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**DOCUMENT CONTROL AS RISK
TREATMENT TOOL IN BUILDING
LIFE CYCLE**
A Proposal for Logistics Buildings

MSc Dissertation

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This dissertation, considering the literature, is positioned in the real estate building heritage studies assessment, focusing the main attention on the importance of the role that the document and its recorded information could assume during the building life cycle phases.

The main hypothesis is that the document management linked to the buildings, then physical asset can identify and analyse, so consequently take under control, some risks that could occur during the different building life cycle.

Furthermore, the work is going to put this focus, more specifically on the due diligence activity by considering the transaction and operations risks as well and how the critical compulsory documents requested by law can be used as risk treatment tool.

The work is composed by theoretical reasonings given by information system and document management standards, due diligence theory and at the end with risk management techniques mixed up with the Italian National compulsory laws.

Moreover, the dissertation develops a practical tool applied and scaled to a real logistics building, then the result is the “*DARM – Document Audit Ranking Matrix*”, a decision making and document control tool, that can make possible reaching the real estate building assessment under the desktop activity step (document - recorded information review) , especially considering the building transaction and operations phases.

This tool represents just the starting point of the document management linked to the risk management techniques and infinite are the stakeholders, organizations, asset classes, etc. at which is possible to address this approach.

Anyway, the key point is the huge role worn by the documents at which are related responsibilities of high relevance and for which there is a typical underestimation of the possible consequences in case of event occurrence.

Getting across the message that, different and critical document availability has different consequences in terms of administrative, civil and criminal liabilities, considering first of all the people's safety and after the impacts on organizations and managers; is the first goal of the work.

“People hate think about bad things happening, so they underestimate their likelihood...the chance that something will happen”¹

¹ Source: The Big Short movie, 2015, directed by Adam McKay, screenplay pull-out by the book “The Big Short: Inside the Doomsday Machine”, based on real happened events about 2008 financial crisis.

The following chapter is devoted to the explanation of the research questions, literature review including the current knowledge regarding specific arguments and topics at which the dissertation is referring to and a brief thesis' introduction. The following parts focus the main attention starting from the research questions that we made up toward our-selves in order to develop this dissertation and what could be the added value that this work can provide to the present technical literature. Going ahead, a literature review aimed at finding out the existing literature devoting on the importance of the document management, recorded information supporting the due diligence activity and the risk management techniques applied to the Real Estate field. Because of the young-nature of the latter, the risk management techniques for Organizations and, due to the continuous updating about National law-framework (compulsory requirements and documents fulfilment); the dissertation positioning, in the existent literature, results a link among these topics. Finally, concluding with the introduction providing a brief thesis' structure for a better work understanding.



Figure 1 - Literature Review Contents

Research Questions

Questions	Issues
<p>How large is the criticality of the information management within the building life cycle and related due diligence process?</p>	<p>The information management within the real estate field results fundamental for the entire management process of building heritage and its life cycle. Assess the buildings implies a huge effort in terms of time to gather and synthesize critical information under multiple matters for treating different kind of risks such as transaction or operations. Then, carry out a due diligence activity, considering short time-frame available, results a huge effort by reaching a trade-off between time and risks.</p>
<p>Can the recorded information be a resource to reduce uncertainty and risks in the building life cycle?</p>	<p>In the Italian law-framework but also at world wide scale; the information contained into the document (recorded information) is itself a tool for managing and then, treating the risks. Moreover, gather and manage the documentation is a fundamental resource for reducing the Real Estate uncertainty during the building life cycle phases, especially considering the transaction and operations ones.</p>
<p>In which way the recorded information could be associated to risk scenarios?</p>	<p>Many organizations undervalue the importance of documents and related recorded information as a tool for risk treatment. This is associated to the low risk perception that the business entities have toward those scenarios just because they are very unlikely, then because of this are not considered. The document with its information and responsibilities associated, is a tool for different risk levels, starting from the prevention in terms of</p>

	<p>deeper and more focused controls, but also in case of event occurrence; results fundamental for attributing important responsibilities.</p> <p>Thanks to the closer Italian Laws that have introduced criminal, administrative and civil responsibilities through D. Lgs. 231/2001 and D. Lgs. 81/2008; the recorded information is fundamental for the law compulsory fulfilment.</p>
<p>What could be, considering recorded information, an added value for the Society (Stakeholders) and for the Companies in which they operate?</p>	<p>Defining and developing a practical tool that facilitates this hard work of information gathering and synthesis including the Risk Assessment and Treatment theories aimed at increasing the risk perception serving People's Safety (workers) at first and Company-Managers'.</p>

Literature Review

Starting from these concept ideas and research questions; it has been developed a deeper research and about the existing literature that involved these three main topics already mentioned and, as support of the above starting concept ideas and research questions here, as follows are reported the main topic categories, key words, findings, methodologies and structures related to the arguments treated. As it will possible to get, is that after the research of around 500 literatures, considering papers, books chapters extractions, practical guides issued by international organizations and articles given by professional's newspapers; the result is that the topics are treated but in separate way as they were not interconnected. Given this broad research, some literatures have focused the attention on these matters but as told before, some critical points are missing.

Topic, Key Words	Key Findings, Methodology, Contents	Strengths (S) – Weaknesses (W)	Source
<p>DUE DILIGENCE: Buyer, Liability, Investigation, Warranties, Past Records, Assets, Litigations</p>	<p>The importance of the due diligence for service providers. Including the areas of due diligence, due diligence process and contents of a report.</p>	<p>(W)-General overview about the due diligence activity as a tool for the knowledge of the potential buyer.</p>	<p>(Chowdhury, 2011)</p>
<p>DUE DILIGENCE: Due diligence assessment, asset due diligence, asset, acquisition.</p>	<p>Examination of limitations for conventional financial due diligence and focus on full asset risk assessment profile also for M&A. The consideration of non-financial issues has a huge impact on the financial one in a long term.</p> <p>Tables showing the external context of firms considering Environmental, Social, Workplace and other issue. The non-compliance with law determines consequences sometimes higher w.r.t. financial aspects.</p>	<p>(S)-importance of non-financial risks of an asset. It considers the other areas. Socio-Environmental and limitations of conventional methodologies.</p> <p>(S)-Analysis of consequences in terms of reputation and companies' shares depreciation.</p> <p>(S)-Complete risk profile during the Pre-Acquisition Phase.</p> <p>(S)-Standards considered ISO 14001, 9001, OSHAS18000</p>	<p>(Reichardt, 2007)</p>

<p>DUE DILIGENCE: Due diligence manual, reputation, risk management, organization assessment, risk perception</p>	<p>Focus on reputation related to the due diligence activity and risk management associated. The framework of a general due diligence under the financial perspective for maximising the shareholders' value. The main aspect, considering financial issues and organizations profiles is related to the reputation itself linked to the non-tangible arguments and assets. The importance of information weights on the final shareholders' value. Environmental issues have a huge weight nowadays and the legislative law-framework and related fulfilment results fundamental in the due diligence process.</p>	<p>(S)-risk perception theory focused on undervaluation of bad events w.r.t. better ones. Identification of sub-risks also with low likelihood. (S)-Reputation risk assessment considered. (S)-Environmental issues-trend considered. (W)-Financial issues focus oriented</p>	<p>(Spedding, 2009)</p>
<p>DUE DILIGENCE: Due diligence, building due diligence, walkthrough, audit, surveys, real estate, RICS</p>	<p>General guide for technical due diligence of commercial properties. Overview about the vendor surveys and client requirements. General audit about the documents involved considering the main aspects and topics. Focus mainly related to the inspection activity for each main building requirements referring the law-framework context.</p>	<p>(S)-Based on practical best practices. (S)-focused on building asset and commercial asset's classes. (W)-only a general documental audit and control overview is considered.</p>	<p>(RICS, 2010)</p>

<p>DOCUMENT MANAGEMENT: Document management, record, document control, information system, real estate document, building document</p>	<p>The practical guide for RIM (records and information management system) for organizations. Defines a RIM risk framework, context, roles and responsibilities and continuous improvement environment. The main matters treated is the compliance with regulatory framework in the information and records context including intangible aspects such as reputation. The text treats the RIM risk controls by different categories and develops a matrix for each of them, including topics as: Governance, Inventory, Retention, Disposition, Legal Holds, Privacy and Security, Partner Management, Staffing and Training. This RIM Risk & Control is aimed at ensuring the law fulfilment for different organizations worldwide in order to mitigate the risks that could arise.</p>	<p>(S)-Includes the Information and Records Risk Management. (S)-Roles and Responsibilities definition in a continuous improvement environment. (S)-Strong presence of law fulfilment. (S)-Strong risk management theory included especially considering the context establishment. (S)-Improvement and monitoring addressed.</p>	<p>(Mountain, 2014)</p>
<p>DOCUMENT MANAGEMENT: Document management, document control, information system, record management,</p>	<p>The principal theme is referred to the document control for enterprises considering their involvement with the external context. This literature treats the lack problems about the document control requirements in this field.</p>	<p>(S)- Acknowledgment of lacks in document control field related to the main techniques. (S)-It considers the main standards:</p>	<p>(Whitman, 2011)</p>

<p>corporate record management, enterprises, business process management system</p>	<p>A huge consideration of document control as a key factor to run properly an enterprise and the low risk perception of that is present nowadays. Furthermore, it recognises the decreasing of enterprises value because of the undervaluation of a properly document control. Each enterprise should implement a document control and management system. The paper presents the key elements that a system should include, the integration into the different organizations and that associated to the different key players of the enterprises: HR, Engineers, Operation, etc. Moreover, are presented the potential methods and ideal models possible to apply.</p>	<p>ISO and OSHA. (W)-low importance related to the risk management techniques, not treated.</p>	
<p>DOCUMENT MANAGEMENT: Document management, records management, management models, record management models, information system</p>	<p>The paper identifies records management practice focusing on the specific matters of classification. It treats the importance of document control using the record management including the intrinsic value for running the business in a continuous way. Furthermore, the paper goes ahead with the records classification considering the RM (record management) as</p>	<p>(S)-importance of document control and records management as key factor for enterprises (W)-focused on specific country (Malaysia) case study</p>	<p>(U.A. Mokhtar, 2016)</p>

	<p>the key factor for the business; the review of the records management models considering the mathematical, conceptual and functional ones. The models are presented in matrix form showing the strengths factors, coverage issues and specific analysis for each of them.</p>		
<p>RISK MANAGEMENT: Risk, risk management, building risk management, scenario fire risk management, building risk treatment</p>	<p>The article presents the building fire risk analysis based on scenario clusters applying the risk management theory and techniques. Starting from the building analysis is possible to take the appropriate risk management (treatment) measures. It starts from the fire risk analysis process on buildings with a building target, fire hazards, scenario clusters and frequencies of occurrences.</p>	<p>(S)-strong risk management standards and theory. ISO 31000:2009 (S)-Case study application very understandable (W)-Based only on physical building factors, it does not consider the document control and related fire teams' inspections that could add different fire risk assessment results.</p>	<p>(J. Xin, 2013)</p>

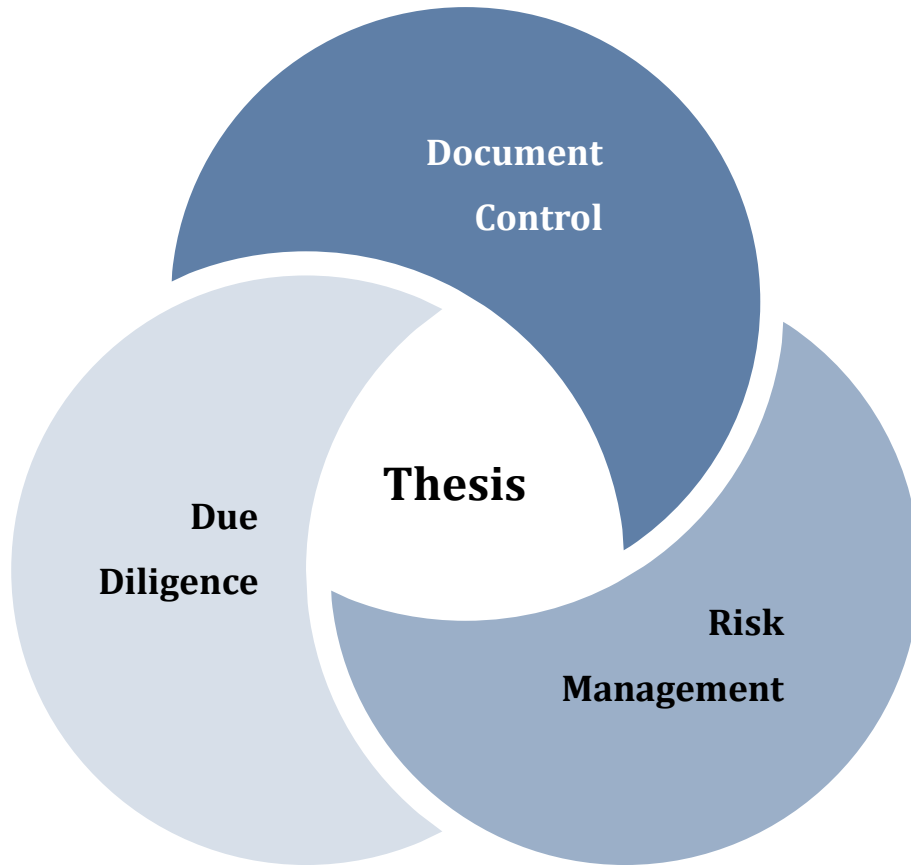
Table 1 – Literature Review Matrix.

Considered what as previously mentioned, the topics of Document management and control, Due diligence and Risk assessment result present into the existing literature (Table 1) but, each of the argument, except for some articles

(Mountain, 2014) that presents almost all the matters, the others refer to single or at maximum two topics without considering at the same time all of them.

Literature Review Critical Remarks

- **Document control:** results one of the most treated argument into the existing literature especially applied to Organizations and Enterprises (Whitman, 2011). The matter is often treated in a theoretical way proposing the main characteristics of a document control system, classification of documents and the role of the information for running the business entities (Mountain, 2014).
- **Due Diligence:** results a topic broadly treated considering the financial aspect (especially if we consider that the due diligence can be applied in three different methodologies – for financial, legal and technical risks). Due diligence finds strong application talking about shareholders' value but, very narrow literature is devoted to the non-financial aspects (Reichardt, 2007) such as environmental, socio reputation issues and others.
- **Risk Management:** also, here, the main aspects refer to the financial issues in terms of financial investments and returns without having a deeper detail for the technical or legal aspects.
- **Real Estate field:** because of its young nature, the three themes above to be get in the same literature results almost impossible and, for this reason it has been chosen to develop this thesis for which a specific place is given by the following scheme.



Introduction

This dissertation is the linking point among document management system, due diligence activity and the risk management techniques. Moreover, applied for the first and most important step of the legal-technical due diligence activity. The central role of the **document control** of this thesis is aimed at creating a **document control tool** that ensure **people's safety** through the fulfilment of all compulsory law requirements and at the same time, ensuring the **organizations** from transaction and operations risks that now, can be held accountable for civil, administrative and criminal liabilities thanks to the introduction of D. Lgs 231/2001 and subsequent D. Lgs. 81/2008.

This extension, thanks to this law, now involves criminal responsibilities for Society's heritage, criminal penalties for CEO and Partners, that, until this decree, was not possible to pursue anyway (before the law entering, just cash-reimbursement were applied, often covered by insurance's companies).

Nowadays, the Real Estate field and its services but also "old" organizations are facing with a day by day more complex environment under the law-fulfilment aspect. This complexity increasing drove to have less time to devote the right attention on this perspective and manage always new laws, standards and regulations is getting a hard work and makes necessarily have specific multidisciplinary-skills. With these considerations, it is necessary to develop management system and **tools** devoted to specific branches such as internal organizations quality, environmental issues and management, health and safety topics, etc. For this, new job-figures came up such as HS&E responsible (Health-Safety and Environment) or into the Italian Soil the so-called RSPP (Responsabile Sicurezza Prevenzione e Protezione).

However, from 20 years up to now, the law-framework and the risk perception has changed a lot and; it is almost compulsory to adopt a systematic approach to face with all these matters.

The complexity of these matters is treated through information and related documents that, as for the laws; are getting harder and harder to be managed.

As previously mentioned, this thesis, is focused and devoted to gives a **practical document control tool** for **treat** the risk associated to transaction and operation into the real estate field.

The Work composed in the following chapters:

1. Chapter: a sort of introduction in the Real Estate Market considering the European context and Italian as well focusing at the end on the real estate operations processes of Asset, Property and Facility management including the main services associated;
2. Chapter: related to the importance of the information for the Real Estate operations process, how to gather and organize in a systematic way this huge amount of information through archives and standards focused on this matter and at the end; the information gathering differences between a slow and gradual process of acquisition "*The Census*" and a faster and punctual information acquisition through "*The Due Diligence*" activity;
3. Chapter: related and more specific on the main phases, players and information that must be present into a legal-technical due diligence considering law-framework and the main *building requirements* to be satisfied according to the *compulsory laws* and *documents* associated. Furthermore, the focus is devoted to the information preliminary check, so-called *document control* or *desktop activity* and the other phases such as the walkthrough activity and the final report writing to be produced;
4. Chapter: to carry out the *first* and most critical phase of a due diligence of the previous chapter, the *document control*; it is was developed a

document control tool explained in this chapter, so-called **DARM** based on the existing **risk management techniques** associated to the **Italian Law-framework**. For made up the DARM, this chapter starts from the general tool, aim and method explanation, going deeper in details explaining and analysing the **document risk assessment** through the events percentage occurrence, risk management standards, utilization of documents for the risk treatment tool given by compulsory laws, real estate risks for the transaction and operation until the analysis of legal sentences for better understanding the law-application considering civil, administrative and criminal liabilities linked to the D. Lgs. 231/2001 and D. Lgs. 81/2008 application.

Given the law-framework and laws' liabilities applied, the **document risk assessment method** was applied in detail on specific documents in order to generate as output the **document control tool – DARM** and related procedure;

5. Chapter: is about the case study application of the document control tool, starting from the general explanation of the building and a deeper analysis of the main spaces and technological elements. Finally, at the end are reported the results of the tool application.

1. REAL ESTATE MARKET

1.1 REAL ESTATE AND THE EUROPEAN CONTEXT



New frontiers of investments have been done in the last 10 years after the 2008 financial big short. NPL, renewing, refurbishments, now are the core of the financial market. Investments societies, front point funds, banks and financial institutions, more in general, now are developing new forms of earnings from tangible assets. The construction industry has been moved from “new” to “maintain” the value over time and the closest results from 2017-2018 years are as follows (BNP Paribas Real Estate Research, 2018) (Estate, At a Glance Q3 2018, Main Investments Markets in Italy, 2018):

“The total commercial real estate investment volumes in Europe have stayed quite high with € 176.7 bn invested between Q1 and Q3 2018, a stable result compared to the same period in 2017.” The 2018 turnover shows a little decline however, as **2017 was an all-time record** due to a very active Q4 that will be hard to be replied. The European result is once again led by Germany where investment activity continues to boom, and more in detail (BNP Paribas Real Estate Research, 2018):

- Office investment volumes remained stable, with the growth being held back by limited supply in some of the European markets.
- Retail investment has seen a decline over 2018 although on an annual rolling basis (that includes the exceptional activity of Q4 2017) it is stable.
- Industrial & logistics, as well as hotels sectors, have reached a down-playing but always quite high w.r.t. the last 10 years average.

With € 66.7 bn transacted over the 2018 three quarters, the European city markets reached an average 10% increase compared to Q1-Q3 2017 (BNP Paribas Real Estate Research, 2018):

- Central London remains the top European city market with €15.8bn invested, foreign investors are decreasing due to the uncertainty linked to Brexit negotiations (**source of risk**);
- Central Paris (+41%) takes second place, mainly due to Paris city performances.
- Following London, and Paris come the four main German markets. Frankfurt (+78%) is number one of the German cities with €6.8bn invested, thanks to a few mega deals.
- Berlin (-19%) is the only one of the four main cities to register a decline, attributable to insufficient supply as there is still a high level of demand. Then comes Amsterdam that jumps to 7th position despite a substantial decline (-23%) in investment activity except in the industrial & logistics asset class.
- After three exceptional years, Madrid is now posting declines (-25%) led by office and retail.
- Vienna's decline (-38%) is attributable to a lack of product whilst offices remain the top performing asset class in Dublin (+124%).
- Milan's investment decline (-5%), but always far over the average.

As have been highlighted, since 2008 investments valley², 2012 has registered a good positive trend and it is possible to state that 2017-2018 years are the closest with respect to 2007 investments.

Then all sectors remained very active if compared w.r.t. 10-year average (BNP Paribas Real Estate Research, 2018): around € 124.0 bn and the reduction is attributable to the 2017 investments record, as already mentioned, hard to be replied.

² The 2008 financial crisis started off in 2006 and also earlier when, the CDO market – Collateralized Debt Obligation – had registered no-valid rating results from the rating companies. Rating AAA, AA (the most secure), in reality, was composed by tranche of B, BB of no-secure mortgages. “Traditional” obligations basically were composed by tranche of mortgages secured by rating corporations, while, CDO composed by other residual mortgages given by the traditional obligations and sold as “the most secure investment” while, they was composed by sub-primes mortgages totally unsecured.

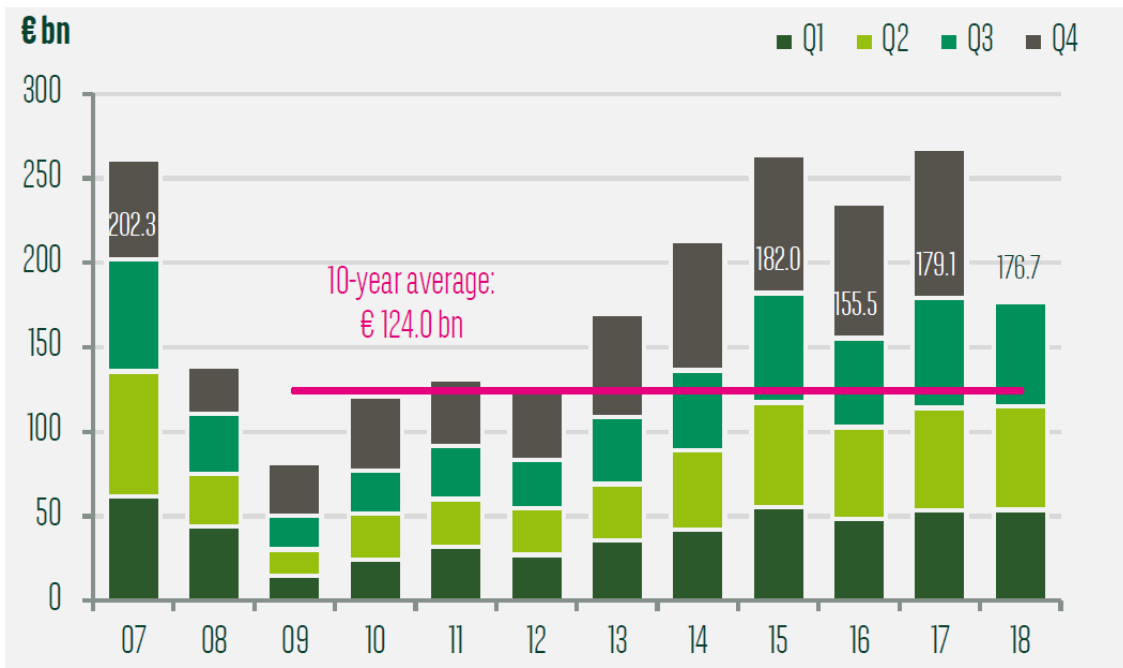


Figure 2 – Real Estate Investment Volume in Europe over time 2007- Q3 2018. Source: (BNP Paribas Real Estate Research, 2018)

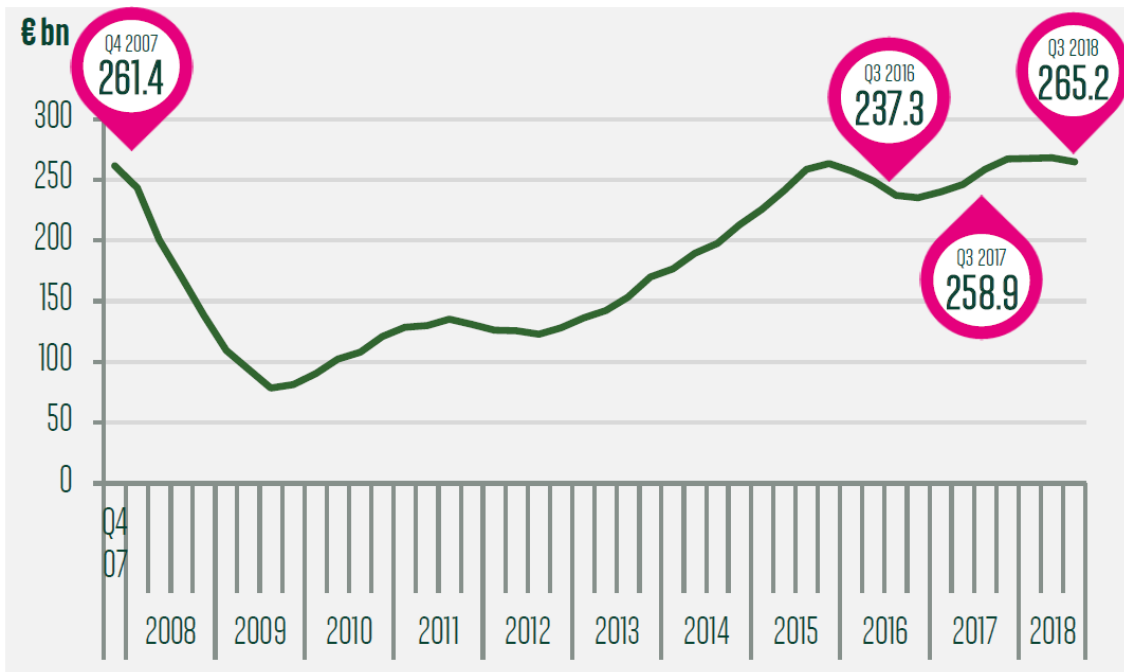


Figure 3 - Real Estate Investment Volume in Europe – Rolling Year over time Q4 2007- Q3 2018. Source: (BNP Paribas Real Estate Research, 2018) – comparison between end 2007 and 2018 years.

1.2 LOGISTICS REAL ESTATE MARKET IN EUROPE

Based on what has just mentioned in the previous paragraph, there is no surprise to see a slump in prices for the logistics compartment if we compare it to the volumes achieved in 2017. But it has to underline that the market is still strong along its 5-year average mark (from 2012 the e-commerce market and more specifically the customers' eCommerce purchases value, has reached a continuous increase along up to now, especially in Italy)³. Yet, investor interest is not fading or decreasing: the market for industrial and logistics achieved its second highest mid-year volume of investments.

To wrap up the 2018 logistics trend, logistics take-up for warehouses over 5,000⁴ sqm is (-14%) in H1 2018 vs H1 2017 (Research, August 2018):

- The market remains strong, above the 5-year average take-up;
- Retail and e-commerce are still strong market drivers in most countries, especially in Italy;
- Rents increased by 3% in H1 2018 over 12 months.

Industrial and logistics investment: € 14 billion, -21% in H1 2018 vs H1 2017:

- Slow start to the year but still well above the 5-year average volume of investment;
- Demand for logistics assets remains strong and still increasing.

Bearing the logistics compartment context statement by (Research, August 2018): *“After the record volumes of take-up achieved in Europe over the past three years, it is not surprising to see a market slowdown during the first half of 2018. In 20 cities monitored... the volume of take-up dropped by 14% in H1 2018, yet the market is sustaining a high level of activity. The **main factor***

³ Source: data developed by Osservatorio eCommerce B2C Politecnico di Milano, www.osservatori.net. Customers' eCommerce purchases value – Italy: (+16%) in 2014, (+22%) in 2015, (+17%) in 2016 and (+16%) in 2017.

⁴ Minimum sqm size, 5000 sqm, today's trend (from 2000 year, going ahead is to have at least from 10.000 to 20.000 sqm as a logistics building) Source: main Investors' interviews, Scenari Immobiliari.

contributing to this positive market dynamics is **GDP growth**, supported by **domestic demand, manufacturing output and international trade. E-commerce activities** also stimulated market growth in the main European logistics hubs. This sector recorded a 14% increase in Europe in 2017 and is expected to further enjoy a two-digit growth in 2018.”

As is possible to see in the following charts, referring to the logistics compartment, since 2012 a net positive trend in investments for industrial and logistics is remarkable during years. The main are registered for UK, followed by Germany, France, Netherland, Finland and Italy.

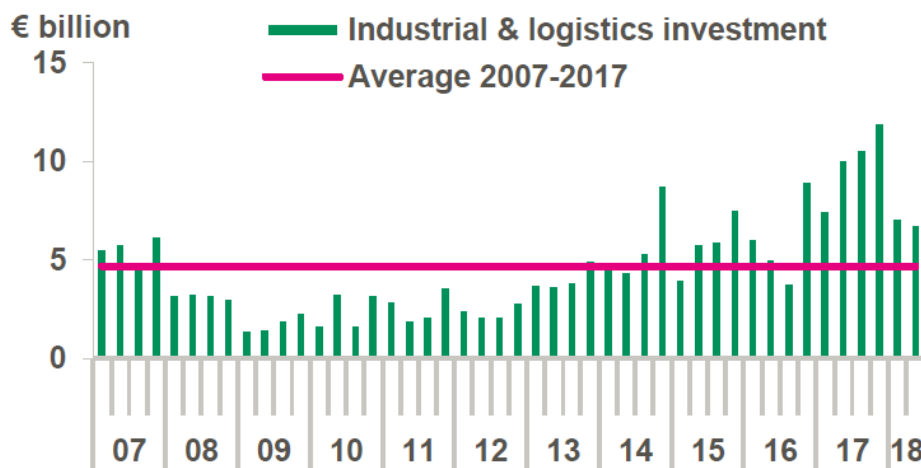
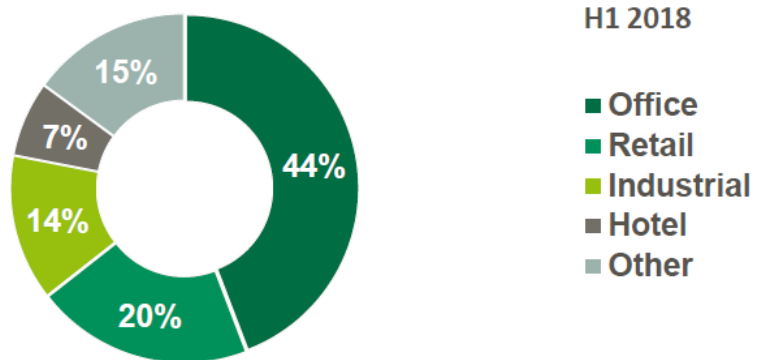


Figure 4 – Industrial & logistics investment in Europe *(Industrial premises and warehouses), Source: Source: Research, B. P. (August 2018). European Logistics Market, Property Report.



Austria, Belgium, Denmark, Finland, France, Germany, Italy, Ireland, Luxembourg, Norway, Portugal, Spain, Sweden, Netherlands, UK

Figure 5 – Commercial Real Estate investment in Europe H1 2018, Source: Research, B. P. (August 2018). European Logistics Market, Property Report.

1.3 REAL ESTATE MARKET AND INVESTMENTS IN ITALY

The macroeconomic context shows an increasing growing in Real Estate investment worldwide level. The most recent data shows that the growth got reinforced and it is still kept up during the first 2018 quarter. Into the EU continent the growth continuous reach higher and higher results. In the last 2017 quarter, into EU zone (ANCE, Febbraio 2018), (Estate, At a Glance Q1 2018, Main Investments Markets in Italy, 2018): has been registered +0.6% GDP also due to larger exportations and higher internal investment demand.

The world's trade strengthening is stimulating the global economy and the continuous growth due to the new technological frontiers is attracting new investors into real estate market, especially for non-commercial building. The (Qe) – Quantitative Easing led to positive Debt-Credit system (IPI, Luglio 2015), so the tendency of banks is to allow and enlarge, for companies and privates, to access to new financial resources.

In Italy, especially Q3 2018 shows real estate investment volumes quite close with respect to the Q3 2017, almost € 1.9 billion over 50 operations. More in detail, the first place is reached by the Retail compartment (almost 33% over the total amount), quite penalized the Offices due to the lack of spaces their selves and only 9% represented by the logistics compartment. The latter, in Italy, it has to be highlighted that is still growing and the market has been representing a new investment opportunity for the last 5 years. While in Germany the compartment is already at maturity stage, Italy is one of the main important strategic drivers for this real estate branch. It has been reported furthermore that in Italy the Real Estate Market has reached (ANCE, Febbraio 2018):

- For residential investments, 2017: 38% over total residential investments are on buildings refurbishment with a +0.5% growth w.r.t 2016, while for new 18% with a +0.1% growth w.r.t 2016;

- For non-residential investments, 2017: private and public represent respectively 27% and 19% over the total. Moreover, the private in this compartment has reached +1.5% w.r.t 2016 (previous forecast was about +0.9%)⁵.

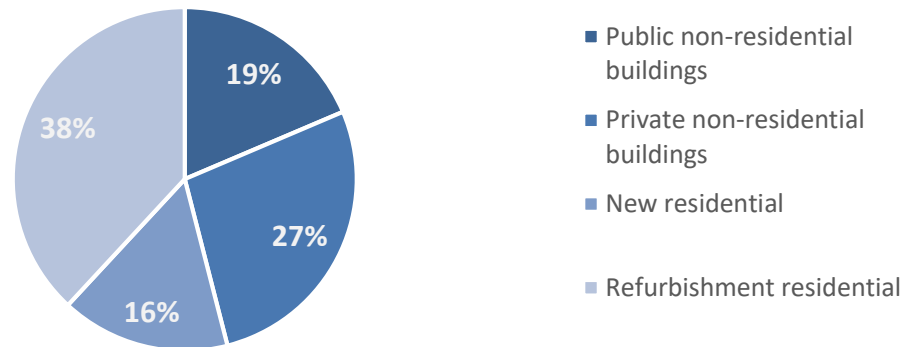


Figure 6 - Real Estate Investment per compartment - 2017 (net of transaction property costs), Source: ANCE, Osservatorio Congiunturale sull'Industria delle Costruzioni, a cura della Direzione Affari Economici e Contro Studi, Febbraio 2018.

Critical Remarks:

Italy, as other European countries has been involved into 2008 financial crisis due to the CDO market. From the second half of 2009 to the end of 2012, Italy has registered a huge valley into RE investments, but considering the new market frontiers and a solid bank liquidity (due the pure Italian culture in savings), Italy now, since 2015 is been registering a good (relatively slow) trend.

⁵ Source: Istat, rielaborazione ANCE, Osservatorio Congiunturale sull'Industria delle Costruzioni, a cura della Direzione Affari Economici e Contro Studi, Febbraio 2018.

1.4 LOGISTICS FOCUS & DIGITAL INNOVATION

Many are the definitions for the term “Logistics”, and many are the different typologies (integrated logistics, partially integrated, manufacturing and so on). Just for not taking for granted, when it is talking about Logistics compartment into real estate field, it is considering (Vignati, 2002): warehouses, CODP⁶ and Industrial buildings (mainly focused on small production, assembling and packaging). Italy, as mentioned in the previous paragraphs, has a non-mature market that nowadays is attracting in a positive trend new investment.

This sector, also due to the ICT complexity increasing, globalization and internationalization has reached one of the most complex level worldwide, trying to achieve day by day the perfect triad of “Time, Cost and Quality” in serving the client.

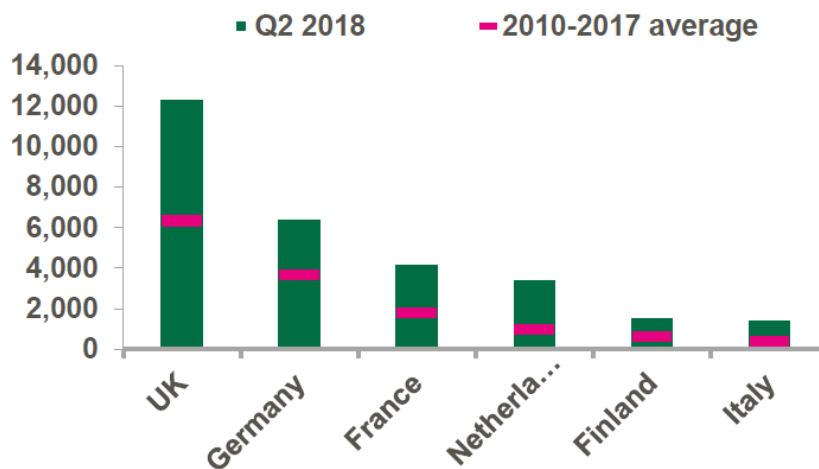


Figure 7 – Industrial & Logistics Investments (rolling year), € ml. Source: Research, B. P. (August 2018). European Logistics Market, Property Report.

⁶ CODP: Customer Order Decoupling Point, where semi-finished or finished products are stocked. These logistics building types are related to the receiving, delivering, handling, stocking and sorting operations. Only a small part or neither that is related to the production. Source: Vignati, G. (2002). Manuale di logistica (1 ed.). HOEPLI

With respect to the past, where the logistics branch has been seen just a part of the production for the supply chain stream (a small in-house service), now this evolution has addressed the logistics services at higher level of complexity. Due to the strong increasing in the demand and service complexity (Figure 8), the logistics compartment is nowadays a proper core business and not just a part



anymore. As reported before, (Innovation, 2018) the **e & mobile commerce**⁷ is considered, from the sectors' players, one of the biggest revolutions in terms of entrepreneurship.

The retailers, in the middle of this revolution, are almost obliged to involve (with respect to the physical shop) the e-commerce channel for running the business. What makes possible e-commerce and physical shop retail business is the logistics compartment. The consumers' habits are changing and are getting more complex and specific day by day. But we cannot forget that the physical shop is still a strong key point for the business, saying so these two channels have to find a good trade-off in a pro-active way rather than competitive one.

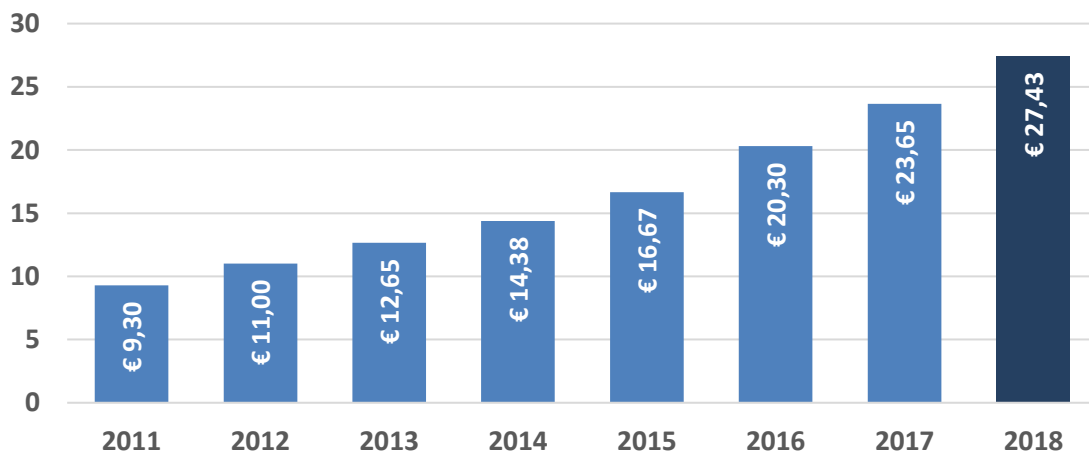


Figure 8 – e-Commerce Demand B2c - Customers' eCommerce purchases value, € bl. Source: Osservatori.net, Politecnico di Milano, 2018.

⁷ Mobile commerce: online trade carried out by portable devices (smartphones, tablets, etcetera)

1.4.1 ITALIAN'S TODAY OFFER

For long time, real estate's players have devoted low attention about this kind of buildings, especially for what has been said above about the youth of the Italian Logistics market. The part of the real estate (existent) on Italian soil presents buildings with inadequate aesthetics, lack technological characteristics (basically what is present, except for huge investments by big foreigner investors) and features based only on the old industrial branch.

About the new buildings, Italy is not underdeveloped or retarded, on the contrary a lot of new industrial solutions are available for building assets "built to suit"⁸. Furthermore, it must be pinpointed that for this type of buildings is faster and more profitable trying to re-use pre-cast elements (or demolishing) rather than trying to re-use the entire asset with a refurbishment.

To specify also that many Italian buildings have high residual performances⁹ (in terms of structure, plants and finishing) but nowadays, the "modern" logistics buildings need more advanced requirements involving under beam height¹⁰ around 9.5 - 10.5 meters, the minimum size, for a good stocking about at least 10.000 - 15.000 sqm or perfect flat¹¹ concrete slabs. Due to these few considerations:

- Italy has good technologies for modern logistics buildings;
- is better the "new construction" w.r.t refurbishment.

⁸ Built to Suit: assets built based on focalized requirements by the final user (Property, Tenant or both) through a very specific agreement and brief document before starting the project / construction. Each requirement is discussed and previously adjusted based on User's specific need. The other type is the "speculative" one, where common characteristics and features are directly built and commercialized after the construction. This latter type is hard to place on the Logistics market due to the peculiarities of the compartment. Each Tenant (final User) has its specific "good" or "product" to be stocked, handled, sorted, then building's characteristics (technological and spatial) are always different. Amazon with thousand different finished products, L'Oréal Paris group with hazardous materials, IKEA with lower SKUs types but higher volumes and weights.

⁹ Residual performances: performances given by a very specific building's assessment, through analytical activities involving information activities (pre-diagnostic, data room inspections, documentation analysis) and technical diagnostic activities (focused on possible specific issued point out during the previous step, NDE, NDT, DT).

¹⁰ Under beam height: for maximising the stocking, is the maximum height at which the main fork lifts are able to get.

¹¹ Flat slabs: typically, are built according to the same standards associated to fork lifts (DIN standards).

1.5 REAL ESTATE OPERATION PROCESS

The real estate includes many aspects, from the operative to the financial ones. The physical asset, especially for what we call “*complex buildings*”, are associated to the physical building’s complexity but also to the activity carried out by the Tenant. In this perspective, the building’s Property and the Tenant, are just the “tip of the iceberg” and before entering the core of the thesis, it due to give a strong foreword about the real estate and its processes. The different players involved into this process can be:

- **Property:** building’s owner, it can have different purposes and into the real estate field, at the table of “*big players*”, the building is owned for earnings aims. The property or the investors, typically, is not the final user of the building but, moreover, buy or make the building build for speculative reasons. In this perspective, for the Property point of view, it is needed to have a systematic information framework already made up for managing in a better way all the building’s operations associated. Why? Most part of these buildings are built and after 2, 3 or 5 years, one got the remuneration, typically are disposed to another Property for the same reasons and, once again, in order to obtain the highest price on the contract, the old Property has to keep *the building value* constant over time. To reach this goal, is needed a huge and complex knowledge of information about the constructed asset and, moreover, to get across the message to other potential future Properties and Investors, that the building had been kept in good condition, the information knowledge, managing, updating, etc must be available and clear. Once the building is operative, the GC handovers all the building documents (As Built)¹² and associated to the other documents (administrative, cadastre, etc) produce the information, base for the right Asset’s management. Furthermore, the Property has the task (and the interest) in knowing the

¹² As Built: set of documents arisen from the construction site once the building has been completed.

building's behaviour in order to develop for it the right strategy (refurbishment, capex, maintenance strategies, etc.) This is the reason why the *Property Management and The Asset Management* are the most important strategic-operative part of the real estate process. Considering the following players (O. Tronconi, 2014):

- **Tenant:** The Tenant or the User of the building, wears a fundamental role into the real estate process, because of its nature of final building user. The Tenant signs the rent contract with the property and has the faculty of choosing who is in charge for the operative building maintenance, the contract type and FM Company¹³ or subcontractors. Moreover, depending on the Tenant's activity, the building is subject to different degradation typologies. Then, the Tenant (or the FM company) has the responsibility to keep the information given by the property and to update the one during its activity¹⁴.
- **Facility Companies** (O. Tronconi, 2014): the tendency nowadays is to contract out all the "*no-core business activities*", and in this perspective, another fundamental process into the real estate market is the *Facility Management*. These Companies carry out all the technical and not-technical activities of the building's user by means of them-selves' operators or subcontractors specialized (usual for the plants maintenance activities). Typically, all the service to the building, to the space and to the building's people. Managing all these information (especially the one related to the building) implies a good knowledge of the building and its parts and systems. The role of the FM Companies

¹³ FM Company: Facility Management Company. The facility, can be carried out with different contracts type, based on single service, multi-service, total facility management or global service.

¹⁴ All the information that are external to the one generated from the construction site. One constructed, the building, has to be keep in maintenance and doing so, for different reasons (requirements by property, by laws, etc) the "dynamic" documentation and information associated has to be gathered, updated and organized. Manuals, Booklets, Handbook, etc.

results fundamental for reaching the quality (in maintaining all the building and User's requirements) aim and to keep the building values over time.

- **Valuation:** this field, into the real estate market wears an external role regarding the evaluation of the asset's portfolio. It is not strictly related to the operation but is linked to that because of itself nature of "*evaluation*". The evaluation process (without entering useless details, because it is not the scope of this work) involves the assessment of several factors in order to develop the right final building's value. It is implicit that for evaluating an asset, the itself leading is fundamental and then all the previous players perform a huge role in maintaining the building's value over time. This process includes the analysis of external and internal factors, such as the building locations, external services, etc and specific internal features and characteristics. Basically, better is maintained the building, higher will be its value. Once again, the valuation process is funded on the *information acquisition* from the previous players and made is available for carrying on activities and tasks.
- **Advisory/Consultancy:** Advisory, into real estate, results a broad term and, it can be applied to many branches and fields. One of them, is the one in which the technical due diligence takes the main place. Being the due diligence (as we will see into the next chapter 3.0) a detailed and focused analysis of the building in a specific time period, typically, it has been developed by consultant companies specialized in this sector. Furthermore, the consultancy can be applied for all the sector involved into the real estate field, such as facility, property, asset management, valuation, capital market, banking, etc. The common point is the knowledge about the building through *the information* sharing among different players and the readability of that latter.

Into Real Estate, the different players can fulfil different task but the mutual connection among those is basically reported in the following manner:

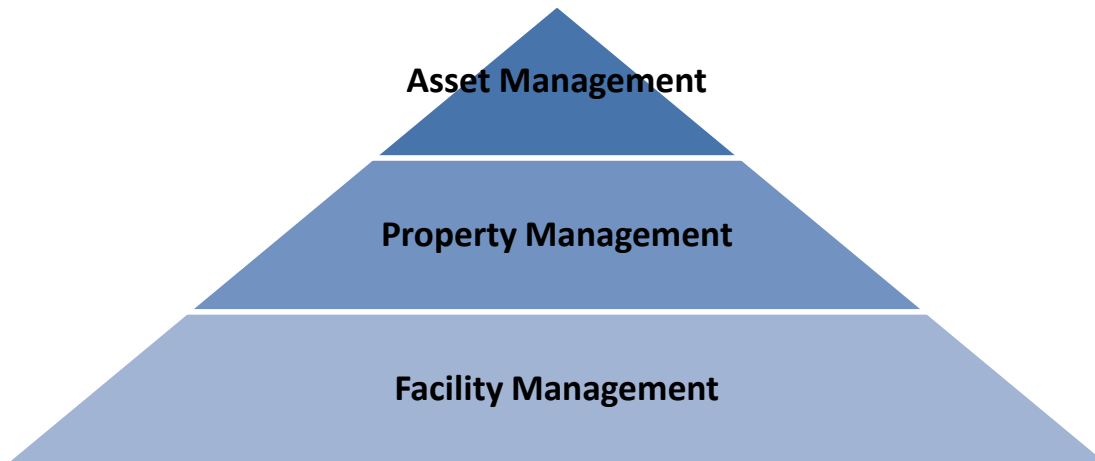


Figure 9 – The Operative Sectors into the Real Estate

Typically, the operative part of the real estate is represented as in the (Figure 9) , as a pyramid where starting from the bottom line we can find the *Facility Management*, the *Property Management* and at the top level, the *Asset Management*. This representation is just a simplification of the process in which are present many features that would deserve a deeper attention.

- **Asset Management**¹⁵: the most strategic branch of the operations, in which high level and aggregated decisions are taken. Typically, the asset management implies strategic aims and purposes about the assets involved, maintenance policies, disposals, enhancement and capex addressing. Moreover, all these strategies cannot be valued without the right information supporting system provided by the “lower” levels. This implies that without the *information* given by the Property and the Facility it will be impossible for the Asset compartment to reach strategic aims or reach them with the right pattern.

¹⁵ Typically represented by the property, the building owner.

- **Property Management:** the middle level is performed by the property management that, it does not get confused with the building's Property that takes the upper strategic decisions. This branch and their tasks are carried out typically by another company or another division of the Property. The Property management includes two types of tasks: administrative and technical one (the technical can be associated to the facility management or a part of it). It can include the administration regarding the document management at administrative, cadastre, rent's contract level, legal issues, running costs and others. While the technical, is focused on the building itself and its life cycle (maintenance activities, etc).
- **Facility Management¹⁶:** the facility, can be a part of the property management or more easily included into that. It depends just on the company structure and business model but at the end, the facility incorporates all the "*no-core activities*" about the building. Typically, it is related to the most "operative" part of the real estate for which all the technical and operational issues are related. The facility is strictly related to the physical building maintenance and its *most important information* due to the fact that all the dynamic information and related documentation pass through this level. The FM Companies manage all the "physical" tasks through physical operations whom results are a huge amount of information that must be gathered, analysed and synthetized for the upper levels. Only and only through this operative process of information (documentation) gathering in a systematic way, it will be possible to make right strategic decisions.

¹⁶ Facility Management: it involves a huge amount of information to be managed, such as: As Built documentation from the Property, Maintenance Handbook, Maintenance Manuals, Building Booklets, mandatory and not-mandatory, reports from the public administration, reports from suppliers, etc.

It clear that, regardless the operative real estate level, regardless the other levels (more external), the common point (and the most important one) is related to **the information** (Figure 10). In order to make decision, in order to make good decisions, the information reliability results fundamental for each of the levels just mentioned. The real estate market is related to “services” that is possible to provide toward buildings and players involved. In this perspective, the management of this amount of services is associated to an information (related to the documents) flow. The most difficult thing, especially in Italy is to reach and obtain this process at all levels, from the most operative (subcontractor and facility management) to the upper ones (Asset and funds management). For this reason, and due to the complexity, multidisciplinary¹⁷, etc of this sector; this work is related to the simplification and systematic organization of an information framework for managing in a better way these matters.

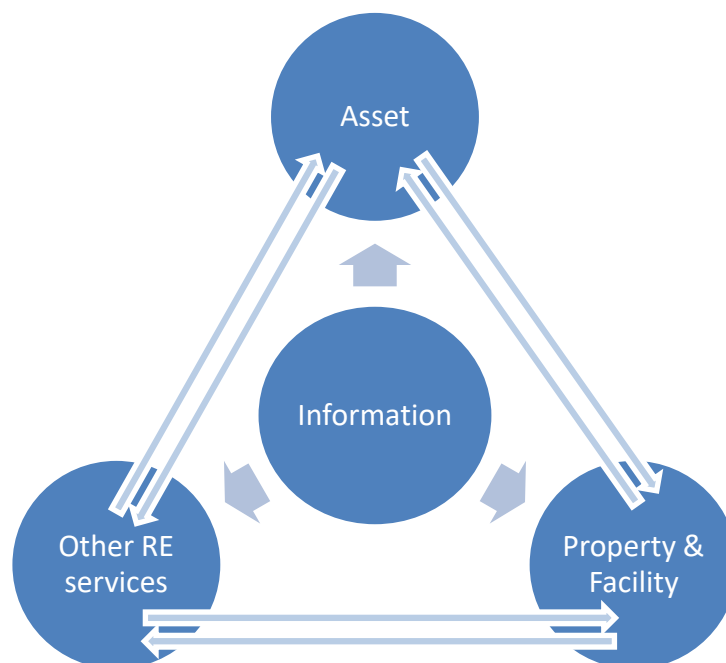


Figure 10 – The information among the real estate operative process of Facility, Property, Asset and other Real Estate services. Source: own elaboration

¹⁷ Typically the real estate involves multiple players for providing services: technical subcontractors, technician, architects, building engineers, management engineers, economists, etc.

2. INFORMATION ACQUISITION WITHIN REAL ESTATE MANAGEMENT

2.1 INFORMATION ACQUISITION FOREWORD

In real estate services and management field, nowadays, the main part of major players (banks, investors, companies and so on) has reached the importance of maintain during time the quality (so value) at the right cost. In this perspective, the real estate management offers a wide range of services (Paganin, 2005): real estate and assets census, energy management, space planning and management, safety-security services, facility & property, documental compliance and management, etc. With the aim of avoiding useless overlapping and redundancy of information, along the last 15 years, the real estate compartment has been getting more efficient in gathering and managing information. As for the financial field, the key point is properly the *information*. The latter has been getting complex and complex year by year also because of ICT¹⁸ evolution and intercorrelated cooperation among markets. Companies are investing in physical assets that reported into their financial statement are related to a specific value, sometimes not clear or correct. This has driven to an implementation of specific information system to generate and maintain value for all the players involved.



Information system is a broad term which aim is to create a constant and increasing value for investors, property and tenants. This requires a full real estate management basically useful for (E.D. Mead, 2011) (S. Bellintani, 2017):

- Real estate market dynamics;
- Active management Players (FM companies, Tenants, etc.);
- Passive management Players (Properties portfolio, Investors, stakeholders in general).

¹⁸ ICT: Information and Communication Technology. Along 20 years this market evolved in exponentially way crossing through each compartment type. Thousands of information are nowadays available thanks by multiple technologies. Digitalization, Cloud, IoT, AI, etc.

However, it must be pointed out that, especially in Italy, the possibility to manage the informative process on built environment (above all for old assets) has been impeded by a huge lack in gathering general information¹⁹ from the beginning. This is not only related to specific and very focused assessment during a TDD²⁰ process but a simple financial (and more general) evaluation as well. The broad field at which the information is referring to, is the one that the most bibliography is using to be addressed for these areas (Paganin, 2005):

1. Facility management - Technical;
2. Property management – Administrative oriented
3. Asset management – Strategic

	<i>TECHNICAL MANAGEMENT</i>	<i>ADMINISTRATIVE MANAGEMENT</i>	<i>STRATEGIC MANAGEMENT</i>
<i>OBJs</i>	Systems Status Efficiency	Costs/Rents Effectiveness	Value
<i>ACTIVITY</i>	Services to the building, people and space, capex application	Running costs, rents, insurances, capex	Refurbishment & Capex, M&A, Disposal & Acquisition
<i>SECTOR</i>	Facility and Technical Property Management	Property Management	Asset & Fund Management

Table 2 – Areas involved into documental management by sectors. Source: Paganin, G. (2005). L'Acquisizione delle Informazioni per la Manutenzione per i Patrimoni Immobiliari. Sistemi Editoriali.

¹⁹ General information: Information: broad term, in our case, the information is related to the physical asset. Information about consistency, structures, plants, cadastre, legal issues, etc.

²⁰ TDD: Technical Due Diligence. A process aimed at assessing all the technical issues related to a building asset. Urbanistic, Static, Fire safety, Energy, H&S, etc. compliance.

(Table 2) synthesises the general objectives, activities and sectors characterizing the three areas pointing out the importance of cooperation between operative and strategic scope. It's clear that regardless the specific goal or scope of each management area, in most cases there are common aims across different fields. This means that the **information system** can and has to support, at the same time, different branches avoiding useless redundancies into the same system. Two are the main field involved, *maintenance planning activities* (Molinari, 2002) (E.D. Mead, 2011): facility-property management and the one focused on *contractual documents* asset management for real estate transaction.

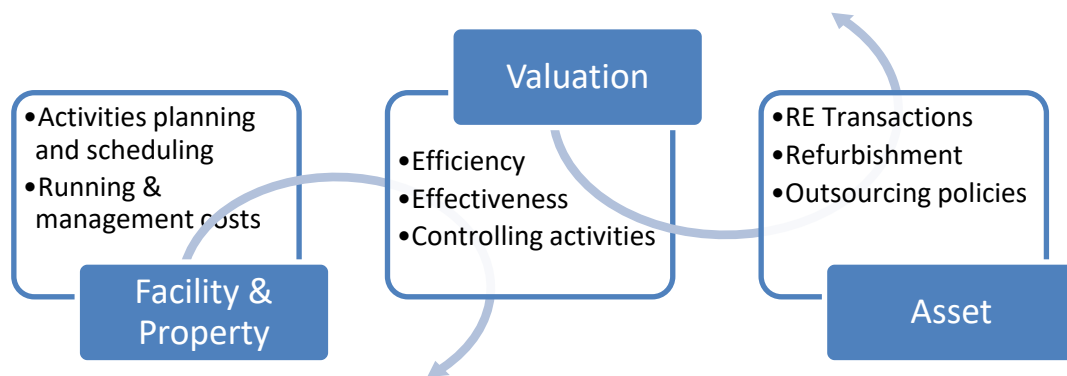


Figure 11 - Wrapping up Real Estate Process, Source: elaboration from Paganin, G. (2005). L'Acquisizione delle Informazioni per la Manutenzione per i Patrimoni Immobiliari. Sistemi Editoriali.

The common key point, as already mentioned above, results the information and as consequence, the related information system that must be present for each Real Estate Asset. Running costs (energy, water, waste disposal, BMS, financial, insurances, etc.), maintenance costs (structural, plants & equipment and others) and higher activity level costs (Asset management branch) involve the process of decision making and good decisions are based on information.

The latter, for the above reasons, must be always *available* and *reliable*²¹ for all stakeholders involved into the decision-making process. The information system, at the end, can have two different type of knowledge and the main difference is the **time** (Molinari, 2002) for managing this information and at which we refer to. In one hand, the acquisition during the design, handover or constructed asset phase, basically the “*Real Estate Census*”, is based on gradualness information gathering principle²². In the other hand, a process across which the time-punctuality (typically short period of time) is the main aspect and, surely, is addressed by the *technical due diligence* process. As *Figure 9 shows*, the Due Diligence area involves and include several Real Estate fields and players, Technical DD for: internal use (property own assessment), pre-acquisition phase for single acquisitions or business mergers and pre-facility management contracts. All these, as we are going to see and analyse deeper in detail, are based in information system which is the common base line.

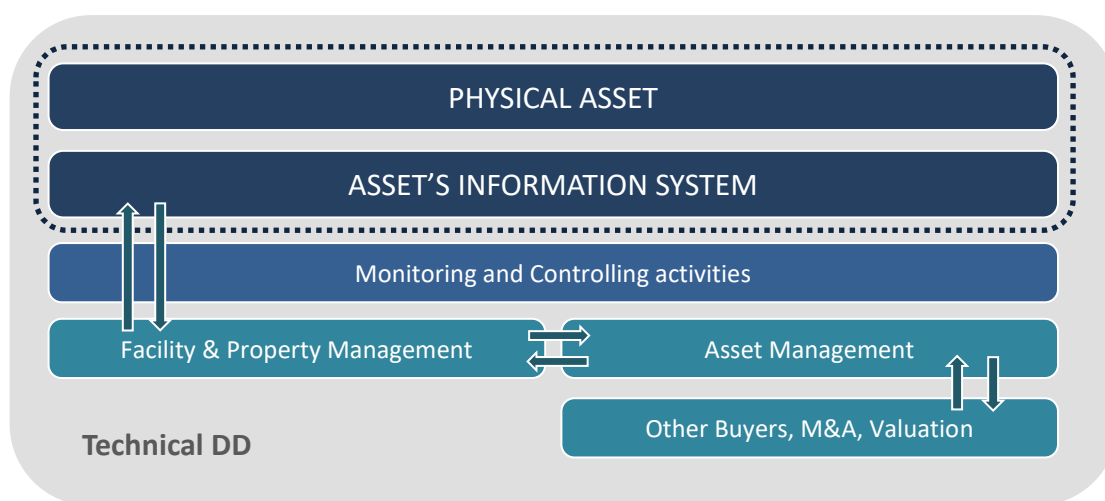


Figure 12 - Real Estate process wrap up and link among activities/players. Source: own elaboration.

²¹ Available and Reliable: sometimes information is just a picture of the past. Nowadays, the information further to be available, has to be updated w.r.t the closest time period. This concept is strictly connected to the assets' book value into financial statement for many Public big Companies

²² Gradualness principle: the process of information gathering for which the asset's knowledge is carried out step by step during time. Starting from the main information (main means critical) useful for the firsts aims predetermined by the Client (explicit needs-requirements) and by mandatory laws (implicit needs-requirements).

2.2 DOCUMENTAL MANAGEMENT AND INFORMATION SYSTEM

A right Real Estate management starts from the knowledge, either for a single building or for an entire portfolio. Knowing is the base for managing and managing implies good information always available. Each physical asset, each building is different for one or more reasons and this paragraph aim is to underline the importance of the support system (IS)²³ for information and how these are structured in different present standards.

The data included into information system (Molinari, 2002) are various and typically aggregated in homogeneous categories based on different scopes (running a service, group of services or an activity). Therefore, it is necessary to identify which are the categories of data and information needed for the assets, moreover which are necessary for carrying out in a complete and free of errors way a technical due diligence (E.D. Mead, 2011).

The following standards are not fixed and rigid examples for a definitive system, but useful to introduce different players, especially in Italy, into the IS tool, nowadays. For 15 years up to now, the IS topic is under the Real Estate's spotlight not only because it is pushed by the "capital gain" but also for laws-standard framework changing, specifically needed by law (Paganin, 2005):

- **Building booklet**²⁴: in which are reported risks linked to the maintenance activities and the base documentation graphics and technical as well;
- **Maintenance plan**²⁵: about the gathering and implementation of all information about the assets involved (based on maintenance handbook or manual);

²³ IS: acronym for Information System.

²⁴ Building booklet: Fascicolo del Fabbricato, ex D.M. 494/96, implementation of EU Directive 92/57/CEE about minimum prescriptions for H&S in temporary construction site. Now repealed by art. 304, D.lgs. n°81/2008 testo unico in materia di tutela della salute e della sicurezza nei luoghi di lavoro.

²⁵ Maintenance plan: Piano di manutenzione, ex L. 109/94 "legge quadro in materia di lavori pubblici e successive modifiche ed integrazioni", repealed by art 256, D.lgs. n° 163/2006, repealed by art. 217 D.lgs. N°50/2016 Nuovo Codice dei Contratti Pubblici.

This documental organization, starts from the capacity of all players involved, starting from the design, through the construction to the running-operative phase to gather in a systematic way all these documentations.

Before starting with the today's standard framework, the general requirements forming and characterizing an (UNI, 10951: Systems of Information for the maintenance management of buildings, 2001) information system SIGeM are (O. Tronconi, 2014):

- **Manageable:** involves procedures and instruction for its utilization. Implementation and itself maintenance;
- **Data availability:** availability and access always guaranteed in each phase;
- **Updatable:** ability to be updated across time, with different users and needs or new management scenarios/situations;
- **Integrability:** ability to be integrated with different information types (graphic, technical documentation, pictures, reports, others);
- **Coherence:** guarantee of coherence maintaining after updating activities;
- **Security:** data must be always available, but some security problems could be arising. Data must be protected and different access for different stakeholders are necessary to guarantee the maximum privacy.

The SIGeM introduction, with the above features, can be implemented thanks to a step by step growth under the so-called **gradualness principle** (see at chapter 2. Documental management in Real Estate) compatibly with respect to the final aim and resources' organization. This means that the structure is developed ad-hoc depending on the specific organization applicant.

2.3 INFORMATION SYSTEM STANDARDS

The UNI 10951:2001 standard: “*Systems of Information for the maintenance management of buildings*” defines the information system as a supporting tool (operative and strategic) composed by database, procedures and functions aimed at gathering, archiving, elaborating and using all the information needed for acting and managing the maintenance service.

It's clear that this standard is not strictly applicable just for maintenance services, but broader used also as a baseline for real estate management, therefore for all the associated services.

The information system criteria, according to UNI 10951 standard, is based on the following breakdown:

- **Archives:**
 - **Data base or registries:** based on building data, related to three main sub-registries, respectively about location, functional, administrative and technical records. These records (registries) are relatable for different specific aims. Basically, these databases contain the main fixed information linked to the building (or assets);
 - **Management archives:** they contain data about dynamic and logistics activities, more specifically about planned or scheduled activities, ticketing systems, information about WIP²⁶ activities;
 - **Supporting archives** are based on information useful for real estate management (maintenance mainly, such as sub-contractors list, prices list, etc.);
 - **External archives:** related to the asset, but located in different places (cadastre registry, tax offices, provincial head fire safety office, etc.)

²⁶ WIP: Work in Progress activities

- **Procedures:**

Procedures about all the information system activities for data implementation, integration, up-dating, etc. These procedures are fundamental for assigning through the RAM²⁷ or similar tools, the right hierarchy and responsibilities about all data involved.

- **Functions:**

Functions related to the maintenance activities. This area is strictly focused on the building management and connected activities, such as data gathering about maintenance handbook, maintenance planning and scheduling, operative and on-field tools useful for running and maintenance costs.

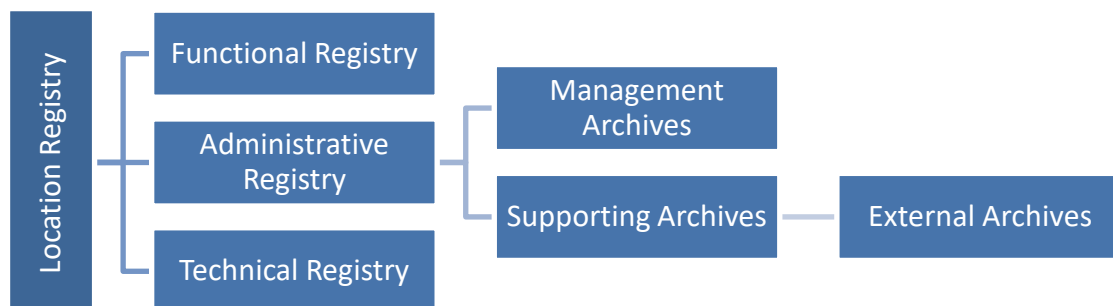


Figure 13 – Registry and Archives relationships, general scheme. Source: UNI. (2001). 10951: Systems of Information for the maintenance management of buildings. UNI.

The registries (Figure 13) represent the most important part as a function of the fundamental assets' data. Different are the data sources and different are the format files included. The standard reports, as we are going to see later, “fixed”

²⁷ RAM: Responsibilities Assignment Matrix, also known as RACI chart or model (Responsible Accountable, Consulted Informed), is a tool used into project management and engineering management field for clarifying roles and responsibilities in cross-functional/departmental projects and processes. Source: Brennan, Kevin (2009). A Guide to the Business Analysis Body of Knowledge (BABOK Guide). International Institute of Business Analysis.

document (related to the building and how is built) and “*dynamic*” documents related to past activities (operative maintenance or capital expenditure activities). All the documents must be identified and classified in homogeneous categories according to the asset’s classification adopted²⁸. Registries, according to the UNI 10951 standard, specify more in detail the following contents:

- **Location Registry:** it must gather and make available information about building address and localization. Moreover, information about cadastre, land registry, etc;
- **Functional Registry:** it must make gather and make available information from different sources, included the asset’s consistency (more aggregated data):
 - Different functional parts and spaces;
 - Destination use and use requirements (possibility to report inside the specific mandatory laws-standards);
 - Users and people in charge;
 - About consistency, sqm per area: gross, net, commercial, rentable, volumes, etc.
- **Administrative Registry:** it must make gather and make available information about rents and acquisition contracts, supplying services or goods contracts, budgets and at-closure contracts and all asset’s legal constraints²⁹;
- **Technical Registry:** it must make gather and make available information about technical elements and related information. This information is the most consistent in terms of volumes and should deserve a deeper analysis, due to the several sections and technical sheets involved.³⁰

²⁸ UNI standards provide a guideline for creating and managing assets’ information system. It’s clear that the guideline must be adapted according to the asset’s type and destination use. Any kind of system adopted has to be flexible and fitted for each building.

²⁹ Legal constraints: legal-jurisdiction status, legal liabilities and outstanding.

³⁰ For more details about technical sheets and systematic organization of the technical registry see at UNI 10951 and 10604 (UNI EN 15331) Criteria for design, management and control of the maintenance services of buildings.

The UNI 10998:2002 standard: “*Building management files: General criteria for construction and care*” (UNI, 10998: Building management files, general criteria for construction and care, 2002). It indicates the general fundamental requirements for real estate’s archives management (new or constructed assets). With respect to 10951 UNI standard (mainly focused on maintenance activities³¹), the 10998 is more focused on archives (maintenance and other broader topics and issues).

As already mentioned, the documental gathering and management, in **archives**, results fundamental for real estate management under several branches (property-facility management, technical due diligence, assets’ evaluation and disposal or acquisitions of physical assets). These archives must fulfil a double task, in one hand to provide a picture as closer as to the reality about the asset’s condition and into the other hand, to direct all management activities previously reported above.

Furthermore, the standard releases a general *breakdown* about categories and sub-categories associated to each document type. The breakdown (table 2) categorises basically all the documentations that is possible to face during the real estate management and provides a further explanation into the subsequent annexes. This systematic scheme is **represented*** as follows:

- Section A – Asset Registry
- Section B – Mandatory Requirements
- Section C – Running and Maintenance

* this representation is directly given by the Italian UNI 10998 standard, based on Italian Laws, Regulations and practices-procedures. It is strongly recommended to scale³² this scheme based on the context at which we refer to.

³¹ It must be pointed out that, except for “static documents”; the main documentations are driven by maintenance activities and related physical assets.

³² Scale: concept of scalability of a methodology into different contexts. Implementation of that methodology for example first at local level and “scaled” to the National one (or different countries).

SECTION A	SECTION B	SECTION C
Asset Registry	Mandatory Requirements ³³	Running and maintenance
<ul style="list-style-type: none"> • Archive’s management and structure; • Building breakdown structure; • Responsible subject involved; • Building description; • Building drawings. 	<ul style="list-style-type: none"> • Environmental protection; • Energy management and savings; • H&S³⁴ for the building; • Certificate of use and occupancy ³⁵ • Fire prevention and protection ³⁶; • Cadastre and Legal Land Registry³⁷; • Building constraints; • Structural parts; • Technological plants. 	<ul style="list-style-type: none"> • Economy and finance; • Real estate values (comparable and other reports); • Context and needs-requirements-performances³⁸; • Maintenance; • Renewing and refurbishment;

Table 3 – Summary table about 3 main categories of archives and related contents. Source: Elaboration from UNI 10998 Standard.

³³ Mandatory requirements and documentations associated will be explained more in detail in the chapter of this dissertation devoted to the documental compliance and technical due diligence. For further information, for all the 3 sections, see at UNI 10998, annex A, B and C.

³⁴ H&S: health and safety.

³⁵ Certificate of use and occupancy: direct translation from “certificato di agibilità” issued by the public administration, fundamental for starting the building occupation and related activity.

³⁶ Fire prevention and protection: all documents related to the fire issues and procedures.

³⁷ Legal Land Registry: direct translation from “Conservatoria dei registri immobiliari”, the substantial difference between the Cadastre and the Legal Land Registry is due to the fact that the Cadastre has no “probatory/probative” property value. About land-building classification and codification is totally reliable, on the contrary, the “owner” is reported in a legally-recognised way into the Legal Land Registry.

³⁸ Needs-Requirements-Performances: system related to the building’s (but also users) needs and related requirements. For further information, see at UNI standard 8290-2, 8290-3 and 8289.

It is clear, from the above scheme that the section A and C (Table 3) are fundamental for the right asset's management, but a greater importance is due to the mandatory (so by laws and regulations) issues. The Section B, containing a longer list of topic and issues, results the focus of the real estate management in general and more specifically for technical due diligence process. The archives can be built up for constructed or new assets. It can be making up according to the design and construction phase (or by the final As-Built handover, but as always the as-built structure can be based on the previous structure); while for constructed assets, must be followed a *census process*.³⁹ Finally, the standard provides indications about the **up-dating** and **checking** and a general frequency for these tasks. Related to this issue, but not analysed in this work, is the operative structure and **responsibilities** associated to different figures⁴⁰ allowed to directly face with the archives.

The **ISO 15489:2016 Standard**: "Information and Documentation: Records management". It defines the functions and requirements of a document management system. Basically, it refers to the principles and guideline for documentation recording and managing for a business entity overtime. For managing this process of documents recording it is important to define for each document or set of them, the people responsible for its production, recording and updating. The first part refers to scope and general definitions' terms, while starting from the 4th part, the standard provides a set of principles for managing records (ISO, 2016):

- a) *"the creation, capture and management of records are integral parts of **conducting business**, in any context;*

³⁹ Census process: organized process for assets information acquisition through a scheme of phases predetermined. Source: Paganin, G. (2005). *L'Acquisizione delle Informazioni per la Manutenzione per i Patrimoni Immobiliari*. Sistemi Editoriali

⁴⁰ People in charge, responsible for managing the archives at different levels. For further details, see at UNI 10998, 7th heading.

- b) records consist of content and metadata, which describes the context, content and structure of the records;
- c) decisions regarding the creation, capture and management of records are **based on the analysis and risk assessment** of business activities, in **their business, legal, regulatory and societal contexts**;
- d) systems for managing records, regardless of their degree of automation, enable the application of records controls and the execution of processes for creating, capturing and managing records. They depend on defined policies, responsibilities, monitoring and evaluation, and training in order to meet identified records requirements.”

This part, reported from the standard itself, underline the importance of the information and its recording for conducting the business. Furthermore, at point C; the standard highlights the concept of scalability saying that the recording system is always attribute to the context in which is applied. Moreover; the standard reports the records’ characteristics (ISO, 2016):

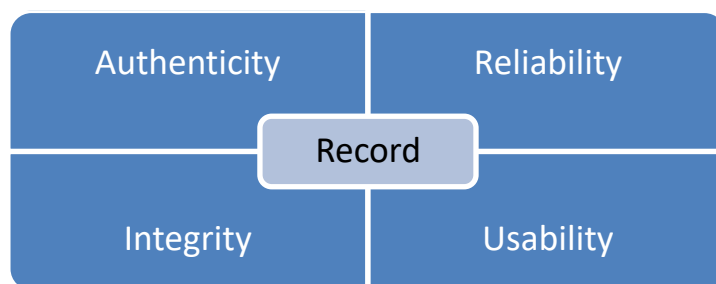


Figure 14 – Recording System features and characteristics overall

The record system itself must present its characteristics to be used overtime and for this reason the standard provides specific features into the section 5 (ISO, 2016):

- **“Reliability:** records systems should be capable of continuous and regular operation in accordance with authorized policy and procedures...;
- **Secure:** Measures such as access controls, monitoring, agent validation and authorized destruction should be implemented to prevent unauthorized access, alteration, concealment or destruction of records...;
- **Compliant:** records systems should be managed in compliance with requirements arising from business, community or societal expectations and the legal and regulatory environment...;
- **Comprehensive:** Records systems should be capable of managing all required records of the range of business activities to which they relate... Records systems should be capable of managing records created using the range of technologies used in the area of business activity to which they relate.
- **Systematic:** The creation, capture and management of records should be systematized through the design and routine operation of records systems and by adherence to authorized policies and procedures.”

Moreover, the section 6 provides a huge importance to policies and responsibilities associated to this system. It must be set a rules framework in order to manage this amount of information and to ensure that each requirement associated is fulfilled by the person who is in charge for.

“...The objective in issuing and implementing policies on managing records should be the creation, capture and management of authentic, reliable and useable records that possess integrity and support and enable business activity for as long as they are required...”

Strategic policies are fundamental and the base for managing in the long period these systems and as other system once developed must be maintained. The record design system includes steps and phases that could be summarised as follows:

- **Preliminary activities:** involves the information gathering aimed at finding the purposes of the organizations for which the record system is built for;
- **Activity and business flow:** information about the business-organization structure and flow. It is possible to generate a process flow for which people and task are linkable. It is the base for the next phase aimed at identifying the main requirements;
- **Records' requirements identification:** it involves the information gathering about the records' requirements for running in the right way the business. It relies on the country's law and regulations and the internal policy;
- **Existing systems evaluation:** it is a kind of "residual performance analysis" applied to the existing record systems, must be compared what is existing and the records' requirement necessary for carrying out the business' activity⁴¹;
- **Strategies:** this phase is devoted to the decision making about strategies to be implemented in order to satisfy the records' requirements. It may include procedures, policies, operative activities, etc.;

⁴¹ It is clear that depending on the documents type, needs-requirement change.

- **Design and realization:** about the record system, it must be designed in a way in which does not overlap its functions with respect the Business' aims and internal policies. It must be built in a systematic way step by step guaranteeing the completeness but at the same time the flexibility for future changes;
- **Monitoring and check:** this phase is carried out by means of information gathering from who has the access and continuous utilization of the system. The record system evaluation can be reached through employees and unit managers by interviews and questionnaires in a medium and short period (monthly-bimestrial at the beginning and less frequent frequency after the first year).

Finally, the standard provides a general overview about the acquisition, recording, classification, uploading, access and traceability of the document recorded into the system. It must remind that the record system allows the documents gathering and they must be always available, especially, for those documents with high criticality⁴² for the business.

⁴² Related to the real estate field, it easy think about some documents at different level. A supplier that cannot has the access to its safety documents and for this it is impossible to carry out a maintenance activity because of this document missing does not allows the FM Company to be in compliance with safety compulsory laws and related requirements. The same for the FM Company that is not able to provide the fire safety register (it is mandatory to have this in paper format on site) or for the Property the property contract, etc.

2.4 INFORMATION ACQUISITION – CENSUS PROCESS

Many times, in the previous paragraph, was pointed out the importance of the information system as a fundamental supporting tool for the real estate management. The information acquisition serving the IS and relates archives starts from one of the main important process, the census one.

The **census process** has a fundamental role for management procedures, especially for the today's tendency of services outsourcing⁴³ in which the increasing performance aim is reached day by day.

COUNTRY	SERVICE % OF OUTSOURCING
UK	59,2
GERMANY	47,7
FRANCE	45,0
ITALY	41,0
SPAIN	40,2

Table 4 - % of services outsourcing by country. Source: CRESME elaboration based on Teichmann data, 2009-2010.

This scenario (Table 4) and the today's outsourcing trend⁴⁴, has driven to the need of gathering information from the constructed assets. Building and related needs are getting higher and higher level of complexity, so Private Property and the Public Administration needs to contract out to specialized companies, different services. In order to face with this new wave and, to produce a multiservice-contract; the service companies providers need to reach at least the minimum information level. Therefore, it results fundamental, the *real estate census activity* (Table 5).

⁴³ Outsourcing: process of contracting-out the activities not properly connected to the central activity (core-business activity) of the organization or when the it is oversaturated. Typically used into facility management field and construction industry during the construction phase (General Contractor outsources subcontracts for multiples activities). For further information see at Oliviero Tronconi, A. C. (2014). Facility Management: Progettare, misurare, gestire e remunerare i servizi. Milano: FrancoAngeli.

⁴⁴ Increasing trend into FM market since 2007 up to 2011, source: CRESME – Osservatorio Nazionale del Facility Management.

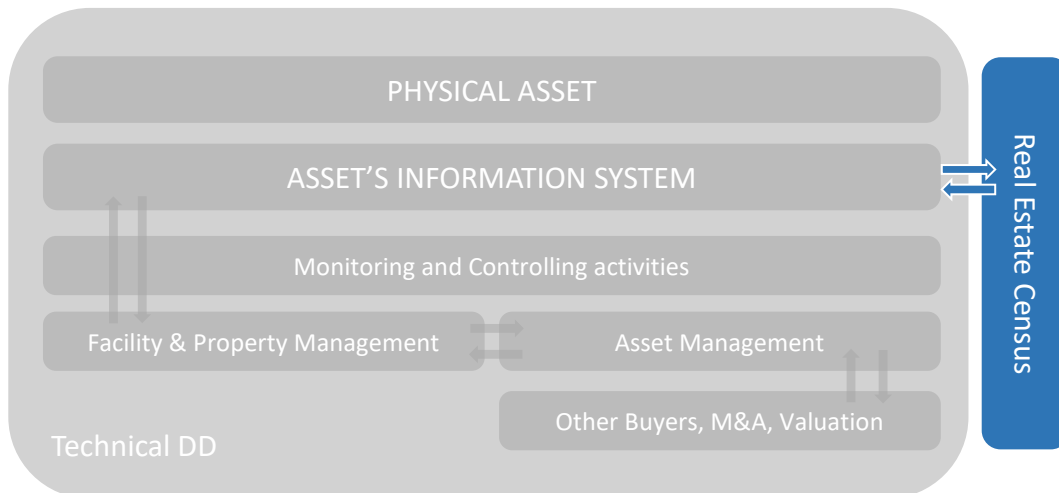


Table 5 - Real Estate process wrap up and link with the Real Estate Census. Source: own elaboration.

The main processes that have triggered the census activity, therefore the need to fill up the gap between the present status and the minimum threshold level, can be summarized as follows:

- **Facility and Property management processes:** more oriented toward the running activities during the building life cycle;
- **Asset-Fund management processes:** focused on strategic and decisional activities, involving long term investments (capital expenditure for partial or whole refurbishment), merges and acquisition connected to physical assets owned by business entities and disposal about entire funds composed by different (in term of performances and conditions) buildings. This process can absorb also activities connected to the real estate valuation directly linked to the facility and property process that in an operative way generate results that are reported into a technical due diligence process. Basically, better is managed the Facility and Property process, better will be the TDD results and therefore the strategic

allocation of CapEx. The result is a higher building value given by the evaluation process-activity (higher value for investors' portfolio);

- **Due Diligence processes:** aimed at defining through different analysis⁴⁵, all the potential economic liabilities related to the non-conformities. This process involves, as it will be seen deeper in detail in the soon chapter, broad analysis related to multiple matters;
- **Adaption to laws and mandatory regulations:** processes that nowadays are getting frequent day by day due to the complexity of standard and laws framework. Adjustments and adaptations are mandatory, and the time associated to this process is fundamental for carrying out the decided-planned activities. Therefore, it becomes necessary to have as complete as possible the IS about constructed assets for skipping in a faster way the possible issues that during this process we can face with.

2.4.1 GOAL AND CHARACTERISTICS OF A CENSUS

The *real estate census* can be defined as “A system of operations and procedures aimed at defining the quantitative and qualitative characteristics knowledge about the real estate assets”⁴⁶.

The information gathering process is based on different criteria that can be summarised as follows (Paganin, 2005):

- **Gradualness:** because of the typical real estate hugeness (hundreds or thousands of buildings for each portfolio), is necessary to create a

⁴⁵ Typically, the analysis is related to different issues: administrative, cadastral-urbanistic, structural, environmental, health, hygiene and safety, fire safety conformity, technical plants, etc. Source: Paganin, G. (2005). *L'Acquisizione delle Informazioni per la Manutenzione per i Patrimoni Immobiliari*. Sistemi Editoriali

⁴⁶ Direct definition translation from the book: Paganin, G. (2005). *L'Acquisizione delle Informazioni per la Manutenzione per i Patrimoni Immobiliari*. Sistemi Editoriali

“priority system” through which is possible to acquire, first, the critical information. The latter, typically, are those client (P.A., Properties, etc.) and law triggered, respectively explicit and implicit needs-requirements based on Client’s policy (goals and aims) and mandatory by regulations. Therefore, is necessary to collect information based on time and resources available for avoiding wastes (Molinari, 2002):

- **Dynamism:** fundamental features of the census (as for the maintenance handbook or manual⁴⁷) allowing the constant updating of all information involved. The critical success factor for building management is properly this characteristic of continuous and frequent data updating;
- **Specificity:** depending on the final aim of the census activity. More in general for having either a picture about qualitative and quantitative quality or for more specific objectives, such as facility, property or asset processes;
- **Information detail level & sources:** as mentioned before, this is related to the time-resources available and the census’ final aim. Moreover, it has to be pointed out the information and data sources to keep a trace about them.

⁴⁷ Maintenance Handbook (Manual): the fundamental tool from which is possible to extract information (about the building) for creating the maintenance plan and scheduling. The maintenance handbook contains a series of sheets (about identification, consistency, technical elements, diagnostic, etc.) concerning the asset as a whole. It is important to underline that is strictly connected to the building and its parts; if the building grows, the handbook grows as well. For further information see at *Talamo, C. (2011). Procedimenti e Metodi della Manutenzione Edilizia: Il Piano di Manutenzione, Vol. II. Sistemi Editoriali.*

2.4.2 CENSUS CATEGORIES & PHASES

About categories, the census refers to two main branches of knowledge (Paganin, 2005):

1. **Quantitative consistency;**
2. **Technical characteristics.**

Quantitative consistency implies the acquisition of information about quantitative and dimensional issues aimed at creating a synthesis for each building and its spaces useful to have the right pool drivers⁴⁸ for different specific goals.

The main information for developing this branch is given by the “As Built” documentation, especially gathered during the design phase and construction phase. If it is not possible (because of it is referring to already constructed asset) to obtain all these data, it is necessary a “strategic plan”⁴⁹ for the acquisition. The (Table 6) shows a brief description and contents about consistencies for a logistics building. Moreover, this structure can be applied to sub-areas of the same asset (compartments, offices, other facilities).

General building consistencies		
Surfaces, heights	U.o.M.	Notes
(GFS) Gross floor surface	Sqm	Considering just the projection of the entire building
(TGFS) Total gross floor surface	Sqm	Considering the GFS of all floors available
(NS) Net surface or (LS) Leasable surface = 0.92* GFA	Sqm	Considering the sum of TGFS net of internal and external walls, columns and others not step-on surfaces

⁴⁸ Pool Drivers: typically, the main earnings and costs are driven and based on areas (sqm). Rents, cleaning services, snow removal services, technical DD walkthrough, shelves framework, cadastre taxes and rents, etc. are based on sqm information.

⁴⁹ For more information about how acquire information for real estate assets, under the three different phases (design, construction and constructed) see at *Talamo, C. (2011). Procedimenti e Metodi della Manutenzione Edilizia: Il Piano di Manutenzione, Vol. II. Sistemi Editoriali.*

(CS) Covered surface	Sqm - %	Sqm or a % on LS
(LS) Land surface	Sqm	Considering the agricultural lot surface
(ES) External surface (LS-CS)	Sqm	Considering the external areas, green, parking, pedestrian and vehicles ways
(TH) Total externa height	m	Considering the total height from external façade.
(UBH) Under beam height	m	Considering the maximum height from the internal floor and the under-beam point (stocking)

Table 6 – General building consistencies for a Logistics building. Example of a general surfaces required for describing this destination of use. Source: own elaboration.

Technical characteristics implies the data acquisition about technical elements about our asset (structural, sub-structural and plants)⁵⁰. As in the previous step, the main data are given by As Built documentation and, depending on the specific final aim, it is possible to filter the data needed.

Remarks:

Quantitative and technical characteristics, combined with other documents, define the entire information system (and related archives) supporting real estate services already mentioned above.

Nowadays the amount of information available and manageable are a lot, and through DMS and digital information system, it is possible to filter those that are needed in a predetermined time-frame. A greater contribute to the real estate census is given by other UNI standards (Table 7) as mentioned across this chapter and, a small deeper overview is possible to reach by the following scheme:

⁵⁰ More details about the building breakdown into UNI 8290-1 and 10838 standards.

UNI	Titles
10604 (EN 15331)	Criteria for designing, managing and controlling the maintenance buildings' services
11257	Criteria for drafting plans and programmes of buildings' maintenance
10874	Criteria for writing maintenance and use manuals
10831-1 and 2	Real estate maintenance – how to produce a maintenance documentation and detail's level
11136	Procedures and criteria for global service contract

Table 7 – Summary about other UNI standards contributing the information gathering and census.

Finally, due to the huge amount of information given by large real estate heritage, it could be difficult to carry out a census. For this reason, it necessary to develop a right sequence of phases for planning the entire census process, considering aims, policies, resources, timing, criticisms, etc.

The main phases can be summarised as follows (Paganin, 2005):

1. **Investigation (preliminary) phase:** this step involves the preliminary activities about the whole information framework to acquire. Typically, as for the maintenance plan drafting, this phase includes meetings for defining policies and client's aims, the information already on hand and general audit-walkthrough;
2. **Design phase:** based on the previous phase, it involves a systematic framework about the information that we want to acquire;
3. **Planning phase:** it involves the identification of different information based on the census' time frame, financial and human resources available;

4. **Scheduling phase:** based on the planning, it's possible to allocate activity and related resource, based on the amount of work to carry out. For each "task", allocate the right resource needed and put this task in a chrono programme⁵¹;
5. **Operative phase:** operative realization of the scheduling phase, with a monitoring activity of what has been scheduled and what is the actual value⁵².

⁵¹ This phase finds its application into project management field. The project management involves, in general, the activity or task management linked to the resources (labour-human, tools and machineries) and time-frame needed to carry out that activity-task. This phase includes the feasibility.

⁵² Actual value: what is happened during the operative phase with respect to the scheduling one. Through this, is possible to run a variance analysis for managing in a better way the available resources.

2.5 INFORMATION ACQUISITION AND TECHNICAL DUE DILIGENCE

As we are going to see in the specific chapter devoted to the **Due Diligence** activity (chapter 3) but, as we have already seen into the 2.4 with the census; the Technical Due Diligence can be defined as “*aimed at defining through different analysis*⁵³ (Paganin, 2005), *all the potential economic liabilities related to the non-conformities. This process involves, as it will be seen deeper in detail in the soon chapter, broad analysis related to multiple matters*”. This chapter is not aimed at entering details of the Due Diligence activity but primarily to provide a short introduction to this issue.

We have just seen that the **census** is an acquisition process devoted to the information gathering and acquisition for the real estate in a long-time frame period. Then the main difference between the census and the due diligence is the **time** at which we refer to. If in one hand the census, based on the Client or Property’s policy, is devoted to the information gathering with a gradualness principle (see at 2.4 – census paragraph); the *due diligence* activity is always an information acquisition process but, more precise and punctual in reporting that information. Typically, the due diligence is carried out in days or weeks, depending on the specific contract’s time-frame available. The census one, in the other hand, could be carried out (and keep in mind that is an end-less process) in months or years, always depending on the asset’s consistency and amount of information we want to catch.

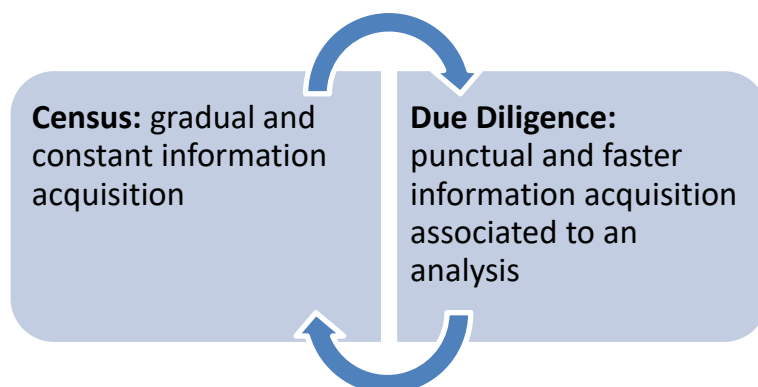
The due diligence, a much shorter process, is devoted to providing an “*instant*” picture of the building, in a specific time period and, moreover, many are the players involved but generally is carried out during an asset’s disposal or transaction. With the term “instant”, the meaning behind is borne to the concept of “*what the building is in this period and what the building should be*”. On the contrary, the census is just an acquisition process devoted to the information

⁵³ Typically, the analysis is related to different issues: administrative, cadastral-urbanistic, structural, environmental, health, hygiene and safety, fire safety conformity, technical plants, etc. Source: Paganin, G. (2005). *L'Acquisizione delle Informazioni per la Manutenzione per i Patrimoni Immobiliari*. Sistemi Editoriali

gathering for “knowledge” and for internal use at the beginning. It does not imply an analysis and an opinion regarding the buildings subject to the transaction. At the end, as we will see in the chapter 3, the due diligence process is developed through different sequential phases aimed at generating and providing a series of documents (issued by the due diligence team or company) through which the Client (who is asking for this activity) is able to analyse and make strategic decision about the asset’s transactions considering all the possible deficiencies, non-conformities and then all the related risks associated to that transactions.

The most important and main difference from the census, is in the fact that the due diligence, tries to reach the goal of “decrease” the risks or “make aware” the Client about the risks connected to that transaction.

It has to be pointed out that, census and due diligence are strictly connected, because one process does not exclude the other one. The census gathers information and organizes them in a systematic way from which the due diligence can get in a faster way the main part of information. On the contrary, at the end of the due diligence, the analysis acquired, can provide to the census more important information about the asset’s status.



2.6 UPDATING & CLASSIFICATION SYSTEM

The census activity and more in general the SIGeM (as information system) is a dynamic tool representing constantly the present condition. In order to maintain updated all this system, must be present procedures and the right framework in all directions. With the term directions we mean *vertical*, *horizontal* and *transversal*.

One of the most important concepts of the information system, but this is applicable in different fields, is the one related to the *hierarchy predisposition framework* for data acquisition. The IS updating can be carried out in the easiest way, applying the so-called hierarchy classification system⁵⁴. The latter's scope is to create a (documents in our case, but movable up to many items or entity⁵⁵ types):

- **Systematic approach**, applicable in several fields;
- **Uniformity data**, understandable across different technicians and others;
- **Traceability of information** univocally identified.

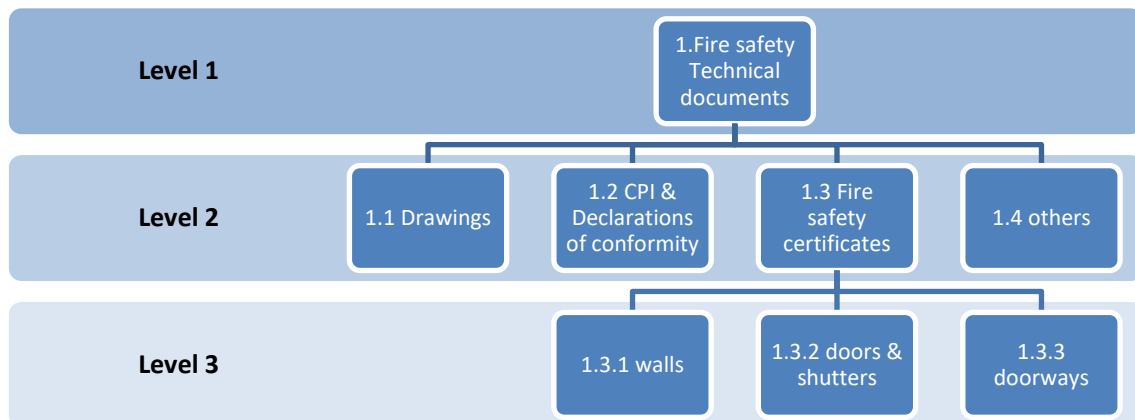


Figure 15 - Hierarchy example focused only on Fire Safety Technical documents. Source: own elaboration.

⁵⁴ Classification System: a system in which, goods, products, services or more general items are broken down, classified and codified for the univocal identification into a hierarchical structure. Nowadays, are present many of these systems. See at UNI 8290-1, ASTM-E-1557-09, OMNICLASS, Master Format, etc.

⁵⁵ Entity: anything for which a breakdown structure is needed. A building, a machine, a car, an archive, etc. defined so by the UNI standard classification.

The above chart (Figure 15) shows how a very simple and focused hierarchy applied to one specific document field, can organize in a systematic way a very complex and critical topic.

The standards related to the classification topic are several, but the common point is the hierarchy and the flexibility in adapting the system to several uses. No matters which is the “item/items” classified, but the main goal is the integrability (updating activity) related to the system.

For the **gradualness principle** above mentioned, the first levels are created and in a “vertical way”, considering the system’s criticism and organization’s aims, adding step by step more needed information (more detailed – so vertical). While for changings in consistency, refurbishment, capex, etc, this system is capable to be adapted in a “horizontal way” adding more horizontal level⁵⁶ (Table 8).

PBS - According to UNI 8290-1:1981 Reference						Layers added			
Classes of technical units (x.x)		Technological unit (x.x.X)		Classes of technical elements (x.x.x.X)		Technical element (x.x.x.x.X)		Layers of Technical Element (x.x.x.x.x.X)	
CTU	CTU Code	TC	TC Code	CTE	CTE Code	TE	TE Code	LTE	LTE Code
Closure	3.2	Vertical closure	3.2.1	Vertical perimetral partitions	3.2.1.1	External vertical wall	3.2.1.1.CO2	Ceramic tiles for exterior	3.2.1.1.CO2.01
								Cement based coating and adhesive render	3.2.1.1.CO2.02
								Hollow bricks - 4 holes	3.2.1.1.CO2.03
								Mineral wool - insulation board	3.2.1.1.CO2.04
								Air gap	3.2.1.1.CO2.05
								Hollow bricks - 4 holes	3.2.1.1.CO2.06
								Lime plaster	3.2.1.1.CO2.07
								Acrylic stucco finishing	3.2.1.1.CO2.08
						Aluminium glass door	3.2.1.1.CO3		
						Inferior Horizontal Closure	3.2.2	Slab on-grade	3.2.2.1
		Horizontal fixtures	3.2.2.2						
Horizontal closure on outdoor spaces	3.2.3	Floors of open spaces	3.2.3.1						
Upper closure	3.2.4	Roofs	3.2.4.1						
		Horizontal exterior fixtures	3.2.4.2						

Table 8 – Example of UNI 8290 – 1 application to a specific item (a wall). The standard provides a general scheme framework for which is possible to add more levels in a vertical and horizontal way. Source: own elaboration.

⁵⁶ Think about a logistics building that because of increasing in the level of activity, decides to be implemented, in the same land-lot, by other buildings facilities (stocking areas, forks areas, etc...). In this perspective, the hierarchy structure that is bound to the physical asset, can grow in a horizontal way without getting issues.

2.6.1 DOCUMENTAL MANAGEMENT SYSTEM & CLOUD

Nowadays, we are living the 4th industrial revolution. The 1st was about the steam, the 2nd for cars, oil and related physical infrastructure and the 3rd, is about informatic. Now, in a rapid way, we have passed from analogic transaction, through digitalization one. The digitalization has driven to have huge amount of information on physical supports, and internet (4th revolution) has dramatically changed again our world. The importance of information and itself in the real estate is clear, but to manage this heritage is not feasible without having the right supporting tools. As we have seen up to now, the IS data are several and various, serving different scopes and purposes. For stocking this amount of data, and consequently, to manage it without incurring in higher costs with respect to advantages, it is necessary to use the today's technology.



2019 year, we are no longer going to talk about USB, Hard Disk or physical supports, except for internal and necessary transactions. Documents, now, are collected and managed in the following manner:

- Physical archives⁵⁷ (typically on building site);
- Cloud archives.

Related to cloud archives, we are going to introduce the DMS⁵⁸ and its general characteristics. Many of those have already been mentioned in the previous standards regarding documents, but from these general standard and system overview it is possible to extract the any system an organization needs.

⁵⁷ Physical archives, for compulsory documents must be maintained. Especially for critical issues, such as fire safety mandatory regulations and others. Fire safety inspection logbook, heating system inspection logbook, etc.

⁵⁸ DMS: Document Management System

The main features of this topic are summarised into **ISO 15489: 2001**⁵⁹ standard “*Information and documentation, Records Management*”. It provides in two main sections, functions and requirements of a document management system.

The standards identify an overview of the main common principles associated to all DMS used by different organizations and business entity⁶⁰:

- Identification of documents related to the activity and its information;
- Structure and technology used;
- Risk assessment associated to missing documents;
- Laws, standards and regulations requirements
- Maintenance and accessibility of those documents;
- Safety and security⁶¹ guarantee;
- Different access for different users;
- Etc.

The DMS, based on the ISO standard, should present the characteristics of *reliability, integrity, conformity, completeness and systemic*. The same standard reports similar phases of the already mentioned census, for building up the system: *preliminary, activity analysis carried out, documental requirements, existing system evaluation, strategies identification, design and planning phase* and at the end, *realization and monitoring*.

Today is possible to combine the filtering system for different users, guarantying the security and at the same time the documentation availability. Therefore, is important to predetermine, the responsibility assignment for each player involved into DMS, identifying who is responsible for what⁶².

⁵⁹ Reported in this dissertation there is only a small portion of the standard. For further information and details, have a look at ISO 15489 standard into the previous paragraph.

⁶⁰ Business Entity: an organization built up by one or more individuals, legally recognised in a given jurisdiction. Sole trader (proprietorship), Partnership, Private or Public Companies, etc.

⁶¹ Many documents contain sensitive information, therefore; those must be kept in security condition.

⁶² RAM activity. Responsibility Assignment Matrix

3. REAL ESTATE TECHNICAL DUE DILIGENCE

3.1 TECHNICAL DUE DILIGENCE FOREWORD

With the due diligence⁶³ term, we mean the analysis process involving multidisciplinary aspects and matters: administrative, cadastre, urbanistic, structural, sub structural, technological plants, environmental, H&S on work-place compliance for real estate heritage⁶⁴. Typically, used for an item before its acquisition or disposal under a legal contract. Real estate heritage involved into this process can be a single part of a building, the whole building or even an entire fund composed by hundreds of buildings; the latter very common into corporate field, during the what is called M&A⁶⁵ process (J. Birt, 2014).



Regardless the object of the transaction, the *due diligence*, is an identification process for *risks* related to the transaction itself aimed at managing those through contractual clauses or responsibilities' limitations. The main concept in the latter statement, is the risk, with this word, we identify a situation involving exposure to a danger. Now, without entering details before explaining some concepts, the three main categories of risks are (Paganin, 2005):

- **Financial risks:** related to the basic indicators given by the financial statement reports⁶⁶, but also more detailed one, involving the core-business we want to acquire, business future trends, other competitors

⁶³ Due Diligence: “dovuta diligenza”, “cura volenterosa e scrupolosa nel far qualcosa”, Source: dizionari.it. Oppure “in diritto civile si intende per diligenza, l’insieme delle cure e delle cautele che il debitore deve porre per l’esatto adempimento del suo obbligo.”, Source: Dizionario Treccani. Furthermore “the quality of working carefully and with a lot of effort”, Source: dictionary.cambridge.org.

⁶⁴ More details into source: Paganin, G. (2005). *L’Acquisizione delle Informazioni per la Manutenzione per i Patrimoni Immobiliari*. Sistemi Editoriali

⁶⁵ M&A: Merger and Acquisition, typical of companies’ trades for 30 years, up to now.

⁶⁶ Financial Statement Reports: set of report indicating and reporting all the economic information of a business entity, useful for decision making process. Reports about balance sheet, income statement, statement of CF and statement of changes in equity. Through these information (must be reliable and recorded according to GAAP – General Accepted Accounting Principle, so reported in a mandatory framework depending on the different country you refer and audited by an independent and external party) is possible to analyse the financial condition, liquidity, solvency, capability to make profit and to manage the operating cycle of a business entity. Source: J. Birt, K. C. (2014). *Accounting, Business Reporting for Decision Making*. Milton: Wiley.

market, stock holding costs⁶⁷, clients, good will assets deeper analysis and suppliers-customer reliability;

- **Legal risks:** related to the laws and regulations compliance. Typically, associated to possible litigations for products' defects (withdrawals), injuries and accidents on work-place or environmental crimes and moreover related to all the administrative contractual issues. These aspects are often linked to technical issues and for this reason, the technical due diligence incorporates even legal aspects;
- **Technical risks:** related to the building degradation and obsolescence (technical and regulatory) for the building itself, structural, plants and core activity⁶⁸ carried out (most of these technical items analysed have legal relations and consequences).

The due diligence process, under these three aspects (Figure 13), can be carried out separately or at the same time through a **central coordination**. This, because of many requirements' object of the analysis are linked for their multidisciplinary nature, but not immediately deductible. The different **due diligence teams** (Paganin, 2005) must be coordinated by a central figure that ensure the right process execution for each due diligence step and, at the end, gather the results for each of the three branches to generate awareness (for each contractual party) and clauses during the contractual writing.

The due diligence term is frequently used into the Italian Civil Law, properly for determining the rights and owes about different parties of a contract. Saying so, the due diligence process (in each of the three main categories, financial, legal and technical) performs a huge role into corporate real estate field.

⁶⁷ SHK, stock holding costs: during the disposal-acquisition of a business entity, it is possible to acquire the inventory as well. For this reason, it is necessary to keep in mind a deeper analysis about the inventory. The latter carry some embedded costs deserving attention; such as physical stock occupancy, financial costs and obsolescence costs. For further information, have a look at R.B. Chase, N. A. (1998). Production and Operations Management. Boston: Irwin McGraw-Hill.

⁶⁸ The requirements involved are several, as usual the check list about all the requirements is associated to the buildings' specific features and characteristics.

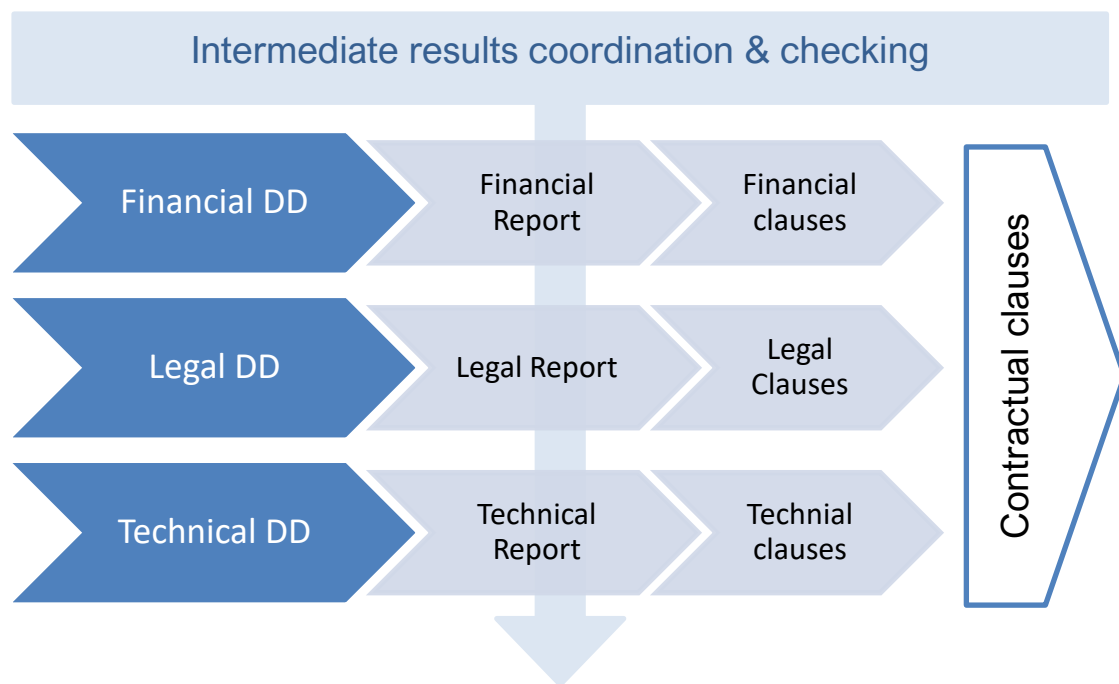


Figure 12 – General Due Diligence chart summary. Source: elaboration based on Paganin, G. (2005). *L'Acquisizione delle Informazioni per la Manutenzione per i Patrimoni Immobiliari*. Sistemi Editoriali

As follows are reported the main Italian Civil Law articles⁶⁹ reporting the “*diligence*” term for writing contract (S. Bellintani, 2017) (Paganin, 2005):

- Art. 1341 – condizioni generali di contratto: *“Le condizioni generali di contratto (have a look at articles 1342, 1679, 2211) predisposte da uno dei contraenti sono efficaci nei confronti dell'altro, se al momento della conclusione del contratto questi le ha conosciute o avrebbe dovuto conoscerle usando l'ordinaria diligenza.”*;
- Art. 129⁷⁰, comma 3, D.lgs. n° 206/2005, Codice del Consumo – Conformità al contratto: *“il venditore ha l'obbligo di consegnare al consumatore beni conformi al contratto di vendita...non vi è difetto di conformità se, al momento della conclusione del contratto, il*

⁶⁹ Italian Civil Law: Codice Civile Italiano. For simplifying the Civil Law understanding, the articles are reported into Italian language.

⁷⁰ This is related to consumption goods, not applicable to real estate transaction. It is reported here to underline the importance of the due diligence concept into contracts regulated by law.

consumatore era a conoscenza del difetto o non poteva ignorarlo con l'ordinaria diligenza o se il difetto, di conformità deriva da istruzioni o materiali forniti dal consumatore”;

- Others articles: 1470 cc, 1547 cc rule the “*Contratti tipici*” and Art. 1490 cc “*Il venditore è tenuto a garantire che la cosa venduta sia immune da vizi 1491 cc che la rendano inidonea all'uso a cui è destinata o ne diminuiscano in modo apprezzabile il valore. Il patto con cui si esclude o si limita la garanzia non ha effetto, se il venditore ha in mala fede taciuto al compratore i vizi della cosa (1229 cc).*”

It is clear from the above articles, the importance and the central role of the due diligence as the instrument for determining added value or discount as well into contracts. Moreover, these Italian articles (but this principle is valid worldwide) show that the Buyer must invest in due *diligence activities* (and deeper analysis) for protect itself from any kind of risks. The main issues related to the real estate heritage, are grouped typically into categories already reported into the chapter 2, regarding the census and the archives' standards. The due diligence process, into gathering information process, involves detailed analysis aimed at pointing out “*what is and what should be*”.

3.1.1 THE TECHNICAL AND LEGAL DUE DILIGENCE FOREWORD:

Into our juridical system, **the trading** (buying and selling), is the most important contract on which the Economy is funded. In the last years the concept of “asset” is changed and from the “*good for personal use*” has moved to “*Asset Class*” and being so, they must be perfectly assessable for mitigating (decreasing) of the “**uncertainty**” that is the weakest point of the investment.

As mentioned above, the legal and technical due diligence activity, present many common aspects for which a coordinated series of operations is needed.

Regardless the due diligence's object, it is necessary that all the due diligence players involved are coordinated to a central player for reach a reliable result. Furthermore, the legal due diligence is mainly focused on the "desktop" activities (see the documental audit chapter of this work for further details on it) devoted to the documental review and, in this case is needed the correlation with respect to the technical due diligence that at the same time implies the same phase (Documental audit). Moreover, the technical one, implies the "*walkthrough survey and inspection*" for validating the "documental audit", then the desktop activity.

Having in common the same and the most important (or almost) phases, the legal due diligence and the technical one, have to be coordinated in the planning tasks, using the common documental framework and the tasks splitting among legal and technical experts. Basically, the information preliminary check (documental audit, Q&A, etc.) must be coordinated and carried out among due diligence team (legal and technical) in a very precise way.

As support for technical and legal due diligence, the information and the real estate surveys, can be summarised into three main categories already seen in the previous paragraphs (S. Bellintani, 2017):

- **General Audit**⁷¹: related to the general buildings' characteristics and moreover implies also the information related to the organization and its management;
- **Census**⁷²: activity, tool, related to the quantitative consistency and technical characteristics of constructed assets;
- **Due Diligence**: detailed analysis about a real estate heritage, it will be discussed more in detail into the following paragraphs.

⁷¹ General Audit activity: applicable to many sectors and sub-sectors of the real estate (also organizations' processes). For further information see at S. Bellintani, A. C. (2017). Due Diligence Immobiliare. Milano: Franco Angeli.

⁷² For further information about Real Estate Census, have a look at chapter 2.3.2 of this thesis.

The *Due Diligence*, more related to the technical issues (so focused on the physical asset) results up to now a hard issue to deal with. Generally speaking, and according to the previous definitions, the due diligence (as other two parties) aims at carrying out an activity for minimizing the investment risk, by acquiring as highest as possible the amount of information needed to be aware of the property condition. At the end, as already discussed, it is a fundamental tool for **decision making**. In this perspective, the further issue to keep in mind is the time necessary to carry out this activity. The due diligence process typically is strictly related to the time available between the acquisition proposal and contract writing, so it is obvious that must be as precise as possible in a short time frame. However, this activity is planned and adapted based on different factors involved, such as the party who is asking for the DD, the final aim, etc. and in this perspective, it is important to highlight the different contexts⁷³ at which the DD refers to:

- Insurances contract;
- Insurance payments for damages (natural, human fraudulent or not);
- Taxation;
- Transactions (single building or portfolio disposal) and M&A;
- Jurisdictional disputes;
- Personal heritage, succession laws and related issues.

⁷³ General list for due diligence application, Source: S. Bellintani, A. C. (2017). *Due Diligence Immobiliare*. Milano: Franco Angeli.

3.2 TECHNICAL DUE DILIGENCE AIMS AND PARTIES INVOLVED

As mentioned in the previous paragraph, the real estate field and, the due diligence one is a multidisciplinary activity involving a lot of different and specialized professionals and individuals. The competences needed are transversal and include economic, legal and technical field, moreover project management, communication and process management in general (S. Bellintani, 2017):

- Capability to verify the building's compliance and general assessment;
- Capability to measure and value the potential future earnings;
- Capability to elaborate ad hoc strategies for each building based on client's needs (to carry out in a proper way a due diligence activity is fundamental clarify at the beginning the client and organization's aims;
- Capability to recognise the trend market directions (at National and international level).

As we are going to see, a due diligence is composed by main steps, involving the task-activity acceptance, document analysis, walkthrough and final report. Typically for transaction the analysis carried out implies the overall assessment, focusing on the main critical parts that could be affect one the contract party (Buyer), but these analyses can be conducted more specifically for activity related to various analysis (S. Bellintani, 2017):

- Property;
- Cadastral, Urbanistic;
- Structural;
- Plants and Equipment;
- Environmental;
- Maintenance and running activities;
- Documental (the most part is related to the above sections).

3.2.1 PLAYERS INVOLVED AND CONTRACTS

With the aim of minimizing the asymmetries between the two parties of a contract (Seller and Buyer), the due diligence has the fundamental role of identifying the status and then the risks associated to that transaction. By making aware the Buyer about all possible deficiencies of the asset it wants to acquire, the possibility to get failure during the investments are sensitive reduced and moreover, no disputes or litigations could arise from the transaction itself. During these critical steps, some questions⁷⁴ could be considered before starting any due diligence audit (Orecchia, 2017)⁷⁵:



- Who is the Buyer? – could be a private equity, Banks, Corporation;
- Who is the Seller or Vendor? What is the time frame?
- Who is the Client? what party are we going to work for?
- Which are the purposes of the DD? Technical, environmental, etc;
- What is the fence of the transaction? Single building or multi-site portfolio?
- What is the time frame?
- Is there a virtual or physical DataRoom?
- Which are the monetary thresholds?
- Do the DD has to carried out according to a specific standard⁷⁶?

Furthermore, during the transaction, it is possible to identify the main phases (Figure 16) to understand in which place the due diligence activity can be applied. Reminding that these steps are not exhaustive or definitive, the following phases are typically involved into an “**Asset Deal**”⁷⁷ (Paganin, 2005) (Ore, Gennaio 2013):

⁷⁴ General questions reported are based on the classes made up by Ing. Marco Orecchia, at Politecnico di Milano, on January 16th. Class: EHS Due Diligence Audit in M&A & Acquisition contex – Golder Associates.

⁷⁵ Third Party perspective. Into the following paragraph it is going to be explained these roles.

⁷⁶ Basically, the National law are implicit in the due diligence role, buti t is important to define which are the aims and standards involved into the process.

⁷⁷ Asset deal: case in which the building is the object of the trade, different from the “Share Deal” in which the trade’s objects are the company’s shares.

1. **Seller's (Vendor) preliminary activity:** the seller identifies the assets it wants to dispose and starts collecting information (critical for the acquisition and due diligence process). Typically, this process, for large and expertise organization results rapid and without problems because of the implementation of structured and systematic information system⁷⁸ already tested for these kinds of activities. After this, the seller prepares the price offer and a general document wrapping up the main information for potential buyers;

2. **Buyer's preliminary activity:** one identified the real estate heritage it wants to acquire, a preliminary activity for understanding the operation feasibility is carried out. Typically, analysis involving the financial and economic areas through a business plan⁷⁹ hypnotising the future real estate development and related earnings;

3. **Preliminary transaction contract:** both parties write down a preliminary contract including main parts and clauses involving the parts related to the analysis of the assets. It is clear that, the Seller is going to face with a huge disclosure, allowing the potential Buyer to catch relevant and critical information about its assets. In this perspective, this phase must be regulated by a contract avoiding spread of information to others. Typically, the transaction contract implies the "*acquisition proposal*" in which are specified the buildings involved, the preliminary price, the time for carrying out the Buyer's due diligence, the available time and all the possible limitations;

⁷⁸ The information system, with all filtering system and structured (as we are going to see soon) in a systematic way, for the Buyer, is a good starting point, underling the good real estate managing of the First party.

⁷⁹ Business Plan: so-called economic-financial plan, it is the document that allows to define the organization's (Firm's perspective) project. It must be according to the vision, strategy and objectives of the Firm itself. For this reason, the business plan fulfils the task of informing and deal the decision-making processes into the company and it differs from the budgeting techniques in terms of time frame, complexity, nature, purpose and contents. Source: Il Sole 24ore, Linee Guida per la Redazione di un Business Plan, 2014.

4. **Due Diligence activity:** The Buyer selects the due diligence team (internal) or company provider⁸⁰(external) and set the scope of work related to the Buyer's development aims and purposes. The final reports, provided by the due diligence team, highlights the possible deficiencies and lacks about the real estate assets object of the due diligence analysis. Furthermore, attached to this report, a series of annexes concerning the defects and costs' restoration useful for defining reliable contractual clauses on the definitive transaction contract;

5. **Definitive contract:** based on due diligence's results, it is possible to add clauses, discount on final price, etc into the transaction contract;

6. **Contract Signature and other:** The definitive contract is signed up to transfer the property rights from the Seller to the Buyer. All the clauses⁸¹ get compulsory and must be fulfilled by both parties.

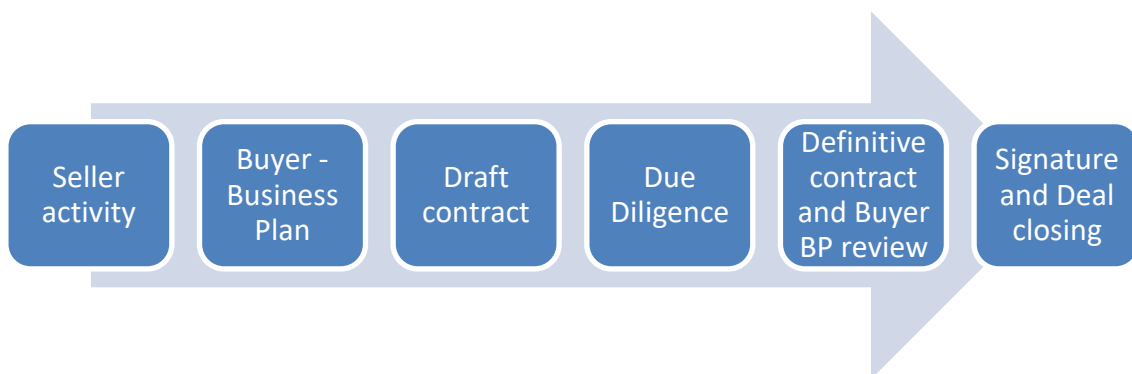


Figure 16 – Summary scheme of transactions process from Seller and Buyer both. Source: own elaboration based on Paganin, G. (2005). *L'Acquisizione delle Informazioni per la Manutenzione per i Patrimoni Immobiliari*. Sistemi Editoriali and D. Martinazzoni, G. Gagliardi, Manuale di Due Diligence, Il sole 24 Ore, Milano, 2004.

⁸⁰ Third Party Company TDD service provider, typically, are companies in which a division or the entire core business is the advising and consulting focused on multidisciplinary matters.

⁸¹ Typically, these clauses are focused on the specific responsibilities that each part must fulfils. Guarantee, ordinary and extraordinary maintenance, etc.

The due diligence role, as just seen in this scheme, results fundamental into transaction and contract writing for both parties. The diligence represents the “**contractual risk management**” (S. Bellintani, 2017) tool for which different parties can get benefits. This is the reason why the due diligence activity is included into risk management techniques for decreasing the (or let’s say treat⁸²) the risk associated the operation. It has to be pointed out that, regardless the due diligence activity and its scope during transactions, the information system and data gathering about the real estate heritage (census, information system framework, data archives organization, etc.) should be always present into real estate heritage. Up to now we have focused on the importance of the two main parties (Buyer and Seller) but managing the real estate knowledge and information if fundamental for all stakeholders involved (J. Birt, 2014).

The due diligence’s aim changes depending for which players the activity is carried out (Table 9). Assets status knowledge acquisition can be important not only for who is buying or for the Seller just in strictly phase of the disposal. The knowledge acquisition is applicable even in the case the Property, without aiming at selling, would want to get information for future property development and/or decision making in general about own heritage.

Player	Phase	DD type
Asset’s Owner	Asset enhancement	First party (Vendor’s DD)
Asset’s Owner	Asset disposal	First party (Vendor’s DD)
Asset’s Owner	Asset’s maintenance aim	First party (Vendor’s DD)
Tenant or FM Company	TFM or GS bid contract	Second party
Buyer or Insurances	Asset acquisition	Second or Third ⁸³ party

Table 9 – Summary of different player involved into due diligence practice and typology. Source elaboration from Paganin, G. (2005). *L’Acquisizione delle Informazioni per la Manutenzione per i Patrimoni Immobiliari* and S. Bellintani, A. C. (2017). *Due Diligence Immobiliare*. Milano: Franco Angeli.

⁸² Risk treatment is the last phase into risk management process, involving different treatments for risks identified, analysed and valued. Source: (AS/NZS 4360 Risk Management, 2004)

⁸³ It depends on what we have already mentioned above. It could be that the due diligence processi s carried out by internal due diligence team or by another external-independent party.

3.2.2 PARTY'S ROLE AND OBJECTIVES

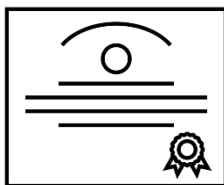
Player	Phase – DD type	Aims and Goals
Asset's Owner	Asset enhancement, first party	The owner itself wants to acquire information for development opportunities based and related to company's strategic goals. It is the base for possible feasibility studies.
Asset's Owner	Asset disposal, first party	The owner wants to acquire information and organise it in a systematic way for presenting in better way them to possible potential buyers.
Asset's Owner	Asset's maintenance aim, first party	The owner wants to acquire information needed for the right organization of maintenance and other services.
Tenant or FM Company	TFM or GS ⁸⁴ bid contract, second party	The company involved wants an overview status for producing as closest as possible the FM bid contract. Possible initial restoration and capex before stating the activity may arise.
Buyer or Insurances	Asset acquisition, second or third party	The potential Buyer wants to get information for reducing as much as possible the risks related to the acquisition. Better is developed the assets' status acquisition, lower will be the exposure.

Table 10 – Summary of players, phase and due diligence types associated to their goals. Source: elaboration from Paganin, G. (2005). *L'Acquisizione delle Informazioni per la Manutenzione per i Patrimoni Immobiliari*.

⁸⁴ GS, TFM: Global Service, Total Facility Management contract. Two different types of facility management contracts. TFM implies a multiservice contract (maintenance, cleaning, catering, etc.); GB is related to multiservice associated to SLA and KPI, respectively Service Level Agreement and Key Performance Indicator. The writing of these contract implies, before starting off physically the service, a good knowing about the asset and critical information as well. Source: UNI. (2004). UNI 11136: Global Services for Maintenance of Buildings and O. Tronconi, A. C. (2014). Facility Management: Progettare, misurare, gestire e remunerare i servizi. Milano: FrancoAngeli.

From (Table 9) and (Table 10), it is possible to find the different players involved and who can benefit from the due diligence. Nowadays, in the modern real estate market, the tendency is to provide a Vendor's due diligence exactly for giving to the potential Buyer the possibility to gather information in a direct way without wasting money and time in useless due diligence operation from third parties that, results rather expensive. The Vendor's (Seller) aim, bringing forward with these due diligence activities in this way, results "good" with respect to the potential Buyers.

Moreover, while for *first party* and *second party* there is the specific interest (and sometimes conflictual) in turning the asset's assessment at own favour; the *third party* (although charged by the Buyer or the Seller), guarantee for each party an appropriate independence⁸⁵. The third-party result is easier to get as reliable properly they are from an independent point of view without having any type of influences carrying out this task. To guarantee this "*independence*" we can refer to the consolidated mechanisms that have been taking place for 15 years up to now. The market is asking for subjects **certificated** capable to provide the guarantee of objective (and not conflictual) view and processes. The certification⁸⁶ harmonizes the due diligence process providing that the due diligence result is reliable and issued by a controlled party, this especially, when the due diligence is provided directly by the Vendor (First party DD), where the



"standing" (S. Bellintani, 2017) and the reputation of the organization that releases the due diligence for the Owner, is fundamental for understanding the reliability of the information contained into the due diligence.

⁸⁵ Typically, the third independent party is engaged by a party (first or second) maintains the impartial vision guarantying a reliable due diligence result. Notice that, the third party, in a second moment (another next transaction) could be charged by the opposite party for another job. The impartiality is fundamental for maintain a reliable result.

⁸⁶ Certification: something that is issued by a third-party (not by us as for the declaration). For further information about management system certification have a look at UNI EN ISO 9001 standard for internal quality (of companies) and UNI EN ISO 14001 for environmental management.

Reliance letter (S. Bellintani, 2017):

Into the real estate market, the acquisition and disposal of huge heritage implies an effort (time and money) at which the potential Buyer maybe don't want to be subject. In the case in which, the Vendor didn't develop itself the due diligence activity on the assets there is another solution to get that information. The potential Buyer can acquire this information from another previous buyers (or similar) that has already developed the due diligence activity and then already has this data. The Buyer can obtain this through the "*reliance letter*"⁸⁷ for which a third party can use the information previously set between the Vendor and the "old" Buyer.

Insurances Companies (S. Bellintani, 2017):

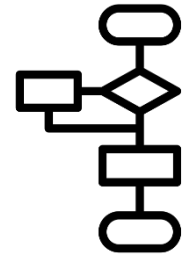
Another Player often undervalued, in this case because of its "external" nature, is the Insurance Company. These players, especially in the last 10 years, have a huge interest in the asset's knowledge for issuing policies for buildings' support (RETI – Real Estate Transactional Liability Insurance, W&I – Warranty and Indemnity, etc). These insurance policies are properly specific against possible liabilities that the potential Buyer could face during the transaction. The Insurance Companies based on the due diligence activities are day by day more oriented to this type of insurance products more and more customised and fitted on the building object of the insurance product.

This Player, based on internal risk analysis based on the building subject to the insurance or the possible future one, can decide to don't carry on the contract because of too many risks are present, especially if we consider the documental compliance.

⁸⁷ Reliance letter: lettera di affidamento. It is not so known into the Italian law field, applied more into UK contracts for the assessment of environmental conditions.

3.3 DUE DILIGENCE PHASES & FUNDAMENTAL TERMS

As already reported, there are different due diligence types and each of them refers to specific aims and time to be carried out (environmental, cadastral, for maintenance bid contract developing, etc). The focus of this work is not to provide a unique solution for all the different due diligence activities, but a tool for assessing in a rapid way (and complete), a logistics building or portfolio object of a transaction considering the main risks associated to the critical documents missing. By saying so, in the following paragraph are reported the main phases involving the due diligence process. Before going to the steps, here is reported a useful standard for have a brief wrap up of what we are going to face in terms of terms, context, concepts and definitions.



The ASTM E 2018-08 “Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process” is a useful standard tool to have a general perspective about the due diligence (or Property Condition Assessment)⁸⁸. The standard provides a series of tips (the number of the bullet point heading refers to the same into the standard) useful for understanding better the coming phases (E50, 2008):

- **2.3.12 Due Diligence:** the process of conducting a walkthrough survey and appropriate inquiries into the physical condition of a commercial real estate’s improvements, usually in connection with a commercial real estate transaction. The degree and type of such survey and inquiry may vary for different properties, user’s aims and time.

⁸⁸ This guide does not purport to address all safety issues and the responsibility of the expertise using this guideline to establish its own process concerning H&S issues. Source: E50, A. C. (2008). ASTM E 2018-08: Standard Guide for Property Condition Assessments.

- **2.3.48 Walk-Through Survey:** conducted during the field observer's site visit of the subject property, that consists of nonintuitive visual observation, survey of readily accessible, easy visible components and systems of the subject property...Concealed physical deficiencies are excluded... it is literally the field observer's visual observations⁸⁹ while walking through the subject property.
- **2.3.13 easy visible:** about items, components and systems that are conspicuous, patent and, which may be observed visually during the walk-through survey without: intrusion, relocation or removal of materials, exploratory probing, use of special protective clothing or use of any equipment.
- **2.3.29 PCA, Property Condition Assessment:** the process by which a person or entity observes a property, interviews sources and, reviews available documentations for the goal of developing an opinion and a PCR⁹⁰ of a commercial real estate's current condition.
- **2.3.30 PCR, Property Condition Assessment:** a written report, that outline the consultant's observations, opinions as to the subject property's conditions and, opinions of probable costs to remedy the physical deficiencies observed.
- **2.3.17 Immediate Costs:** opinions of probable costs that require immediate action as a result of any of the following issues: (i) material existing or potential unsafe conditions, (ii) material building or fire code violations or (iii) conditions that if left uncorrected have the potential to

⁸⁹ Related just to the observation. For further analysis, it is possible to suggest them into the final report, clarifying the possibility to some risks associates to those issues.

⁹⁰ PCR: Property Condition Report

result in or contribute to critical element or system failure or will result most probably in a significant escalation of its remedial cost.

- **2.3.37 Short-Term Costs:** opinions of probable costs to remedy physical deficiencies, such as deferred maintenance, that may be not warrant immediate attention, but require repairs or replacements that should be undertaken on a priority basis in addition to routine preventive maintenance. Such opinions of probable costs may include costs for testing, exploratory probing and, further analysis should this be deemed warranted by the consultant.

Remarks:

These standard headings report the main issues and steps concerning the core of the due diligence process and purposes. It is important to underline the importance of this bullet point list, highlighting that the opinions reported into the PCR are related to the consultant's back-knowledge but also, the surveys and interviews reflect what it is possible to spot in visible way. It will be possible to include into the report, some attachments, where each of them focused on a specific issue concerning short term and immediate costs, but also, the possible deeper analysis⁹¹ (C. Talamo P. G., 2006) that couldn't be addressed during the pure observation.

⁹¹ Analysis and Valuation: related to technical diagnostic activities. The latter are based on analytical activities, such as information or pre-diagnostic activities (so due diligence and others). Technical diagnostic activity focuses on specific aspect to be deeper analysed and, may include NDT, SDT or DT (respectively non-destructing, semi-destructing or destructing testing). Concrete rebound hammer, Resist-graph, Pull-out test, Thermography, Ground penetrating radar, Flat Jacks, Energy assessment, etc. Further information and source on: C. Talamo, P. G. (2006). *Mantenzione e Recupero: criteri, metodi e strategie per l'intervento sul costruito*. Firenze: Alinea Editrice.

3.4 DUE DILIGENCE OPERATIVE PHASES

The due diligence is a process for assessing assets under multidisciplinary matters and as a result, it provides a report with several opinions issued by the consultant. The main aspects for achieving the best due diligence goals should be reported into a **stipulated contract** between the client and the due diligence executor. These are basically⁹²: *Aim of the activity* (due diligence carried out based on the client's purposes and organization's policy), *real estate object* (real estate's boundaries), *methodology adopted*, *activity organization* (people and team dedicated for each task/phases), *time frame available*, *final report* (and related attachments) and *confidentiality contractual clauses*⁹³. The (Figure 17) shows the main operative due diligence phases and more in detail are specified as follows (Paganin, 2005) (S. Bellintani, 2017):



Figure 17 – Flow chart summary about the main due diligence phases. Source: own elaboration based on the phases of Paganin, G. (2005). *L'Acquisizione delle Informazioni per la Manutenzione per i Patrimoni Immobiliari*.

3.3.1 LEGAL-TECHNICAL INFORMATION PRELIMINARY CHECK

Depending on the TDD type⁹⁴, different will be the due diligence analysis and different will be the activity planning. Focusing on the specific objectives and client's goals, thanks to a preliminary **Audit**, it is possible to avoid wasting of resources (time and labour) and concentrate them on issues strictly related to the predefined targets.

⁹² These main aspects are reported in the previous paragraph 3.1.1, with typical questions between the two parties (client and due diligence executor).

⁹³ Contractual clauses about confidentiality: regarding the information (as usual critical) disclosure given by the client toward the executor. These clauses guarantee that the client's information will be treated in a specific manner, especially for not spreading them without previous consensus.

⁹⁴ Due Diligence type (First, Second or Third Party): have a look at paragraph 3.1.2.

Once defined the due diligence contract with the drafted contents about the goals and purposes of the activity, *the information preliminary check* is concerning the ***specific-technical audit*** according to available documents, the Asset's Property and the FM Company (if there is any) Q&A sessions.

- **Client Audit & Contract:** goals and thresholds of the due diligence;
- **Documental Audit⁹⁵:** through physical or virtual data room, it allows to identify in a rapid way some deficiencies and conformities (as usual based on the Client's Audit assumptions/clauses and according to compulsory laws and regulations);
- **Interviews (Q&A):** with the Asset's Property (could be the Client if the due diligence is the First party) and FM Company. The latter results fundamental for many specific and technical issues that, typically are not of competences of the Property unless the Property's core business is real estate technical issues. FM Company, because of the nature of its work, can provide useful information about maintenance activity (ordinary and capex, fixed and dynamic) and possible hidden features.

One of the most critical aspect of this phase in properly the documental audit (also related to the walkthrough), due to the high information disclosure needed. Typically, the interested party (Buyer) has to sign up a "Letter of Intent" associated to a caution to guarantee the tangible interest for the transaction.

3.4.1.1 Access to the Documentation:

In the past with the term "data room" (S. Bellintani, 2017) it identified the physical room in which was possible have the access to the documentation involved object of the analysis. Nowadays the tendency is to provide (by

⁹⁵ Documental Audit: better is organized the documental framework (information system), faster and better is carried out the due diligence activity, including the consultant's opinion into the final report. Further information on the information system into chapter 2.

Property consensus) the access to a what is called VDR⁹⁶. The latter is based on the cloud access to several asset's information parts, by using the appropriate filtering system to accept or deny the visibility about specific documents⁹⁷. Then, considering the DR or VDR access, it must be clarified: who can access, access time frame, available document list and the possibility to catch copies.

The **Documental Audit** is fundamental to realise a reliable opinion into the final report and in this perspective must be carried out a **Documental Plan Audit** before starting the **documental compliance analysis**. In this way is possible to focus the audit based directly on the building type and its characteristics but, typically, the documentation refers to these main categories:

(1) Technical & Administrative (As Built)	Structure: Drawings, Declaration of conformity, manuals
	Substructure: Drawings, Declaration of conformity, manuals
	Plants: Drawings, Declaration of conformity, manuals
(2) Administrative Property & Cadastre	Ownership – Rents contracts
	Services / Products supplied contracts
	Cadastre / Land registry / Land constraints
	Balance expenses / Bills
(3) From Past Activities Mandatory	Fire safety logbook
	Heating station logbook
	P.A. Reports: Elevators, ATEX, Lighting-Grounding system, Pressure equipment, etc.
(4) From Past Activities – Not Mandatory	Grass cutting, Landscaping, Snow removal, Water pumps cleaning, etc
	Survey reports: cleaning service audit, catering service satisfaction, other service surveys

Figure 18 - Document categories focused on technical due diligence activity. Source: own elaboration based on Paganin, G. (2005). *L'Acquisizione delle Informazioni per la Manutenzione per i Patrimoni Immobiliari*.

⁹⁶ VDR: Virtual Data Room

⁹⁷ For example, the access to the financial reports (internal) by a Technical Due Diligence team will be not allowed. On the contrary, all the declaration of conformity on which is possible to catch the plant type and supplier information involved will be accepted. Vice versa for a Financial Due Diligence team will be not.

3.4.1.2 CPR Framework

A useful regulation from which is possible to extract the main issues about the documental audit from the (Figure 18), **(1) technical and administrative** and **(3) mandatory from past activities documents** is the CPR EU n°305/2011⁹⁸. It is possible to refer to this regulation to cover most of the area involved as follows:

Requirements	Description	Law-Regulation ⁹⁹	Area/Document
1. Mechanical Resistance and Stability	<p>The building must be designed / built to:</p> <ul style="list-style-type: none"> • Don't collapse or damage other people / parts; • Don't pass the deformation limits; 	L.1086/71	<ul style="list-style-type: none"> • Static test certificate; • Notification public authorities.
2. Safety in case of Fire	<p>The building must be designed / built foreseeing events of outbreak of fire:</p> <ul style="list-style-type: none"> • Load bearing capacity in a specific time-frame; • Limited spread of fire and smoke (internal cells); • Limited spread of fire toward the close neighbourhood; • Safety for occupants and rescue team. 	D.P.R. 151/2011	<ul style="list-style-type: none"> • Signed Designs; • Fire Safety Technical report; • Signed Fire Fighters opinion; • SCIA; • CPI (Validity 5 o 10 ys); • Eventuale attestazione di rinnovo CPI • Safety Inspection Logbook; • Materials Certificates.

⁹⁸ CPR EU n° 305/2011: it has repealed the old 89/106/CEE Directive. CPR – Construction Product Regulation lays down several rules for the product marketing across the Europe ensuring the information reliability and performances comparison. This regulation can be mixed up with the UNI 8289 (needs-requirements-performances) standard for which almost all the areas are covered in the same way.

⁹⁹ Laws and Regulations refer to the Italian National framework. The requirements can be taken as a draft template for different countries.

Requirements	Description	Law-Regulation	Area/Document
3. Safety and Accessibility in Use	<p>The building must be designed / built to don't present unacceptable risks of accidents:</p> <ul style="list-style-type: none"> • Slipping, Falling, Collision, Concussion, Burns, Electrocutation, Explosion, etc.; • Safety for issues, such as accessibility for disables, etc.; • Possibility of asbestos existence; • Periodical controls issued by the PA. 	<ul style="list-style-type: none"> • D.M. 37/2008 	<ul style="list-style-type: none"> • Declaration of conformity (all plants and equipment – Electrical production or transformation; Tv, radio etc; Heating, cooling, climatization; Water plant; Gas plant; Lifting, Fire safety; Pressure equipment, etc.)
		<ul style="list-style-type: none"> • D. Lgs. 81/2008 	<ul style="list-style-type: none"> • Materials & Components CE certificate and mark (relevant items); • Risk assessment report for Lighting System; • Technical documents about asbestos¹⁰⁰; • Others¹⁰¹ (DVR, etc.)
		<ul style="list-style-type: none"> • D.P.R. n° 462/2001 	<ul style="list-style-type: none"> • Notification to the PA (ATEX, Grounding and Lighting systems); • Certification ATEX • Inspection Reports (every 2 or 5 years).
		<ul style="list-style-type: none"> • D.P.R. n° 162/1999 	<ul style="list-style-type: none"> • Inspection Reports issued by the PA (every 2 years) • CE Certificates

¹⁰⁰ Further information: L. n° 257/1992, D.M. 6 september 1994, specific local health care regulation (eg. N° 13237 Lombardy).

¹⁰¹ Some documents related to the D.lgs 81/2008 could be redundant in other regulations for safety reasons.

Requirements	Description	Law-Regulation	Area/Document
Safety and Accessibility in Use	The building must be designed / build to don't present unacceptable risks of accidents as the previous page table)	<ul style="list-style-type: none"> • D.P.R. n° 380/2001 	<ul style="list-style-type: none"> • Certificate of Use and Occupancy¹⁰²; • Authorisation to build¹⁰³; • Handover report; • Maintenance Handbook
4. Hygiene, Health and Environment	<p>The building must be designed / build considering the whole Life Cycle.</p> <p>Avoiding threats about hygiene/health for workers, occupants or neighbourhood and avoiding (reduce as much as possible) environmental impact during all the life cycle phases:</p> <ul style="list-style-type: none"> • Giving-off toxic gasses (Radon, Carbon dioxide, etc.); • Emission of dangerous substances (VOC), into the soil, water, drinking water, etc; • Emission of dangerous radiations; 	<ul style="list-style-type: none"> • D. Lgs n° 152/2006 	<ul style="list-style-type: none"> • Waste water dumping authorization; • Air atmosphere emission authorization; • VIA¹⁰⁴ (E.I.A.) • CER¹⁰⁵ codes register
		<ul style="list-style-type: none"> • D. Lgs n° 31/2001 	<ul style="list-style-type: none"> • Notification to the PA

¹⁰² Certificate of Use and Occupancy: Certificato di Agibilità. The final document that presume the regularity with respect to the PA. Released by the PA (Municipality) after the fulfilment of all compulsory requirements.

¹⁰³ Typically, this documenti is already fulfilled by the Certificate of use and occupancy.

¹⁰⁴ VIA: Valutazione d'Impatto Ambientale, or Environmental Impact Assessment

¹⁰⁵ CER: Catalogo Europeo dei Rifiuti

Requirements	Description	Law-Regulation	Area/Document
5. Energy Economy and Heat Retention	The building must be designed / build for maximising the energy performances:	<ul style="list-style-type: none"> • Ex D. Lgs n° 192/2005, L. n°90/2013 	<ul style="list-style-type: none"> • Energy certificate
	<ul style="list-style-type: none"> • Notification to the PA design project; • Third party delegation 	<ul style="list-style-type: none"> • D.P.R. n°74/2013 	<ul style="list-style-type: none"> • Heating system inspection logbook
6. Protection against Noise	The building must present a series of protections against noise.	<ul style="list-style-type: none"> • D.P.C.M. 5/12/1997; L. n°447/1995 	<ul style="list-style-type: none"> • Risk noise assessment (typically into the EIA)
7. Sustainable use of Natural Resource	<p>The building must be designed / build:</p> <ul style="list-style-type: none"> • Using natural resources; • Reuse / Recycle materials; • Maximising the durability 	//	<ul style="list-style-type: none"> • Energy certificate¹⁰⁶ (broad topic, this issue typically is treated in a separate manner)

Table 11 – Documental Audit summary. This table reports a general overview about the documents present for commercial buildings. This structure is not exhaustive and, can be expanded or shrunk by own needs. Source: own elaboration from CPR EU n° 305/2011 and Paganin, G. (2005). *L'Acquisizione delle Informazioni per la Manutenzione per i Patrimoni Immobiliari*.

¹⁰⁶ Energy certificate, as for the 5th requirement, it is better to have the documentation (if available) about the holistic certification such as BREEAM or LEED. These include a predetermined set of sustainable requirements aimed at achieving the certification. Source: Ponzini, C. (2012). *L'edificio energeticamente sostenibile*. San Marino: Maggioli Editore.

3.4.1.3 - (2) Administrative Property & Cadastre:

This document typology is more focused on the building itself and its land-property constraints. This latter document set deserves a **particular attention** because of its **legal nature** and the not always simple required availability. The previous document set (1) *technical and administrative*, typically, are issued by the general contractor in the form of As Built (original paper and scanned) at the end of the construction phase, but the (2) *Administrative Property and Cadastre*, often has to be get thought different subjects involved, with different means, times and costs¹⁰⁷. As follows are reported into the table the main categories of documents for which the presence is fundamental. This part is mainly focused on the “**legal due diligence**” (the legal due diligence and the technical one are strictly related to this documental audit phase) for which a legal due diligence team is typically devoted (Cabiddu, 2010):

Category	Document	Description
Title Holder & Administrative¹⁰⁸: <ul style="list-style-type: none"> • Third rights • Tenants' issues • Contracts 	Atto di compravendita	A definitive contract in which the two parties (Seller and Buyer) transfer the property rights each other. It contains the price, and clauses. It has a legal value, and from which is possible find out legal asset's constraints. These are defined as “third rights” that could limit the rights of the Asset object of the transaction with the risk to compromise the operation of the Buyer. The “third rights” can be: iscrizioni, trascrizioni pregiudizievoli, privilegi, servitù e vincoli, diritti personali o reali, etc.
	Atto di conferimento	Contract's details into 2440, 2343 cc

¹⁰⁷ For these documents is strongly recommended to have a legal due diligence team for setting all the possible contractual clauses.

¹⁰⁸ Documents are issued by Conservatoria dei Registri Immobiliari, and owned by the Property.

Contratto di locazione	Document between the Property and the Tenant. It provides information about some possible contractual clauses (constraints that the Property is obliged to fulfil) that the possible Buyer will fulfil. Related to this issue, one of the most important is the “Pre-emption Right” linked to the Tenant that, could compromise the operation of the Buyer. Further details about Property’s obligations toward the Tenant on art. 34, L. 392/78.
Ispezione Ipotecaria ¹⁰⁹	Document inspection reporting acquisition-selling-donation-expropriation and collaterals about the building.
Regolamento delle parti comuni	If present (common areas ¹¹⁰) it is possible that this document has been stipulated among the different Tenants. For this, some limitations could arise (art. 1138, c 3, cc).
Verbali di condominio	If the building presents many tenants, it is possible to have a look at these “Reports” in which some extraordinary works have been approved, then those would weight on the possible Buyer.
Cadastre¹¹¹	Provides the Property’s information, cadastral identifications and rents. It has legal value because of the presence of Agenzia delle Entrate’s stamp.

¹⁰⁹ Verifica per eventi o iscrizioni pregiudizievoli quali: Ipoteche, Fallimenti, Pignoramenti, Sequestri

¹¹⁰ Common areas are often present into the so-called “Magna Logistics Park” for which green areas, external lightings, asphalt ways are present and ruled.

¹¹¹ Documents are issued by Cadastre Office or Online

	Estratto di Mappa	Land and building shapes of a specific Municipality Zone.
	Planimetria catastale	Internal building spaces representation
	Visura catastale (e/o storica)	Similar to the “Certificato Catastale”, Official document but without legal value because of PA (Agenzia delle Entrate) stamp missing.
	Rendite catastali	Included into “Visura or Certificato Catastale”
	Denuncia di accatastamento	Document issued after the cadastral building registration by DOC.FA procedure.
	Voltura catastale	Document for which is possible to update the new Property subject of a Building. The Cadastre has not legal value due to the fact of errors for the previous Property or Cadastre historical inefficiency ¹¹² .
City Planning Strengths and Constraints	Certificato di destinazione urbanistica (CDU) - DPR 380/2001.art30.c2	A document issued by the PA (Municipality) in which is possible to find information about: urban features, PGT's areas, cadastral, buildable index (sqm, m3), urban constraints (monumentali, paesistici o ambientali). Ruled by DPR n° 380/2001 – “Testo Unico” in materia edilizia. Furthermore, Art. 30, c. 2, explains that “è obbligatorio allegare il CDU per atti pubblici o scritture private per edifici superiori ai 5000 mq.”

¹¹² Cadastral documentation about the new property not updated, entry errors, rents and category errors, “Planimetria catastale” not updated, etc. The regularisation is carried out, for each type by different practices (cadastral): DOC.FA, Tipo Mappale, Tipo Frazionamento, Voltura.

	Convenzione Urbanistica	Agreement between the municipality and the Property in which are present the Property's obligations that must be fulfilled. L. 241/1990 art.11
	PGT o PRG (estratto)	Just the part of the plans reporting the main information about the asset.
	Regolamento Edilizio	Document in which all the technical issues and specific constraints are identified.
	Vincolo Storico, Culturale e Paesistico	Ruled by the D.lgs. 42/2004, "Codice dei beni culturali" for which an independent document (beyond the "permesso di costruire") is needed. This document is not typical of the logistics one.
Building Titles¹¹³	P.d.C. – Permesso di Costruire	Ruled by TU 380/2001
	Concessione Edilizia	Ruled by L. n°10/1977
	Licenza Edilizia	Ruled by L. 1150/1942
	SCIA o super SCIA o CILA	TU 380/2001, it can be applied instead of having the P.d.C. (only some cases).

Table 12 – Administrative Property and Cadastre documentation summary. Source: Own elaboration, Agenzia delle Entrate, CatastoOnline.it.

¹¹³ Depending on the building age. Here are reported just the summary about the main titles but, for the logistics buildings, P.d.C. is enough.

3.3.2 ENVIRONMENTAL INFORMATION PRELIMINARY CHECK

Linked to the main technical and legal issues, there are also the not less important **environmental** ones that, because of its nature has huge consequences in terms of administrative, civil and criminal responsibilities. Many aspects are treated indirectly through the legal-technical part but, because of the environmental due diligence activity results not less important, it is necessary to report some aspects related to these topics (C. Signorelli, 2004). Basically, the environmental due diligence activity is split in three phases (S. Bellintani, 2017) the *first* that involves a documental and technical inspection aimed at spotting the main possible issue involved, the *second* related to a deeper analysis base on the first and the *third*, for more specific analysis if necessary always based on the previous two phases. The main aspects, especially when we are talking about M&A – Merges and Acquisitions, which a typical due diligence has to focus on, are (Orecchia, 2017):

Issue	Reference Law	Document
Pollution and authorization for: water drain, air emission, wastes, etc.	D. Lgs. 152/2006, DPR 59/2013	VIA, AIA or AUA
Hazardous material presence: Underground tanks and tanks	D. Lgs. 152/2006	
Hazardous material presence: Asbestos	L. 257/1992 D.M.-06/09/1994 D. Lgs 81/2008	Ref. D. Lgs 81/2008 - DVR
Hazardous material presence ¹¹⁴ : ODSs – Ozone Depleting Substances (CFC, HCFC, etc.)	Regulation 1005/2009	

¹¹⁴ A useful standard, for hazardous materials assessment, in this case could be the Canadian MASTERFORMAT – CSI – CSC, Division 02-Existing conditions

Hazardous material presence: PCB – PCT (condensers, etc.)	DPR 216/1988 D. Lgs. 209/1999	Product labels
Hazardous material presence: Natural - Radon	-	Regional parameters and regulations
Hazardous material presence: MMFV – man made vitreous fibers	-	-

Table 13 – Main environmental issues related to the due diligence activity. Source: own elaboration.

Due to the topic's broadness, here are reported the main laws and regulation at with an environmental (but also technical and legal because of D. Lgs 231/2001 and related D. Lgs 81/2008) due diligence must refer:

- D. Lgs. 152 / 2006 – TUA, Testo Unico sull'Ambiente, VIA-VAS;
- D. Lgs. 163 / 2006 – VIA procedures;
- D. Lgs. 128 / 2010 e D. Lgs. 46 / 2014 – AIA (Autorizzazione Integrata Ambientale);
- DPR 59 / 2013 – AUA (Autorizzazione Unica Ambientale).

Critical Remarks:

From the above tables (Table 11)(Table 12) is possible to catch many of the fundamental aspects/requirements/documents for commercial-logistics buildings. For each document is furthermore important to reach (Paganin, 2005):

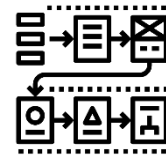
- The document **presence**;
- **Validity**¹¹⁵ (expiry date) and **Applicability**, due to the fact that many critical documents are fixed for a specific time-frame and must be applicable, because they do not if some modifications were applied to the building. In this perspective, more details are needed about those documents and questions must be inquired to the person in charge;
- Critical documents and related critical issues must be verified during the walkthrough inspection.
- Linked to the technical due diligence could be addressed a part related to the **Environmental** one. This, based on the documentation and walk-through survey, may request a deeper analysis concerning specific environmental issues;
- For documentation related to **(4) Past activities not mandatory** is important to have a general overview about the importance that the Property bestows to the physical asset. Not only in terms of mandatory issues but, more in general for maintaining in a good condition the building. Maintenance past activities reports (not mandatory) are always a positive sign.

The structure is a simplified summary about the main issued involved into these building types. Into the following paragraph will be developed the more specific structure focused on logistics building. It is important to highlight the general overview to give a perspective of the documents involved in order to make this approach adaptable to other real estate heritage.

¹¹⁵ Validity: example for the CPI (Certificato Prevenzione Incendi) – Fire Safety Certificate, from 10 to 5 years depending on the building's activity

3.4.2 ACTIVITY PLANNING PHASE

From the previous phase is possible to identify the main issued about the building subject to the due diligence activity. It allows to plan more in detail the inspection activity based on the available documentations and related deficiencies. The *planning activity* should contain the following parts (Paganin, 2005):



- **All areas, system and components involved into the inspections:** It would be useful link the Building Breakdown Structure (if present it would be better, otherwise a rapid structure it is possible to made up using a specific codification system¹¹⁶) with the items subject to the inspections based on the previous phase (mandatory and client's requirements);
- **Resources and roles:** for each area, system or component must be devoted a specific resource. This is applied for large real estate heritage. Typically, a due diligence team could be composed by 2-3 technicians, enough for a complete due diligence activity logistics building around 40.000 sqm, then for large portfolio's asset is better to develop a resource-role-responsibility planning;
- **Coordination meetings:** for large portfolio heritage, it is important to define a coordination among due diligence teams and the client. It is possible that some deficiencies require specific and more detailed analysis (often for administrative and legal issues);

¹¹⁶ Have a look at chapter 2.4 – Classification System

- **Documental check list:** typically related to the documental audit. The inspection is strictly connected to the documental compliance, then a check list with all documents and related regulation source is needed to provide a right opinion;
- **Communication procedures:** useful when the parties involved are several. Defining these communication procedures at the beginning prevents from serious errors;
- **Deficiencies and non-conformities criteria of reporting:** fundamental for having a right opinion related to compulsory issues and those that are related more to the client's policy and aims. Based on the Client's purposes it important to define a threshold of inspection (typically in monetary terms);
- **Format, languages and attachments deliverables:** must be defined the type and content of the final due diligence's report.

3.4.3 INSPECTION ACTIVITY PHASE

The first phase and the second one, respectively the Information Preliminary Check and the Activity Planning result fundamental for the following third. Into the first, especially the Documental Audit, is possible to reach the “desktop” overview about the asset analysed but, to achieve the 100% of the due diligence activity concerning the asset’s knowledge, must be carried out the *Inspection* or *walkthrough activity* (Paganin, 2005).

As already mentioned before , the *Inspection Activity* is just a **visual activity** without using any kind of technical tools or equipment. Only by doing this walkthrough, in a second moment will be possible to get deeper and detailed information about the building. This phase basically is aimed at finding out the gap between the **documental analysis (Audit)** and the **real building’s status**.

The visual activity allows us to get “what is” and “what should be” in terms of deficiencies¹¹⁷, furthermore the visual could seem a weak point of the due diligence but is exactly the opposite, because represents a good trade-off between **the time to get the information** and the **risk**.

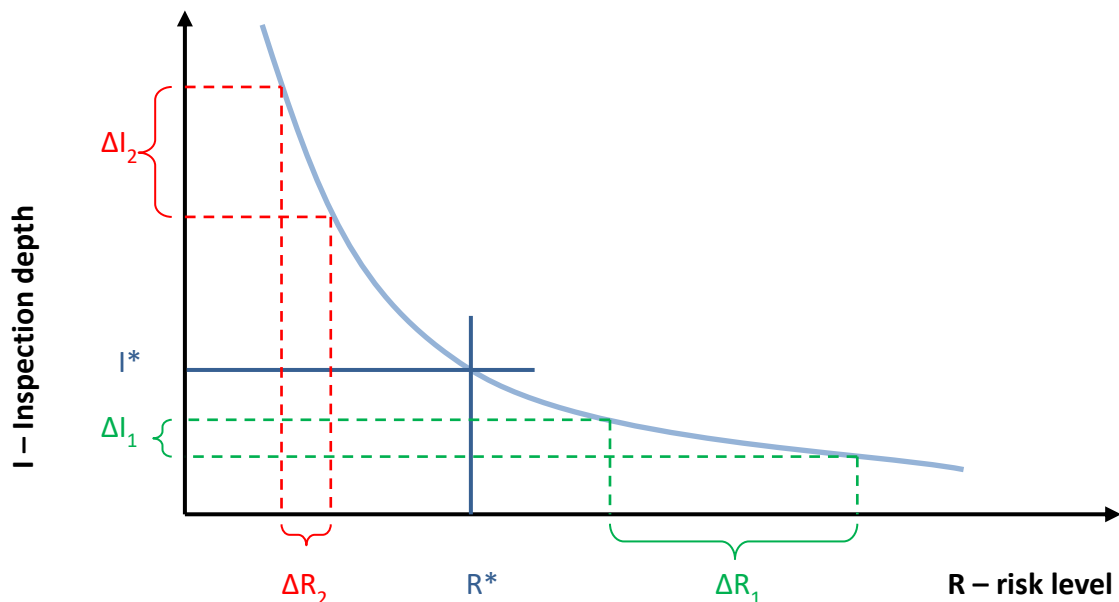


Figure 19 – Relation between the inspection depth (time to do it) and the transaction risk. Source: (Paganin, 2005)

¹¹⁷ Basically, the non-conformities relate to the components, elements or systems

The (Figure 19) shows exactly the relation between the time to reach the building's knowledge, so the *inspection depth*¹¹⁸ and the transaction risk, so the risk associated to the several building's parts and components.

It means that, due to the typical very short time-frame for carrying out the due diligence activity, the *time-resources* devoted to the documental analysis and furthermore for the visual inspection **must be balanced in the best way**. Taking into consideration the ΔI_1 as a little increase in the inspection activity level (in terms of labour-hours), corresponds to a ΔR_1 so a high reduction in risk level. While, on the contrary, at a specific level of knowledge acquired, ΔI_2 (huge amount of effort in hours), corresponds to a ΔR_2 so a little reduction in risk level.

The ***Risk-Inspection trade-off*** is reached thanks to the R^* and I^* and is achieved considering different factors and priorities (Paganin, 2005):

- Time available for carrying out the due diligence activity given by the Property related to the contract time-lines;
- Time related to the Tenant's activity¹¹⁹ or its policy;
- Time available for historical building, for which a pre-diagnostic activity and more detailed diagnostic activities are needed;
- Risk threshold to be considered, it is important to reach out a good trade-off for pointing out the right benchmark related to the possible anomalies of the asset.

¹¹⁸ The inspection depth is measured in terms of time due to the walkthrough survey and the documental audit.

¹¹⁹ A little consideration must be done, the Client typically has a short time-frame, but often, the Property (or more generally the Tenant with its internal policy) has some frictions or little conflicts in the disclosure to the third party. This could drive to a gap between what has been planned into the second phase and what is the real time available for all the activities, especially for the visual inspection on side. Consider these factors during the planning activity phase could prevent from reaching unpleasant events.

Carrying out the walkthrough, implies the pre-knowledge of the asset from the “desktop” activity during the Documental Audit, or more specifically, the documental review is split in two parts. One fully devoted to the principal aim of highlighting the conformity through mandatory documents, etc. and the second related to the analysis the main areas that will be subject to the analysis (typically related to the compulsory documents).

As already mentioned, the documental audit points out conformity and possible deficiencies but, only through the visual inspection is possible to carry out the fully activity. Then, the conformity (or no-conformity) result is achieved through these 2 main parts of the activity (Figure 20). Moreover, it is possible to face with a not-evaluable situation for which a deeper analysis is requested, but simply, this situation is reported into the due diligence final report and managed through the contractual clauses (S. Bellintani, 2017).

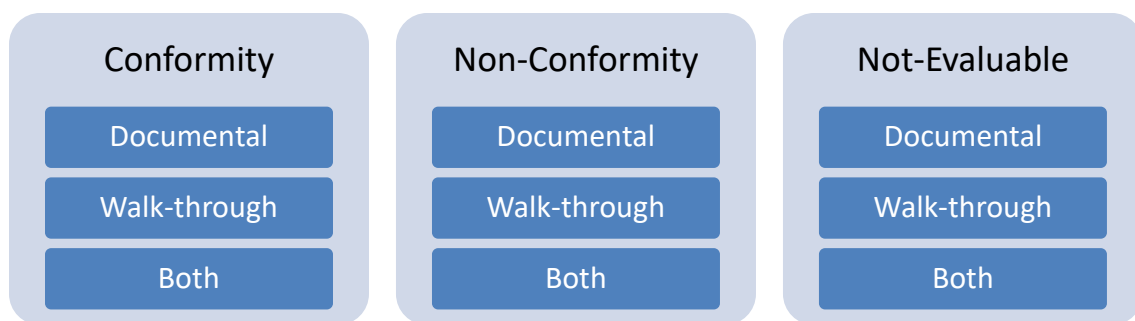


Figure 20 – different analysis results situation possible to face with during the Documental and Walk-through analysis.

Operative Walk-through

From the operative point of view, the visual inspection (so the walk-through), is based on the BBS¹²⁰. Thanks to the Document analysis is possible to extract the information about the main spaces and technological elements and using them as a guideline for conducting the walk-through.

¹²⁰ BBS: Building Breakdown Structure. A useful breakdown, classification and codification of the asset into spaces and elements specifically and univocally codified. It allows to identify in a systematic and organic way the several asset's parts.

INSPECTION AREAS	SUB-AREAS	ELEMENTS
<i>1. Main Building</i>	1.1 Compartment 1	1.1.1 Structure, Sub-structure
		1.1.2 Doors & Windows
		1.1.3 Plants
		1.1.4 Others
	1.x Compartment x	1.x.1 Structure, Sub-structure
		1.x.2 Doors & Windows
		1.x.3 Plants
		1.x.4 Others
	1.xx Top Roofing	1.xx.1 lighting
		1.xx.2 water-proof membrane
		1.xx.x ...
1.xxx External parts	1.xxx.x walls, panels, etc.	
<i>2. Offices</i>	2.1 Chief offices	2.1.1 ...
	2.2 Managers offices	2.2.2 ...
	2.3 CED room	2.3.1 ...
	2.x ...	...
<i>3. Technical rooms</i>	3.1 Pump station	3.1.1 tank, diesel engines, cleanliness, etc
	3.2 Electrical cabin	3.1.1 electrical panels, safety tools, cleanliness, etc
	3.3 Heating power station	...
	3.4 Pressure air room	...
	3.x ...	...
		...
<i>4. External areas</i>	4.1 Truck pavement	4.1.1 Concrete, asphalts, etc.
	4.2 Pedestrian pavement	4.2.1 Concrete blocks, etc
	4.3 Green areas	4.3.1 green, water system, etc.

Figure 21 – Example not exhaustive of BBS matching the main areas subject to the inspection to the main technical elements to be inspected during the walk-through. The list must be enough simple but enough exhaustive to cover all the building's issues. Source: Own elaboration based on a general logistics building.

Conducting the walk-through is not an easy task because of its fast and relatively experience-based nature. Carrying out these phase needs a good knowledge about the asset and generally about the building type and, moreover, it is needed a good experience strictly focused on some critical issue. The walk-through is aimed at identifying all the visual non-conformities but, not for this; it has to done in a superficial way. On the contrary, this requires a huge visual skill in spotting what could be a potential future critical issue.

Furthermore, it must be identified in a very specific way all those deficiencies that could represent a danger for the safety of people or environment (Figure 22). For example, all the non-conformities related to the fire safety regulation must be highlighted and underlined toward the Client but, in this case, it could be possible to spot those for the Property if the defects could represent a sudden issue for people inside the building. Here, below are reported, just as an example, two photos about possible issues regarding the fire safety regulation for guaranteeing the sealing of the fire cells. The fire safety foam is present but, it should be restored and re-filled up in a better way for those wires' holes.

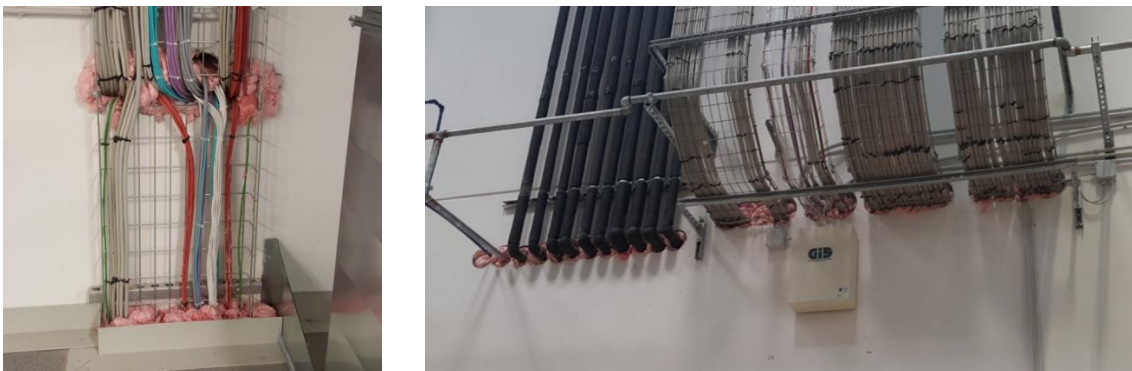


Figure 22 – Example of fire safety foam for wires-hole aimed at guaranteeing the sealing of the fire cells between different compartments. Source: Own due diligence activity on a logistics building

3.4.4 IDENTIFICATION & QUANTIFICATION PHASE

After having done the inspection activity, the due diligence team as to report in a systematic way all the information gathered. This information, first from the documental audit and second from the walkthrough, are mixed up to create a due diligence report and related attachments.

This phase as the fundamental role into the contract, because of its cost assessment nature. The cost assessment refers to the costs for restoring all the anomalies, defects and non-conformities found out during the activity and then, the quantitative amount of money that is possible to discount from the transaction contract, these costs are so-called “**alignment costs**”. Moreover, is important to underline the following costs (Paganin, 2005):

- Original transaction cost;
- Alignment costs: summary’s costs for eliminating all the anomalies, defects and non-conformities (this implies also the documental missing);

The summary’s costs allow to have a structured framework about all the costs at which the Client’s (Buyer typically) must face with in case the transaction takes place. One of the most important aspect of this phase, is the way in which the information about costs is represented.

Basically, the final report and related attachments are showed to “*non-technical people*” and for this reason, it extremely important to be (inside the report and the attachments) as much as possible clear and synthetic without using technical terms or explanation about issued that could be presented in a rapid way.

The result of this phase in an attachment or more than one, in which is explained the defects, anomalies and non-conformities with the related costs for realigning the normal situation.

Documental conformities:

The first part of the identification and quantification is related to the documents, related to the Documental Audit in which, as already mentioned, is possible to find out all the compulsory document missing. It is useful producing an attachment in which by a “*document review matrix*” is possible to get the **issues** (activity, building in general, structure, plants, etc), the related **law-regulation** and the **compulsory document associated**, its **presence** and **validity** and the **administrative** and/or **penal consequences** associated to the missing of that document in different scenarios. The administrative and penal consequences could be removed or hidden (may be too technical or legal to be understood), but in case the assessment had to be explained in detail, is better to have the legal-law reference always available.

Defects and physical anomalies:

For defects and visible anomalies, sometimes found out first into documental audit, it is possible to categorise in the following framework and spot them during the walk-through (Paganin, 2005):

- **Law non-conformities:** this category includes anomalies that are related to the non-fulfilment with respect to the compulsory¹²¹ law and regulations;
- **Defects:** here we can find *high-importance* or *low-importance* defects. The high importance one, refers to the criticality of the defect that could generate heavy building’s consequences, on the contrary; the low level one generates softer consequences. Typically, the defect spotting, is

¹²¹ For example, the presence of all Fire Safety Documentation (SCIA, CPI, VV.F Opinion, Materials certificates, etc) but, during the inspection, it is highlighted that between one fire cell and another there is a missing of the fire-safety foam for technical holes and plants (wires, electrical cables, etc) or worse, the fire safety material certification document for a specific material is present but the material found out during the inspection is not the corresponding. The law-requirements is not fulfilled regardless the documental compliance.

related to a threshold¹²² (monetary terms) agreed upon with the Client during the first phase of the due diligence activity. It's clear that is possible to have *intermediate defects*, depending on the defect type and is up to the technician clarify these aspects at the beginning to the client.

Regarding the alignment costs estimation, due to the rapid and punctual nature of the due diligence process, it will be a kind of simplification of those costs. Furthermore, it must be underlined that some defects could be come up as low importance, but what is to be taken into consideration is the effect that that/those defects could be affect in the long-term period. Sometimes, some anomalies could be underestimated but, the cost of “no-intervention”, in the long period, could be higher with respect to a very high cost for restoring a defect that seems heavier. In this perspective, it is extremely important the background and the back-experience of the assessor in spotting those anomalies.

The representation of the suggestions for managing the anomalies results fundamental for the Client and this represents an added value before signing the final contract. The due diligence team must report the list of anomalies in the form of *consultancy* and not as *design* then, the Team, should write a kind of feasibility study and suggestions for solving all the anomalies found out. There are some indications that should be contained into this part:

- **Defect identification:** criticality, position and codification. In these terms, the defect can be univocally identified and using a codification, it can be associated also to other document (photographic report, etc.);

¹²² For example, a low-importance defect could be the usury of the car parking's asphalt close to the logistics building. An intermediate defect, the missing or anomalies of bumpers attached to the dock station for trucks, this drives to a continuous damaging of precast panels of the front side because of trucks' hits during the manoeuvres. The high-importance could be an hydrant not totally sealed that is dripping and losing water continuously; this drives to a potential risks for the fire safety plants.

- **Source of the defect:** identifying the source of the defect, it is possible to intervene in a better way to prevent from another defect's occurrence. Moreover, some sources could be accidental or could be attributed to different reasons (wrong design, wrong construction, wrong use or maintenance missing, etc);
- **Alignment intervention suggestion:** it should be reported the intervention, so the solution for realigning the anomaly (restoring, demolish, specialized technician plants intervention, other deeper analysis, etc.);
- **Probable cost:** probable cost associated to each defect found. This is related to the physical defects addressed to the visual inspection but, at the end these costs must be added to the others (costs for documental missing and related alignment);
- **Possible consequences of “no-intervention”:** typically, as usual, it is preferable to realign those anomalies that are related more toward the aesthetic effect. This part, “consequences of no-intervention”, results fundamental to bestow the priority to those intervention that potentially could generate heavy consequences for the building, people and image.

In the following part (Table 14), is reported just an example of the physical defect attachments with the related defect framework. The matrix can be modified and applied depending on the various situation and time-frame available. In order to have the most readable paper, the defects' criticality is provided by a colour scale:

Low-Criticality	Medium-Criticality	High-Criticality
-----------------	--------------------	------------------

Defect code	Space-Area / Element	Source / Notes	Alignment Suggestion	Alignment Cost [€]	No-Intervention consequences
1 External Area					
1.1	Trucks' manoeuvre area	Ref. pic – xx: the manoeuvre area is too small in order to guarantee the truck's manoeuvres. Fence and security poles are damaged. Design defect.	Restoring security poles and cameras' wires. It is possible to diminish the green area close to, adding new asphalt sqm for guarantee the manoeuvres.	3.500,00	Perimetral fence and security poles (and related security cameras) is always damaged. The insurances won't reimburse if the cameras are in a failure status.
1.2	...	...	...	x.xxx,00	...
2 Dock stations					
2.1	Emergency exit doors (docks n° xx)	Emergency exit doors are damaged by fork lifts. It does not work.	Door and related components substitution	800,00	The fire safety systems must be in compliance with fire safety regulations. Administrative and Penal sanctions are associated.
2.2	...	...	...	x.xxx,00	...
Total Defect Alignment [€]				xx.xxx,00	

Table 14 – Example of defects' framework attachment report. This table can be associated or developed based and implemented on one or more risk management (risk assessment phase) techniques. For further detail on risk assessment techniques have a look at ISO 31010:2009 standard. Source: own elaboration based on some areas/elements of a logistics building.

3.4.5 FINAL REPORT WRITING

The final report writing is the last step for concluding the due diligence activity. As previously mentioned, the final report is addressed to non-technical people and in this perspective, the latter must be prepared in a way in which the Client is able to understand the several parts without having a technical background. Typically, into this report, there is a part “*flag analysis*” in which it is possible to have a general summary about the building status (documental, physical and the assessor’s opinion) through which, in just one or two pages, the Client is able to catch all the important information about the due diligence analysis.



Then this phase is the translation of the all technical information acquired and gathered during the analysis into a readable document useful for strategic decision making before signing the final contract. For writing a due diligence report there is no a specific framework standardised¹²³ but, the technician must follow the specific aim and features of the building. Here, as follows, are reported useful guidelines given by standards for technical due diligence report. **Guide EA 5/01 “Guidance on the application of EN 45004”** related to the minimum content of an inspection report:

- Due Diligence Report document identification (number, date, code, etc.);
- Client’s identification;
- Site and Building identification and people involved;
- Buildings or Portfolio boundaries (object of the due diligence);
- Methods and Procedures;
- When and weather conditions (If relevant);
- Anomalies and defects results;
- Signature of people in charge and involved.

¹²³ As reported into L. Capaldo, FRICS; RICS Europe 2011 – Best Practice & Guidance Note for Technical Due Diligence: “*the components of a technical Due Diligence report may or may not be mandatory in specific countries, may or may not be regulated in law and may or may not be restricted to members of certain professions.*”

Another example about the technical due diligence report, is related to the already mentioned **ASTM E 2018 -01 “Standard Guide for Property Condition Assessment”** that spots the following key points:

1. Summary & general overview:
 - a. General asset’s description;
 - b. General asset’s conditions;
 - c. General alignment costs;
 - d. Suggestions and recommendations.
2. Scope and object
3. Asset’s description and observations
 - a. Deeper asset’s description
 - b. Site and spaces: external areas, internal spaces, patches, facilities, specific activity for each space;
 - c. Gas, Water, Electricity, etc utilities;
 - d. Technological characteristics description: structural and sub-structural parts;
 - e. Technological plants descriptions: fire safety system, electrical, water distribution, mechanical air cooling, lifts and elevators;
 - f. Etc.;
4. Documental audit and interviews check;
5. Opinions and suggestions about costs for the alignment;
6. Attachments: documental review, photographic report, defects report.

Based on what has just reported, the common points result always the same:

- Site and description;
- Non-technical opinion, results and suggestions about the asset’s status;
- Technical issues and opinions related;
- Attachments with the related documental review and physical defects costs alignments.

3.5 TEMPLATE REPORT AND ATTACHMENTS DELIVERY FOR LOGISTICS

BUILDINGS

As reported into the previous paragraph, “3.4 Due Diligence Operative Phases”, the due diligence activity includes many sub-operative phases whom results gives rise to a *final due diligence report* and related attachments (for further detailed specifics). The report, as already stated, must be written in a way in which the Client (typically, non-technician) is capable in understanding all the issues in a rapid way for making decisions. The general framework for delivering the report and attachments included is as follows:

- **PCA report – Property Condition Assessment report;**
- **Report’s attachments:**
 - A. Document check list and review (what should be present and what is);
 - B. Photographic report (given by the visual inspection and walk-through);
 - C. Anomalies, defects and alignment’s costs (Physical and Documental non-conformities)

The **PCA report** has not a mandatory framework, so based on the previous statements, here is reported a practical framework index-summary, for the section reported, the key point is must be present a short but exhaustive description of the plant, system or administrative issue, and at the end of the situation description it must be present a short comment and related suggestions:

1. Introduction:

- a. Due Diligence's Client
- b. Building address subject to the due diligence activity
- c. Attachments
- d. Scope of the due diligence, main Client's purpose and brief working plan and related phases (eg. information preliminary check, document collection and review, people in charge by the Property for the activity support, walk-through, Q&A session);
- e. Disclaimers

2. General Building overview:

- a. Building address and destination use;
- b. **Foreword** about the building quality (conformity, technical and aesthetic), just a qualitative opinion to summarize in few statements the situation;
- c. Surfaces and general description:

General building consistencies		
Surfaces, heights	U.o.M.	Notes
(GFS) Gross floor surface	Sqm	Considering just the projection of the entire building
(TGFS) Total gross floor surface	Sqm	Considering the GFS of all floors available
(NS) Net surface or (LS) Leasable surface = 0.92* GFA	Sqm	Considering the sum of TGFS net of internal and external walls, columns and others not step-on surfaces
(CS) Covered surface	Sqm - %	Sqm or a % on LS
(LS) Land surface	Sqm	Considering the agricultural lot surface
(ES) External surface (LS-CS)	Sqm	Considering the external areas, green, parking, pedestrian and vehicles ways
(TH) Total external height	m	Considering the total height from external façade.
(UBH) Under beam height	m	Considering the maximum height from the internal floor and the under-beam point (stocking)

6. Technical Building description

- a. Brief description about the building, space and main areas;
- b. Main areas, spaces and facilities
- c. Technology and construction characteristics (foundation system, structural framework, bearing structure roof, industrial slab, substructure shell, substructure roof, etc.)

7. Structural check is about a brief comment and conclusion about the documental structural check.

8. Plants check a brief summary about the plants taken into consideration for the due diligence activity (documental and visual inspection) and small description:

a. Fire safety plant, description and sub systems:

- i. Water Pump station and tank
- ii. Foam Pump station and tank
- iii. Sprinkler system
- iv. Hydrants
- v. Extinguishers
- vi. Special: Smoke and Fire detection
- vii. Etc.

b. Electrical plant, description and sub systems:

- i. Direct and indirect contact
- ii. Artificial lighting levels
- iii. Main electrical cab
- iv. Main piping distribution and panels
- v. Grounding and lighting system
- vi. Electrical power for elevators and lifts
- vii. Electrical fire alarm
- viii. Electrical power for dock stations
- ix. Electrical power for fork lifts
- x. Special electrical: Power Electrical Supplier

xi. Etc.

c. Mechanical Plants:

i. Lifts, elevators

ii. Hydraulic dumbwaiters

iii. Etc.

d. HVAC plant and water distribution:

i. Air cooling distribution warehouse and offices

ii. Sanitary water distribution and disposal

iii. Etc.

9. CPI – Fire Safety Certificate:

a. CPI main activity and others

b. Critical points description and opinions about the material certificates

10. Conclusions and costs alignment:

a. Key points to be highlighted referring and deeper opinions about the point 2.b

b. Wrap up about the **attachments** and **costs' summary**:

i. Documental missing and time to be trace

ii. Physical deficiencies

iii. Initial asset offer, final suggested cost

4. DOCUMENT CONTROL AND RISK ASSESSMENT: A SUPPORT TOOL IN BUILDING LIFE CYCLE MANAGEMENT

4.1 FOREWORD

Before going into practical details there are some features for which it should be aware of. The next chapter is focused mainly on the practical application and tangible tool for the building life cycle and more specifically for **technical** and **legal due diligence** aimed at assessing the documental audit for logistics buildings. Analysing the physical structure of these typology of buildings, is possible to reach all the possible characteristics, feature and issues associated to them. It is important to underline what are the main systems, elements and components of these specific assets because of its nature. A logistics building basically, is a *simple shape-building*¹²⁵ that practically 90% of the time presents the same or very similar characteristics under spaces and technological terms.



A logistics asset presents its main characteristics based on the activity carried out and, based on the product type stocked and treated. Moreover, is possible to guess at the beginning the specific spaces and technologies associated that, are adapted according to specific needs. From the external-shape point of view, these buildings result similar and, taking into consideration the structural framework (structural system: foundations, pillars, beams, etc.), are basically the same. Furthermore, the plants can be different into specifics but, as usual, even here, are the same for each building in the 90% of the cases. Only if there are present some specific needs or designs chooses could be a different plants or equipment inside. As we will see, the plants for these assets are structured in a systematic way for the “similar” **final scope of stocking materials**.

The main technologies that are present in these buildings are *precast elements* for the *structural and sub structural parts*, and furthermore for the *plants*, are always present the *fire-safety system, electrical, electrical supplier systems, mechanical water-air, lifts and specials*.

¹²⁵ Except for very rare cases for which the shape was designed in a unique way.

Due to this “*simplicity*” or better “*systematic*” structure intrinsic in building these assets; it results possible to describe them in a faster way with respect to for example, a residential or hotel assets. The following chapter, said so, is developed in the following manner:

- The first paragraph is devoted to the **breakdown of a modern logistic building** (main spaces and technologies) in order to facilitates the reader in understanding all the possible issues and documents that will arise from the analysis. As already mentioned at the beginning of this dissertation (chapter 1 and 2); **the information** contained into documents results fundamental for the building’s knowledge and, this knowledge is the only mean for managing in a better way the real estate heritage.
- Once understood the main feature of a logistics building, it is possible to develop a system for gathering information, then documents related to our building, especially, in this case, devoted to the **due diligence activity**. Moreover, before explaining that, it will be explained the scope and the aim of the proposed tool and the methodology used based on the previous chapters (Information system, Information System Standards, Due Diligence phases and main aspects, etc).
- At the end, the **risk management** for missing of critical document (for logistics buildings) associated to the tool so-called “**Documental Audit Ranking Matrix**” aimed at supporting the first phase of the due diligence (see chapter 3.3.1).

4.2 BUILDING BREAKDOWN PROCESS: LOGISTICS EXAMPLE

Because of new technologies, globalization and construction industry complexity increasing, the modern logistics building is adapting its characteristics and features to this changing. The logistics building market, in real estate terms, is different depending on the different soil in which we are. For some countries, France and Germany in Europe or in Canada and US for the North America, this real estate compartment has started off years ago and now is one of the most mature. While in Italy (not necessarily a weak point because of many growing opportunities and investments) are just 15 years that has been developing. The *real estate logistics compartment* presents many different buildings, depending on the player involved and their activity:

- Carrier only building, typically smaller in surface and lower where, the final product stays in for very-short time-frame period (TNT, Bartolini, DHL, FedEx, UPS, SDA, Scerni, etc);
- Pure logistics building, typically bigger in surface and higher where, the final product is stocked in huge quantity for which cells and compartments of the building are subject to different compulsory law-requirements (Amazon, Ikea Logistics, YooX, Zalando, L'Oréal Group, Whirlpool, etc.);
- CeDi or CODP¹²⁶ ;
- Etc.;

but, for simplicity and for the scope of this work, it will be presented a short list and description of the main space functional areas and the technological characteristic of a modern logistics building. The BBS¹²⁷ will be split into SBS and TBS, respectively Space and Technological Breakdown Structure.

¹²⁶ CeDi or CODP: are respectively Centro di Distribuzione o Customer Order Decoupling Point

¹²⁷ Building Breakdown Structure

General characteristics:

A modern logistics building typically, presents some general features in terms of spaces, surfaces and facilities. We will see more in details but, the building presents the following overall characteristics:

- Linked to the main highways;
- Standardised and flexible structural framework;
- Min. surface about 15.000 sqm;
- Under-beam warehouse height around 9.5-10.5 m;
- 45-50% of covered surface (w.r.t the whole land);
- Pre-cast elements and heavy plants;
- Areas: main warehouse and its compartments, warehouse's facilities, offices, external areas.

General building consistencies		
Surfaces, heights	U.o.M.	Notes
(GFS) Gross floor surface	Sqm	Considering just the projection of the entire building
(TGFS) Total gross floor surface	Sqm	Considering the GFS of all floors available
(NS) Net surface or (LS) Leasable surface = 0.92* GFA	Sqm	Considering the sum of TGFS net of internal and external walls, columns and others not step-on surfaces
(CS) Covered surface	Sqm - %	Sqm or a % on LS
(LS) Land surface	Sqm	Considering the agricultural lot surface
(ES) External surface (LS-CS)	Sqm	Considering the external areas, green, parking, pedestrian and vehicles ways
(TH) Total externa height	m	Considering the total height from external façade.
(UBH) Under beam height	m	Considering the maximum height from the internal floor and the under-beam point (stocking)

The table above, referring to the chapter 2.4.2, represent a good starting point for summarizing the general consistencies of a logistics building, indicating the main features to have a general idea about the asset object of the analysis. The list can be adapted and bound based on the specific details' level. This is just the identity card about the building in which is possible to catch important information about characteristics useful for the due diligence activity.

Disclaimer and Remarks:

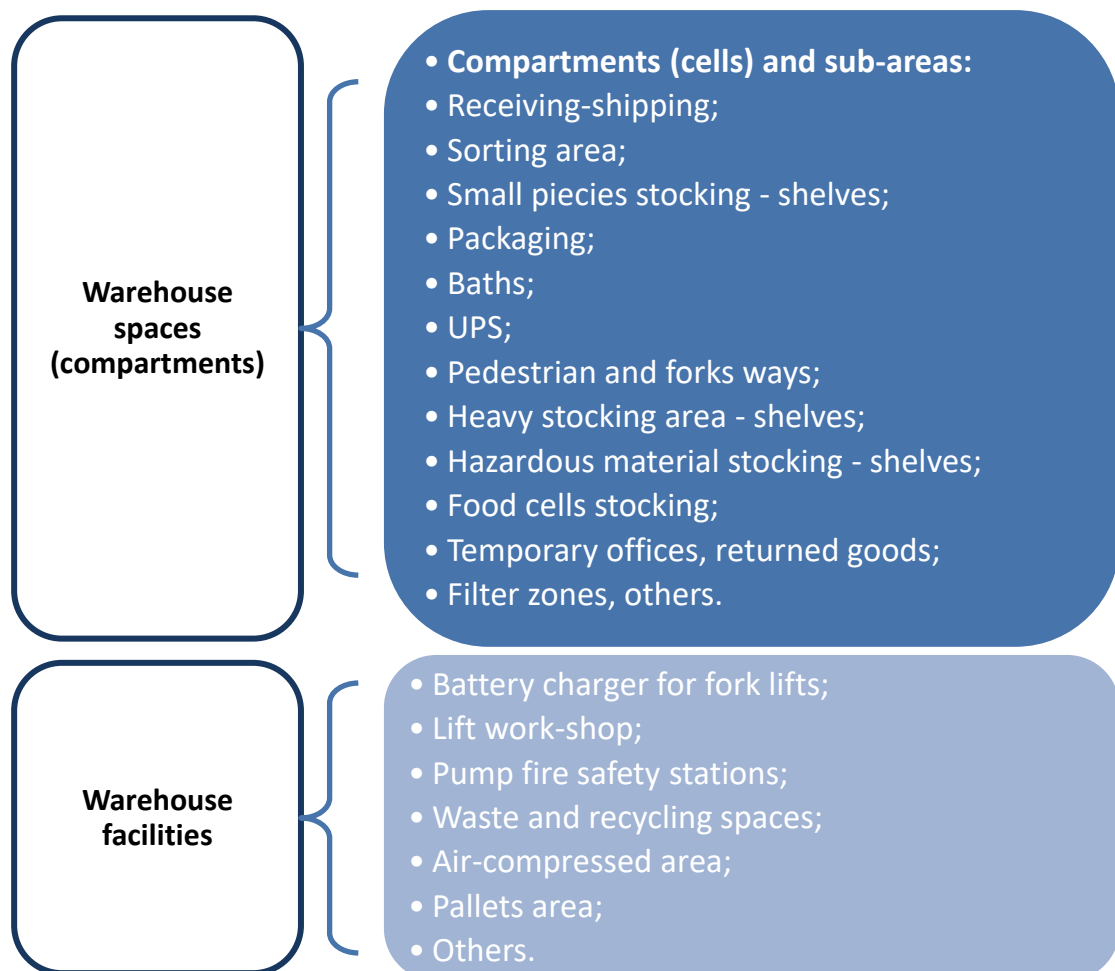
The following part is a wrap up based on the outcome of:

- Own bachelor thesis: Politecnico di Milano-Scuola di Architettura e Società, corso di laurea in Architettura e produzione edilizia *“Progettazione della Logistica: Criteri di progettazione innovativa per immobili ad indirizzo logistico”*, di Alessandro Di Pietro a cura del Prof. Stefano Bellintani, 2014-2015;
- Job experience in the real estate logistics compartments period 2015-2016.

4.2.1 LAYOUT AND FUNCTIONAL SPACES

Typically, the spaces, into BBS – Building Breakdown Structure, are undervalued because of its nature and the main precedence is bestowed to the technological systems. But it must be pointed out that, especially into logistics buildings, the spaces and related activity-tasks, can provide huge information about technological features implicit into the activity that is carried out.

Regardless the building's dimensions, a modern logistics building is composed by a specific functional spaces related to the activities to be carried out. Because of its several factors to be considered inside the functions, such as: *products to be stocked, sorted, handled, forklift technology and shelves used* results impossible to have a “perfect” warehouse but, it is possible to gather this information in order to catch the main characteristics-areas of our building:



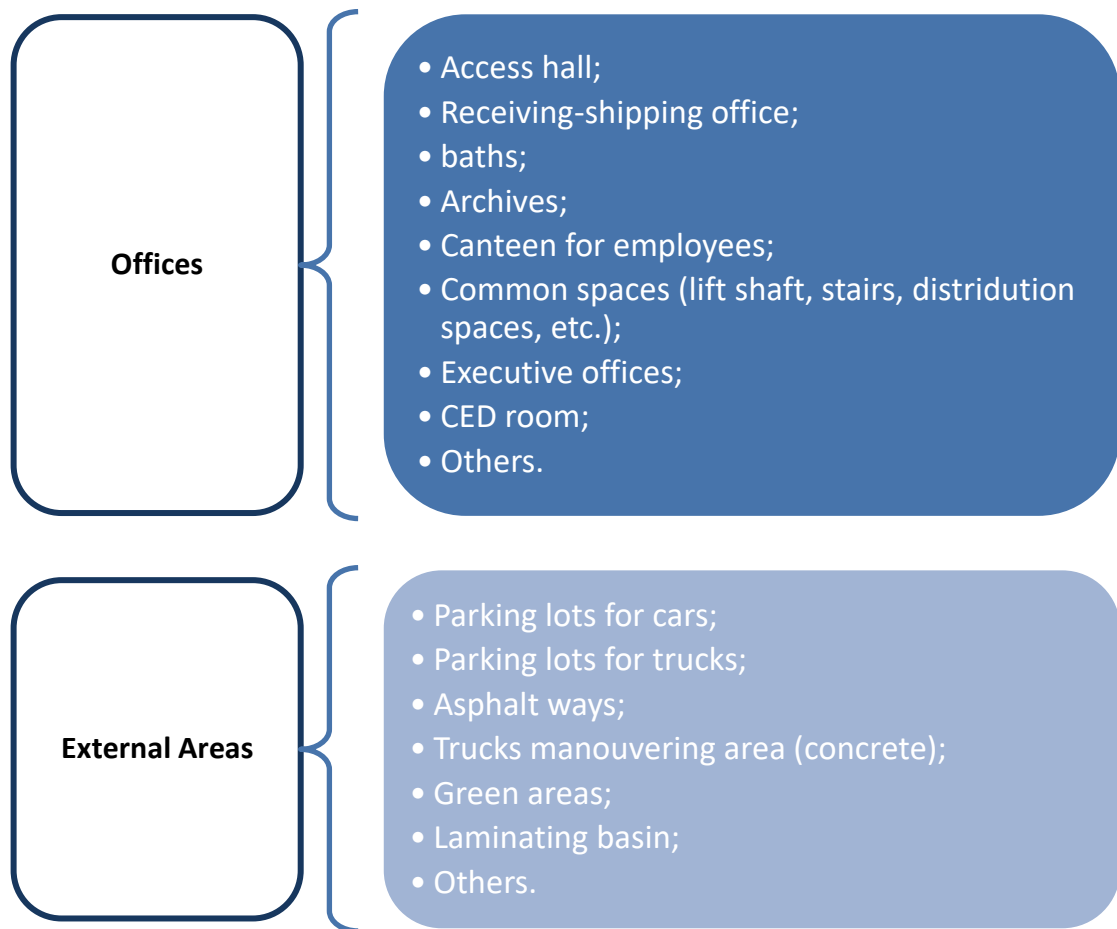


Figure 23 – Some of the main functional spaces into a logistics building. Source: own elaboration based on the bachelor dissertation: Politecnico di Milano, “*Progettazione della Logistica: Criteri di progettazione innovativa per immobili ad indirizzo logistico*”, Alessandro Di Pietro, A.Y. 2014-2015.

In the (Figure 23) are reported the main functional spaces present into a logistics building. The list is just a summary about the main spaces¹²⁸, not exhaustive due to the different nature of the several logistics building typologies. Based on the product treated and stocked some spaces could be present or could not; it is important to understand the **building activity** in order to get as much as possible the information about possible hidden space’s issues.

¹²⁸ Useful classification system, used as a base can be the Omniclass Standard – Table 11 (construction entities by function) and Table 13 (Spaces by function).



Figure 24 – Example of a Logistics building spaces and main areas. Source: Protected data. Elaboration from “Technical Assessment of Built Environment – Course of Politecnico di Milano – MSc MBE.

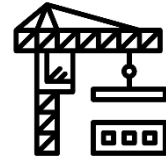
In the (Figure 24) is reported an example of a logistic building and related main spaces and areas. From this drawing is already possible to catch some important information about the asset. The drawing shows perfectly the main building (warehouse), the office area, the facilities and the remaining external one. Moreover, we can see the general layout composing this asset:

- The warehouse composed by three compartments;
- The offices;
- The battery charger area;
- The waste and recycling space;
- The tank and pull station;
- The hazardous area (inside the building);
- The aerosol area;

This is just an example of the main spaces involved and, each of them contains sub-areas as previously showed in the paragraph but, the key point is that, from a general drawing overview is possible to face with all the technologies associated.

4.2.2 CONSTRUCTION TECHNOLOGY AND CHARACTERISTICS

Into the previous paragraph has been reported the main functional spaces and the latter have a huge impact on the technologies and its characteristics. Generally, these complex buildings are made in two different typologies: **speculative** or **built to suit** (Stefano Bellintani, 2009). Due to their nature, complexity and then expensive construction characteristics, the second typology is the most used. Before starting the design, except for common features, the building is designed starting from the specific Client's (so future Tenant) need¹²⁹. In this case, about the Building Breakdown Structure, we are considering the Technical Breakdown Structure, including all the main technological characteristics for a modern logistics building.



Because of the complexity of these buildings (Arbizzani, 2011), the following breakdown is not related to a specific classification standard¹³⁰ but rather, it is related to the simplification of the asset based on the breakdown given by the personal experience. It must recall that; this classification is the base for a due diligence activity whom result is a report for non-technical people. More will be the simplification (always in a complete way) more will be the understanding by other users of the report. In this perspective, the following scheme reports all the possible technological characteristics, systems and elements for a logistics building in an understandable manner. The main systems are related to: Structures, Substructures, Doors & doorways, Plants and others.

¹²⁹ The Property in this case, assumes the role of “technical part” that, associated to its General Contractors and Sub-contractors, build the logistics building based on specific Client's feature and for its future use-activity. The Client, before starting the design activity has to sign a contract (a kind of agreement) for which it reserves some obligations toward the Property. Basically, it is present a document in which are exposed all the building characteristics (spatial-technological) as the attachment for the rent-contract (with compulsory obligations at which the Tenant has to be in compliance) with specific renting obligations for specific time period. For example, the Property will build up the logistic building if and only if the Tenant will stay in at least for 9 years. In this way, the Property will be sure for its return on investment without losing money.

¹³⁰ Further details into the chapter 2.6 – Classification systems.

TBS – Technical Breakdown Structure			
Level 1		Level 2	
Code	Name	Code	System - Element
ST	Structures	ST.10	Foundation: plinths and beams (precast or not)
		ST.20	Precast pillars
		ST.30	Precast beams (main and secondary)
		ST.40	Precast tile wings
		ST.xx	Others
SUB	Substructures	SUB.10	Industrial slabs
		SUB.20	External reinforced concrete slabs
		SUB.30	Precast bricks slabs (autobloccanti)
		SUB.40	Protective paint slab (synthetic resin)
		SUB.50	Precast reinforced concrete sandwich panels
		SUB.60	Precast reinforced concrete sandwich panels for dock stations
		SUB.70	Steel framework
		SUB.80	Steel shelter
		SUB.90	Aluminium sandwich panels
		SUB.100	Plasterboards parts
		SUB.110	Roof and Tinplate works
		SUB.120	Skylights (fixed and movable)
		SUB.130	Warehouse internal walls
		SUB.140	Chimneys, cowls, aerations and extractions (canne fumarie, aerazione, estrazione, etc.)
		SUB.150	REI wall bricks
		SUB.160	External pedestrian slabs
		SUB.170	Precast WC box - baths
		SUB.180	Steel works (stairs, railings, gates)
		SUB.190	Curtain wall (typically for offices)
		SUB.200	Floating floor (typically for offices)
		SUB.210	False ceiling (typically for offices)
SUB.xxx	Others		

DD	Doors & doorways	DD.10	Dock stations doors & External dock system
		DD.20	Entrance doors
		DD.30	Steel doors (technical rooms) & steel fixed window (shutters)
		DD.40	Exit emergency doors
		DD.50	Fire safety doors
		DD.60	Fire safety doorways
		DD.70	Internal doors (office)
		DD.xx	Others
EP	Electrical plant	EP.10	Internal spotlighting
		EP.20	External spotlighting
		EP.30	Electrical cab (MV - medium voltage)
		EP.40	Main electrical panels
		EP.50	Secondary electrical panels
		EP.60	Emergency spotlighting
		EP.70	Grounding system
		EP.80	Lighting system
		EP.90	Electrical power supplier (gruppo elettrogeno)
		EP.xx	Others
		FS	Fire safety system plant
FS.20	Foam system		
FS.30	Hydrants upper ground UNI70		
FS.40	Hydrants underground UNI70		
FS.50	Hydrants box UNI45 & motor pump connection		
FS.60	Trolley fire extinguisher (CO2)		
FS.70	Mobile fire extinguisher (CO2)		
FS.80	Trolley fire extinguisher (dust)		
FS.90	Mobile fire extinguisher (dust)		
FS.100	Smoke and fire detection		
FS.110	EFC – Smoke evacuators		
FS.110	Oxygen suppression (extraction) system		
FS.xx	Others		

MP	Mechanical plant	MP.10	Elevators
		MP.20	Hydraulic dumbwaiters
		MP.xx	Others
H	HVAC and Heating-Cooling system	H.10	AHU/ATU
		H.20	Fan-coils and Ducts
		H.30	Expansion Vessel
		H.40	Domestic water distribution
		H.50	Space heaters
		H.60	Heat generators, Co-generation, Trico-Generation, etc
		H.xx	Others
SP	Special Plants	SP.10	Mechanical extraction ducts (filters & ATEX)
		SP.20	Basin & submerged electrical pumps
		SP.30	Grass irrigation system
		SP.40	Security system (cam-vid)
		SP.xx	Others

Figure 25 – Logistics building technical breakdown structure draft. Source: own elaboration based on real logistics building on National soil.

The (Figure 25), report the technical breakdown including the main technological systems and element in a simplified manner¹³¹. This structure is at the same time, synthetic but reports all the main and common technologies present into a modern logistics building. It can be a useful base for a maintenance handbook, information system framework, walkthrough planning survey, documental audit etc. and moreover, these systems and elements must be object of the walk-through inspection during the due diligence analysis, then, starting from this framework, it is possible to plan (also using the building space framework) the visual activity in a better way.

¹³¹ Obiously this structure, as for all the classification system can be simplified more or changed for different use. Due to the scope of the work, this structure results the way to gather data in a complete way.

4.2.3 Building Information System Framework for Due Diligence: Logistics Example

This paragraph is devoted to the “Property” (but also for the Tenant and FM Company) of the logistics assets that would want to create an Information system devoted to the management of the assets them-selves owned. Moreover, this structure, can be applied during the construction phase by the General contractor for the future handover toward the property regarding the As Built documentation because of the main part of these documents are easily available during the construction site. As previously seen, the information related to the real estate heritage is enormous and manage it require a broad knowledge under different and multiple matters. One of the main errors in gathering and managing these data, is to gather all the information without having a unique approach and sense of prioritization. Sometimes, the same weight to a simple document, maybe even not compulsory, is given to a document that, because of its nature, if missing could drive to a huge impact on activity and building real estate operations. For these reasons, this paragraph is devoted to developing a simple but efficacy folders system for manage the main documents concerned the logistics building.

Based on the previous paragraph (4.2.1 and 4.2.2), but even more based on the “*Information preliminary check*”, here are reported the main categories and sub-categories of folders and documents associated that should be present for managing a logistics building under the asset perspective. The classification is based on different users (Asset, Property, Facility, Tenant and Third-Party assessment players).

Information System – Logistic Building Folder Template								
Master Folder		Folder		PDF/DWG Document				
Code	Category	Code	Category	Code	Category	Val.		
VVF	Fire Safety	VVF.10	Drawings	VVF.10.10	Signed Drawings			
				VVF.10.20	Other details			
		VVF.20	Titles	VVF.20.10	SCIA			
				VVF.20.20	VVF Asseveration			
				VVF.20.30	CPI	x		
				VVF.20.40	CPI renewals	x		
		VVF.30	Dynamic	VVF.30.10	Fire Safety Inspection Logbook			
					VVF.30.20	Others Reports (pump station, etc.)		
				VVF.40	Other	VVF.40.10	REI Materials Certificates	x
						VVF.40.20	VVF Opinion report	
		VVF.40.30	VVF Calculation					
		VVF.40.40	VVF Technical report					
		Code	Category	Code	Category	Code	Category	Val.
ASB	As Built	ASB.10	Structure: <ul style="list-style-type: none"> Warehouse Offices Facilities Externals 	ASB.10.10	Foundation drawings			
				ASB.10.20	Pillars drawings			
				ASB.10.30	Beams drawings			
				ASB.10.40	Roof drawings			
				ASB.10.50	Structural report			
				ASB.10.60	Static test Certificate			
				ASB.10.70	Other details			

	ASB.20	Sub-Structure Precast: • Warehouse • Offices • Facilities • Externals	ASB.20.10	Drawings: generals
			ASB.20.20	Drawings: panels single details
			ASB.20.30	Panes certifications
			ASB.20.40	Drawings: Curtain wall
			ASB.20.50	Curtain wall certifications, declarations, report
			ASB.20.60	Manuals
			ASB.20.70	Others
	ASB.30	Sub-Structure: • Warehouse • Offices • Facilities • Externals Based on the BBS (figure 22) drawings and manuals should be organized	ASB.30.10	Industrial slabs drawings and manuals
			ASB.30.20	External façade panels (docks area)
			ASB.30.30	REI wall bricks drawings and manuals (filter areas)
			ASB.30.40	Steel works drawings, manuals and signed report
			ASB.30.50	Protective paint slab (synthetic resin) drawings and manuals

		ASB.30.60	External Asphalt and Reinforced concrete details
		ASB.30.70	Floating floor (typically for offices)
		ASB.30.80	False ceiling (typically for offices)
		ASB.30.90	Others
ASB.40	Door and Doorways:	ASB.40.10	Dock stations doors & External dock system drawings and manuals
	<ul style="list-style-type: none"> • Warehouse • Offices • Facilities • Externals 	ASB.40.20	Steel doors (technical rooms) & steel fixed window (shutters)
	The section devoted only for door, doorways, etc. is fundamental.	ASB.40.30	Exit emergency doors certifications and manuals
		ASB.40.40	Fire safety doors certifications and manuals (REI)
		ASB.40.50	Fire safety doorways certifications and manuals (REI)
		ASB.40.60	Fire safety shutters certifications and manuals (REI)
		ASB.40.70	Others

Code	Category	Code	Category	Code	Category	Val.
ASB	As Built Plants	ASB.50	Electrical Plant: • Warehouse • Offices • Facilities • Externals	ASB.50.10	Drawings	
				ASB.50.20	Scheme drawings	
				ASB.50.30	Declarations of conformity	
				ASB.50.40	Lighting system report	
				ASB.50.50	ATEX area classification	
				ASB.50.60	Manuals	
				ASB.50.70	Others	
		ASB.60	Fire Safety System Plant: • Warehouse • Offices • Facilities • Externals	ASB.60.10	Drawings	
				ASB.60.20	Drawings detail	
				ASB.60.30	Declarations of conformity	
				ASB.60.40	Manuals	
				ASB.60.50	Others (typically special fire safety plants associated, smoke, EFC, etc.)	
		ASB.70	Mechanical plant: • Warehouse • Offices • Facilities • Externals	ASB.70.10	Drawings	
				ASB.70.20	Drawings detail	
				ASB.70.30	Declarations of conformity	
				ASB.70.40	Manuals	
				ASB.70.50	Others	
		ASB.80	HVAC and Heating-Cooling system: • Warehouse • Offices	ASB.80.10	Drawings	
				ASB.80.20	Drawings detail	
				ASB.80.30	Declarations of conformity	
				ASB.80.40	Manuals	
				ASB.80.50	Others	

			<ul style="list-style-type: none"> • Facilities • Externals 			
		ASB.90	Power EL Supplier Gruppo elettrogeno	ASB.90.10	Drawings	
				ASB.90.20	Declaration of conformity	
				ASB.90.30	CE mark certificate	
				ASB.90.40	Manuals	
				ASB.90.50	Others	
Code	Category	Code	Category	Code	Category	Val.
PA	Past Activity	PA.10	Heating plant	PA.10.10	Heating logbook	x
				PA.10.20	Third responsibility letter	x
				PA.10.30	Others	
		PA.20	Lift Plant	PA.20.10	Booklet	
				PA.20.20	Public authorities report	x
				PA.20.30	Others	
		PA.30	Electrical Plant and ATEX	PA.30.10	Notification to Public Authorities ATEX	
				PA.30.20	Public Authorities Validation, Omologazione ARPA-ASL	
				PA.30.30	ATEX periodical reports (2y)	x
				PA.30.40	Notification to Public Authorities Lighting System	
				PA.30.50	Lighting periodical reports (2y) and 1 st ISPEL report	x

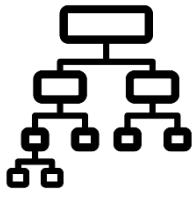
				PA.30.60	Notification to Public Authorities Grounding System	
				PA.30.70	Grounding periodical reports (2y) and 1 st ISPEL report	x
		PA.40	Power Electrical Supplier	PA.40.10	Inspection reports	
		PA.50	Others	PA.50.10	Maintenance handbook and Plan. Reports about maintenance work carried out	

ADMINISTRATIVE PROPERTY & CADASTRE

Code	Category	Code	Category	Code	Category	Val.
ADM	Property, Cadastre, Urban Planning	ADM.10	Title holder and other building issues	ADM.10.10	Atto di Compravendita	
				ADM.10.20	Atto di conferimento	
				ADM.10.30	Contratto di locazione, comodato, etc.	
				ADM.10.40	Ispezioni Ipcatastali (iscrizioni pregiudizievoli)	

		ADM.10.50	Verbale di consegna	
		ADM.10.60	Manuale di manutenzione siglato	
		ADM.10.70	Regolamento parti comuni	
		ADM.10.80	Verbali di condominio	
		ADM.10.90	Agibilità	
		ADM.10.100	PdC, CILA, SCIA	
		ADM.10.110	VIA	
		ADM.10.120	Sustainability certification	x
		ADM.10.130	Libretto del fabbricato	
ADM.20	Cadastre	ADM.20.10	Certificato catastale	
		ADM.20.20	Estratto di mappa	
		ADM.20.30	Planimetria catastale	
		ADM.20.40	Visure catastali	
		ADM.20.50	Rendite catastali	
		ADM.20.60	Denuncia di accatastamento	
		ADM.20.70	Volture	
ADM.30	Urban Planning	ADM.30.10	CDU	
		ADM.30.20	Estratto PGT	
		ADM.30.30	RE-NTA	
		ADM.30.40	Vincolo storico	

Table 15 – Information System Folder-Documents Template for Logistics Buildings. Source: Own elaboration.



In the (Table 15), it has been showed a summary of the documentation (master folder, folder and document) that could be easily represented for a logistics building. Into the table are reported the main documents concerning the building under

different issues. Starting from the Fire Safety issue, the most important one to the As Built documentation and Property and administrative act.

A strong suggestion is to organize this kind of framework starting from the design and construction phase, in which we are able to collect the most critical information about the building and where the main players involved are easier available. This process can drive to a future easier assessment of the building, simplifying the information acquisition gathering process for the all players involved into real estate market services.

Most of the documents present in this structure is concerning issues that are connected also to the activity itself and, because of this, each framework should be adapted based on the Tenant's needs.

4.3 DARM: THE TOOL PROPOSAL AIM AND METHOD

The proposal and then the aim of this work is based on the specific need of **synthetizing** a broad and complex phase of the building technical-legal due diligence activity and operations. As previously mentioned, the **technical and legal due diligence activity** is the detailed analysis of the building carried out under multiple, complex and interrelated matters (3. Real Estate Technical Due Diligence).

Carrying out this activity, of **assessing** (not managing¹³²) all the possible **risks** related to **the contract**, then to the real estate **operations** and **transaction**, involves many aspects and requirements, from those closer to the legal field such as Property contracts, cadastre documents, etc. to the more technical one related to compulsory documents for plants and structures.

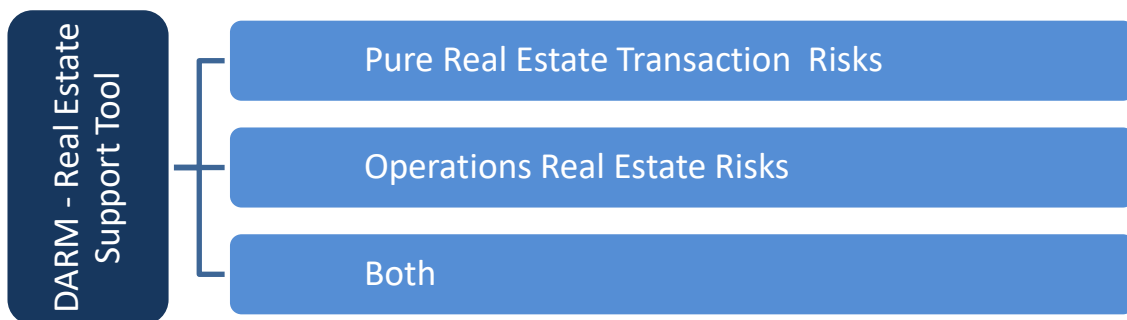


Figure 26 - DARM general application

The **pure transaction risks** refer to the possibility that, due to the missing of some legal documents, the transaction cannot physically take place as consequence. While, those documents related to the **Operations risks** could generate possible consequences in case of scenario occurrence (CPI document, Event: fire, consequences: administrative, civil, criminal).

¹³² Remember that the Due Diligence is a risk assessment tool and not a risk management tool. It is just a picture of the risks associated to the operation, then a support tool for decision making. The risk treatment (another step) is intrinsic into the documentation. This issue will be explained in the following chapters.

The common point, in these multiple matters and issues, is the **short time-frame** to complete this analysis (typical of these activity) and, moreover, the main issue at which the due diligence team as to face according to the “**Documental Audit**” with the related “*desktop activity*”. Another major point is related to the form in which the documents are released, and, thanks to an organized and systematic method, it can be possible to check in a fast way all these documents without wasting resources.

4.3.1 COMPOSITION, AIM AND POSITIONING IN THE BUILDING LIFE CYCLE

Because of the complex environment (many issues and subjects involved) related to the technical and legal due diligence activity, **the proposal** is aimed at creating **operative tool** and related **procedure** about all the **critical document (for buildings transactions and operations)** that must be present during the documental audit of a due diligence for logistics building. The tool, basically, include all the list of the **critical documents** and it weights the building’s assessment based on different factors. The **criticality** is automatically weighted thanks to the risk assessment techniques applied to those **compulsory documents** (for carrying out the transaction but, more important to treat the risk for the operations) and their missing, then linking a weight to those critical documents considering the *scenarios-likelihood* and *consequences-impact* in missing those documents. It will be pointed out that, based on different weights; different documents will have a huge impact on the final assessment. Those documents will be associated to so-called “**CSD – Critical Success Documents**”, for which the success itself transaction and operation is related.

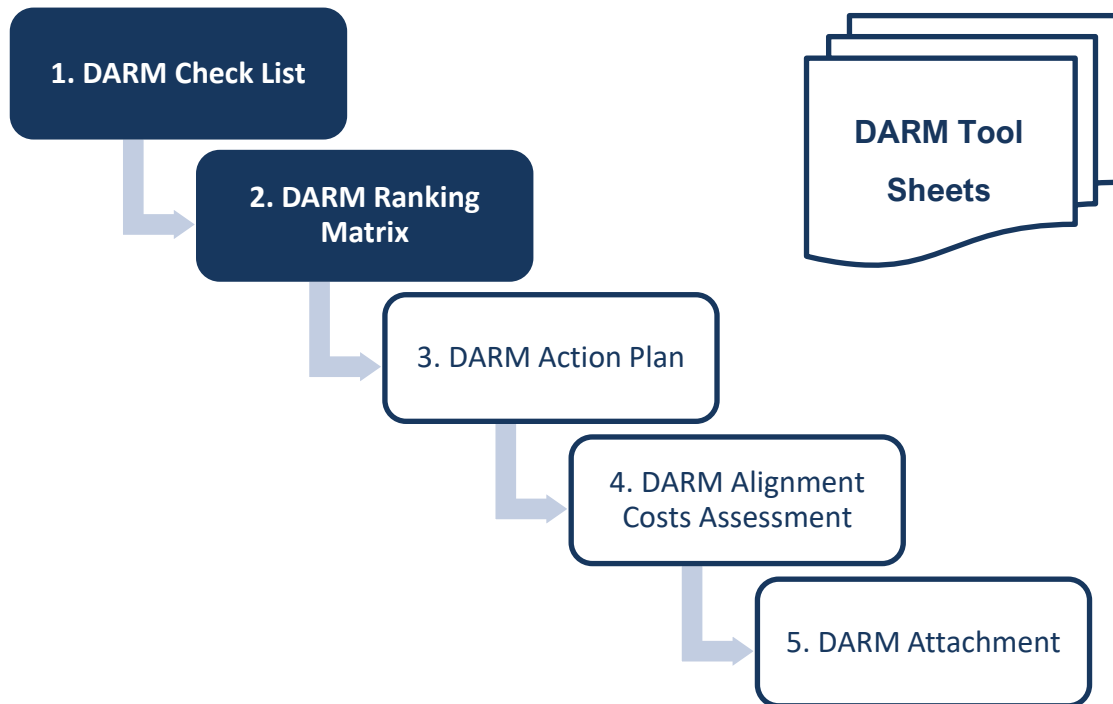


Figure 27 - DARM Documents Sheets composition

The DARM tool that will be explained in the following paragraph, is composed by 5 potential sub-documents (Figure 27) based on the same CSD – Critical Success Documents. The work of this dissertation will be focused and devoted more specifically on the first two; the DARM – Check List and the DARM – Ranking Matrix that; as it will showed more in detail into the thesis, are the two parts more involved into the document control analysis.

By focusing the main attention on these two parts, the method results the base for the subsequent “documents” that; basically, are the same but, updated considering the due diligence activities. By considering the due diligence activity; the Tool can be positioned for each DD phase and, by doing so; it is possible to get the meaning for each DARM document.

The tool's positioning is referred to the Property for facilitating the documental audit in setting the data room operations but, the main relation is linked to the due diligence team for assessing the building. Here is reported the tool's positioning into the technical due diligence process (Figure 28):

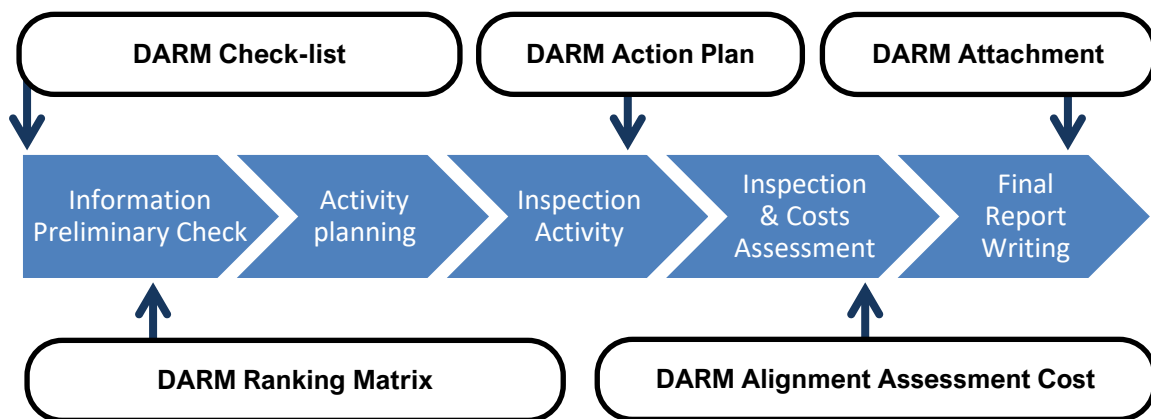


Figure 28 – Tool's positioning into the technical due diligence process.

It results easy to understand that, regardless the pure transaction, so the contract, this tool has the potentiality to be applied also for those players of the real estate that are external or marginal. The work aimed at creating a risk management tool for managing the documents that, could generate a huge impact on people and businesses.

4.3.2 THE METHOD

1. Fundamental for the method is the **documental check list (first tool part)** that can be anticipated to the Asset's Manager (or who is in responsible for those documents) in charge of the Property in order to allow him/her about the sections involved into the documental audit and then, prepare the documents in the different forms (data room, virtual data room on cloud, mail, etc.)¹³³;

¹³³ For creating a supporting information system see at 4.4 chapter.

2. Once the documental check list has been sent, the access to the documentation (or the receiving of that) is fundamental for applying the documental audit through **the second part of the tool** that will be explained in the following paragraph;
3. The documental check list¹³⁴ is based on the **CPR – EU n°305/2011 framework requirements** applied at all the **issues** concerning a general logistics building case (Structures, Plants, Administrative Property, Cadastre, Environmental, etc.) and associated to the **compulsory document** requested by law. For the Legal-Administrative part, it has been carried out a literature (laws and regulations) check for extracting the most important responsibilities, players and documents with the related liabilities.

4.3.3 THE TOOL: DARM

The “**DARM – Documental Audit Ranking Matrix**”, is a **document control tool** composed by two main parts the **DARM-check-list** and the **DARM Documental Audit Ranking Matrix**. A tool created during this dissertation for assessing the building under the documental perspective and as a base for planning the following walk-through and the final report with alignment costs.

The DARM’s purpose is to simplify the documental audit for having at the end a building’s **flag analysis rank** about documents for the **transaction** and for the **operations**. Moreover, the tool is updatable after the walk-through, reminding that the documental audit can be “modified” according to the walk-through result¹³⁵.

¹³⁴ The check list is given by the DARM tool, basically the base structure is the same. The check list is oriented for the Property and the DARM for the due diligence team.

¹³⁵ Example: presence of all materials fire safety certificates during the documental audit, after the walk-through has been pointed out that some materials are not matching with respect to those documents previously checked. Then the presence and the validity of those documents

Then, the **DARM**, works on two different fronts, assessing the documents for the **transaction** and the document (more critical considering consequences) for the **operations** as well.

The tool is flexible in nature and applicable (in terms of concept) to all logistics buildings (and similar commercial ones) because of its foundation principle: *Systematic approach, Uniformity data* and based on the main *logistics buildings' requirements*.

As already mentioned, the tool DARM is implemented with the risk assessment techniques for attributing the weights based on the **document criticality**.

This tool, inside the technical due diligence activity phases, is located (figure 23):

1. **DARM - Check List**: At the beginning of the first phase "*Information preliminary check*" related to the check list sent to the property;
2. **DARM - Ranking Matrix**: During the Documental Audit (always during the first phase) for filling the tool in order to assess the building through the "desktop" activity, so the document control;
3. **DARM - Action Plan**: for making an *action plan* before the walkthrough and after it, carry out the documental audit updating;
4. **DARM - Alignment Costs Assessment**: Into the "*Inspection and cost assessment*" for assessing the alignment costs for documents missing;
5. **DARM Attachment**: Used as the attachment for the "*final report writing*" useful for the Due Diligence's Client in order to understand deeper in detail what has been analysed and why some discount costs have arisen.

Here, is reported the wrap up scheme about the tool DARM, its positioning in the Due Diligence Process and furthermore, itself location into the building life cycle stages developed by the RIBA¹³⁶(Figure 29).

(but furthermore also for the CPI), is compromised. More details into chapter 3 and D.P.R. n° 151/2011.

¹³⁶ The RIBA Plan of Work is the definitive UK model for the building, design and construction process. It involves the main buildings phases-stages of the construction industry.

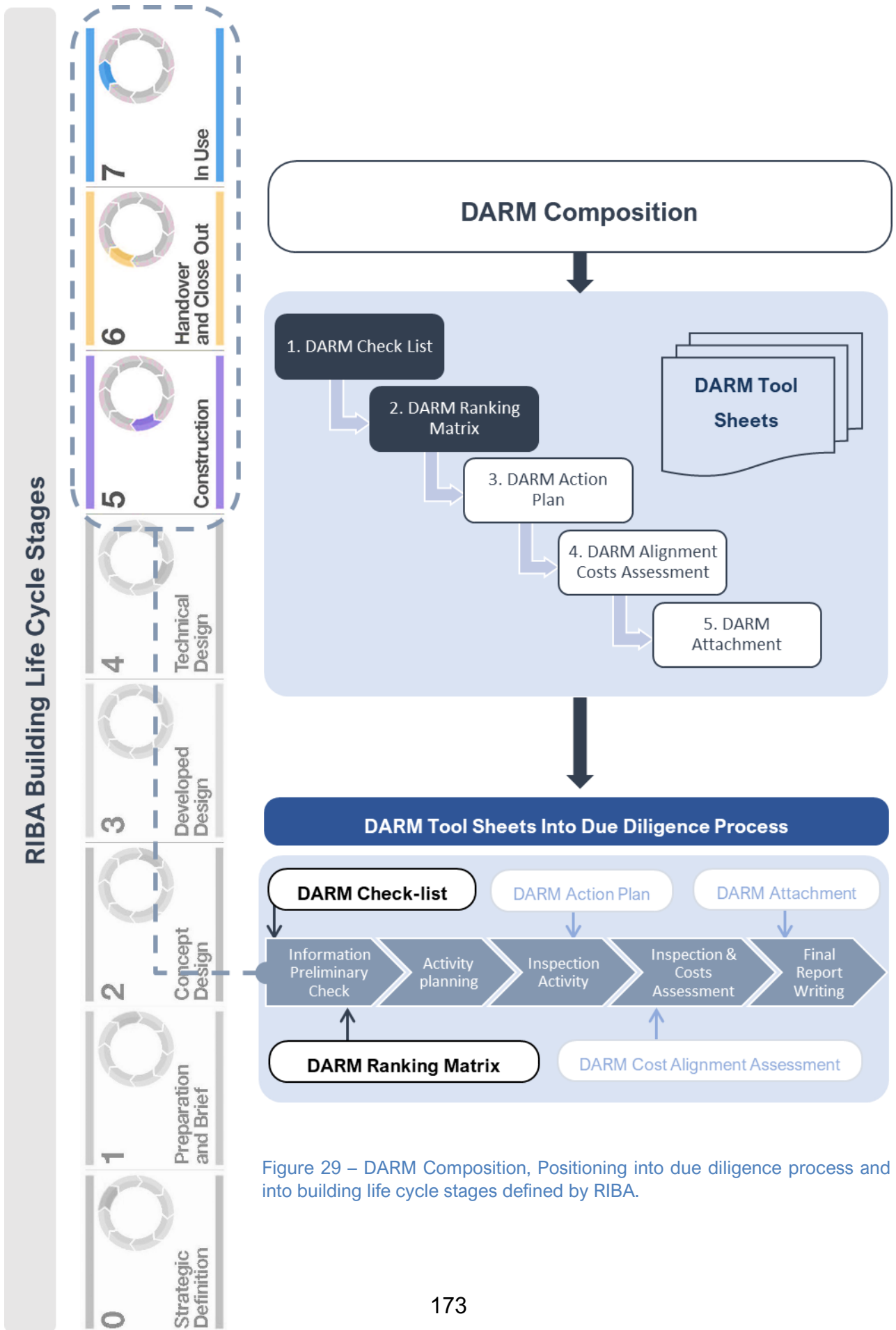


Figure 29 – DARM Composition, Positioning into due diligence process and into building life cycle stages defined by RIBA.

4.4 DOCUMENT RISK ASSESSMENT

The following chapter is devoted to the risk assessment introduction, standards and application to the documental audit for the legal-technical due diligence for logistics buildings. As mentioned into the previous paragraph, related to the **tool proposal** is based on the critical document missing during the due diligence documental audit. The **documental check-list** sent to the Property (or the in subject in charge) is based on all those critical documents that could represent a potential risk in the moment in which they are not available and furthermore, their missing represent a potential consequence related to different likelihood scenarios.

4.4.1 FOREWORD CONSIDERATION

“People hate think about bad things happening, so they underestimate their likelihood...the chance that something will happen”¹³⁷

Before entering into technical details, and due to the fact that the due diligence activity results at the end in a non-technical report for non-technical people; it is necessary to report here a short consideration about that something will happen independently our self-management and certainty in managing the daily activity and how the improbable affects our lives and jobs.

The forecasting activity on possible scenarios, typically are based on past data and on what happened in the past, then based on **inductive reasoning** (Taleb, 2007). Then, the usual approach is “it has never happened, so it won’t happen.”, but let think about to the 1987 and 2008 financial crisis or the 2001 World Trade Center disaster. Is this approach applicable again?

¹³⁷ Source: The Big Short movie, 2015, directed by Adam McKay, screenplay pull-out by the book “The Big Short: Inside the Doomsday Machine”, based on real happened events about 2008 financial crisis.

Luogo	Dettaglio	n°	%
Ambienti particolari	Altri	953	0,4
	Scuole	621	0,3
Ambienti di civile abitazione	Altri	2.958	1,2
	Appartamenti	28.941	11,9
	Autorimesse private	1.428	0,6
	Campi nomadi	558	0,2
	Costruzioni Provvisorie	732	0,3
	Edifici in generale	9.238	3,8
	Locali quadri elettrici	484	0,2
	Aziende varie	Altre	986	0,4
Depositi combustibili solidi	Depositi foraggi, paglia, etc.	665	0,3
	Depositi rifiuti	678	0,3
Esercizi Commerciali	Altri	799	0,3
	Bar	514	0,2
	Ristoranti e mense	999	0,4
Località agricole	Altre	2.872	1,2
	Boschi	5.077	2,1
	Campi	27.491	11,3
	Capannoni	777	0,3
	Fabbricati agricoli	1.652	0,7
	Zana alberata	824	0,3
	Zone rurali	12.155	5,0
	Zone di sosta e traffico	Altre	2.768	1,1
Cortili		3.806	1,6
Giardini		1.657	0,7
Parcheggi all'aperto		866	0,4
Sedi ferroviarie		777	0,3
Strade e/o piazze cittadine		56.835	23,4
Strade extraurbane		22.204	9,1
Zone di montagna		23.333	9,6
Altri luoghi		Altre	965	0,4
	Fiumi, corsi d'acqua, etc.	1.055	0,4
	Zone costiere	1.480	0,6
	Altro	25.985	10,7
Totale		243.133	100,0

Table 16 – n° of Fire and Explosion on Italian soil in 2015. Partial data, 94% on total. Source: Ministero dell'interno – Annuario statistico del corpo nazionale dei vigili del fuoco.

Let's think about to improbable and far away from us scenario, but anyway possible. Something you typically can get from the tv-news or just seen passing across the road. Think about a **fire**.

From the above table is possible to understand and consider that the main fires occurred are related to open spaces such as squares and street, main roads, fields, and domestic houses (mainly caused by people's accidents).



Table 17 - n° of Fire and Explosion on Italian soil. Source: Ministero dell'interno – Annuario statistico del corpo nazionale dei vigili del fuoco.

Considering the **productive** or **logistics** compartments (or the real estate in general), this data shows a very low probability regarding this scenario type and, considering also that the same percentages are related to the previous years (Table 17), this occurrence results almost impossible. This is due to the fact that the attention (especially for the Italian law framework) for the critical buildings is quite high. Then, we can consider almost impossible, except for rare cases, that a fire into a logistics building is something so far from us to be ignored and doing so, low attention is possible to have on this issue. The same reasoning is applicable for other scenarios but, it results the same. This is a **typical inductive** reasoning.

This short foreword is aimed at creating a small shake in considering what is something “impossible” in our mind, in something that, maybe with a very low-probability, is something “possible”.

The Black Swan (Taleb, 2007). Something rare and isolated, with a huge impact and possible to foresee only in a retrospective way (after its happening) has to be considered when we face with the risk management.

The turkey’s story and the inductive reasoning problem (Taleb, 2007):

Typically, we base our knowledge on what has already happened in the past. But, think about a turkey, since it was born, every day of every week of every month of each year is feed by its breeder. Then it is basing its knowledge on these input data for which is simple to state that every day the sun goes up and a feed will arrive. Until the Thanksgiving Day. For the turkey, something totally rare and with a huge impact happens.

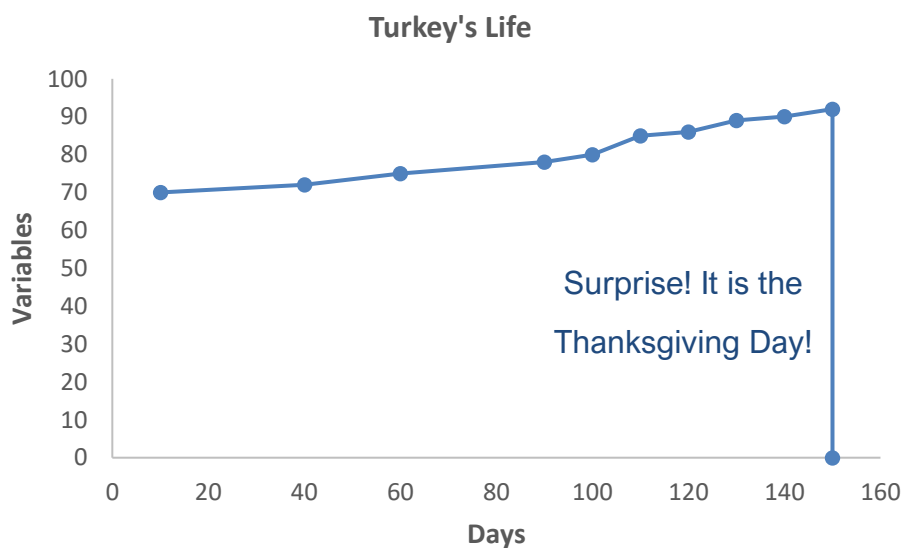


Figure 30 – Turkey’s life until the Thanksgiving Day. A process story that is going ahead for many days does not tell us nothing about the future. Source: Taleb, N. N. (2007). *The Black Swan*. Milano: ilSaggiatore.

This consideration is applicable to many fields; we can observe a phenomenon for days, years with the related variables for the future forecast (sales, investments, crimes, earnings, etc.). It is possible to obtain information based on what has already happened in the past and nothing certain for the future.

With this consideration it does not state that because of this “black swan”, get a forecast or foresee an event is useless. On the contrary, we are claiming that, into the risk assessment field, the main task is to consider also those scenarios and events that otherwise would be undervalued only because of their low likelihood occurrence.

(Taleb, 2007): *“...it is not necessary to bury ourselves at home and don’t cross the roads because of a lot of risks and uncertainties are present in our lives, on the contrary; we can cross the roads, but with awareness of them without having the eyes covered...”*¹³⁸

4.4.2 RISK MANAGEMENT STANDARDS

Into real estate and then into the construction industry process many are the management system standards involving the risk management for different issues (G. Paganin, 2012):

- Models for managing risks related to the conformity of products, UNI EN ISO 9000;
- Models for managing risks related to environmental impacts of organizations’ activities, UNI EN ISO 14000;
- Models for managing risks related to health and safety impacts of organizations’ activities on workers, BS OHSAS 18001;

¹³⁸ Own translation from the Italian book

The common point in these standards is properly the continuous improving process for which results fundamental the:

- Planning;
- Execution;
- Check and monitoring;
- Improving

The standards' propensity is related to the risk management toward the organizations' activities but, talking about risk management and assessment the most relevant issue, often undervalued is properly the check-monitoring and improving activities mainly related to the communication of these matters especially toward the executive parts (CEO and Managers) of the business entities. In this perspective, what is in common, among these three standards, are related to the product, the environment and health and safety for people.

While for the ISO 9001 the main attention is devoted for the risk related to the goals to be obtained based on requirements agreed between the seller and the buyer, the ISO 14001 and 18001 are more focused on the risk meant as impact on something (environment, then people and directly people).

The criticality related to environmental risks has been highlighted in the last years thanks to the implementation of EU Directives into National soil. 2008/99/CE about Environmental Protection and penal responsibilities and related D. Lgs. 231/2001 "*Disciplina della responsabilità amministrativa delle persone giuridiche, delle società e delle associazioni anche prive di personalità giuridica*". Moreover, the concept not only related to the crime of illegal abuse of a position or office for personal gain and corruption but extended to the violation of safety regulations. In this standard framework, results fundamental to keep in mind these matters to avoid unpleasant events in terms of legal issues and people safety.

As mentioned above, those standards, have the common key point of management systems in which the risk is just a part of it without having a real strategic core. The topic of risk management is strongly present as root but, almost hidden inside, and for this reason, there was necessary to develop a standard fully devoted to this theme that is **the risk management**.



The UNI 11230:2007 – Gestione del Rischio defines the risk as *“la valutazione delle probabilità di accadimento di un evento e del suo effetto sugli obbiettivi”*. The statement points out the risk as a negative meaning, while it is known that the risk (especially in financial field) is associated even to positive effects. Furthermore, for managing the uncertainty level, in the productive organizations, during the last years has been developed the so-called *“risk management”* approach that has generated a series of standards focused on this aspect. Many organizations are implementing these approaches devoting specific resources to the risk management subject due to the huge importance that the law and the organizations them-selves are putting into a matter that has effect on the people’ safety. Among the several standards, it is possible to get the following as the main base for the approach, remembering that the risk management approach is applicable for different types of business entity and organizations:

- AS/NZS 4360:2004 *“Risk Management”*;
- ISO 73:2009 *“Risk Management – Vocabulary”*;
- ISO 31000:2009 *“Risk Management – Principles and Guidelines”*;
- ISO 31010:2009 *“Risk Management – Risk Assessment techniques”*

4.4.2.1 AS/NZS 4360:2004

The standard provides a generic guide for managing risk and by so, applicable to a wide range of organizations and activities. It is important to get some definitions about the risk management matters for not getting confused on the specific terms. This guide defines the risk as: “1.3.13 - *the change of something happening that will have an impact on objectives*”. It has measured in terms of **event** or circumstances and the related **consequences** and their **likelihood** (positive or negative effect). Some definitions are reported below:

- **1.3.1 Consequence:** outcome or impact of an event, positive or negative, expressed in a quantitative or qualitative way;
- **1.3.4 Event:** occurrence of a particular set of circumstances, can be certain or uncertain, single or a series of them;
- **1.3.7 Likelihood**¹³⁹: general description of probability or frequency, can be expressed in a quantitative or qualitative way;
- **1.3.11 Probability:** a measure (numerical) of the change of occurrence expressed as number between 0 and 1;
- **1.3.15 Risk Assessment:** overall process involving the *risk identification, analysis and evaluation*;
- **1.13.19 Risk Identification:** the process of determining what, where, when, why and how something could happen;
- **1.3.14 Risk Analysis:** systematic process to understand the nature of and to deduce the level of risk, it is the base for the evaluation and decision making about risk treatment;

¹³⁹ **BN:** Likelihood is a broad wide term considered in the AS/NZS 4360 but also into the others ISO standards. It is a broad/wide term, related to something measured or defined, objectively or subjectively, quantitatively or qualitatively, used in general or in mathematical terms. By saying so, likelihood is not the probability for which, numerical and mathematical results have to be used. Section 1.4 reports “*ISO/IEC Guide 73 uses the word -probability- in this general sense, to avoid translation problems of -likelihood- in some non-English languages that have no direct equivalent. Because -probability- is often interpreted more formally in English as a mathematical term, -likelihood- is used throughout this standard, with the intent that it should have the same broad interpretation as -probability- as defined in ISO/IEC Guide 73*” Source: AS/NZS 4360.

- **1.3.18 Risk Evaluation:** process of comparing the level of risk against the risk criteria (if the risk is acceptable or not);
- **1.3.17 Risk Criteria:** terms of reference by which the significance of risk is assessed, can include costs and benefits, legal and compulsory requirements, socio-economic and environmental aspects based furthermore, on stakeholders' inputs;
- **1.3.26 Risk Treatment:** process of selection of implementation of measures to modify the risk (avoiding, modifying, sharing, etc.);
- **1.3.21 Risk Management Process:** systematic application of management policies, procedures and practices involving tasks of *communicating, establish the context, identifying analysing, evaluating, treating, monitoring and review the risk.*

The section 2 and 3, furthermore, are devoted to the explanation of the risk assessment process in each of the single phases.

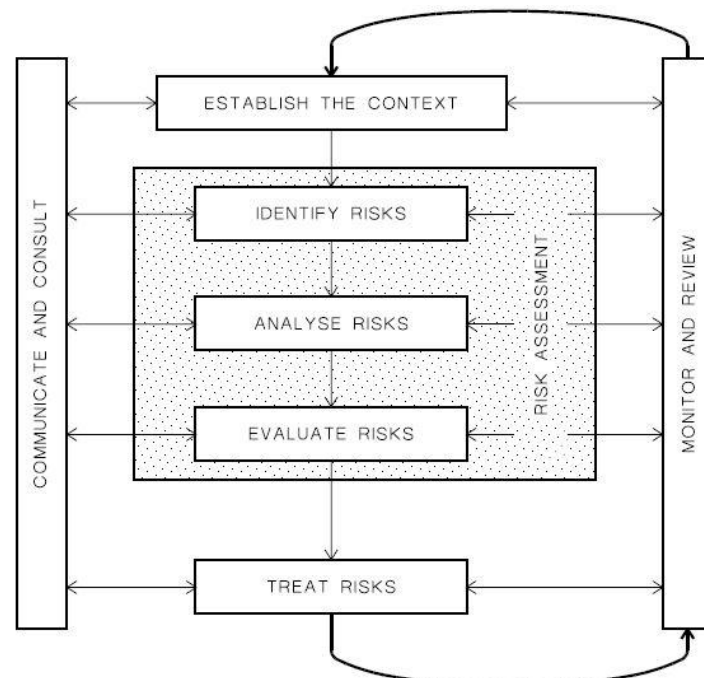


Figure 31 - Risk Assessment Process. Source AS/NZS 4360

4.4.2.2 ISO 73:2009 Vocabulary

“This Guide provides basic vocabulary to develop common understanding on risk management concepts and terms among organizations and functions, and across different applications and types.” Defining basically the similar and following terms, strictly connected to the AS/NZS 4360:

- **1.1 Risk:** effect of uncertainty on objectives. An effect is a deviation from the expected, positive and/or negative. Objectives can be financial, health and safety, environmental, etc.). Risk is often characterized by reference to potential events and consequences, or a combination of these. Risk is often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated likelihood of occurrence. Uncertainty is the state, even partial, of deficiency of information related to, understanding or knowledge of, an event, its consequence, or likelihood;
- **3.1 Risk Management Process:** systematic application of management policies, procedures and practices to the activities of communicating, consulting, establishing the context, and identifying, analysing, evaluating, treating, monitoring and reviewing risk;
- **3.2.1.2 Risk Perception:** the perception reflects the stakeholder's needs, issues, knowledge, belief and values;
- **3.3.1.3 Risk Criteria:** terms of reference against which the significance of a risk is evaluated. Risk criteria are based on organizational objectives, and external and internal context and it can be derived from standards, laws, policies and other requirements.

Without reporting further definition, it is easy to get from these statements that the process in which the risk management approach operates is basically the same. The process of communicating, consulting, establishing the context, and identifying, analysing, evaluating, treating, monitoring and reviewing risk is present and highlighted in each standard.

4.4.2.3 ISO 31010 - Risk Management Process

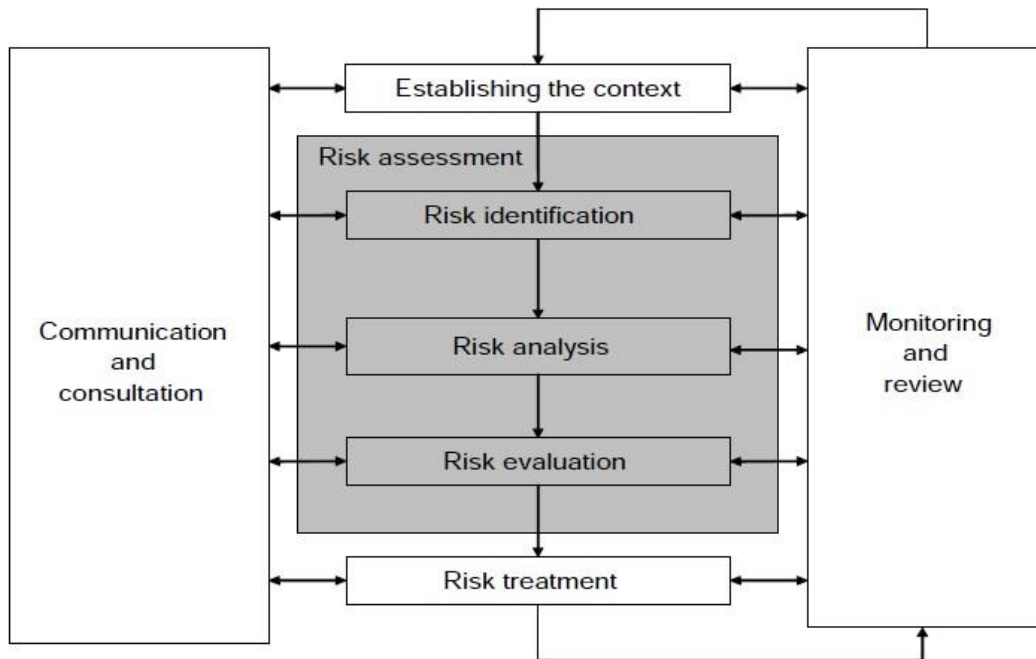


Figure 32 – Risk Management Process. Source ISO 31000:2009 – Risk Management – Principles and Guidelines and AS/NZS 4360:2004.

The ISO 31000:2009 standard provides a general structure for managing the risks starting from the context establishment, the risk assessment (to do not get confused with the risk management that involves the other phases), the risk treatment and Monitoring and review. The last but not least, communication and consultation across all the previous steps, often undervalued. As we can understand, the previously mentioned standards are really close to the latter and moreover, we can reach the following considerations.

Considering the ISO 31000:2009, ISO 73 Guideline and the AS/NZS; all of these defines and highlight some fundamental features about the concept of risk:

- The risks are strictly related to the final goals and objectives;

- They are related to the probability and likelihood concept (different in nature, for further information see at the previous paragraph) because of the uncertainty situation;
- The uncertainty is not the risk but, it is the influence (certain) of an event (uncertain);
- The risk can be positive and/or negative;
- The measure of a risk is directly in function of event's probability and its consequences.

4.4.3.1 Risk Management Phases

The risk management process involves different steps and sub-steps for which a dedicated focus this paragraph is oriented to. These phases are reported into the already mentioned standards (AS/NZS 4360:2004, ISO 31000:2009, ISO 31010:2009 and ISO 73:2009). The phases summarised, are as follows:

1. **Communication and consultation:** the success of the risk assessment (central macro-phases – Identification, Analysis and Evaluation) depends on the effective communication and communication to all stakeholders involved in the organization process;
2. **Establish the Context:** it defines the basic parameters for managing risk and set the scope and criteria for the rest of the process. It involves the internal and external context:
 - a. **External:** it is a familiarization with the environment in which the organization operates (cultural, political, regulatory framework, laws, regulations, financial, etc.);
 - b. **Internal:** it involves the understanding of organization's structure, resources and objectives, policies, procedure and standards adopted regarding the organization itself;

c. **Risk criteria definition:** nature and type of consequences to be included and how they will be measured, the likelihood or probability to be used, when the risk is acceptable or not, etc.

3. **Risk Assessment:** it is the macro-phase that includes the sub-phases of *risk identification, analysis and evaluation*.

a. **Risk Identification:** very critical phase of the process involving the finding, recognizing and describing risks. This phase involves the identification of **risk sources**, **events**, their causes and their potential **consequences**, for which a:

- i. **Risk source** (hazardous identification) is an element which alone or in combination has the intrinsic potential to give rise to risk. (e.g. electrical plant, suspended parts, etc);
- ii. **Event:** occurrence or change of a particular set of circumstances (e.g. electrocution, concussion, etc.);
- iii. **Consequence:** outcome of an event affecting objectives, positive or negative, quantitatively/qualitatively expressed. (e.g. given the event, huge reimbursements to workers, closing of the business, penal responsibilities, etc.)

Because of the critical nature of the risk identification, for identifying the risks, can be adopted different methods such as (G. Paganin, 2012) and ISO 31010:

- Past data available;
- Meetings, brainstorming, Delphi;
- Walk-through on site;
- Check-lists;
- Flow chart diagrams;
- HAZOP analysis – Hazard and Operability;

- FTA - Faults Tree Analysis;
- PHA – Preliminary Hazard Analysis;
- SWIFT – What if;
- Etc.

b. Risk Analysis: is about developing an understanding of the risk and provides an input to risk assessment for decision making whether the risks need to be treated or not. Then is the process to comprehend the nature and the level of risk. It consists in determining the consequences and their probabilities or likelihood¹⁴⁰.

- i. **Consequences analysis:** determines the nature and type of impact which could occur associated to the event occurrence, quantitative or qualitative term of explanation;
- ii. **Likelihood analysis and probability estimation:** typically, are used three main categories of approaches: relevant historical data, probability forecast techniques and expert opinion;
- iii. **Preliminary analysis:** it is important to filter and then to put the main attention on those risk that are relevant for the organization. Notice that, with the term relevant we are not stating that if the likelihood is very low, the risk is filtered, on the contrary, if relevant and low-likelihood to occur, it must dedicate a specific attention¹⁴¹.

¹⁴⁰ Probability is not the same of likelihood. For further information, see at chapter 4.4.2.1

¹⁴¹ The problem mentioned into the previous paragraph. The inductive reasoning problem. Source: Taleb, N. N. (2007). The Black Swan. Milano: ilSaggiatore.

c. Risk Evaluation: this phase involves the comparison of the risk criteria and the risk analysis results. it determines if a risk is acceptable or not and the related treatments (avoiding, accept, removing, changing the likelihood or consequences, sharing the risk, etc.).

Based on the AS/NZS 4360 standard, it is possible to identify the possible **impact areas** of risks, useful to classify the different effect of the risks based on the specific area/zone:

IMPACT RISK AREAS

Organization's resources (workers, machineries, buildings, etc)
Revenues and earnings of third part
Direct-indirect activity's costs
People (also external)
Community at which the organization relates
Times for the organization's activity
Environment
Third Organizations (insurances companies, etc)
Intangibles (reputations, brand, etc.)

Table 18 – Impact Risk Areas. Source: elaboration from AS/NZS 4360 Standard.

Carried out the **risk assessment phase**, it is possible to refer at three main areas or zone for which the ALARP concept (as outcome of the analysis phase) is useful to recall (G. Paganin, 2012):

- BAT – Best Available Technique, for which the risk is **unacceptable**, and regardless the cost, the risk treatment must be applied;
- ALARP – As Low As Reasonably Practicable, in which risk and costs can be compared and treated by suitable control measures;
- NO-ALARP, in which the risk is not relevant.

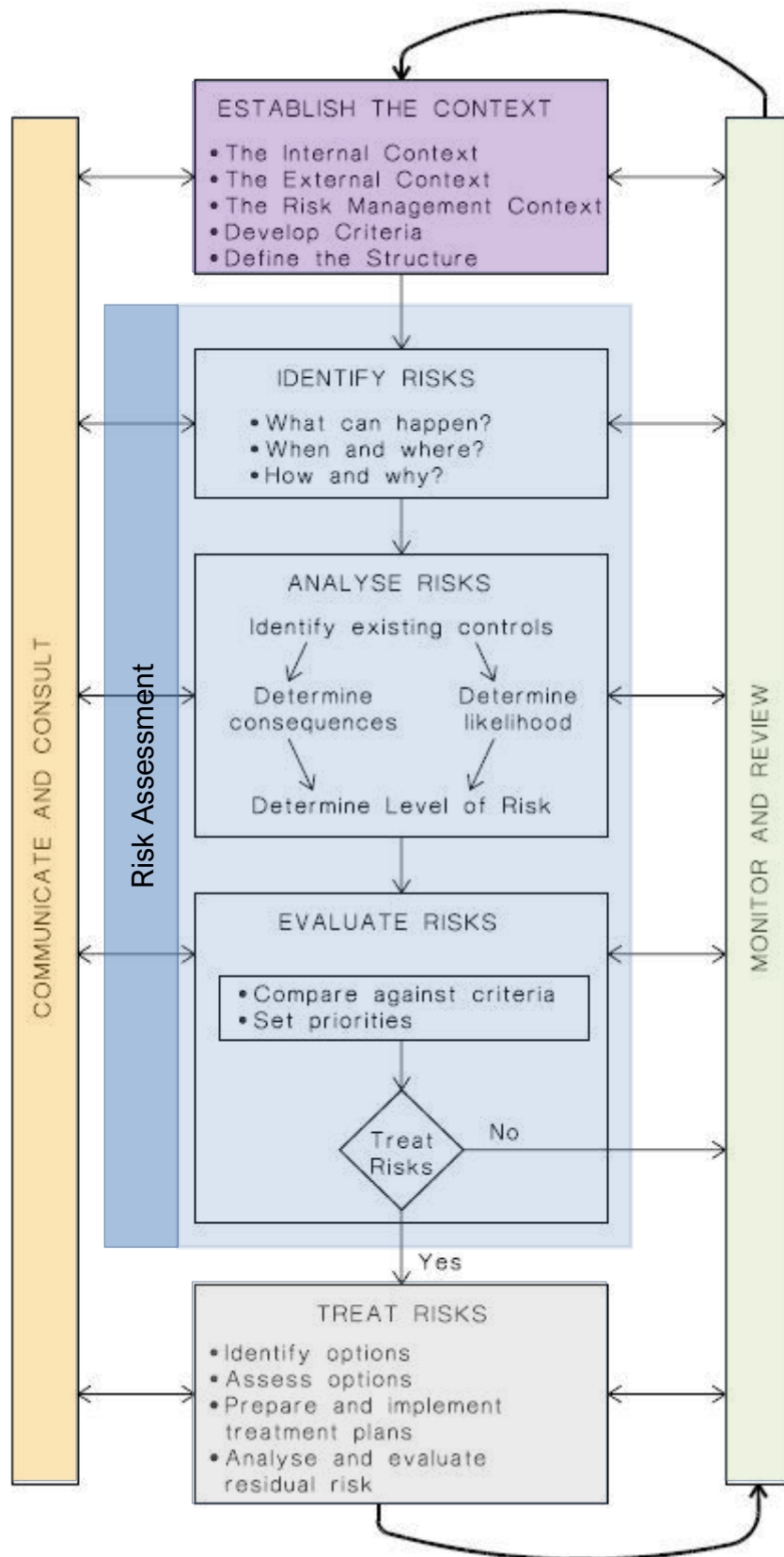


Table 19 – Risk Management Process and Risk assessment macro-category. Source: Elaboration from AS/NZS 4360:2004 standard.

4. Risk Treatment: after having carried out the risk assessment, the risk treatment involves the decision making about the risks and related options for changing the probability of occurrence, the consequences or both. This drives to a risks' reassessing for making decision whether is necessary a further treatment. Moreover, the standards report the treatments then the possibility to modify the risk, involving (ISO, ISO 73:2009 - Risk Management Vocabulary, 2009):

- a. **Avoiding** the risk by deciding not to start or continue with the activity that gives rise to the risk (Risk avoidance can be based on the result of risk evaluation and/or legal and regulatory obligations);
- b. **Accept** the **risk** or the **Residual Risk** after the treatment (reassessing);
- c. Taking or increasing risk in order to pursue an opportunity;
- d. **Removing** the risk source;
- e. **Changing** the likelihood;
- f. **Changing** the consequences;
- g. **Sharing** the risk with another party or parties. Legal requirements can limit or prohibit the risk sharing; it can be carried out by insurances or other contract forms; the extension to which the risk is distributed could depend on the reliability of sharing agreements. The sharing includes also the risk transfer¹⁴².
- h. Retaining the risk by informed decision

¹⁴² This point result particularly important and relevant because of many compulsory documents relate to the sharing, transfer the risk and the responsibilities. The Property to the Tenant through the rental contract, the Tenant to the FM Companies through the maintenance contract and the FM Company to the Third Responsible (plants suppliers – Fire Safety, Electrical, etc.).

5. Monitoring and Review: this part of the risk management process is related to the constant monitoring of the previous phases verifying the assumptions, the context, the techniques used during the risk assessment and the treatment (not explained in detail in this work) in an efficacy way.

This process is fundamental for guaranteeing the scope of the risk management and assessment for the organization.

4.4.3 DOCUMENT CONTROL AS RISK TREATMENT TOOL

It must be underlined that, the **due diligence process**¹⁴³ and the related documental audit, typically, refers only to the **risk assessment area** and not the risk management process as a whole. Then is important to underline that because of the punctual nature of the due diligence, the risk assessment itself is just a picture about the risks but, not further information about the risk's treatment¹⁴⁴ are available after the due diligence activity.

It must be highlighted moreover, that, the documental audit and related documental assessment for spotting possible non-conformities, is itself a risk treatment tool for what has just mentioned above about the **Risk Treatment – Sharing**. This dissertation is aimed at underlining the importance of the document review through the risk management process. The document itself (CPI, Material's certificates, heating plant logbook, etc.) with its presence is a kind of risk treatment sharing, or to be more specific, a **risk treatment transfer** through which it is possible to transfer the responsibilities to third parties in case of **event occurrence**.

¹⁴³ The due diligence process implies the risk assessment techniques in two main phases, the documental audit and the walk-through one.

¹⁴⁴ In some cases, could be present the "suggestions" part into the report (or into the attachments) for restore physical defects or documental non-conformities.

Table 20 – Laws-Regulation Extract connected to administrative and criminal responsibilities linked to the documents for the risk sharing. Source: Own elaboration.

Laws, Responsibilities, Players, Duties and Documents for the Risk Sharing	
DPR n°74/2013	“Regolamento recante definizione dei criteri generali in materia di esercizio, conduzione, controllo, manutenzione e ispezione degli impianti termici per la climatizzazione invernale ed estiva degli edifici e per la preparazione dell'acqua calda per usi igienici sanitari, a norma dell'articolo 4, comma 1, lettere a) e c), del decreto legislativo 19 agosto 2005, n. 192.”
Art 6	“Criteri generali, requisiti e soggetti responsabili per l'esercizio, la conduzione, il controllo e la manutenzione degli impianti termici per la climatizzazione invernale ed estiva.”
C.1	“L'esercizio, la conduzione, il controllo, la manutenzione dell'impianto termico e il rispetto delle disposizioni di legge in materia di efficienza energetica sono affidati al responsabile dell'impianto , che può delegarle ad un terzo. ...”
C.2	“In caso di impianti non conformi alle disposizioni di legge, la delega di cui al comma 1 non può essere rilasciata, salvo che nell'atto di delega sia espressamente conferito l'incarico di procedere alla loro messa a norma . Il delegante deve porre in essere ogni atto, fatto o comportamento necessario affinché il terzo responsabile possa adempiere agli obblighi previsti dalla normativa vigente... ”
C.3	“Il responsabile o, ove delegato, il terzo responsabile rispondono del mancato rispetto delle norme relative all'impianto termico, in particolare in materia di sicurezza e di tutela dell'ambiente . L'atto di assunzione di responsabilità da parte del terzo, anche come destinatario delle sanzioni amministrative, applicabili ai sensi dell'articolo 11, deve essere redatto in forma scritta contestualmente all'atto di delega.”
C.4	“Il terzo responsabile, ai fini di cui al comma 3, comunica tempestivamente in forma scritta al delegante l'esigenza di effettuare gli interventi, non previsti al momento dell'atto di delega o richiesti dalle evoluzioni della normativa, indispensabili al corretto

	funzionamento dell'impianto termico affidatogli e alla sua rispondenza alle vigenti prescrizioni normative. ...”
C.5	“Nel caso di impianti termici con potenza nominale al focolare superiore a 350 kW, ferma restando la normativa vigente in materia di appalti pubblici, il terzo responsabile deve essere in possesso di certificazione UNI EN ISO 9001”
Art 7	“Controllo e manutenzione degli impianti termici.”
C.1	“Le operazioni di controllo ed eventuale manutenzione dell'impianto devono essere eseguite da ditte abilitate ai sensi del decreto del Ministro dello sviluppo economico 22 gennaio 2008, n. 37 , conformemente alle prescrizioni e con la periodicità contenute nelle istruzioni tecniche per l'uso e la manutenzione rese disponibili dall'impresa installatrice dell'impianto ai sensi della normativa vigente.”
C.5	“Gli impianti termici per la climatizzazione o produzione di acqua calda sanitaria devono essere muniti di un "Libretto di impianto per la climatizzazione" . In caso di trasferimento a qualsiasi titolo dell'immobile o dell'unità immobiliare i libretti di impianto devono essere consegnati all'avente causa, debitamente aggiornati , con gli eventuali allegati. ...”
Art 8	“Controllo dell'efficienza energetica degli impianti termici .”
C.1	“In occasione degli interventi di controllo ed eventuale manutenzione di cui all'articolo 7 su impianti termici di climatizzazione invernale di potenza termica utile nominale maggiore di 10 kW e sugli impianti di climatizzazione estiva di potenza termica utile nominale maggiore di 12 kW, si effettua un controllo di efficienza energetica riguardante: <ul style="list-style-type: none"> • il sottosistema di generazione come definito nell'Allegato A del decreto legislativo; • la verifica della presenza e della funzionalità dei sistemi di regolazione della temperatura centrale e locale nei locali climatizzati; • la verifica della presenza e della funzionalità dei sistemi di trattamento dell'acqua, dove previsti. ...”

C.3	<p>“I controlli di efficienza energetica di cui ai commi 1 e 2 devono essere inoltre realizzati:</p> <p>...all'atto della prima messa in esercizio dell'impianto, a cura dell'installatore...in caso di sostanziali e successive modifiche...”</p>
C.5	<p>“Al termine delle operazioni di controllo, l'operatore che effettua il controllo provvede a redigere e sottoscrivere uno specifico Rapporto di controllo di efficienza energetica, come indicato nell'Allegato A del presente decreto. Una copia del Rapporto è rilasciata al responsabile dell'impianto, che lo conserva e lo allega ai libretti di cui al comma 5 dell'articolo 7; una copia è trasmessa a cura del manutentore o terzo responsabile all'indirizzo indicato dalla Regione o Provincia autonoma competente per territorio, con la cadenza indicata all'Allegato A del presente decreto. ...”</p>
Art 9	“Ispezioni sugli impianti termici”
C.1	<p>“Ai sensi dell'articolo 9, comma 2, del decreto legislativo, le autorità competenti effettuano gli accertamenti e le ispezioni necessari all'osservanza delle norme relative al contenimento dei consumi di energia nell'esercizio e manutenzione degli impianti termici...”</p>
C.3	<p>“I risultati delle ispezioni sono allegati al libretto di impianto di cui all'articolo 7, comma 5.”</p>
Art 11	“Sanzioni”
C.1	<p>“In relazione agli adempimenti di cui al presente decreto vigono le sanzioni previste dall'articolo 15, comma 5, del decreto legislativo n°192/2005¹⁴⁵, a carico di proprietario, conduttore, amministratore di condominio e terzo responsabile, e comma 6, a carico dell'operatore incaricato del controllo e manutenzione.”</p>

¹⁴⁵ Sostituito dall' Art. 12, L. n°90/2013

D.lgs. 192/2005	Attuazione della direttiva 2002/91/CE relativa al rendimento energetico nell'edilizia
L.90/2013¹⁴⁶	Disposizioni urgenti per il recepimento della Direttiva 2010/31/UE del Parlamento europeo e del Consiglio del 19 maggio 2010, sulla prestazione energetica nell'edilizia per la definizione delle procedure d'infrazione avviate dalla Commissione europea, nonché altre disposizioni in materia di coesione sociale
Art. 6	“Modificazioni al D. lgs. N°192/2005...Attestato di prestazione energetica”
C.1	“...l'attestato di prestazione energetica degli edifici è rilasciato per edifici o le unità immobiliari costruiti, venduti o locati ad un nuovo locatario e per gli edifici indicati al comma 6. Gli edifici di nuova costruzione e quelli sottoposti a ristrutturazioni importanti , sono dotati di un attestato di prestazione energetica prima del rilascio del certificato di agibilità . Nel caso di nuovo edificio, l'attestato è prodotto a cura del costruttore, sia esso committente della costruzione o società di costruzione che opera direttamente. Nel caso di attestazione della prestazione degli edifici esistenti , ove previsto dal presente decreto, l'attestato è prodotto a cura del proprietario dell'immobile. ”
C.2	“Nel caso di vendita, di trasferimento di immobili a titolo gratuito o di nuova locazione di edifici o unità immobiliari, ove l'edificio o l'unità non ne sia già dotato, il proprietario è tenuto a produrre l'attestato di prestazione energetica di cui al comma 1. In tutti i casi, il proprietario deve rendere disponibile l'attestato di prestazione energetica al potenziale acquirente o al nuovo locatario all'avvio delle rispettive trattative e consegnarlo alla fine delle medesime; in caso di vendita o locazione di un edificio prima della sua costruzione, il venditore o locatario fornisce evidenza della futura

¹⁴⁶ La L. n°90/2013 va a sostituire in gran parte il D.lgs n°192/2005 mantenendo gran parte della forma. Per avere una lettura uniforme, è conveniente partire dal 192/2005 e successive modificazioni nella 90/2013.

	prestazione energetica dell'edificio e produce l'attestato di prestazione energetica entro quindici giorni dalla richiesta di rilascio del certificato di agibilità.”
C.3 e C.3bis	“Nei contratti di vendita negli atti di trasferimento di immobili a titolo gratuito o nei nuovi contratti di locazione di edifici o di singole unità immobiliari è inserita apposita clausola con la quale l'acquirente o il conduttore danno atto di aver ricevuto le informazioni e la documentazione, comprensiva dell'attestato, in ordine alla attestazione della prestazione energetica degli edifici. 3-bis. A decorrere dalla data di entrata in vigore del decreto di adeguamento di cui al comma 12. L'attestato di prestazione energetica deve essere allegato al contratto di vendita , agli atti di trasferimento di immobili a titolo gratuito o ai nuovi contratti di locazione, pena la nullità degli stessi contratti. ”
C.5	“L'attestato di prestazione energetica di cui al comma 1 ha una validità temporale massima di dieci anni a partire dal suo rilascio ed è aggiornato a ogni intervento di ristrutturazione o riqualificazione che modifichi la classe energetica dell'edificio o dell'unità immobiliare. ...”
Art. 12	“Modificazioni al D. lgs. N°192/2005...Sanzioni”
C.4	“Il direttore dei lavori che omette di presentare al comune l'asseverazione di conformità delle opere e l'attestato di qualificazione energetica , di cui all'articolo 8, comma 2, prima del rilascio del certificato di agibilità , è punito con la sanzione amministrativa non inferiore a 1.000 euro e non superiore a 6.000 euro. ”
C.5	Il proprietario o il conduttore dell'unità immobiliare, l'amministratore del condominio, o l'eventuale terzo che se ne è assunta la responsabilità, qualora non provveda alle operazioni di controllo e manutenzione degli impianti di climatizzazione secondo quanto stabilito dall'articolo 7, comma 1, è punito con la sanzione amministrativa non inferiore a 500 euro e non superiore a 3.000 euro.

C.6	L'operatore incaricato del controllo e manutenzione, che non provvede a redigere e sottoscrivere il rapporto di controllo tecnico di cui all'articolo 7, comma 2, è punito con la sanzione amministrativa non inferiore a 1.000 euro e non superiore a 6.000 euro .
C.7	In caso di violazione dell'obbligo di dotare di un attestato di prestazione energetica gli edifici di nuova costruzione e quelli sottoposti a ristrutturazioni importanti, come previsto dall'articolo 6, comma 1, il costruttore o il proprietario è punito con la sanzione amministrativa non inferiore a 3.000 euro e non superiore a 18.000 euro .
C.8	In caso di violazione dell'obbligo di dotare di un attestato di prestazione energetica gli edifici o le unità immobiliari nel caso di vendita , come previsto dall'articolo 6, comma 2, il proprietario è punito con la sanzione amministrativa non inferiore a 3.000 euro e non superiore a 18.000 euro .
C.9	In caso di violazione dell'obbligo di dotare di un attestato di prestazione energetica gli edifici o le unità immobiliari nel caso di nuovo contratto di locazione , come previsto dall'articolo 6, comma 2, il proprietario è punito con la sanzione amministrativa non inferiore a 300 euro e non superiore a 1.800 euro .
C.10	In caso di violazione dell'obbligo di riportare i parametri energetici nell'annuncio di offerta di vendita o locazione , come previsto dall'articolo 6, comma 8, il responsabile dell'annuncio è punito con la sanzione amministrativa non inferiore a 500 euro e non superiore a 3.000 euro .
D.P.R. 462 / 2001	“Regolamento di semplificazione del procedimento per la denuncia di installazioni e dispositivi di protezione contro le scariche atmosferiche, di dispositivi di messa a terra di impianti elettrici e di impianti elettrici pericolosi.” - ATEX
Art. 2	“Messa in esercizio e omologazione dell'impianto”
C.1	“La messa in esercizio degli impianti elettrici di messa a terra e dei dispositivi di protezione contro le scariche atmosferiche non può

	essere effettuata prima della verifica eseguita dall'installatore che rilascia la dichiarazione di conformità ai sensi della normativa vigente. La dichiarazione di conformità equivale a tutti gli effetti ad omologazione dell'impianto "
C.2	"Entro trenta giorni dalla messa in esercizio dell'impianto, il datore di lavoro invia la dichiarazione di conformità all'ISPESL ed all'ASL o all'ARPA territorialmente competenti."
Art. 4 "Verifiche Periodiche..."	
C.1	" Il datore di lavoro è tenuto ad effettuare regolari manutenzioni dell'impianto , nonché a far sottoporre lo stesso a verifica periodica ogni cinque anni , ad esclusione di quelli installati in cantieri, in locali adibiti ad uso medico e negli ambienti a maggior rischio in caso di incendio per i quali la periodicità è biennale."
C.3	" Il soggetto che ha eseguito la verifica periodica rilascia il relativo verbale al datore di lavoro che deve conservarlo ed esibirlo a richiesta degli organi di vigilanza."
Art. 5 "Messa in esercizio e omologazione - ATEX..."	
C.4	" L'omologazione è effettuata dalle ASL o dall'ARPA competenti per territorio, che effettuano la prima verifica sulla conformità alla normativa vigente di tutti gli impianti denunciati."
Art. 6 "Verifiche Periodiche - ATEX..."	
C.1	"Il datore di lavoro è tenuto ad effettuare regolari manutenzioni dell'impianto, nonché a far sottoporre lo stesso a verifica periodica ¹⁴⁷ ogni due anni. "
C.3	"Il soggetto che ha eseguito la verifica periodica rilascia il relativo verbale al datore di lavoro che deve conservarlo ed esibirlo a richiesta degli organi di vigilanza."

¹⁴⁷ La verifica periodica è eseguita dalla PA (ASL o ARPA). È differente dalle regolari manutenzioni effettuate dalla Proprietà o dal Conduttore.

D.M n° 37 / 2008	“Regolamento concernente... disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.”
Art. 7	“Dichiarazione di Conformità”
C.1	“Al termine dei lavori, ...l'impresa installatrice rilascia al committente la dichiarazione di conformità degli impianti realizzati nel rispetto delle norme di cui all'articolo 6. ...”
C.3	“In caso di rifacimento parziale di impianti, il progetto, la dichiarazione di conformità, e l'attestazione di collaudo ove previsto, si riferiscono alla sola parte degli impianti oggetto dell'opera di rifacimento, ma tengono conto della sicurezza e funzionalità dell'intero impianto. ...”
Art. 9	“Certificato di Agibilità”
C.1	“Il certificato di agibilità è rilasciato dalle autorità competenti previa acquisizione della dichiarazione di conformità di cui all'articolo 7, nonché del certificato di collaudo degli impianti installati, ove previsto dalle norme vigenti.”
Art. 15	“Sanzioni”
C.1	“Alle violazioni degli obblighi derivanti dall'articolo 7 del presente decreto si applicano le sanzioni amministrative da euro 100,00 ad euro 1.000,00 con riferimento all'entità e complessità dell'impianto, al grado di pericolosità ed alle altre circostanze obiettive e soggettive della violazione.”
C.2	“Alle violazioni degli altri obblighi derivanti dal presente decreto si applicano le sanzioni amministrative da euro 1.000,00 ad euro 10.000,00 con riferimento all'entità e complessità dell'impianto, al grado di pericolosità ed alle altre circostanze obiettive e soggettive della violazione.”

DPR n°23 / 2017 (DPR n°162 / 1999)	“Regolamento concernente modifiche al decreto del Presidente della Repubblica 30 aprile 1999, n. 162 , per l'attuazione della direttiva 2014/33/UE relativa agli ascensori ed ai componenti di sicurezza degli ascensori nonché per l'esercizio degli ascensori”
Art. 6	“Procedura di valutazione della conformità”
C.5	“...l'installatore appone la marcatrice CE all'ascensore e redige una dichiarazione di conformità recante gli elementi indicati nell'allegato... conservandone una copia per dieci anni a decorrere dalla data di commercializzazione dell'ascensore.”
Art. 12	“Messa in esercizio degli ascensori e montacarichi”
C.2	“ La comunicazione di cui al comma 1, da effettuarsi entro sessanta giorni dalla data della dichiarazione di conformità dell'impianto... ”
C.3	“L'ufficio competente del comune assegna all'impianto, entro trenta giorni, un numero di matricola e lo comunica al proprietario o al suo legale rappresentante dandone contestualmente notizia al soggetto competente per l'effettuazione delle verifiche periodiche. ”
C.6	“...il comune ordina l'immediata sospensione del servizio in caso di inosservanza degli obblighi imposti dal presente regolamento.”
Art. 13	“Verifiche Periodiche”
C.1	“ Il proprietario dello stabile, o il suo legale rappresentante, sono tenuti ad effettuare regolari manutenzioni dell'impianto installato, nonché a sottoporre lo stesso a verifica periodica ogni due anni. ”
C.2	“Il soggetto che ha eseguito la verifica periodica rilascia al proprietario, nonché alla ditta incaricata della manutenzione, il verbale relativo e, ove negativo, ne comunica l'esito al competente ufficio comunale per i provvedimenti di competenza.”
Art. 16	“Libretto e Targa”
C.1	“I verbali dalle verifiche periodiche e straordinarie debbono essere annotati o allegati in apposito libretto... in oltre... deve contenere copia delle dichiarazioni di conformità di cui all'articolo 6, comma 5,

	del presente regolamento ovvero all'articolo 3, comma 3, lettera e) del decreto legislativo 27 gennaio 2010, n. 17, e copia delle comunicazioni del proprietario o suo legale rappresentante al competente ufficio comunale, nonché copia della comunicazione del competente ufficio comunale al proprietario o al suo legale rappresentante relative al numero di matricola assegnato all'impianto. ”
D.P.R. n°151 / 2011	“Regolamento recante semplificazione della disciplina dei procedimenti relativi alla prevenzione degli incendi”
Art. 3	“Valutazione dei progetti”
C. 1	“Gli enti ed i privati responsabili delle attività di cui all'Allegato I, categorie B e C , sono tenuti a richiedere, con apposita istanza , al Comando l'esame dei progetti di nuovi impianti o costruzioni nonché dei progetti di modifiche da apportare a quelli esistenti, che comportino un aggravio delle preesistenti condizioni di sicurezza antincendio.”
Art. 4	“Valutazione dei progetti”
C.1	Per le attività di cui all'Allegato I del presente regolamento, l'istanza di cui al comma 2 dell'articolo 16 del decreto legislativo 8 marzo 2006, n. 139, è presentata al Comando, prima dell'esercizio dell'attività , mediante segnalazione certificata di inizio attività , corredata dalla documentazione prevista dal decreto di cui all'articolo 2, comma 7, del presente regolamento. Il Comando verifica la completezza...”
C.3	“Per le attività di cui all'Allegato I, categoria C , il Comando, entro sessanta giorni dal ricevimento dell'istanza di cui al comma 1, effettua controlli, attraverso visite tecniche...nonché alla presenza dei requisiti di sicurezza antincendio. Entro lo stesso termine, in caso di accertata carenza dei requisiti e dei presupposti per l'esercizio delle attività previsti dalla normativa di prevenzione incendi, il Comando adotta motivati provvedimenti di divieto di prosecuzione dell'attività e di rimozione degli eventuali effetti dannosi dalla stessa prodotti, ad

	eccezione che, ove sia possibile, l'interessato provveda a conformare alla normativa antincendio e ai criteri tecnici di prevenzione incendi detta attività entro un termine di quarantacinque giorni. Entro quindici giorni dalla data di effettuazione delle visite tecniche effettuate sulle attività di cui al presente comma, in caso di esito positivo , il Comando rilascia il certificato di prevenzione incendi. "
C.6	"Fermo restando quanto previsto dall'articolo 3 del presente decreto in caso di modifiche che comportano un aggravio delle preesistenti condizioni di sicurezza antincendio , l'obbligo per l'interessato di avviare nuovamente le procedure previste dal presente articolo ricorre quando vi sono modifiche di lavorazione o di strutture, nei casi di nuova destinazione dei locali o di variazioni qualitative e quantitative delle sostanze pericolose esistenti negli stabilimenti o depositi e ogni qualvolta sopraggiunga una modifica delle condizioni di sicurezza precedentemente accertate. "
Art. 5	"Attestazione di rinnovo CPI"
C.1	"La richiesta di rinnovo periodico di conformità antincendio che, ogni cinque anni , il titolare delle attività di cui all'Allegato I del presente regolamento è tenuto ad inviare al Comando, è effettuata tramite una dichiarazione attestante l'assenza di variazioni ¹⁴⁸ alle condizioni di sicurezza antincendio corredata dalla documentazione prevista dal decreto di cui all'articolo 2, comma 7. Il Comando rilascia contestuale ricevuta dell'avvenuta presentazione della dichiarazione."
Art. 6	"Obblighi connessi con l'esercizio dell'attività"
C.1	" Gli enti e i privati responsabili di attività di cui all'Allegato I del presente regolamento, non soggette alla disciplina del decreto legislativo 9 aprile 2008, n. 81 , e successive modificazioni, hanno l'obbligo di mantenere in stato di efficienza i sistemi, i dispositivi, le attrezzature e le altre misure di sicurezza antincendio adottate e di effettuare verifiche di controllo ed interventi di manutenzione secondo le scadenze temporali che sono indicate dal Comando nel

¹⁴⁸ Se a basso rischio, è sufficiente un'autodichiarazione, altrimenti per l'alto rischio si rende necessaria l'asseverazione di un tecnico specializzato.

	<p>certificato di prevenzione o all'atto del rilascio della ricevuta a seguito della presentazione della SCIA di cui all'articolo 4, comma 1, nonché di assicurare una adeguata informazione sui rischi di incendio connessi con la specifica attività, sulle misure di prevenzione e protezione adottate, sulle precauzioni da osservare per evitare l'insorgere di un incendio e sulle procedure da attuare in caso di incendio.”</p>
C.2	<p>“I controlli, le verifiche, gli interventi di manutenzione e l'informazione di cui al comma 1, devono essere annotati in un apposito registro a cura dei responsabili dell'attività. Tale registro deve essere mantenuto aggiornato e reso disponibile ai fini dei controlli di competenza del Comando.”</p>
D.P.R. 139 / 2006	<p>“Regolamento recante semplificazione della disciplina dei procedimenti relativi alla prevenzione degli incendi”</p>
Art. 16	<p>“CPI – Certificato di Prevenzione Incendi”</p>
C.1	<p>“Il certificato di prevenzione incendi attesta il rispetto delle prescrizioni previste dalla normativa di prevenzione incendi e la sussistenza dei requisiti di sicurezza antincendio nei locali, attività, depositi, impianti ed industrie pericolose, individuati, in relazione alla detenzione ed all'impiego di prodotti infiammabili, incendiabili o esplosivi che comportano in caso di incendio gravi pericoli per l'incolumità della vita e dei beni”</p>
C.4	<p>“Il Comando provinciale dei vigili del fuoco, acquisisce dai soggetti responsabili delle attività di cui al comma 1 le certificazioni e le dichiarazioni attestanti la conformità delle attività alla normativa di prevenzione incendi...”</p>
C.6	<p>“Indipendentemente dal periodo di validità del certificato di prevenzione incendi stabilito con il regolamento di cui al comma 1, l'obbligo di richiedere un nuovo certificato ricorre quando vi sono modifiche di lavorazione o di strutture...nuova destinazione...variazioni...”</p>

Art. 16	“Sanzioni Penali e sospensione dell’attività”
C.1	“ Chiunque , in qualità di titolare di una delle attività soggette al rilascio del certificato di prevenzione incendi, ometta di richiedere il rilascio o il rinnovo del certificato medesimo è punito con l'arresto sino ad un anno o con l'ammenda da 258 euro a 2.582 euro , quando si tratta di attività che comportano la detenzione e l'impiego di prodotti infiammabili, incendiabili o esplosivi, da cui derivano in caso di incendio gravi pericoli per l'incolumità della vita e dei beni, da individuare con il decreto del Presidente della Repubblica. previsto dall'articolo 16, comma 1.”
C.2	“ Chiunque , nelle certificazioni e dichiarazioni rese ai fini del rilascio o del rinnovo del certificato di prevenzione incendi, attesti fatti non rispondenti al vero è punito con la reclusione da tre mesi a tre anni e con la multa da 103 euro a 516 euro . La stessa pena si applica a chi falsifica o altera le certificazioni e dichiarazioni medesime.”
C.3	“Ferme restando le sanzioni penali previste dalle disposizioni vigenti, il prefetto può disporre la <u>sospensione dell'attività</u> nelle ipotesi in cui i soggetti responsabili omettano di richiedere: il rilascio ovvero il rinnovo del certificato di prevenzione incendi; i servizi di vigilanza nei locali di pubblico spettacolo ed intrattenimento e nelle strutture caratterizzate da notevole presenza di pubblico per i quali i servizi medesimi sono obbligatori. La sospensione è disposta fino all'adempimento dell'obbligo.”
D.P.R. n° 380 / 2001	“TUE - Testo unico delle disposizioni legislative e regolamentari in materia edilizia”
Art.24	“Certificato di Agibilità” (ora “Segnalazione di Agibilità” – D. lgs. 222/2016 decreto SCIA 2)
C.1	“La sussistenza delle condizioni di sicurezza, igiene, salubrità, risparmio energetico degli edifici e degli impianti negli stessi installati, valutate secondo quanto dispone la normativa vigente, nonché la conformità dell'opera al progetto presentato e la sua agibilità sono attestati mediante segnalazione certificata. ”

C.2	<p>“Ai fini dell'agibilità, entro quindici giorni dall'ultimazione dei lavori di finitura dell'intervento, il soggetto titolare del permesso di costruire, o il soggetto che ha presentato la segnalazione certificata di inizio di attività”</p>
C.5	<p>“La segnalazione certificata (agibilità) di cui ai commi da 1 a 4 è corredata dalla seguente documentazione:</p> <p>a) attestazione del direttore dei lavori o, qualora non nominato, di un professionista abilitato che assevera la sussistenza delle condizioni di cui al comma 1;</p> <p>b) certificato di collaudo statico di cui all'articolo 67 ovvero, per gli interventi di cui al comma 8-bis del medesimo articolo, dichiarazione di regolare esecuzione resa dal direttore dei lavori;</p> <p>c) dichiarazione di conformità delle opere realizzate alla normativa vigente in materia di accessibilità e superamento delle barriere architettoniche di cui all'articolo 77, nonché all'articolo 82;</p> <p>d) gli estremi dell'avvenuta dichiarazione di aggiornamento catastale;</p> <p>e) dichiarazione dell'impresa installatrice, che attesta la conformità degli impianti installati negli edifici alle condizioni di sicurezza, igiene, salubrità, risparmio energetico prescritte dalla disciplina vigente ovvero, ove previsto, certificato di collaudo degli stessi.”</p>
Art.26	<p>“Dichiarazione di Inagibilità”</p>
C.1	<p>“La presentazione della segnalazione certificata di agibilità non impedisce l'esercizio del potere di dichiarazione di inagibilità di un edificio o di parte di esso ai sensi dell'articolo 222 del regio decreto 27 luglio 1934, n. 1265.”</p>
Art.30	<p>“Lottizzazione abusiva”</p>
C.2	<p>“Gli atti tra vivi, sia in forma pubblica sia in forma privata, aventi ad oggetto trasferimento o costituzione o scioglimento della comunione di diritti reali relativi a terreni sono nulli e non possono essere stipulati né trascritti nei pubblici registri immobiliari ove agli atti stessi non sia allegato il certificato di destinazione urbanistica contenente le prescrizioni urbanistiche riguardanti l'area interessata.”</p>

Art.31	“Interventi in assenza di PdC, in totale difformità o con variazioni essenziali”
C.1	“Sono interventi eseguiti in totale difformità dal permesso di costruire quelli che comportano la realizzazione di un organismo edilizio integralmente diverso per caratteristiche tipologiche, planivolumetriche o di utilizzazione da quello oggetto del permesso stesso, ovvero l'esecuzione di volumi edilizi oltre i limiti indicati nel progetto...”
C.2	“Il dirigente o il responsabile del competente ufficio comunale, accertata l'esecuzione di interventi in assenza di permesso , in totale difformità dal medesimo, ovvero con variazioni essenziali, determinate ai sensi dell'articolo 32, ingiunge al proprietario e al responsabile dell'abuso la rimozione o la demolizione , indicando nel provvedimento l'area che viene acquisita di diritto, ai sensi del comma 3.”
C.3	“Se il responsabile dell'abuso non provvede alla demolizione e al ripristino dello stato dei luoghi nel termine di novanta giorni dall'ingiunzione, il bene e l'area di sedime , nonché quella necessaria, secondo le vigenti prescrizioni urbanistiche, alla realizzazione di opere analoghe a quelle abusive sono acquisiti di diritto gratuitamente al patrimonio del comune. ... ”
Art. 44	“Sanzioni Penali”
C.1	“Salvo che il fatto costituisca più grave reato e ferme le sanzioni amministrative, si applica: a) l'ammenda fino a 10.329 euro per l'inosservanza delle norme, prescrizioni e modalità esecutive previste dal presente titolo, in quanto applicabili, nonché dai regolamenti edilizi, dagli strumenti urbanistici e dal permesso di costruire; b) l'arresto fino a due anni e l'ammenda da 5.164 a 51.645 euro nei casi di esecuzione dei lavori in totale difformità o assenza del permesso o di prosecuzione degli stessi nonostante l'ordine di sospensione; c) l'arresto fino a due anni e l'ammenda da 15.493 a 51.645 euro nel caso di lottizzazione abusiva di terreni a scopo edilizio...”

Art. 128	“Certificazione Energetica degli edifici”
C.2	“Nei casi di compravendita o di locazione il certificato di collaudo e la certificazione energetica devono essere portati a conoscenza dell'acquirente o del locatario dell'intero immobile o della singola unità immobiliare.”
G. lgs. 152 / 2006	“TUA - Norme in materia ambientale”
D.P.R n° 59 / 2013	“Regolamento recante la disciplina dell'autorizzazione unica ambientale e la semplificazione di adempimenti amministrativi in materia ambientale gravanti sulle piccole e medie imprese e sugli impianti non soggetti ad autorizzazione integrata ambientale”
Art. 128	“AUA - Autorizzazione Unica Ambientale”
C.1	<p>“Salvo quanto previsto dall'articolo 7, comma 1, i gestori degli impianti di cui all'articolo 1 presentano domanda di autorizzazione unica ambientale nel caso in cui siano assoggettati, ai sensi della normativa vigente, al rilascio, alla formazione, al rinnovo o all'aggiornamento di almeno uno dei seguenti titoli abilitativi:</p> <p>a) autorizzazione agli scarichi di cui al capo II del titolo IV della sezione II della Parte terza del decreto legislativo 3 aprile 2006, n. 152;</p> <p>b) ...</p> <p>c) autorizzazione alle emissioni in atmosfera per gli stabilimenti di cui all'articolo 269 del decreto legislativo 3 aprile 2006, n. 152;</p> <p>d) autorizzazione generale di cui all'articolo 272 del decreto legislativo 3 aprile 2006, n. 152;</p> <p>e) ...</p> <p>f) autorizzazione all'utilizzo dei fanghi derivanti dal processo di depurazione in agricoltura di cui all'articolo 9 del decreto legislativo 27 gennaio 1992, n. 99;</p> <p>g) comunicazioni in materia di rifiuti di cui agli articoli 215 e 216 del decreto legislativo 3 aprile 2006, n. 152.”</p>

C.6	“L'autorizzazione di cui al presente articolo ha durata pari a quindici anni a decorrere dalla data di rilascio.”
D. Igs 81/2008 (D. Igs 231 / 2001)	D. Igs. 81/2008 “Testo unico sulla Salute e Sicurezza sul posto di lavoro” che modifica aggiornando l’art. 25 septies del D. Igs. 231/2001 “Disciplina della responsabilità amministrativa delle persone giuridiche, delle società e delle associazioni anche prive di personalità giuridica”
Art. 25-septies	“ Omicidio colposo e lesioni colpose gravi o gravissime commesse con violazione delle norme sulla tutela della salute e sicurezza sul lavoro. ”
C.1	“In relazione al delitto di cui all'articolo 589 del codice penale (omicidio colposo) , commesso con violazione dell'articolo 55, comma 2, del decreto legislativo attuativo della delega di cui alla legge 3 agosto 2007, n. 123, in materia di salute e sicurezza sul lavoro , si applica una sanzione pecuniaria in misura pari a 1.000 quote . Nel caso di condanna per il delitto di cui al precedente periodo si applicano le sanzioni interdittive di cui all'articolo 9, comma 2, per una durata non inferiore a tre mesi e non superiore ad un anno. ”
C.2	“Salvo quanto previsto dal comma 1, in relazione al delitto di cui all'articolo 589 (omicidio colposo) del codice penale , commesso con violazione delle norme sulla tutela della salute e sicurezza sul lavoro , si applica una sanzione pecuniaria in misura non inferiore a 250 quote e non superiore a 500 quote . Nel caso di condanna per il delitto di cui al precedente periodo si applicano le sanzioni interdittive di cui all'articolo 9, comma 2, per una durata non inferiore a tre mesi e non superiore ad un anno. ”
C.3	“In relazione al delitto di cui all'articolo 590 (lesioni personali colpose), terzo comma, del codice penale , commesso con violazione delle norme sulla tutela della salute e sicurezza sul lavoro , si applica una sanzione pecuniaria in misura non superiore a 250 quote . Nel caso di condanna per il delitto di cui al precedente periodo si applicano le sanzioni interdittive di cui all'articolo 9, comma 2, per una durata non superiore a sei mesi. ”

CP	Codice Penale
Art. 590 cp	“Lesioni personali colpose”
	“se i fatti sono commessi con violazione delle norme sulla disciplina della circolazione stradale o di quelle per la prevenzione degli infortuni sul lavoro la pena per le lesioni gravi è della reclusione da tre mesi a un anno o della multa da euro 500 a euro 2.000 e la pena per le lesioni gravissime è della reclusione da uno a tre anni... ”
Art. 583 cp, c.1	la lesione è considerata grave : “se dal fatto deriva una malattia che metta in pericolo la vita della persona offesa, ovvero una malattia o un’incapacità di attendere alle ordinarie occupazioni per un tempo superiore ai quaranta giorni ; se il fatto produce l’indebolimento permanente di un senso o di un organo. ”
Art. 583 cp, c.2	la lesione è considerata gravissima : “se dal fatto deriva una malattia certamente o probabilmente insanabile ; la perdita di un senso ; la perdita di un arto , o una mutilazione che renda l’arto inservibile, ovvero la perdita dell’uso di un organo...”
Art. 589 cp	“Omicidio colposo”
	“o contro l’intenzione, quando l’evento, anche se preveduto, non è voluto dall’agente e si verifica a causa di negligenza o imprudenza o imperizia , ovvero per inosservanza di leggi, regolamenti, ordini o discipline. ”
	“se il fatto è commesso con violazione delle norme sulla disciplina della circolazione stradale o di quelle per la prevenzione degli infortuni sul lavoro la pena è della reclusione da due a sette anni... ”

The D. Lgs results a fundamental changing into the legislative framework for the people health and safety on the work place. In this perspective a deeper analysis, considering the (Table 20), has been carried out into the 4.4.6 chapter. Anyway, from the above table (Table 20), is possible to extract some of the main documents that must be present during the operations and useful to guarantee the safety requirements for workers and, to reduce the impact on the business

in case of event occurrence, as mentioned, regarding the **risk sharing**. The following list¹⁴⁹ is just an example of some Italian documents selected from the reference laws in order to develop the tool:

- P.d.C – Permesso di Costruire (and sub documents)
- Certificato / Segnalazione di Agibilità (and sub-documents)
- AUA – Autorizzazione Unica Ambientale (or AIA, VIA depending on buildings' typology);
- Certificato di Collaudo Statico;
- Certificati per Curtain Walls;
- Documentazione Antincendio (Designs, SCIA, CPI, etc.);
- Dichiarazioni di conformità degli impianti (tutti);
- Libretti degli impianti;
- Verbali statici della Pubblica Amministrazione;
- Verbali periodici della Pubblica Amministrazione;
- Etc.

¹⁴⁹ It has been chosen to report in Italian way for better understanding the real meaning of those documents and in case of deeper research, in this way would result easier the information seeking.

4.4.4 REAL ESTATE RISKS: TRANSACTION AND OPERATION PHASES

The (Table 20) in the previous paragraph, not exhaustive but relatively complete, shows the broadness of the **regulation framework** in which the due diligence is located and how many matters are involved considering the real estate transaction and the real estate operations as well.

Laws and Regulations consider Players (Property, Tenant, etc.) and bound them to specific responsibilities associated to specific **tasks** and **documents**. As we can deduct from the table, is that, regardless all, those issues covered by compulsory laws, must be treated in a very carefully way in order to decrease the **risk of transaction successful** and the **risk** associated to the **event occurrence** and the related **consequences** (administrative and criminal responsibilities), typically of the documents related to the real estate operations. The **document** itself, as already mentioned, with its presence, represents a **risk treatment tool** for different players involved in the **real estate operative phases**. It is easy to understand that, for example, in case of an event (e.g. fire) and related consequences; the presence, validity and applicability of all the documents associated to that issue, results a huge risk treatment tool against heavy consequences.

Moreover, it must be underlined that, some documents, after having analysed the compulsory laws, are addressed to the successful of the pure real estate transaction (act of purchasing, the energy certificate, etc), others focused on the real estate operations. The latter, although are not critical for the transaction, results far more important under the consequences perspective. Typically, critical documents for the transactions (e.g. act of purchasing) are focused on the transaction successful without having huge impact on possible events and their occurrence. While, documents related to the operations, even if their missing, don't result **totally compulsory** by law in order to carry on and out the real estate transaction.

This concept must be clarified because, for example, a real estate transaction can be carried out even if some **critical documents** for the operations are missing but can be treated into the contract through **discount** and **clauses** between the two parties involved.

The problem involved here, is related to the perception that people have with respect to some issues or events (Slovic, 1987), and unfortunately, those perceptions referring to some risks are always funded on events that, are “important” considering the **mass-logic** (Taleb, 2007). One again, the concept of inductive reasoning is claimed for this theme.

But, the **risk perception and related exposure** of these documents missing is relatively low if compared with respect to the **consequences** related to their missing in case of **worse event occurrence**. Regardless the low probability of an event, and sorry for the fun of the gaussian curve (Taleb, 2007), it must considered into the risk management process, and due to the fact that, the document are, as already mentioned in the previous chapter, a **risk treatment tool for sharing** the risk in case of events' occurrence. The real estate operations critical documents missing, is a potential risk that deserve to be treated and highlighted for avoiding unpleasant surprises.

4.4.5.1 Risk Perception

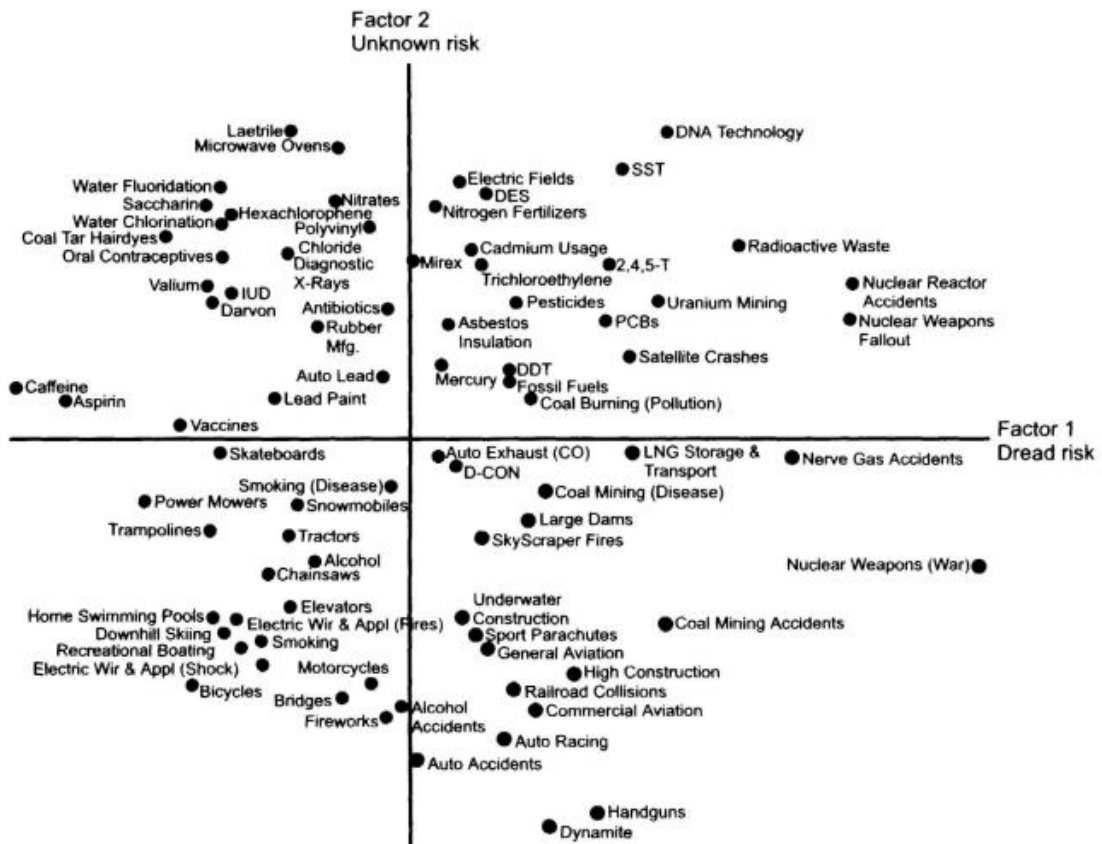


Figure 33 – Location of 81 Hazards on Factors 1 and 2. Source: Slovic, P. “Perception of Risk”, 1987.

A small consideration about the risk perception is to be considered in before starting the proposal explanation of risk assessment. As showed in the (Figure 33), based on 1987 studies (Slovic, 1987), those were the main hazards and related knowledge and dread.

Interesting thinking about, for example, the low-medium perception of asbestos or very low for lead paint or moreover, for smokes. Regardless the fact that some consequences could be higher or not (e.g. vaccines, huge today’s discussion), the perception of those risks moved up to today would result quite different. Why? The ’87 year, before the medical advertising, internet, welfare increasing, etc., let’s say, “*information spread and sharing*”, the perception was very different.

Taking into consideration the today's perception of risks and likelihood connected to some events, results that some differences come up with respect to the '80 years. It results interesting, moreover, reporting a 2019 survey carried out by The World Economic Forum.

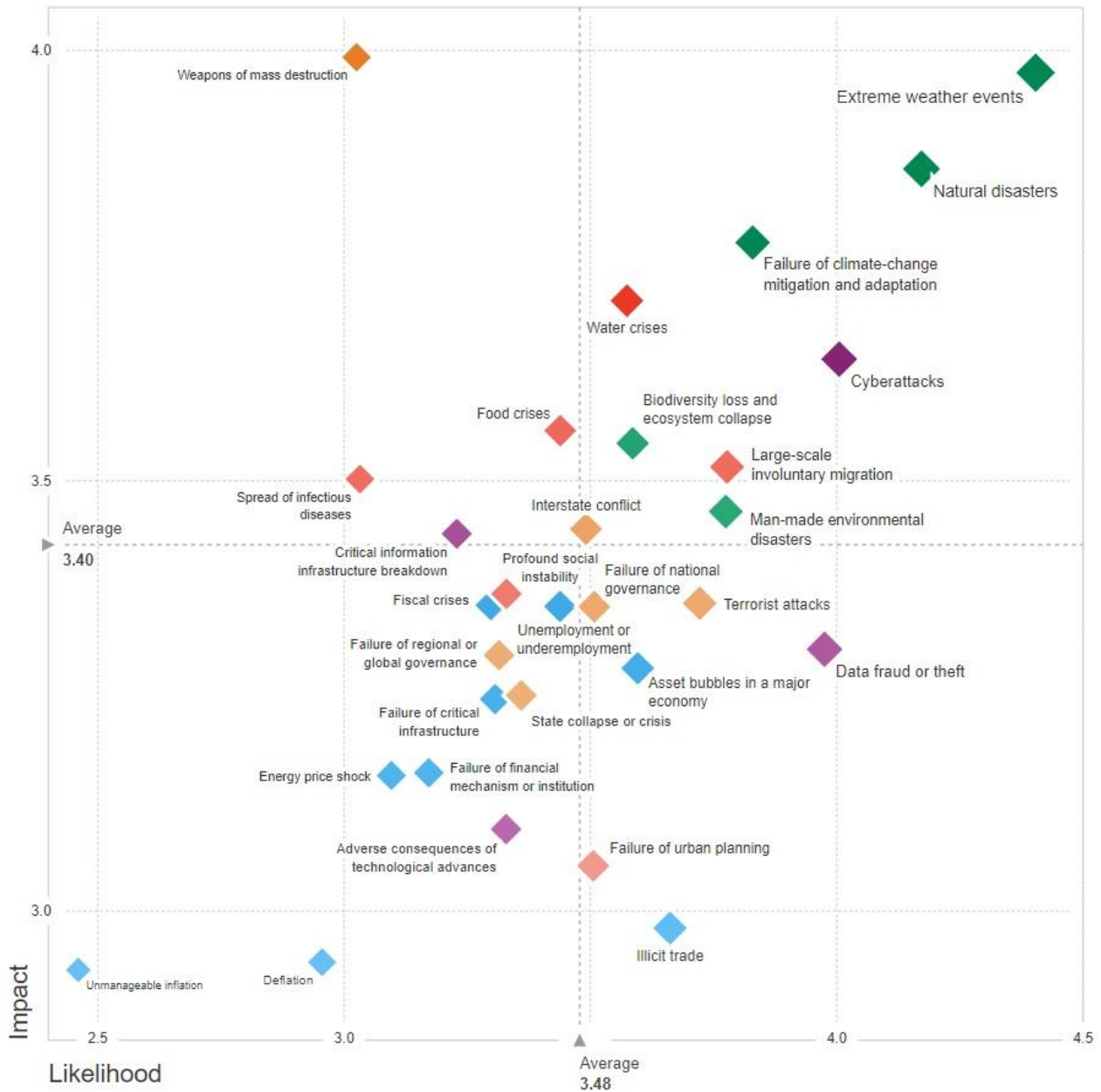


Figure 34 – Global Risk Landscape 2019, scale from 1 (very unlikely) to 5 (very likely to occur) and 1 (minimal impact) to 5 (catastrophic impact) – Source: World Economic Forum Global Risk Perception Survey 2018-2019.

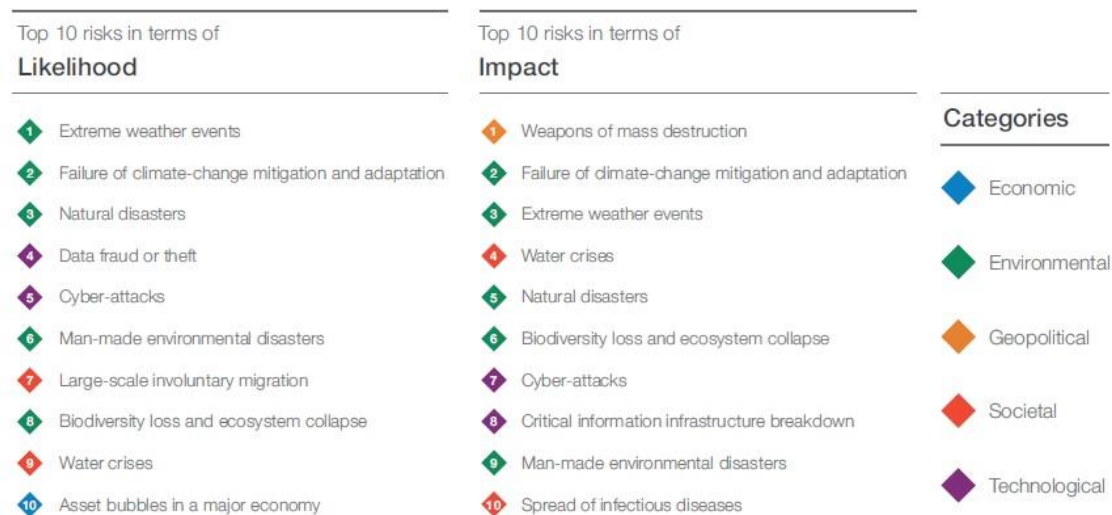


Figure 35 – Legend of (Figure 34) – Likelihood and Impact Ranking by categories, Source: World Economic Forum Global Risk Perception Survey 2018-2019.

(Forum, The Global Risk Report, 2019): *“The survey was conducted from 28 August to 1 November 2017 among the World Economic Forum’s multi-stakeholder communities, members of the Institute of Risk Management and the professional networks of our Advisory Board Members. The results of the GRPS are used to draw the Global Risks Landscape, Interconnections Map, and Trends Map presented, and to provide additional evidence used in the Global Risks Report.”*

Moreover, the 2018 study included the Global Risks of Highest Concern for Doing Business (Forum, The Global Risks Report, 2018) a ranking of global risks caught by the business leaders’ opinion since 1979 up to 2017-2018. The ranking includes broad and global risks such as unemployment, financial crisis, energy, cyberattacks, data fraud and so on.

The perception in the last years shifted from the *“nuclear war”* to the *“asset price collapse and financial crisis”* to the *“environment protection”* and related technological globalization. The following chart reports the ranking list of the today’s global risks for the business (Forum, The Global Risks Report, 2018):

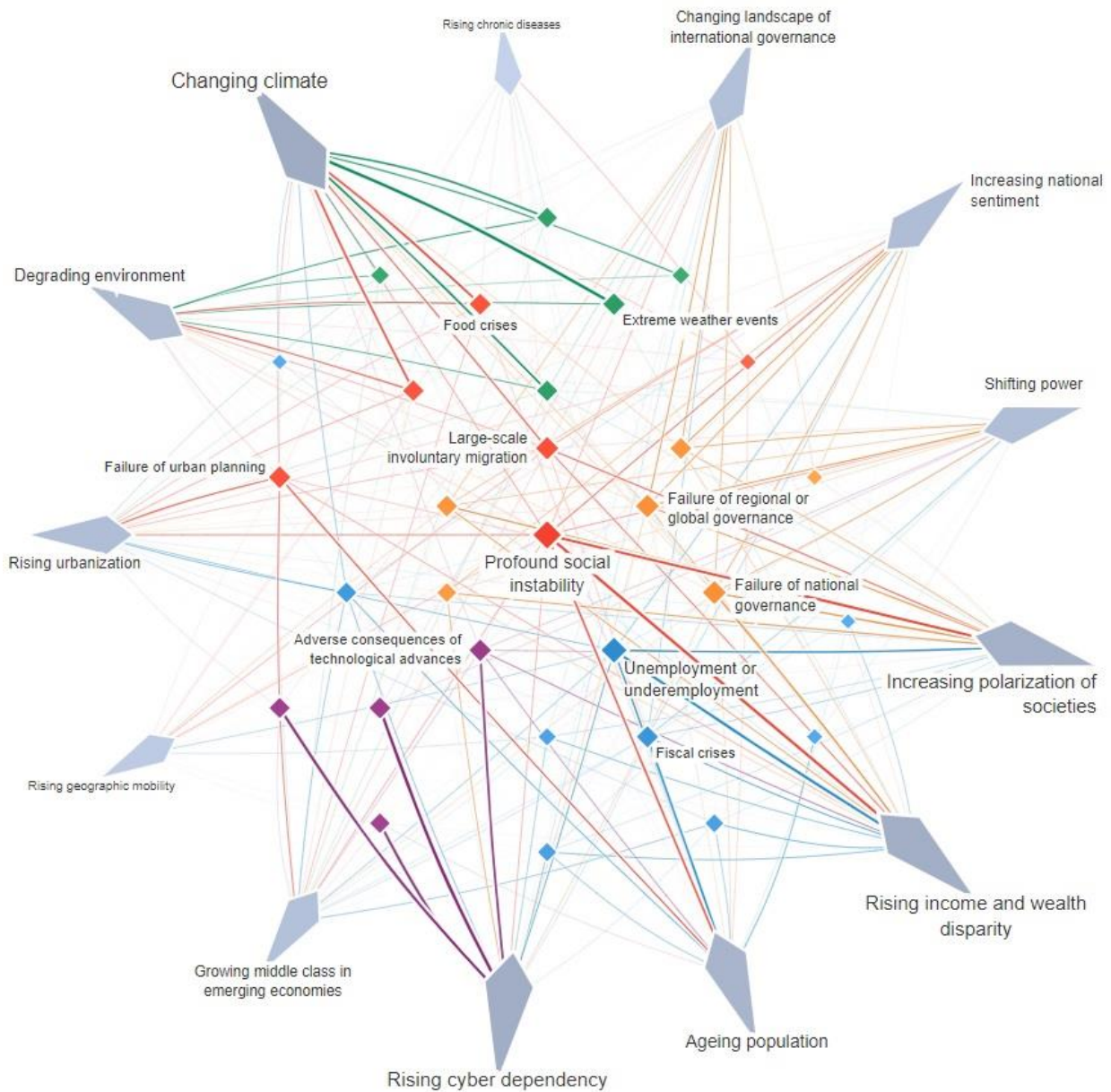


Figure 36 – The Risk-Trends Interconnections Map 2018. Narrows (trends) and Square (risks). Source: World Economic Forum Global Risk Perception Survey 2018

In the (Figure 36) is possible to see the interconnections between the today's trend and the risks perceived related to those trends. This discussion, quite far from the real estate and the document management is devoted to explaining what are the main risks that Businesses perceive during the year and how the **inductive reasonings** weight on the perception (Taleb, 2007).

Top 5 Global Risks in Terms of Impact

	2009	2010	2011	2012
1st	Asset price collapse	Asset price collapse	Fiscal crises	Major systemic financial failure
2nd	Retrenchment from globalization (developed)	Retrenchment from globalization (developed)	Climate change	Water supply crises
3rd	Oil and gas price spike	Oil price spikes	Geopolitical conflict	Food shortage crises
4th	Chronic disease	Chronic disease	Asset price collapse	Chronic fiscal imbalances
5th	Fiscal crises	Fiscal crises	Extreme energy price volatility	Extreme volatility in energy and agriculture prices

Figure 37 – Extract of Global Risk in Terms of Impact from 2009 to 2012. Colours based on the Figure 35. Source: World Economic Forum Global Risk Perception Survey 2018

Related to the inductive reasoning, then the reasoning based on what has already happened in the past, the (Figure 37) shows exactly the perception on what has happened into the financial field just after the 2008 financial crisis. People perceive the risk if it is “*advertised*”, think about Italian bridges collapses during the last 2 years.

Coming back to the perception of risks, related to this work of thesis, the aim is to generate a deductive reasoning (Taleb, 2007) on the risk perception and risk management in general applied to the **real estate field** and related importance of the **documental management** that result from it.

4.4.5 DOCUMENT RISK ASSESSMENT METHOD

As showed in the (Table 20), the main risks associated to the document missing are those related to the **people's health and safety** (includes basically all the issues of building, plants, structures, etc.) and, for this reason, it must be underlined a legal consideration. The D. Lgs. 231/2001 (and D. Lgs. 81/2008 subsequently modifications) introduced the **criminal** and **administrative** responsibility for juridical people and organizations. This extension, thanks to this law, now involves criminal responsibilities for Society's heritage, criminal penalties for CEO and Partners, that, until this decree, was not possible to pursue anyway (before the law entering, just cash- reimbursement were applied, often covered by insurance's companies).

DARM Check List					
Category	Issue	Code	Document	Expiry Date	Laws
Technical -Fire Safety Plant	Safety and accessibility in use	T.1.1	Declarations of conformity	-	D.M. 37/2008
	Safety in case of fire	T.1.2	Signed VV. F designs	-	D.P.R. 151/2011
		T.1.3	VV. F Signed opinion	-	
		T.1.4	SCIA	-	
		T.1.5	CPI or Renewals	5/10 y	D. Lgs. 139/2006
		T.1.6	Fire Safety Inspection logbook	Must be updated	
	T.1.7	Material's certificates and asseverations	5y		

Table 21 –Check List draft extract example. Source: own elaboration

In this perspective, it has been made decision of taking into consideration these factors to develop a **document risk assessment process** and, more specifically, the **risk identification** and **analysis** phases to make aware about the possible scenarios involved for a **document missing**. For carrying out a risk assessment under the documental perspective, it has been selected to mind about the **National law-framework** and **sanctions** associated to the critical document involved into the analysis. The easiest part refers to the **risk identification**, for which the risk itself is associated to the missing or applicability of the document, while; the **risk analysis** involved many reasonings and aspects to be considered because of the several topics and law-framework broadness. The law application and interpretation are for many times, hard to get and understand in a wide view especially considering that, the non-conformity associated to a specific event has not just one consequence but, on contrary, as it will show, has several and interconnected consequences¹⁵⁰.

The risk Evaluation (and criteria associated for accepting the risk of document missing), as it will see, because of its dependence on the context, then external and internal factors (Organization's policy mainly), can be treated just for concluding the risk assessment theory but, the final **risk acceptability**, will be always in charge of the Business Entity and its managers. For this was implemented an evaluation proposal based on people's safety requirements.

Given the **law framework**, the **DARM-Check List** (Table 21) has been developed to create a baseline for assessing the risk related to the missing of those compulsory documents and by doing so, for developing the **DARM Ranking Matrix** and its **procedure**. Moreover, considering the following chapter, about **sentences** and related **Civil, Administrative** and **Criminal** liabilities, it has been possible to develop the **risk assessment** (identification, analysis and an evaluation proposal) in a stronger way considering what really can happen ignoring the documental management importance into the real estate field.

¹⁵⁰ Example: in case of fire, with people damages (but no accidental killings), the consequences are related to many aspects. Civil reimbursements, Administrative, Jail, etc.

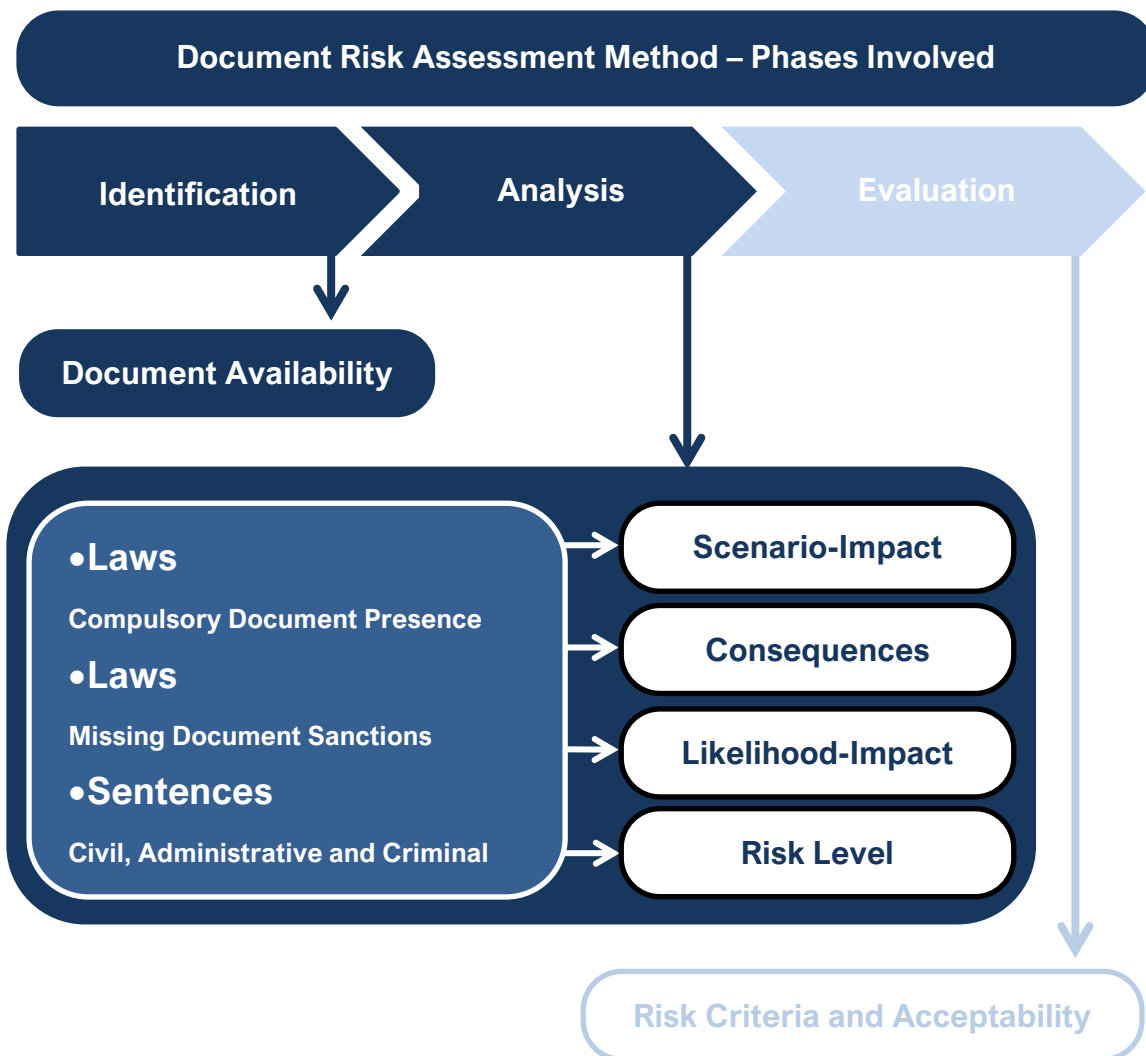


Figure 38 - Document Risk Assessment Methodology – Identification and Analysis focus.
Source: own elaboration

Because of the high relevance of the legislative framework in the last years, after the D. Lgs. 231/2001 art. 25-septies and subsequent modification given by the D. Lgs. 81/2008 art. 300 it has decided to implement for the risk assessment and treatment a focus on those laws and their applicability during the legal process for **civil, administrative and criminal liabilities** related to the document missing in case of event occurrence (Figure 38).

Moreover, considering the **D. Lgs. 81/2008, art.30**, must be ensured that the organization includes a **business management system** that ensure the compliance and the willingness with all the legal requirements:

- a. *“al rispetto degli standard tecnico-strutturali di legge relativi a attrezzature, impianti, luoghi di lavoro, agenti chimici, fisici e biologici;*
- b. *alle attività di valutazione dei rischi e di predisposizione delle misure di prevenzione e protezione conseguenti:*
- c. *alle attività di natura organizzativa, quali emergenze, primo soccorso, gestione degli appalti, riunioni periodiche di sicurezza, consultazioni dei rappresentanti dei lavoratori per la sicurezza;*
- d. *alle attività di sorveglianza sanitaria;*
- e. *alle attività di informazione e formazione dei lavoratori;*
- f. *alle attività di vigilanza con riferimento al rispetto delle procedure e delle istruzioni di lavoro in sicurezza da parte dei lavoratori;*
- g. *alla acquisizione di documentazioni e certificazioni obbligatorie di legge;*
- h. *alle periodiche verifiche dell'applicazione e dell'efficacia delle procedure adottate”.*

From this short extract, it is possible to understand the huge importance of the documents control and mandatory role of those in the risk assessment process. The following part is devoted to report the main law's liability that is possible to apply in a legal process.

Considering the D. Lgs 231/2001 (and the D. Lgs. 81/2008, art. 55 **administrative penalties** (sanctions) applicable, refer to:

- **Pecuniary** (financial) sanctions, quotes from minimum n° 100 to 1000, and from 258 € to 1549 € for each quote;
- **Debar**¹⁵¹ (ban) sanctions: stop of the activity, activity authorization removals, ban from the Public Administration, ban from financial-incentives and present incentives removals, product advertising ban;
- **Confiscating** sanctions;
- **Sentence Publication** (reputation)

Considering the (Table 20), “**Lesioni personali colpose**”, considering the work health and safety regulations violation:

- People serious damages (prognosis >40 days): from 3 months to 1-year jail or from 500 to 2.000 € sanction;
- People very serious damages (irreversible disease): from 1 to 3-years jail;
- Pecuniary sanction until maximum 250 quotes (from 258 € to 1549 € for each quote);
- In case of final sentence, it must be added the debar sanction until 6 months.

Considering the (Table 20), “**Omicidio colposo**”, considering the work health and safety regulations violation:

- From 2 to 7-years jail;
- Pecuniary sanction from 250 to 500 quotes (from 258 € to 1549 € for each quote);
- In case of final sentence, it must be added the debar sanction from 3-months to 1-year.

¹⁵¹ Translation from the legal Italian word “Interdittive”

Furthermore, the **civil penalties** have to be applied based in the National Law framework and they depend on factors that won't analysed in this work but, these liabilities have to be considered:

- **Legal process costs** to be reimbursed for each party constituted and taxes added¹⁵²;
- **Public administration** reimbursement;
- **Civil reimbursement:** to be reimbursed for each party constituted based on calculation relying on different factors. For example:
 - **Person damaged directly or indirectly:** $IBT^{153} = \text{Invalidity's Days} \times \text{Euro/Day} \times \text{Interests}$

¹⁵² In Italy, for example, some taxes have to be added: CPA (Cassa di Previdenza Avvocati) e IVA.

¹⁵³ Invalidità Biologica Temporanea

4.4.6 LEGAL SENTENCES

Taking into consideration the previous paragraphs, about *inductive reasonings*, risk management definitions and fundamentals terms, the document management as a *risk treatment tool* explanation and the related risks linked to the *transaction* and *operation* and, before going analysing the “*documental risk assessment proposal*” ; this part is devoted to beef up and reinforce the speech related to the liabilities introduced with the D. Lgs 231/2001 and subsequent modification to the art. 25-septies of the same regulation through the D. Lgs. 81/2008. The force of those decrees is implicit in the fact that, the applicability of them-selves must take place for managers and people responsible. Before those degrees’ introduction, executive managers were totally relieved from responsibilities given by their decisions and by doing so, an undervaluation of the “people safety decisions”, let’s say “job people safety rules”, was undervalued because of this low-responsibility charging.

Moreover, this part is related to highlight the **scenarios** given by the undervaluation of “daily” safety rules and the **impact** that these have on our world related to the “*simple*” document management and D. Lgs 231/2001 application. Keep in mind that, beyond the **liabilities** (administrative and criminal) given by non-applicability of the compulsory rules, what is going to be spot; is the fact that, many times, people in charge that are paid money to make important decisions, **are no longer untouchable** and those white-collars must wake up and realize that, people’ life depending on those decisions and not only the liabilities have to considered to considers people’ safety.

Thanks to the legal sentences research and thanks to the “*Olympus: osservatorio per il monitoraggio permanente della legislazione e giurisprudenza sulla sicurezza del lavoro*” and the specific section devoted to the D. Lgs 231/2001 (D. Lgs. 81/2008) applicability; it has been developed a sentences’ research-analysis devoted to highlight the importance of **documental management** and its role into the Italian jurisdictional legislation associated to specific **facts**.

Sentence	Title
N° 3671, 25 gennaio 2018	Cassazione Penale - Ruolo di un responsabile dell'Ufficio Lavori Pubblici per omessa predisposizione di un impianto idrico antincendio e per omesso CPI presso una scuola media
Fatto	1.Con sentenza del 16 Settembre 2016, il Tribunale di Santa Maria Capua Vetere, sez. dist. di Caserta, ha dichiarato la penale responsabilità di L.V., quale responsabile dell'Ufficio Lavori Pubblici del Comune di San Nicola la Strada, in ordine alle contravvenzioni di cui all'art. 46 d.lgs. 9 aprile 2008, n. 81 , condannandolo alle pene pecuniarie di legge per aver omesso di predisporre presso la scuola media statale comunale un impianto idrico antincendio conforme alla normativa vigente e di munire il plesso scolastico del certificato di prevenzione incendi .
Diritto	“...In particolare, nella prima delle richiamate decisioni, la Corte costituzionale, premesso che la disciplina normativa in esame mira, «da un lato ad assicurare l'effettività dell'osservanza delle misure di prevenzione e di protezione in tema di sicurezza e di igiene del lavoro , materia in cui l'interesse alla regolarizzazione delle violazioni, e alla correlativa tutela dei lavoratori, è di gran lunga prevalente rispetto all'applicazione della sanzione penale...»”
P.Q.M.	Annula senza rinvio la sentenza impugnata per essere i reati estinti per prescrizione
Commento	Scarico delle responsabilità fra l'imputato e il comando VV.FF di competenza fino a prescrizione e violazione delle precedenti norme processuali sull'imputato stesso.

Table 22 – Sentence n°3671, January 25th, 2018

Sentence	Title
N° 57931, 29 dicembre 2017	Cassazione Penale - Mancanza di porte di emergenza e di CPI. Cessione di ramo di azienda e responsabilità dell'amministratore della società conferente
Fatto	“Con sentenza in data 23.1.2017 il Tribunale di Taranto ha condannato V.L.B. alla pena di € 2.000 di ammenda in quanto ritenuto responsabile del reato di cui all'art. 68 comma 1 lett.b) d. Lgs. 81/2008 per non avere , in qualità di legale rappresentate della s.p.a. Fima, installato accanto ai portoni destinati alla circolazione dei veicoli, porte di emergenza per il transito dei pedoni appositamente segnalate e lasciate sgombre da impedimenti e per non avere richiesto il certificato di prevenzione antincendio, così come accertato dal Comando dei Vigili del Fuoco il 23.1.2013. ...”
Diritto	“Non avendo il ricorrente dimostrato che il certificato di prevenzione antincendio , così come la mancata predisposizione di uscite per il transito pedonale di emergenza in corrispondenza dei portoni destinati alla circolazione dei veicoli, fossero relativi alla struttura edilizia facente parte del ramo dell'azienda ceduta , ... le vicende relative alla pretesa cessione di un ramo di azienda non sono idonee ad incidere sulla titolarità in capo al soggetto che riveste la qualifica di amministratore della società conferente che, restando in vita, continua a configurare un autonomo soggetto giuridico. ...”
P.Q.M.	“Annulla la sentenza impugnata limitatamente all'applicabilità delle circostanze attenuanti generiche con rinvio per nuovo esame sul punto al Tribunale di Taranto.”
Commento	Commistione di responsabilità fra l'imputato e il soggetto firmatario della cessione del ramo d'azienda.

Table 23 - Sentence n°57931, December 29th, 2017.

Sentence	Title
N° 8092, 20 febbraio 2017	Cassazione Penale - Fiamme in un capannone di mobili. Nessun CPI, nessun sistema rilevamento fumi, nessuna misura antincendio: l'incendio non venne contrastato in nessun modo
Fatto	<p>“Con la sentenza emessa dal G.U.P. del Tribunale di Pinerolo, all'esito del giudizio abbreviato, il 21/11/2012, V.F. veniva dichiarato colpevole del reato ascrittogli e, concesse le attenuanti generiche e applicata la diminvente del rito, veniva condannato alla pena di mesi dieci e giorni venti di reclusione.</p> <p>1.1...quale amministratore delegato della D.V.M. S.r.l., società affittuaria di un capannone industriale di proprietà della IMMOBILIARE APPIA S.p.A. che la D.V.M. S.r.l. utilizzava quale magazzino di beni di arredamento...omesso di predisporre e curare l'efficienza delle minime precauzioni e delle misure di sicurezza antincendio, risultando infatti: 1) lo stabile privo del previsto certificato antincendio; 2) non funzionante il sistema di rilevazione fumi all'interno del capannone; 3) disabilitato il sistema antincendio, cagionava (o comunque non poneva in essere le condotte necessarie ad impedirne il verificarsi) un incendio di vastissime dimensioni che interessava l'intero magazzino provocando il collasso degli elementi costruttivi metallici e la totale distruzione dei beni ivi contenuti. ...”</p>
Diritto	“Il ricorso è infondato. ...”
P.Q.M.	Rigetta il ricorso e condanna il ricorrente al pagamento delle spese processuali.
Commento	Applicazione della norma (penale e pecuniaria)

Table 24 - Sentence n°8092, February 20th, 2017.

Sentence	Title
N° 31210, 20 luglio 2016	Cassazione Penale - Morti e feriti per un incendio generatosi da un container carico di rifiuti speciali pericolosi. Numerose violazioni e responsabilità amministrativa dell'impresa
Fatto	<p>“1) Delitto di cui all'art. 589, commi 1, 2 e 4, cod. pen., per avere cagionato per colpa la morte di S.S., C.S., Z.H. e S.L. e lesioni gravi ai danni di E.N., K.X., M.F. e L.S., ...</p> <p>2) Numerose violazioni della normativa antinfortunistica, per aver omesso di valutare i rischi specifici derivanti da atmosfere esplosive... (art. 290, comma 1, d. Lgs. n. 81/08 per non avere messo gli ambienti di lavoro in condizioni di sicurezza, omettendo i dovuti controlli e non aver ripartito in zone le aree a rischio (art. 291, co. 1 lett. a e b e 293, co. 1, cit. d.lgs.); per non aver previsto l'organizzazione di un servizio formativo per i lavoratori, che li istruisse sulle cautele necessarie per evitare scariche elettrostatiche (art. 293, co. 2, d.lgs. cit.); per non aver provveduto a sottoporre a revisione il documento di protezione contro le esplosioni (art. 294, co. 4, d.lgs. cit.); per aver fatto utilizzare un muletto con motore a scoppio diesel, pericoloso in relazione alle lavorazioni in corso (art. 71, co. 2, d.lgs. cit.) ... in ambienti sprovvisti di impianti di aspirazione e captazione...</p> <p>Di numerose violazioni della normativa diretta alla protezione ambientale... (art. 256, co. 1, lett. b, d.lgs. n. 152/06) ... per avere miscelato, travasato e triturato materiali speciali pericolosi in assenza di impianti di aspirazione...”</p>
Diritto	<p>“...Nel caso al vaglio, come si è visto, le emergenze probatorie non giustificano l'insorgenza di alcun ragionevole dubbio a riguardo della penale responsabilità del ricorrente in ordine a tutte le ipotesi di reato che gli vengono contestate: palesi e non</p>

specificamente poste in contestazione le plurime violazioni della normativa antinfortunistica, sullo smaltimento dei rifiuti, dell'art. 4 e 18 del d.lgs. n. 276/2003 ... non è in alcun modo eludibile la responsabilità penale a riguardo del delitto di cui all'art. 589, commi 1, 2 e 4 e d'incendio colposo, dei quali è **rimasto provato il nesso di causalità ...**”

P.Q.M.

“Dichiara inammissibili i ricorsi e condanna i ricorrenti al pagamento delle spese processuali e ciascuno al versamento della somma di euro 1500 a favore della cassa delle ammende. Condanna altresì il ricorrente M.G. alla rifusione delle spese sostenute dalle parti civili in questo giudizio, spese che si liquidano:

a) in euro 2500, oltre accessori come per legge in favore di ciascuna delle seguenti parti: Istituto Nazionale per l'Assicurazione contro gli Infortuni sul Lavoro; Camera del Lavoro Metropolitana di Milano; F.C.; M.K.; L.S.; M.F.; A.A.S.; K.X.;

b) in euro 2000, oltre accessori come per legge in favore della parte civile Comune di Paderno Dugnano.”

Commento

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[Table 25 - Sentence n°31210, July 20th, 2016.](#)

Due to be specified, is the fact that, regardless the law application at which this work is not refer to, the **facts** reported into these sentences, are those related to the people safety into the job environment. It is important to specify that, the undervaluation of documental missing and related safety regulations, drives to dramatics consequences for people' life (it will be seen in the next part).

4.4.8 ThyssenKrupp Case

It has been chosen to report an extract of one the most significant cases in terms of D. Lgs. 231/2001 (D. Lgs. 81/2008) application on the National Soil. Before starting this particular and critical analysis, a **disclaimer** has to be highlighted: the following part **is not aimed** at abusing or taking advantage of the Thyssen disaster just to reinforce the thesis but, once again, talking about D. Lgs. 231/2001 (D. Lgs. 81/2008) means, talking about **people's life**, that sometimes, are undervalued from who is paid for taking important and managerial decisions.

The following Sentence has been made through **4 years, 94 juridical hearings, 200 witnesses** and around **20 consultants**.

This is what happened during the night, **on December 5th-6th, 2007**; at the Cold Annealing and Pickling line, so called **APL5** (linea di ricottura e decapaggio).

Sentence	Title
N° 31095, 14 novembre 2011	Cassazione Penale – Sentenza ThyssenKrupp
Fatto e Diritto.	<u>L'INCENDIO:</u> <i>“L'innescò è stato causato dallo sfregamento del nastro contro la carpenteria -con formazione di scintille - ovvero o anche - da uno sfregamento del nastro contro la carta oleata...determinare il "collasso" dei flessibili ed il repentino flash fire. ... in luogo ad elevato rischio di incendio per la presenza di olio idraulico in pressione, olio di laminazione e carta imbevuta di olio di laminazione...”</i>

CAUSE IN BREVE:

Omissione, nell'ambito delle rispettive attribuzioni e competenze, di collocare impianti e apparecchi destinati a prevenire disastri ed infortuni sul lavoro:

- lo stabilimento di Torino rientrante nell'ambito delle industrie a rischio di incidenti rilevanti e **sprovvisto del certificato di prevenzione incendi**. *“La mancanza del certificato di prevenzione incendi è dato pacifico; lo stabilimento di Torino, secondo la puntigliosa ricostruzione anche riassunta durante l'arringa finale dai difensori degli imputati, operava sin dal 8/3/1985 con un "nullaosta" provvisorio ...”*;
- e di un **adeguato sistema automatico di rivelazione e spegnimento degli incendi** ... e ciò pur emergendone la necessità da più fatti e **documenti**, tra i quali:
 - “La **valutazione del rischio** d'incendio da parte delle **Compagnie di Assicurazione**: “a imporre ... una franchigia specifica di **100 milioni** di euro ben superiore alla precedente pari a 30 e doppia **rispetto a quella di 50 prevista** per gli altri tipi di impianti ...”;
 - **Le relazioni** del 16 maggio 2007, 26 giugno 2007, 31 luglio 2007, ecc., predisposte dal gruppo AXA Assicurazioni che avrebbero dovuto già far adottare misure di prevenzione e protezione dei lavoratori;
 - ...ulteriori...

“l'obbligo di installare un impianto di rilevazione e spegnimento automatico ... art. 437, 1° e 2° comma c.p. -Rimozione od omissione dolosa di cautele contro gli infortuni sul lavoro. Chiunque omette di collocare impianti, apparecchi o segnali destinati a prevenire disastri o infortuni sul lavoro, ovvero li rimuove o li danneggia, è punito con la reclusione da sei mesi a cinque anni. Se dal fatto deriva un disastro o un infortunio, la pena è della reclusione da tre a dieci anni. -”

- Controlli della **Pubblica Amministrazione**: “la questione dei controlli, nello stabilimento di Torino, da parte degli Enti pubblici preposti - Vigili del Fuoco, ma anche, v. infra, ASL e SPRESAL. ... Per quanto qui rileva, si deve ricordare che l'attività di controllo sullo stabilimento ... **non ha potuto essere compiutamente accertata** nel presente dibattito, non oltre alcuni scarni dati documentali; infatti **i funzionari e dipendenti A.S.L. addetti**, chiamati a testimoniare dai difensori degli imputati, si sono tutti **avvalsi della facoltà di non rispondere** (v. in particolare udienza 2/3/2010), quali indagati in reati connessi (art. 323 c.p. - abuso di ufficio e 479 c.p. - falsità ideologica commessa dal p.u. in atti pubblici). Anche qui (come già per le contestate false testimonianze) si tratta di separato procedimento penale, che seguirà il suo corso.”

Conclusioni del PM:

- **l'esistenza del diretto nesso di causalità** tra le condizioni (di inadempienza) e l'incendio;
- **l'esclusione del caso fortuito**, dell'imprevedibile sovrapporsi e concentrarsi di "anomalie" e, invece, la **evidente prevedibilità** da parte di tutti coloro che dirigevano, gestivano ed organizzavano il lavoro in quello stabilimento;
- **la prevedibilità anche di possibili drammatiche conseguenze - rischio per l'integrità fisica dei lavoratori** - non determinate nel caso di specie da alcuna condotta imprudente o negligente o imperita da parte degli stessi lavoratori; tanto meno, ai lavoratori si può imputare alcuna condotta "imprevedibile" e tale da spezzare il nesso di causalità esistente tra le condizioni di lavoro e l'incendio; come si è ampiamente esposto, anche quella notte essi si sono comportati secondo le direttive aziendali.

**Conseguenze
umane**

L'incendio presso la THYSSEN KRUPP ACCIAI SPECIALI TERNI s.p.a. ha avuto **diretta conseguenza** dell'incendio descritto - come sarà qui di seguito motivato - è **stata la morte di sette lavoratori**: *"S. Antonio, nato il 20/9/1971, deceduto il 6/12/2007; S. Roberto, nato il 2/9/1975, deceduto il 7/12/2007; S. Bruno, nato il 2/5/1981, deceduto il 7/12/2007; L. Angelo, nato il 16/8/1964, deceduto il 7/12/2007; M. Rocco, nato il 28/11/1953, deceduto il 17/12/2007; R. Rosario, nato il 30/10/1981, deceduto il 19/12/2007; DE. M. Giuseppe, nato il 18/3/1981, deceduto il 30/12/2007."*

Visto l'articolo 533 c.p.p.

- **ES. H. -Amministratore Delegato e membro del comitato Esecutivo-** condannato a **16 anni e 6 mesi di reclusione**, interdizione perpetua dai pubblici uffici ed incapacità di contrarre con la P.A.;
- **PU. M. -Consigliere del Consiglio di Amministrazione e membro del Comitato Esecutivo-** condannato a **13 anni e 6 mesi di reclusione** ed interdizione dai pubblici uffici per 5 anni ed incapacità di contrarre con la P.A.;
- **PR. G. -Consigliere del Consiglio di Amministrazione e membro del Comitato Esecutivo-** condannato a **13 anni e 6 mesi di reclusione** ed interdizione dai pubblici uffici per 5 anni ed incapacità di contrarre con la P.A.;
- **MO. D. -Dirigente con funzioni di Direttore dell'Area Tecnica e competenza nella pianificazione degli investimenti in sicurezza antincendio-** condannato a **10 anni e 10 mesi di reclusione** ed incapacità di contrarre con la P.A.;
- **SA. R. -Direttore dello stabilimento-** condannato a **13 anni e 6 mesi di reclusione** ed interdizione dai pubblici uffici per 5 anni ed incapacità di contrarre con la P.A.;
- **CAF. C. -Dirigente con funzioni di Responsabile dell'Area EAS (ecologia, ambiente e sicurezza) e RSPP-** condannato a **13 anni e 6 mesi di reclusione** ed interdizione dai pubblici uffici per 5 anni ed incapacità di contrarre con la P.A.

Visto il D. Lgs 231/2001, applicazione ex. Art 25-septies per illecito amministrativo alla THYSSEN KRUPP ACCIAI SPECIALI TERNI s.p.a. per il reato di Omicidio colposo aggravato

- la **sanzione pecuniaria** di € 1.000.000,00;
- la **sanzione interdittiva** della esclusione da agevolazioni, finanziamenti, ...per la durata di mesi 6;
- la **sanzione interdittiva** del divieto di pubblicizzare beni o servizi per la durata di mesi 6;
- 4) la **confisca della somma di € 800.000,00... e la pubblicazione**, per estratto e per una volta, della presente sentenza sui quotidiani a diffusione nazionale: "LA STAMPA", "IL CORRIERE DELLA SERA" e "LA REPUBBLICA"; nonché l'affissione, per estratto, nel Comune di TERNI.

Visti gli art. 538 e segg. c.p.p.; condanna gli imputati, in solido fra loro, al risarcimento del danno a favore delle seguenti parti civili costituite

- **REGIONE PIEMONTE**, della somma € 973.300,00;
- **PROVINCIA DI TORINO**, della somma di € 500.000,00;
- **COMUNE DI TORINO**, della somma di € 1.000.000,00;

Condanna gli imputati, in solido fra loro ed in solido con il responsabile civile THYSSEN KRUPP ACCIAI SPECIALI TERNI s.p.a. al risarcimento del danno a favore delle seguenti parti civili costituite:

- **FIM-CISL**, della somma di € 100.000,00;
- **FIOM-CGIL**, della somma di € 100.000,00;
- **UILM-UIL**, della somma di € 100.000,00;

- FLMU Uniti – CUB, della somma di € 100.000,00;
- ASSOCIAZIONE MEDICINA DEMOCRATICA, della somma di € 100.000,00;
- CH. G., della somma di € 237.300,00;
- T.R.G., della somma di € 221.400,00;
- C.F.D., della somma di € 100.525,00;
- S.F., della somma di € 77.055,00;
- R. P., della somma di € 141.450,00;
- B.P., della somma di € 154.430,00;
- P.S., della somma di € 233.735,00;
- P.G., della somma di € 76.600,00;
- DI F. R., della somma di € 87.795,00;

Condanna gli imputati, in solido fra loro, al risarcimento del danno a favore delle seguenti parti civili costituite:

- BO. A., della somma di € 50.000,00;
- A.G., della somma di € € 50.000,00;
- G.S., della somma di € € 30.000,00

Condanna gli imputati, in solido fra loro ed in solido con il responsabile civile THYSSEN KRUPP ACCIAI SPECIALI TERNI s.p.a., al risarcimento del danno a favore delle seguenti parti civili costituite:

- A.S., della somma di € 5.000,00;
- Z.A.E., della somma di € 50.000,00;
- V.A., della somma di € 50.000,00
- V.R., della somma di € 50.000,00
- P.M., della somma di € 50.000,00
- P.B., della somma di € 50.000,00
- B.G, della somma di € 50.000,00

- A.F., della somma di € 50.000,00
- P.G., della somma di € 50.000,00
- L.G.L., della somma di € 50.000,00
- L.R., della somma di € 50.000,00
- D'A.M., della somma di € 50.000,00
- A.S., della somma di € 50.000,00
- B.S., della somma di € 50.000,00
- D.G., della somma di € 50.000,00
- N.M., della somma di € 50.000,00
- M.J., della somma di € 50.000,00
- A.C., della somma di € 50.000,00
- M.G., della somma di € 50.000,00
- C.V., della somma di € 50.000,00
- R.G., della somma di € 50.000,00
- G.L., della somma di € 50.000,00
- A.P.I., della somma di € 50.000,00
- A.L., della somma di € 50.000,00
- G.P., della somma di € 50.000,00
- L.P.G., della somma di € 50.000,00
- G.S., della somma di € 30.000,00
- M.D., della somma di € 40.000,00
- M.S., della somma di € 40.000,00
- M.E., della somma di € 40.000,00
- P.G., della somma di € 40.000,00
- P.R., della somma di € 30.000,00
- T.L., della somma di € 30.000,00

	<p>Visto l'art. 541 c.p.p.</p> <p>Condanna gli imputati, in solido fra loro, al pagamento delle spese di costituzione e difesa a favore delle parti civili costituite, così liquidate:</p>
	<ul style="list-style-type: none"> • REGIONE PIEMONTE, della somma € 81.045,00; • PROVINCIA DI TORINO, della somma di € 81.045,00; • COMUNE DI TORINO, della somma di € 79.695,00; • BO. A., della somma € 83.767,50; • A.G., della somma € 4.511,80; • G.S., della somma € 3.421,40;
	<p>Condanna gli imputati, in solido fra loro ed in solido con il responsabile civile THYSSEN KRUPP ACCIAI SPECIALI TERNI s.p.a., al pagamento delle spese di costituzione e difesa a favore delle parti civili costituite, così liquidate:</p> <ul style="list-style-type: none"> • FIM-CISL, della somma di € 85.533,75 oltre CPA e IVA; • FIOM-CGIL, della somma di € 85.533,75 oltre CPA e IVA; • UILM-UIL, della somma di € 84.093,75 oltre CPA e IVA; • FLMU Uniti – CUB, della somma di € 90.900,00 oltre CPA e IVA; • ASSOCIAZIONE MEDICINA DEMOCRATICA, della somma di € 90.900,00 oltre CPA e IVA; • CH. G., T.R.G., C.F.D., S.F., R. P., B.P., P.S., della somma di € 114.806,25 oltre CPA e IVA, • M.D., M.S., M.E. e P.G., della somma di € 78.691,10 oltre CPA e IVA; • P.R. e T.L., della somma di € 95.445,00 oltre CPA e IVA; • DI F. R., della somma di € 68.427,00 oltre CPA e IVA; • A.S., Z.A.E., V.A., V. Renato, P.M., P.B., B.G., A.F., della somma di € 123.337,70 oltre CPA e IVA; • P.G., L.G. e L.R., della somma di € 75.071,70 oltre CPA e

	<p>IVA;</p> <ul style="list-style-type: none"> • D'A. M. e A.S., della somma di € 71.848,40 oltre CPA e IVA; • B.S., D.G., N.M., M.J., A.C., P.G., della somma di € 85.533,80 oltre CPA e IVA; • M.G., C.V., R.G., G.L., A.P.I., A.L., G.P., L.P.G. della somma di € 121.818,90 oltre CPA e IVA;
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Table 26 - ThyssenKrupp Sentence Extract. Source: Own elaboration based on the original sentence.

Critical Remarks:

The first thing that is possible to get from the (Table 26) – ThyssenKrupp Sentence – is the fact that the **impact areas** involved, especially people's life but also revenues, costs and reputation is affected by:

- The **critical document missing** (CPI, Companies Insurances reports, etc.) and related executive managers' decisions;
- The **underestimation** of those documents (totally ignorance in this case) drives to huge, dramatic **consequences** depending of different **scenarios**: normal Public Administration inspections, Companies Insurance's Inspections and Fire;
- This fact could have been avoided thanks to a better **perception of risks** connected to those relationship between causes-effects;
- Unfortunately, the **perception** is given only through the acknowledgment and the right technical risk assessment-treatment technique.

4.5 DOCUMENT RISK ASSESSMENT METHOD IMPLEMENTATION

Techniques	Risk Assessment Process				
	Risk Ident.	Risk Analysis			Risk Evaluation
		Consequence	Probability	Risk level	
Brainstorming	SA	NA	NA	NA	NA
Delphi	SA	NA	NA	NA	NA
Check-lists	SA	NA	NA	NA	NA
PHA - Primary hazard analysis	SA	NA	NA	NA	NA
Hazard and operability (HAZOP)	SA	SA	A	A	A
Environmental risk assessment	SA	SA	SA	SA	SA
SWIFT – what if	SA	SA	SA	SA	SA
Scenario analysis	SA	SA	A	A	A
Root cause analysis	NA	SA	SA	SA	SA
Failure mode effect analysis	SA	SA	SA	SA	SA
Fault tree analysis	A	NA	SA	A	A
Event tree analysis	A	SA	A	A	NA
Cause and consequence analysis	A	SA	SA	A	A
Cause-and-effect analysis	SA	SA	NA	NA	NA
Decision tree	NA	SA	SA	A	A
Human reliability analysis	SA	SA	SA	SA	A
Reliability centered maintenance	SA	SA	SA	SA	SA
Markov analysis	A	SA	NA	NA	NA
Monte Carlo simulation	NA	NA	NA	NA	SA
FN Curves - ALARP	A	SA	SA	A	SA
Consequence/Prob.ty matrix	SA	SA	SA	SA	A
Cost/benefit analysis	A	SA	A	A	A
Multi-criteria decision analysis (MCDA)	A	SA	A	SA	A

Table 27 - Applicability Techniques into the Risk Assessment process. SA-Strongly Applicable, NA – Not Applicable, A - Applicable Source: Elaboration from the ISO 31010 standard.

Related to the **critical document**, in order to have an idea about some **techniques** for the risk assessment phase and the tools applicable for each phase, it has been chosen to report in the previous part (Table 27) an elaboration of the main techniques applied in the risk assessment process and the related identification, analysis and evaluation activity thanks to the **ISO 31010 standard** that provides an exhaustive list regarding the tools-techniques, the related explanation and the application field.

As mentioned into the literature review at the beginning of this dissertation, the positioning of this work is to create a link between the documental management, mainly related to the compulsory documents and, the risk assessment techniques already existing applied to the real estate field. In the (Table 27) are reported many (not all) techniques contained into the ISO 31010 that unfortunately, are useful just a part.

This part results a base for the due diligence maker that, due to the different nature of different building that could face with, could modify and adjust on the own needs the DARM tool. Basically, based on the previous information regarding the main **National laws and regulation, aims' Organization (Context Establishment phase) and sentences**, it results possible to **bestow the importance** to each **specific document** considering different **scenarios** and then related **consequences**, given that **missing document**.

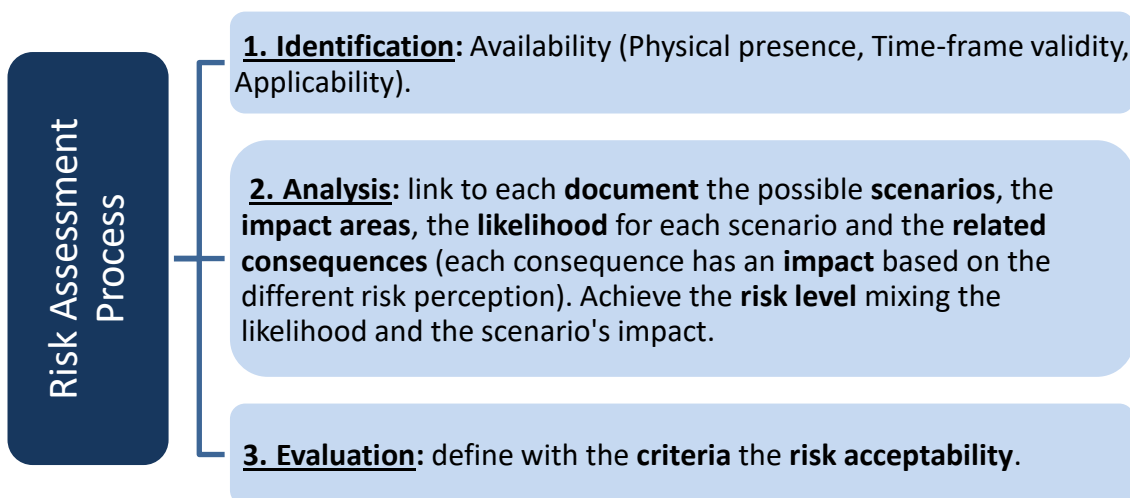


Figure 39 - Risk assessment process for the proposal.

Documental Risk Assessment Application

Using and mixing up three different parts of the risk assessment techniques reported into (Table 27); respectively, PHA, Scenario analysis and Consequence/Probability Matrix is possible to apply the **risk assessment** technique to the *critical document missing risk* (**1. Identification Phase** - document missing, non-validity and/or non-applicability) based on the **D. Lgs 231/2001 and D. Lgs. 81/2008 application**.

2. Risk Analysis - Scenarios and Impact Areas:

First is possible to list the likely **scenarios** linked to the document it wants be analysed: Public Administration inspections, Fires' scenarios, TDD inspections of third parties or Third parties' Companies Inspection, etc. Then, for each scenario; it has to be linked the **impact's area** that the scenario itself will affect. Reclaiming the impact risk area of the AS/NZS 4360 standard (Table 28), is possible to link and associate what it has just said above.

IMPACT RISK AREAS

Organization's resources (workers, machineries, buildings, etc)
Revenues and earnings of third part
Direct-indirect activity's costs
People (also external)
Community at which the organization relates (public administration, suppliers, etc.)
Times for the organization's activity
Environment
Third Organizations (insurances companies, etc)
Intangibles (reputations, brand, etc.)

Table 28 - Impact Risk Areas. Source: elaboration from AS/NZS 4360 Standard

The consequences and their impact.

As it has just seen in previous paragraphs, the consequences are different depending on different scenarios. Laws and Regulations, especially in Italy,

report the sanctions associated to each different legal non-conformity under the administrative, civil and criminal aspects.

What is hard to get from the law is, the interpretation and the link between the document missing and what derives from that non-conformity in terms of sanctions applicability. In this perspective, it has been associated to the critical document missing (especially, for the operational risk part) a law-sanction-consequence example connected to the D. Lgs 231/2001.

Risk: Document Missing, not Valid or not Applicable		
Scenario example	Consequences	Impact
PA Inspection	- Administrative sanctions: pecuniary ≤ € 2.500,00	Low
Third Party Inspection (TDD – Insurance or other aims assessment)	- Transaction's discounts; - Higher Insurance deductibles (franchigie), etc.; - Third Party's Reputation	Medium
PA Inspection	- Criminal Sanctions translated to administrative one (pecuniary); - Pecuniary sanctions ≥ € 2.500,00 ; - Reputation with no sentence publication	Medium-High
Critical event with people's damage or killing	- Criminal Sanctions (jail); - Administrative sanctions: pecuniary ≥ € 2.500,00, debar (activity stop and ban from incentives and PA offices), confiscating (pre-issued incentives and capitals) and sentence publication (deposit and publication on the main newspapers - reputation); - Civil sanctions: reimbursement for damage and for trial-jurisdictional costs.	High

Table 29 - Risk, Scenario, Consequences and Consequences' criticism example. Source: own elaboration based on National Laws.

2. Risk Analysis - The Scenarios and their Likelihood.

Each scenario, that must be considered regardless its likelihood but, has to be tangible in its being. This concept is different from the scenario likelihood, for which it has to be considered the relevant scenario irrespective its low occurrence (Taleb, 2007). In this perspective, to maintain the operativity of the tool and its applicability, it has been considered three likelihood levels that, could be modified based on past data event for inspections, while for critical events, this results the so-called “**Black Swan**” that anyway, must be considered.

Risk: Document Missing, not Valid or not Applicable		
Scenario example	Consequences	Likelihood
PA Inspection	- Administrative sanctions: pecuniary ≤ € 2.500,00	Likely
Third Party Inspection (TDD – Insurance or other aims assessment)	- Transaction’s discounts; - Higher Insurance deductibles (franchigie), etc.; - Third Party’s Reputation	Very Likely
PA Inspection	- Criminal Sanctions translated to administrative one (pecuniary); - Pecuniary sanctions ≥ € 2.500,00 ; - Reputation with no sentence publication	Likely
Critical event with people’s damage or killing	- Criminal Sanctions (jail); - Administrative sanctions: pecuniary ≥ € 2.500,00, debar (activity stop and ban from incentives and PA offices), confiscating (pre-issued incentives and capitals) and sentence publication (deposit and publication on the main newspapers - reputation); - Civil sanctions: reimbursement for damage and for trial-jurisdictional costs.	Unlikely

Table 30 - Risk, Scenario, Consequences and Consequences' Likelihood. Source: own elaboration based on National Laws.

2. Risk Analysis - Consequence/Probability Matrix:

Before going to **the critical document risk assessment table**, it has to be defined the **Risk Level** through the risk assessment techniques so-called consequence/probability matrix (IEC, ISO 31010:2009 - Risk Management - Risk Assessment Techniques, 2009). The latter is made up based on the Law-National Framework, Internal Organization policies and other standards or regulations (ISO, ISO 73:2009 - Risk Management Vocabulary, 2009) and moreover, this matrix, is a mixing of combining qualitative or semi-quantitative ratings of consequence and probability to produce a **level of risk**.

Based on the previous analysis “**Risk-Scenario-Consequences-Impact and Likelihood**”, it is possible to build the Consequence/Probability¹⁵⁴ Matrix in order understand the acceptability of the critical document missing. The risk level has been considered in 4 levels based on the **Likelihood x Impact** formula (codification: I = low, II = medium, III = medium-high, IV = high).

Likelihood (L)	Very Likely	II	III	IV	IV
	Likely	I	II	III	IV
	Unlikely	I	I	II	IV
Risk Level (L x C)		Low	Medium	Med-High	High
		Consequence Impact (I)			

Table 31 - Risk Level determination through Consequence / Probability Matrix. Source: own elaboration based on ISO 31010 standard.

¹⁵⁴ **BN:** Section 1.4 reports “ISO/IEC Guide 73 uses the word *-probability-* in this general sense, to avoid translation problems of *-likelihood-* in some non-English languages that have no direct equivalent. Because *-probability-* is often interpreted more formally in English as a mathematical term, *-likelihood-* is used throughout this standard, with the intent that it should have the same broad interpretation as *-probability-* as defined in ISO/IEC Guide 73” Source: AS/NZS 4360.

Criteria Definition - Scenario's Acceptability:

Based on the previous phase, the risk level assessment (Table 31), the next task is to create a **criteria** for assessing the **scenario's acceptability** that, following the risk management process (and then the risk assessment in our case) drives to the **risk evaluation** as final phase of the macro-risk assessment process (IEC, ISO 31010:2009 - Risk Management - Risk Assessment Techniques, 2009).

$$Risk\ Level = Likelihood\ (L) * Criticism\ (C)$$

Reminding the **Likelihood x Impact** formula, where level **I = low**, **II = medium**, **III = medium-high**, **IV = high** is possible to define the acceptability criteria for scenarios take into consideration.

Acceptability Criteria (Y/N)	Code	Risk Level
(Y) Acceptable – no intervention	I	Low
(N) Not Acceptable – Risk treatment can be considered	II	Medium
(N) Not Acceptable - Risk treatment to reduce the risk level at acceptable (valued case by case)	III	Medium-High
(N) Not Acceptable ¹⁵⁵ - Sudden Risk treatment intervention to reduce the risk level	IV	High

Table 32 – Risk level criteria acceptability for each scenario. Source: own elaboration

Considered the (Table 32) it is possible to accept or not the risk associated to each scenario and doing so, is moreover possible to value the risk associated to the **macro-risk of critical document missing**. Due to the fact that; it is present a several series of scenarios and criteria, in order to get the last phase of **risk**

¹⁵⁵ For example, as it will show in the next part, the CPI missing is not acceptable, and it must be considered the sudden intervention of document alignment based on the document obtaining procedure given by the D.P.R. 151/2001 – Fire Safety Italian Law.

evaluation (Y/N) related to the document missing acceptance, it necessary to consider some factors in order to define whether the document missing is acceptable or not.

3. Risk Evaluation¹⁵⁶ Proposal - Suggestion:

Then, taking into account the previous consideration, it is possible to state that, to determine **the acceptance** (then the evaluation) of critical document missing, can be considered the following **sub-criteria system** (Table 32) linked to the criteria for each scenario (that can be modified according to the organization's policy and National law framework)and then, **don't accept the risk**, whether:

- Connected to a specific document, there is associated even just one **high-risk level**;
- Connected to a specific document, there are 30% or more **medium** and/or **medium-high risk levels**;
- Connected to a specific document, there are at least 50% or more **Low** and/or **medium risk levels**.

As previously mentioned, **the risk Evaluation** (and criteria associated for accepting the risk of document missing), because of its **dependence on the context**, then external and internal factors (Organization's policy mainly), is treated for concluding the risk assessment theory but, the final **risk acceptability**, will be always in charge of the Business Entity and its managers. For this was implemented an evaluation proposal based on **impacts on people's safety** and/or **Organization's reputation**.

¹⁵⁶ The Risk Evaluation, as previously mentioned, has been reported as an example with different paraments possible to apply. Anyway, they must be considered according to the organization.

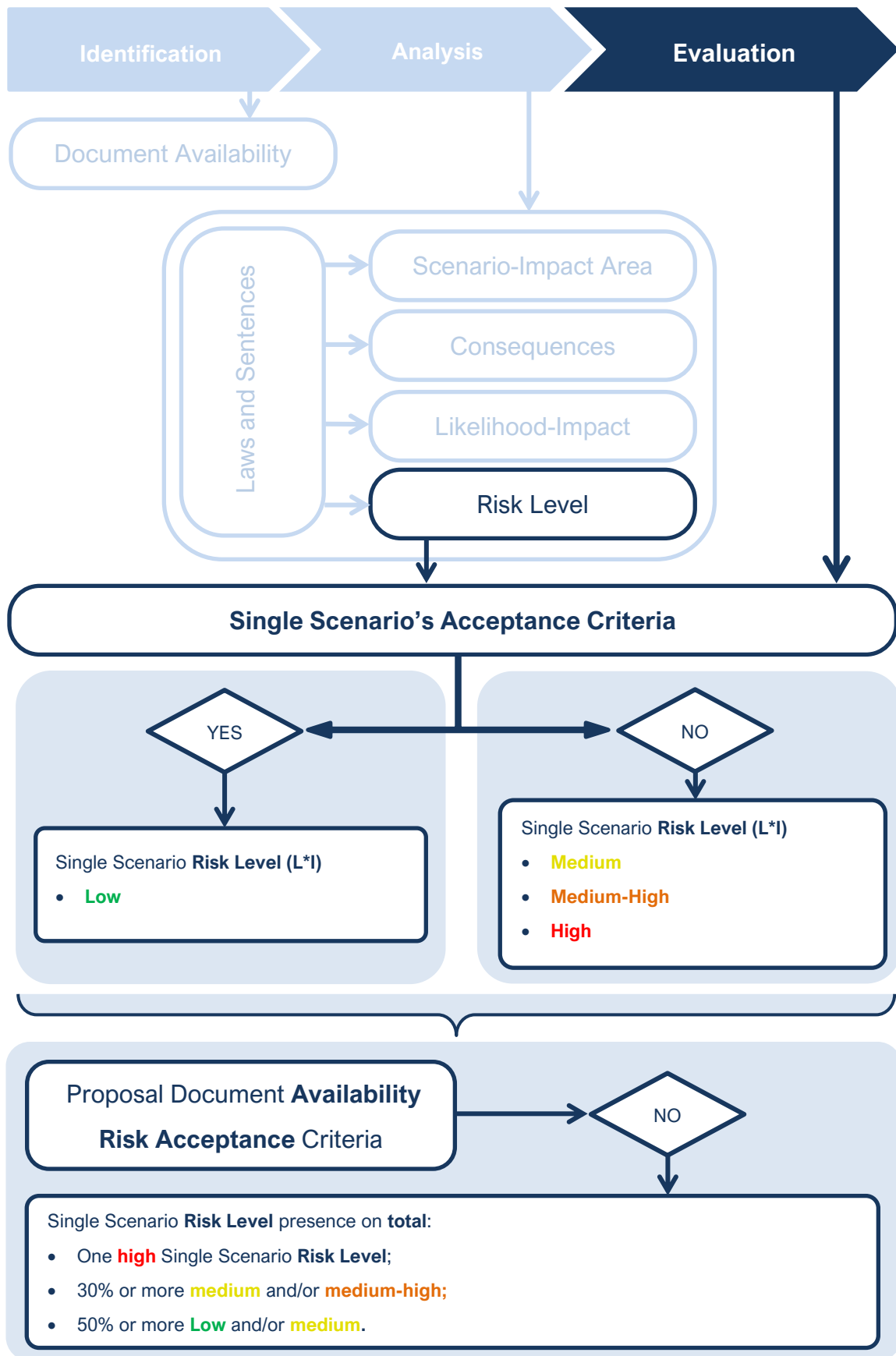


Figure 40 - Document Risk Assessment Methodology – Evaluation Proposal focus. Source: own elaboration based on (Figure 38)

Critical Remarks:

- The **evaluation** is a **dissertation's proposal** (Figure 40), can be modified according to the external (National laws) and internal context (Organization's policy);
- The proposal can be applied and modified to **different document** and for each of them, **different criteria** must be considered;
- The risk perception is given by the consequences that are affected by internal policies but moreover, by National law-framework;
- Mind the **reputation damage** as critical for possible future consequences, often hard to estimate but, typically with heavy impacts.
- Always to be considered the People's safety, regardless the risk assessment process selected. A **people's safety** will be always a **critical issue** and the, **high impact** to be considered.

Document Risk Assessment Sheet – General Structure:

The document assessment process can be applied to different and **multiple documents** derived from the law-framework and related scenario, impact area, responsibilities-consequences, likelihood and impact. As follows, has been reported the general structure of a **document risk assessment sheet** and moreover, the **practical application**, focusing the attention on the fire safety documentation, in particular, the CPI.

Risk Identification		Risk Analysis							Criteria	Risk Evaluation
Risk: Document Availability: Physical, Validity, Applicability	Scenario	Impact Area	Law-Reference	Consequences	Likelihood (L)	Impact (I)	Risk Level (L*I)	Scenario's acceptability (Y/N)	Risk Acceptability (Y/N)	
Document Code: L.XX - T.XX	Scenario 1	Area 1, 2, 3, etc	/	Consequence 1 Consequence 2 Consequence 3	/	/	/	/	(Y/N)	
	Scenario 2	Area 1, 2, 3, etc	/	Consequence 1 Consequence 2 Consequence 3	/	/	/	/	(Y/N)	
	Scenario 3	Area 1, 2, 3, etc	/	Consequence 1 Consequence 2 Consequence 3	/	/	/	/	(Y/N)	
	Scenario 1	Area 1, 2, 3, etc	/	Consequence 1 Consequence 2 Consequence 3	/	/	/	/	(Y/N)	
	Scenario 2	Area 1, 2, 3, etc	/	Consequence 1 Consequence 2 Consequence 3	/	/	/	/	(Y/N)	
	Scenario 3	Area 1, 2, 3, etc	/	Consequence 1 Consequence 2 Consequence 3	/	/	/	/	(Y/N)	
	Scenario 1	Area 1, 2, 3, etc	/	Consequence 1 Consequence 2 Consequence 3	/	/	/	/	(Y/N)	
	Scenario 2	Area 1, 2, 3, etc	/	Consequence 1 Consequence 2 Consequence 3	/	/	/	/	(Y/N)	
	Scenario 3	Area 1, 2, 3, etc	/	Consequence 1 Consequence 2 Consequence 3	/	/	/	/	(Y/N)	

Figure 41 – Document Risk Assessment Sheet for different documents.

Risk Identification	Risk Analysis							Risk Evaluation	
	Scenario	Impact Area	Law-Reference	Consequences	Likelihood (L)	Impact (I)	Risk Level (L*I)	Criteria Scenario's acceptability (Y/N)	Risk Acceptability (Y/N)
Risk Document Availability: Physical, Validity, Applicability Document Code: CPI T.13	PA (ASL, ISPELS, ARPA.) Inspection	Costs	DPR 139/2006, art. 16. C1	Under arrest responsible until 1 year jail or from 258 to 2.582 euros sanctions Under arrest responsible until 1 year jail or from 258 to 2.582 euros sanctions	Likely	Low	Low	Y	
	Fire: items damage	Costs, Resources, Revenues, Reputation	DPR 139/2006, art. 16. C1	Denied insurance reimbursements or higher deductibles Materials and goods damages Reputation	Unlikely	Medium-High	Medium	N	
	Fire: people damage (prognosis >40 days)	People, Costs, Resources, Revenues, Reputation	D.Lgs 81/2008 (D.Lgs 231/2001, ex. Art 25-septies - 590cp e 583 cp c.1)	Administrative sanctions: Pecuniary until 250 quotes (from 258 € to 1549 € for each quote); Debans until 6months and Confiscating. From 3 months to 1-year jail or from 500 to 2.000 € sanction Civil sanctions reimbursements toward damaged parties	Unlikely	High	High	N	
	Fire: heavy people damage (Incurable disease)	People, Costs, Resources, Revenues, Reputation	D.Lgs 81/2008 (D.Lgs 231/2001, ex. Art 25-septies - 590cp e 583 cp c.2)	Reputation due to the sentence publication Administrative sanctions: Pecuniary until 250 quotes (from 258 € to 1549 € for each quote); Debans until 6months and Confiscating. From 3 months to 1-year jail Civil sanctions reimbursements toward damaged parties	Unlikely	High	High	N	N
	Fire: accidental killing	People, Costs, Resources, Revenues, Reputation	D.Lgs 81/2008 (D.Lgs 231/2001, ex. Art 25-septies - 589 cp)	Administrative sanctions: Pecuniary from 250 to 500 quotes (from 258 € to 1549 € for each quote); Debans from 3-months to 1-year and Confiscating. From 2 to 7-years jail Civil sanctions reimbursements toward damaged parties	Unlikely	High	High	N	
	Third Party Inspection (TDD – Vendor)	Costs, Revenues, Reputation	//	Reputation due to the sentence publication Higher transaction discount based on realignment costs Reputation	Likely	Medium	Medium	N	
	Third Party Inspection (TDD – Insurance)	Costs, Revenues, Reputation	//	Higher insurance costs: Premium and Deductibles Reputation	Very Likely	Medium-High	Medium-high	N	

Figure 42 - Document Risk Assessment application on CPI document.

Based on the previous consideration about the documental risk assessment method, the practical application to the CPI document has been carried out through the National Law-framework. Especially considering the **applicable laws** and the **criminal sentences** in order to verify whether the laws have been used during the jurisdictional process and moreover, in what measure.

Considering the risk identification and analysis above mentioned and explained, the **risk level** results much more over the acceptability criteria considered and, in order to fulfil these parameters for the evaluation activity; the **risk** for the document missing related to the CPI is strongly oriented to the “non-acceptability”.

Once again, applying the risk assessment techniques, the documental management into the real estate field, considering the **people’s safety** requirements (D. Lgs. 231/2001 and D. Lgs 81/2008) is able, to assess the risk associated to the operation. But, more important, is able to assess the risk associated to the people’s health.

4.6 DARM: THE TOOL PROCEDURE

The DARM's purpose is to simplify the documental audit for getting at the end a building's **flag analysis rank** about documents for the **transaction** and the **operations risks** as well. Then the DARM, results a document control tool for assessing the documental compliance for which, it has been already underlined its importance as **risk treatment tool**.

The “**DARM Procedure**” includes the **DARM - Ranking Matrix** and the **DARM-Check list**. They are based on the following schemes and tables treated in the previous chapters:

- (Table 20) – Laws-Regulation Extract connected to administrative and criminal responsibilities linked to the documents for the risk sharing;
- (Table 22), (Table 23), (Table 24), (Table 25), (Table 26) – Criminal Sentences;
- (Table 3) - Summary table about 3 main categories of archives and related contents
- (Table 11) – CPR EU n°305/2011 from which it has been possible to extract the main building's requirements, associating the main documents based on National Laws (Table 20);
- (Table 12) - Administrative Property and Cadastre documentation based on the National Laws (Table 20);
- (Figure 25) - Logistics building technical breakdown structure;
- (4.5 Document Risk Assessment Method)

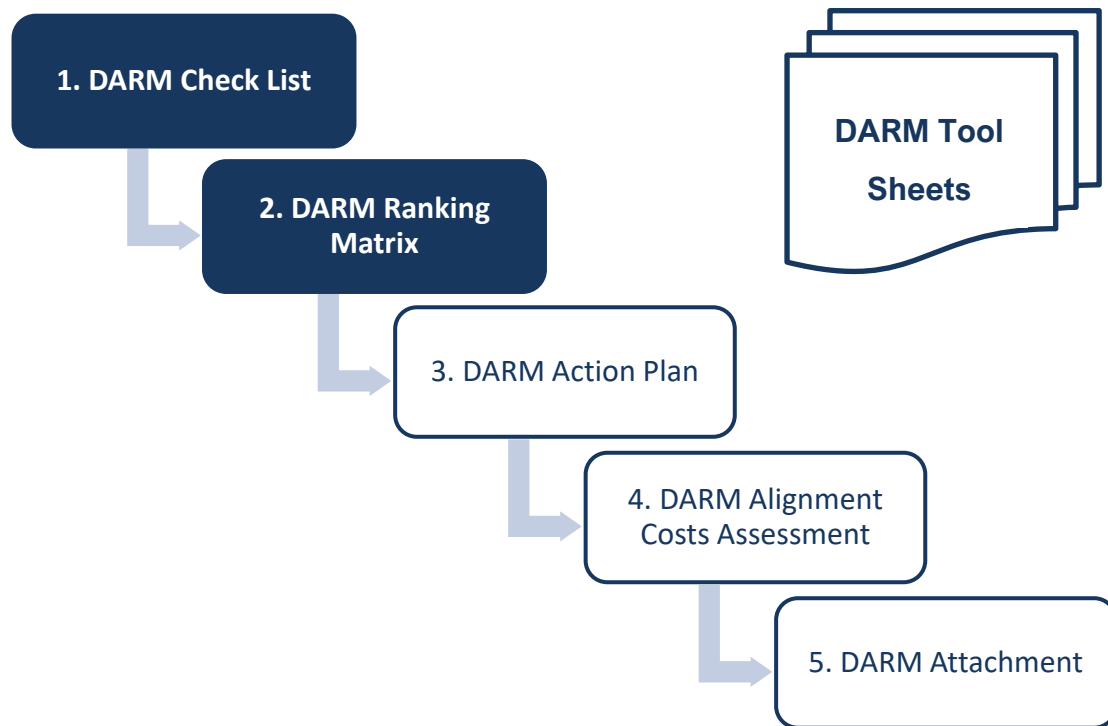


Figure 43 - DARM documents composition.

Positioning - Players

As already mentioned into the chapter (4.3.1 Composition, Aim and Positioning in the); **the DARM** is applicable for many real estate stakeholders but, it is important to state that, this dissertation is aimed at focusing and applying the tool for the **Acquisition or Insurance Third-Party Due Diligence**, especially in the **desktop activity phase** (the first and the most important one).

Scaling:

*“Do things that don’t scale”*¹⁵⁷. The DARM is applied at the beginning for working on single buildings or few of them. It will be able to be scaled once the testing phase and the real application with the adjustments will be done.

¹⁵⁷ Paul Graham’s advice.

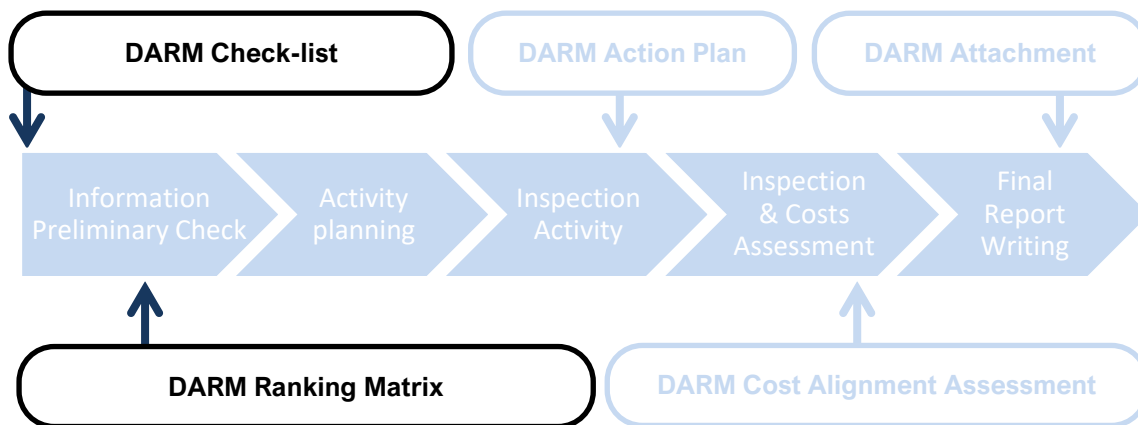


Figure 44 - DARM Procedure – DARM documents positioning into the due diligence process explanation

6. **DARM - Check List:** At the beginning of the first phase “*Information preliminary check*” related to the check list sent to the property;
7. **DARM - Ranking Matrix:** During the Documental Audit (always during the first phase) for filling the tool in order to assess the building through the “desktop” activity, so the document control;
8. **Future DARM Implementation:** for making an *action plan* before the walkthrough and after it, carry out the documental audit updating;
9. **Future DARM Implementation:** Into the “*Inspection and cost assessment*” for assessing the alignment costs for documents missing;
10. **Future DARM Implementation:** Used as the attachment for the “*final report writing*” useful for the Due Diligence’s Client in order to understand deeper in detail what has been analysed and why some discount costs have arisen.

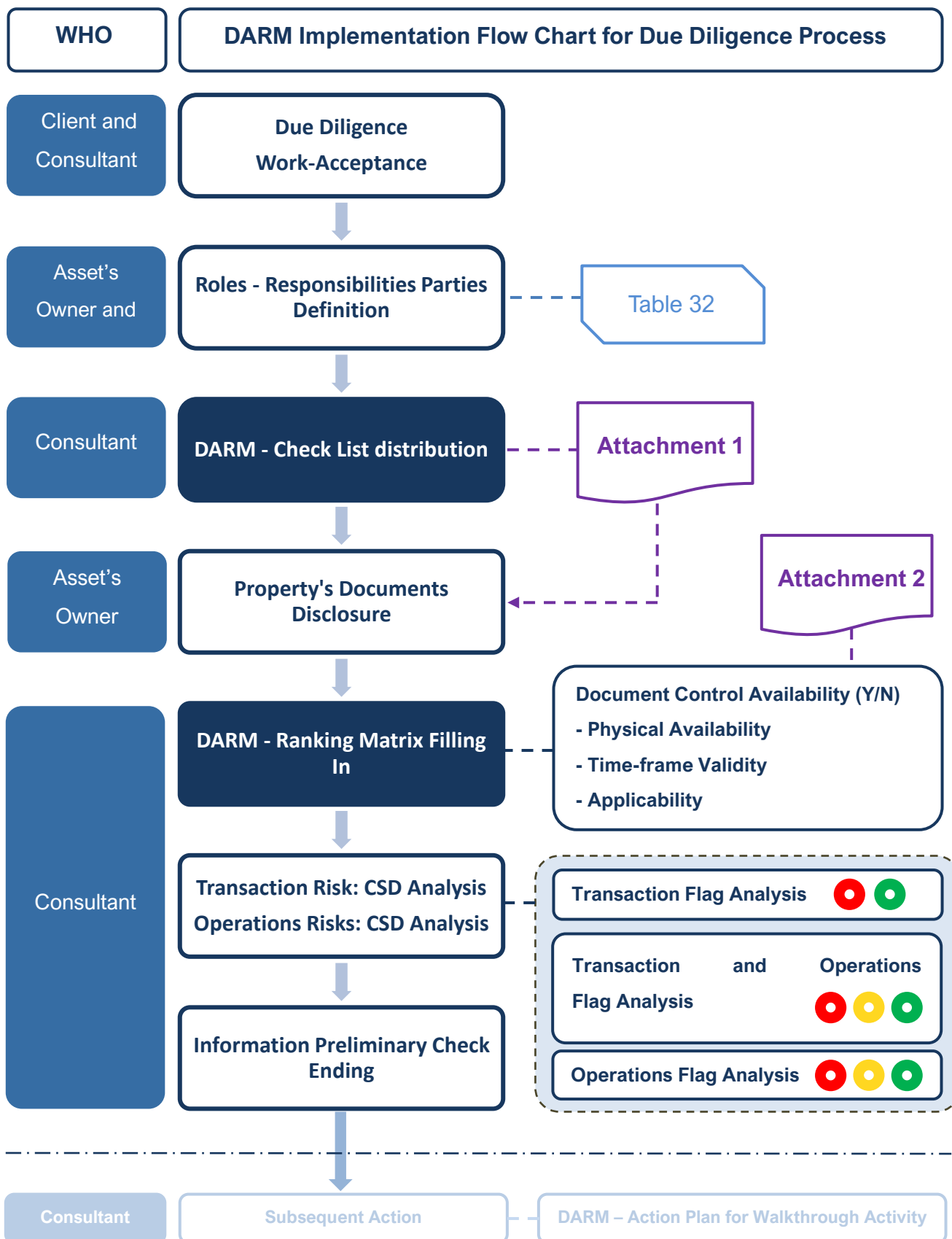


Figure 45 – DARM Procedure Flow Chart for Due Diligence Process – Desktop Activity.

4.6.1 Role and Responsibilities definition

The first step in using this tool, but anyway applied for many others, is to define the **operative roles** and **responsibilities** considering the parties involved (UNI10998:2002).

Party	Role	Responsibility
Property	Technical or General Services Property Coordinator	Central role of coordination by Property. Front point at which the Head of Due Diligence can discuss and set strategical decisions with the Head of due diligence.
	Technical or General Services Property Assistant	Person at which is possible to ask during the due diligence process information and documents integration.
TDD Company	Head Team	Central coordinator of the due diligence team makes strategical decisions with the Property Coordinator and reviews the work during all the phases until the final one.
	Senior Team	Coordination of the work (also on site during the walkthrough), critical documental analysis and breakdown organization, meeting and discussion with the head for high critic's issues and final report writing.
	Jr. or Assistant	Desktop activity about the main and common issues, Walt through and photo-report set in coordination with the Senior.

Table 33 – Roles and Responsibilities example for a due diligence coordination.

4.6.2 DARM-Check List distribution:

DARM - CHECK LIST									
CATEGORY	ISSUE	TOPIC	CODE	DOCUMENT TEAR 1	DOCUMENT TEAR 2	EXPIRY DATE STATUS	REGULATIONS & STANDARDS	Titles of laws	
TECHNICAL	FIRE SAFETY	Safety and accessibility in use	T.1.13	Pratica VVFF	Dichiarazioni di conformità per ogni tipo d'impianto antincendio (Foam, Tank, SPK, Hydrants, Pumps, Special plants)	A	D.M. 37/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante riordino delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.	
						A			
TECHNICAL	Fire safety system	Safety in case of fire	T.1.13	Pratica VVFF	Elaborati grafici VVFF e Relazione tecnica (siglati)	A			
					Parere di conformità VVFF (favorevole)	A	D.M. 26/06/1984 art. 9	Classificazione di reazione al fuoco ed omologazione dei materiali ai fini della prevenzione incendi.	
					Dichiarazione VVFF dei materiali (blocchi, porte tagliafuoco, portoni sezionali)	B	D. Lgs. 139/2006 art. 16	Riassetto delle disposizioni relative alle funzioni ed ai compiti del Corpo nazionale dei vigili del fuoco	
					Asseverazione ai fini della sicurezza antincendio	A			
					SCIA (siglata)	A	D.P.R. 151/2011	Regolamento recante semplificazione della disciplina dei procedimenti relativi alla prevenzione degli incendi	
					Verbale tecnico d'ispezione (facoltativo)	D			
					CPI/Attestazione di rinnovo di conformità antincendio	B	D.M. 7/08/2012	Disposizioni relative alle modalità di presentazione delle istanze concernenti i procedimenti di prevenzione incendi e alla documentazione da allegare	
					Registro antincendio	C			

Figure 46 – DARM - Check List extract - Fire Safety documentation part.

First step is to send the entire **check list** to the Person-Subject who is in charge for the Asset (Table 33) deal and the Virtual Data Room (or Physical) coordination considering the “**Property Party**”.

The **Property** once received the check-list can prepare and set for the disclosure phase toward the due diligence maker.

The DARM Check-List composition:

- **Legal and Technical Category and Sub-Category:** Building Titles, Cadastre, City Planning Constraints, Building Activity, Structure, Substructure and Plants;
- **Topic – Requirement:** Based on the CPR n°305/2001, it has been associated a building’s requirement/s for the **Property** better understanding;
- **Codification:** each document must be codified, in this case L.XX and T.XX stand for respectively, L=Legal and T=Technical with associated an incremental number;
- **Document Tear 1:** level 1 about the proper single document or set, named by law;
- **Document Tear 2:** sub-documents asked, some of them are present in the single document cell but, because of their interconnection, it must be replicated¹⁵⁸;
- **Expiry Date Status** (Table 34): It has been selected to bestow a category for each document in order to better understand the time-frame validity;
- **Reference Law:** Law, Regulation, Article and commas references;
- **Title of law**

¹⁵⁸ For example: the “Certificato di Collaudo Statico” is present as sub document of the “Agibilità” but, also as principal document for the Technical category- Structure. This is due to the relation among different documents.

EXPIRY DATE STATUS

Category	Explanation
A	Documents with a validity > 15 years
B	Documents with a validity > 2 ≤ 15 years
C	Documents with a validity ≤ 2 years
D	Documents with a variable validity or not definable

Table 34 – Document Expiry Date Status categories

In the (Table 35) is possible to understand that; the **DARM-check-list** is the fundamental first part of the DARM procedure for better preparing the Property to the disclosure phase of the process.

Understanding the whole documents' set forward is also useful for define in a better way, the time-frame related to the virtual or physical data room. Sometime the Property have outsourced some pure operative parts or operations such as facility services and, by doing so, more time could be useful for gathering the entire document amount.

DARM - CHECK LIST								
CATEGORY	ISSUE	TOPIC	CODE	DOCUMENT TEAR 1	DOCUMENT TEAR 2	EXPIRY DATE STATUS	REGULATIONS & STANDARDS	Titles of laws
LEGAL	Fire holder & Administrative	Property constraints	L.1.1	400 note di compromesso	-	A	-	-
			L.1.2	Atto di compromesso	-	A	-	-
			L.1.3	Contratto di locazione	-	A	-	-
			L.1.4	Iscrizione ipotecaria	-	A	-	-
			L.1.5	Regolamento della società condominiale	-	D	-	-
	Cadastral	Property's information and cadastral identifications	L.1.1	Certificato catastale	-	A	L.132/2008 art. 15	Conversione in legge, con modificazioni, del decreto legge 11 maggio 2005, n. 76, recante misure urgenti in materia di stabilizzazione finanziaria e di competitività economica
			L.1.2	Tavola catastale (info storica)	-	A	-	-
			L.1.3	Piùmetri catastale	-	A	-	-
	City Planning Strengths and Constraints	Property's information and cadastral identifications	L.1.4	Denuncia di accatastramento	-	A	-	-
			L.1.5	Tavola catastale	-	A	-	-
L.1.6			CDU - Certificato di destinazione urbanistica	-	A	D.P.R. 380/2001 art. 30	Testo unico delle disposizioni legislative e regolamentari in materia edilizia	
Building Times	Safety and accessibility in use (built past 1987)	L.1.1	Permessi di costruire	-	A	D.P.R. 146/2001	Testo unico delle disposizioni legislative e regolamentari in materia edilizia	
		L.1.2	Permessi di costruire	-	A	-	-	
		L.1.3	Conservazione urbanistica	-	A	L.241/1998 art. 11	Nuove norme sul procedimento amministrativo	
		L.1.4	Conservazione edilizia	-	A	-	-	
BUILDING	Safety and accessibility in use	Safety and accessibility in use	L.1.1	Certificato di agibilità	-	A	D.P.R. 380/2001 art. 24	Testo unico delle disposizioni legislative e regolamentari in materia edilizia
			L.1.2	Atto di agibilità	-	A	-	-
			L.1.3	Aggiornamento catastale	-	A	D. Lgs. 222/2006	Individuazione dei procedimenti soggetti ad autorizzazione, segnalazione certificata di inizio attività (SCIA), licenze esecutive e autorizzazioni e di definizione dei regimi amministrativi applicabili a determinate attività e procedimenti
			L.1.4	Dichiarazione di conformità degli impianti	-	A	-	-
			L.1.5	Misure delle manufatti	-	D	D.P.R. 380/2001	Testo unico delle disposizioni legislative e regolamentari in materia edilizia
	Activity	Energy economy and heat re-use	L.1.1	Verifica di compatibilità energetica	-	A	-	-
			L.1.2	Atto di compatibilità energetica	-	A	-	-
			L.1.3	Atto di compatibilità energetica	-	A	-	-
			L.1.4	Atto di compatibilità energetica	-	A	-	-
			L.1.5	Atto di compatibilità energetica	-	A	-	-
Safety and accessibility in use	Fire safety system	L.1.1	Atto di compatibilità energetica	-	A	-	-	
		L.1.2	Atto di compatibilità energetica	-	A	-	-	
		L.1.3	Atto di compatibilità energetica	-	A	-	-	
		L.1.4	Atto di compatibilità energetica	-	A	-	-	
		L.1.5	Atto di compatibilità energetica	-	A	-	-	
STRUCTURE & SUBSTRUCTURE	Local bearing structure (Warehouse - Bakery - Garage - Office)	Mechanical resistance and stability	L.1.1	Certificato di collaudo statico	-	A	en. 1088/71	Norme per la disciplina delle opere di conglomerato cementizio armato, normale e precompresso ed a struttura metallica
			L.1.2	Certificato di collaudo statico	-	A	en. 1088/71	Norme per la disciplina delle opere di conglomerato cementizio armato, normale e precompresso ed a struttura metallica
			L.1.3	Certificato di collaudo statico	-	A	en. 1088/71	Norme per la disciplina delle opere di conglomerato cementizio armato, normale e precompresso ed a struttura metallica
			L.1.4	Certificato di collaudo statico	-	A	en. 1088/71	Norme per la disciplina delle opere di conglomerato cementizio armato, normale e precompresso ed a struttura metallica
			L.1.5	Certificato di collaudo statico	-	A	en. 1088/71	Norme per la disciplina delle opere di conglomerato cementizio armato, normale e precompresso ed a struttura metallica
	Safety and accessibility in use	Safety and accessibility in use	L.1.1	Certificato di collaudo statico	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.2	Certificato di collaudo statico	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.3	Certificato di collaudo statico	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.4	Certificato di collaudo statico	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.5	Certificato di collaudo statico	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
FIRE SAFETY	Fire safety system	Safety in case of fire	L.1.1	Atto di compatibilità energetica	-	A	D.M. 20/09/2001 art. 9	Classificazione di rischio e il fuoco ed omologazione dei materiali ai fini della prevenzione incendi
			L.1.2	Atto di compatibilità energetica	-	A	D.M. 20/09/2001 art. 14	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.3	Atto di compatibilità energetica	-	A	D.M. 15/2001	Regolamento recante disciplina dei procedimenti relativi alla autorizzazione alla costruzione e all'esercizio di impianti di produzione di energia elettrica che utilizzano fonti convenzionali
			L.1.4	Atto di compatibilità energetica	-	A	D.M. 7/09/2012	Disposizioni relative alle modalità di progettazione delle opere convenzionali i procedimenti di prevenzione incendi e alla documentazione da allegare
			L.1.5	Atto di compatibilità energetica	-	A	-	-
	Electrical plant (power & supplies)	Safety and accessibility in use	L.1.1	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.2	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.3	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.4	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.5	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
ELECTRICAL PLANTS	Electrical plant	Safety and accessibility in use	L.1.1	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.2	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.3	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.4	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.5	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
	Special Electrical plant (power & supplies)	Safety and accessibility in use	L.1.1	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.2	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.3	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.4	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.5	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
OTHER PLANTS	B/C	Safety and accessibility in use	L.1.1	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.2	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.3	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.4	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.5	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
	Smoke and fire detection	Safety and accessibility in use	L.1.1	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.2	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.3	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.4	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.5	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
MECHANICAL PLANTS	Water and sanitary system	Safety and accessibility in use	L.1.1	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.2	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.3	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.4	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.5	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
	UR plant	Safety and accessibility in use	L.1.1	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.2	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.3	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.4	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.
			L.1.5	Atto di compatibilità energetica	-	A	D.M. 17/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante rinvio delle disposizioni in materia di attività di installazione degli impianti all'interno degli edifici.

Table 35 – DARM - Check List full screen

4.6.3 DARM Ranking Matrix - Tool

The Property starts with the disclosure considering its own method, for example, the first desktop activity can take place:

- By **VDR**: typically, the access is restricted (in terms of time as well) and filtered in some folders and sections of the cloud for security/privacy reasons. In this case, it could be useful a preliminary organization carried out by the Property to avoid time wastes;
- By **e-mail-cloud**: depending on the files' weight but, having a codification (open and flexible), the Property can set and organize the file according to the check-list for supporting the due diligence team;
- By **PDR**: the physical data room is again present and, in this way, results important the time-frame available for assessing the entire documentation.

Once the Property selected the suitable method for the disclosure, the second phase of the DARM can start. Having the access to the documentation and related information, it is possible to carry out the **document control** through the **DARM Ranking Matrix**.

The tool, works on two different fronts, **assessing the documents** for the **transaction** and for the **operations**¹⁵⁹ as well.

As already mentioned, the tool DARM includes the risk assessment techniques for attributing the right importance to the documents based on their **Impact on people and organization (criticality)**.

The following part is devoted to the tool's composition explanation and how it works.

¹⁵⁹ Those documents are more critical considering the consequences.

DARM - RANKING MATRIX									
CATEGORY	ISSUE	TOPIC	CODE	DOCUMENT TEAR 1	DOCUMENT TEAR 2	EXPIRY DATE STATUS	AVAILABILITY	NOTES	
LEGAL	Title Holder & Administrative	Property constraint	L.1.1	Atto notarile di compravendita		A	Y		
			L.1.2	Atto di conferimento		A	Y		
			L.1.3	Contratto di locazione		A	N		
			L.1.4	Ispezione ipocatastale		A	Y		
			L.1.5	Regolamento delle parti comuni		D	N		
			L.1.6	Verbale di condominio		A	N		
	Cadastrale	Property's information and cadastral identifications	L.2.1	Certificato catastale		A	N		
			L.2.2	Visura catastale (e/o storica)		A	Y		
			L.2.3	Planimetria catastale		A	N		
			L.2.4	Denuncia di accatastamento		A	Y		
			L.2.5	Voltura catastale		A	Y		
	City Planning Strengths and Constraints	Property's information and cadastral identifications	L.3.1	CDU - Certificato di destinazione urbanistica		A	N		
			L.3.2	PGT o PRG (estratto)		B	Y		
			L.3.3	Convenzione urbanistica		A	N		
	Building Titles	Safety and accessibility in use (Built post 1967)	L.4.1	PdC - Permesso di Costruire		Concessione edilizia	A	N	
			L.4.2			Licenza edilizia	A		
L.4.3			SCIA/super SCIA			A			
L.4.4			CILA			A			

Table 36 - DARM - Documental Audit Ranking Matrix extract - Legal documentation part

The DARM Ranking Matrix - Composition and Filling-In:

- Category, issue, topic, codification and document with the deeper analysis is related to the DARM-Check List in order to have a systematic and common baseline for the assessment. For further information see at the previous phase;
- **The availability** (Table 36): this part results crucial and the hardness one for the assessment successful. For each document or set of documents, the related availability can be filled-in by **YES** or **NO**. But, the word availability in this case, refers not only to the document “**physical availability**” but even, to its **time-frame validity (expired or not)**, and **applicability**.

The **applicability** depends on the document type considered and, for example:

- **Convenzione Urbanistica:** could be **physically present** but, it could not be **applicable** because of the inside agreements between the municipality and the property were not fulfilled after the construction;
- **CPI:** could be **physically present**, could be **within the time limit (validity)** but, it is not **applicable** because of for example the fire safety materials certificates and asseverations missing. For this reason, the availability for the fire safety is related not just for one document but, it is related to the fire safety **document set**;
- **Certificato o Segnalazione di Agibilità:** could be **physically present** but, it could not be **applicable** (and withdrawn) because of some building's subsequent modifications;
- **P.d.C. – Permesso di Costruire:** could be **physically present** but, it could not be **applicable** because of the subsequent building modifications during the construction (no correspondence between the design and the built) or after. In this case a deeper analysis must be carried out, then the historical building phases and documents related. For this reason, the availability for this document is related not just for one document but, it is related to the building titles **document set**.
- **The Notes:** this part is directly linked to the “**availability**” and helps in the better understanding the reasons of the “**YES**” or “**NO**” for the due diligence maker also for the final report writing.

DARM - RANKING MATRIX								
CATEGORY	ISSUE	TOPIC	CEOR	DOCUMENT YEAR 1	DOCUMENT YEAR 2	EXPIRY DATE STATUS	AVAILABILITY	NOTES
LEGAL	Title holder & Administrative	Property constraints	L.1.1	Atto costitutivo di condominio	-	A	Y	
			L.1.2	Atto di conferimento	-	A	Y	
			L.1.3	Contratto di locazione	-	A	N	
			L.1.4	Polizza assicurativa	-	A	Y	
			L.1.5	Regolamento delle parti comuni	-	D	N	
			L.1.6	Verbale di condominio	-	A	N	
	Cedolare	Property's information and cadastre identifications	L.2.1	Certificato catastale	-	A	N	
			L.2.2	Visura catastale (foto storica)	-	A	Y	
			L.2.3	Planimetria catastale	-	A	N	
			L.2.4	Denuncia di inizio attività	-	A	Y	
	City Planning Strengths and Constraints	Property's information and cadastre identifications	L.3.1	CDU - Certificato di destinazione urbanistica	-	A	N	
			L.3.2	PCT o PRG (sestanti)	-	B	Y	
			L.3.3	Conversione urbanistica	-	A	N	
			L.4.1	-	-	A	Y	
Building Times	Safety and accessibility in use (built post 1987)	L.4.2	APC - Permesso di Costruire	-	Concessione edilizia	A		
		L.4.3	SCIA	-	SCIA/SCIA Super SCIA	A	N	
		L.4.4	-	-	SCIA	A		
		L.4.6	-	-	APF	B		
BUILDINGS	Safety and accessibility in use	T.1.1	Certificato/Regolazione di agibilità	-	Collaudo statico	A		
				-	Conformità della legge	A		
				-	Aggiornamento catastale	A	N	
				-	Dichiarazione di conformità degli impianti	A		
				-	-	D	Y	
				-	Verbale di consegna dell'edificio	A	Y	
	Energy economy and heat retention	T.1.4	APE - Attestato di prestazione energetica	-	-	B	Y	
				-	-	D	Y	
				-	-	B	Y	
				-	-	B	Y	
	Hygiene, health and environment	T.1.7	AUA - Autorizzazione unico ambientale	-	-	B	Y	
				-	-	B	Y	
	Safety and accessibility in use	T.1.8	DWR ATEX - Documento Manutenzione Rischi per Atmosfere Esplosive	-	-	D	Y	
				-	-	D	Y	
STRUCTURE & SUBSTRUCTURE	Load bearing structure (Architect - Structural Engineer - Offsets)	Mechanical resistance and stability	T.1.9	Certificato di calcolo statico	-	A	Y	
			T.1.10	Certificato di calcolo statico	-	A	Y	
	Curtain wall	Mechanical resistance and stability	T.1.11	Certificato di omologazione CE	-	A	Y	
			T.1.12	Certificato di calcolo statico	-	A	Y	
FIRE SAFETY	Safety and accessibility in use	T.1.13	Pratica VVFF	-	Dichiarazione di conformità per ogni tipo di impianto antincendio (Fiumi, Tetti, DR, Pannelli, Portoni, Speciali impianti)	A		
				-	Dichiarazione VVFF a richiesta (DINCA (sigilli), Fiume di conformità VVFF (sigilli), Dichiarazione VVFF dei mezzi (Gruppi, porte tagliafuoco, portoni automatici)	A		
	Safety in case of fire	T.1.13	Pratica VVFF	-	Asserazione ai fini della sicurezza antincendio	A		
				-	SCIA (sigilli)	A		
				-	Verifica tecnico di spazzola (sigilli)	D		
				-	Conferma di conformità al regolamento antincendio	B		
TECHNICAL	Electrical plant	Safety and accessibility in use	T.1.14	Dichiarazione di conformità per ogni impianto e componente	-	A	Y	
					-	Dichiarazione di conformità	A	
					-	Modulo di trasmissione dichiarazione di conformità Verifica a campione (PELS, (sigilli))	A	Y
					-	Verifica periodici ASL/ARPA	D	
					-	Verifica periodici ASL/ARPA	B	
					-	Dichiarazione di conformità	A	
	Special Electrical plant (Power EL Supplier)	Safety and accessibility in use	T.1.15	Pratica ATEX and MT	-	Modulo di trasmissione dichiarazione di conformità Certificato di omologazione ASL/ARPA	A	Y
					-	Verifica a campione (PELS, (sigilli))	A	
					-	Certificato di omologazione ASL/ARPA	A	
					-	Verifica periodici ASL/ARPA	C	
	Safety and accessibility in use	T.1.16	Dichiarazione di conformità per ogni impianto e componente	-	-	A	Y	
				-	-	A		
				-	-	A	Y	
				-	-	B	Y	
Hygiene, health and environment	T.1.20	Certificato di omologazione CE	-	-	A	Y		
			-	-	A	Y		
OTHER PLANTS	Safety and accessibility in use	T.1.21	Dichiarazioni di conformità	-	-	A	Y	
				-	-	A	Y	
				-	-	A	Y	
MECHANICAL PLANTS	Smoke and fire detection	Safety and accessibility in use	T.1.22	Dichiarazioni di conformità	-	A	Y	
					-	-	A	Y
	Gas plant	Safety and accessibility in use	T.1.23	Dichiarazioni di conformità	-	A	Y	
					-	-	A	Y
	Water and sanitary system	Safety and accessibility in use	T.1.24	Dichiarazioni di conformità	-	A	Y	
					-	-	A	Y
	Lift plant	Safety and accessibility in use	T.1.25	Libretto dell'impianto	-	Dichiarazioni di conformità	A	
					-	Certificato di omologazione CE n. di impianto	A	
					-	Comunicazione della messa in esercizio	A	Y
					-	Manutenzioni semestrali	C	
-					Verifiche biennali e/o straordinarie	C		
-					Verifiche biennali e/o straordinarie	C		
Hydraulic dumbwaiters	Safety and accessibility in use	T.1.26	Libretto dell'impianto	-	Dichiarazioni di conformità	A	Y	
				-	Certificato di omologazione CE n. di impianto	A		
Mechanical (for cooling, heating system, air extraction)	Safety and accessibility in use	T.1.27	Libretto dell'impianto	-	Dichiarazioni di conformità	A		
				-	Verbale di prima messa in esercizio	A	Y	
Special plants (Dissolvente)	Safety and accessibility in use	T.1.28	Dichiarazioni di conformità	-	Verbale di controllo efficienza energetica	B		
				-	Dispositivi speciali PA	B		
FRANCALINI								
L'Esperto								

Table 37 - Documental Audit Ranking Matrix full screen

The DARM Ranking Matrix – Flag Analysis:

The **Ranking Matrix** as previously explained in more in general (4.3.3 The Tool: DARM) is a document control tool in which **risk assessment techniques** (4.5 Document Risk Assessment Method) are applied for assessing a logistics building under the documental law fulfilment and risks associated.

For doing so, it has been bestowed a weight for each document or set of them (based on risk assessment techniques and theories) and, furthermore, to define the so-called “**CSD-Critical Success Documents**¹⁶⁰” for the Transaction, Transaction and Operations or Operations only. Both, based on the **National Law-Framework** and **Criminal Sentences** in order to produce at the end of the tool two different **flag analysis**:




Flag Analysis	CSD Criteria Based
Transaction	National Law-Framework.
Operation	National Law-Framework and Criminal Sentences. Application of D. Lgs. 231/2001 and 81/2008 with direct people’s safety and organization consequences.



Once the **Ranking Matrix** has been filled-in is possible making considerations about the results that is possible to obtain. For example, in order to conclude the **transaction**, based on National Laws, it is necessary to have five CSD: Atto Notarile o di Proprietà, Certificato Catastale, CDU, APE e Certificato di Collaudo Statico¹⁶¹. In this perspective is possible to have just a red or green analysis in order to pass to the subsequent but not less important **operations analysis**.

¹⁶⁰ The CSD – Critical Success Documents derived from the original acronym CSF – Critical Success Factors that, in management terms is a: “Limited number of characteristics, conditions, or variables that have a direct and serious impact on the effectiveness, efficiency, and viability of an organization, program, or project.” Source: BusinessDictionary.com

¹⁶¹ This document is considered for both phases a CSD.

It is important to remind that, if the “**green**” light due to the presence of the **CSD** for the transaction; results just the first step for assessing the risk associated to the **CSD** for the **operations** of that building. Given the different possibilities of the tool application, for **transaction**, **transaction and operations** or only **operations**, here are reported the **meanings** and related **suggested actions** based on the different flag results by application phase:

Phase	Flag	Meaning	Suggested Actions
Transaction		It is possible to conclude the transaction because of the presence of all fundamental CSD. It is possible to go ahead for a deeper and critical analysis for the operations.	Mind for the Operation Analysis
		It is not possible to conclude the transaction because of the fundamental CSD missing.	Property’s document alignment.
Transaction + Operation		The documentation is complete or close to be, so the CSD presence, especially for the medium-critical parts. It is possible to conclude the transaction with low risk associated to the building and the residual risk remains under acceptable conditions.	Residual Risks managed through contract’s discount and clauses.

Phase	Flag	Meaning	Suggested Actions
Transaction + Operation		<p>The documentation is not complete, considering the low-medium criticality documents missing. For example, the maintenance manual, the building handover document (con lista riserve), convenzione urbanistica, etc. It is possible to conclude the transaction with medium risk associated to the building and the residual risks can be treated by both parties.</p>	<p>Residual Risks managed through quite high contract's discount and clauses or document pre-alignment by the Property.</p>
		<p>The documentation is not complete, considering the high criticality documents missing. This area involves the most important risks associated to the consequences in terms of people's safety and organization criminal responsibilities (4.4.5 Document Risk Assessment Method). For example: dichiarazioni di conformità degli impianti, libretto della caldaia o dell'ascensore not complete, registro antincendio not updated. It is possible to conclude the transaction with high risk associated to the building and the residual risks must be treated by the Property before the building disposal.</p>	<p>Residual Risks managed through high contract's discount and clauses. Sudden critical document alignment in charge of the Property before the building transaction.</p>




Phase	Flag	Meaning	Suggested Actions
Operations		It is possible to conclude the transaction because of the presence of all fundamental CSD. It is possible to go ahead for a deeper and critical analysis for the operations.	Residual low risks managed through Property and Tenant reports and inspections.
		The documentation is not complete, considering the low-medium criticality documents missing . For example, the maintenance manual, the building handover document (con lista riserve), convenzione urbanistica, etc. It is possible to go ahead with the building activities.	Residual risks managed through the documentation alignment by Property and Tenant.
		The documentation is not complete, considering the high criticality documents missing . This area involves the most important risks associated to the consequences in terms of people's safety and organization criminal responsibilities (4.4.5 Document Risk Assessment Method). For example: dichiarazioni di conformità degli impianti, libretto della caldaia o dell'ascensore not complete, registro antincendio not updated.	Sudden critical document alignment in charge of the Property and the Tenant.

Table 38 – Transaction, Transaction-Operations and Operations Flag Analysis and suggested actions by different phases.

The DARM Documental Audit Ranking Matrix, thanks to the weights associated to each document or set of them; can provide automatically the **flag analysis** by itself according to the following criteria:




Flag Analysis	Criteria
	<ul style="list-style-type: none"> All documents are present
	<ul style="list-style-type: none"> If from 1% to 9% of medium-low-criticality documents missing; it generates a yellow result
	<ul style="list-style-type: none"> Even just one high-critical document (people's safety involved, D. Lgs 231/2001 and D. Lgs 81/2008 application) generates a red result; If about 10% of medium-low-criticality documents missing; it generates a red result as well.

Table 39 – DARM - Flag Analysis Criteria

The DARM Documental Audit Ranking Matrix – Critical Remarks:

1. Mind always about the building life cycle phase at which the tool is addressed to;
2. Anytime a flag analysis is done, it must be carried out the **examination** for better understanding those **results** into the report explaining the source of the results them-selves;

3. Once the flag analysis is carried out is possible to get more information from the walkthrough and update the tool with new information. The DARM-Ranking Matrix can be used for the “*action plan*” base as subsequent action as showed in the DARM Tool Sheets;
4. Given new information, is possible to **re-run** the tool and assess in a better way the building;
5. The tool is the base for the final report writing in which is possible to attach the tool as “full matrix” and as a base for explaining all the features of the specific assessment;
6. It is possible to extend the tool in a **vertical way** adding new documents based on the specific feature but always following the criteria mentioned (4.4.5 Document Risk Assessment Method)(4.5 Document Risk Assessment Method);
7. It is possible to extend the tool in a **horizontal way** adding costs and person responsible associated for each document realigning the documental missing.

5. CASE STUDY APPLICATION: FOCUS ON LOGISTICS BUILDING

5.1 CASE STUDY OVERVIEW

This chapter is devoted the presentation and the application of the **DARM** to a real existing logistics building. Due to the critical information contained in this part, it has been chosen to avoid reporting the today Property's and specific feature of the security system.



The logistics building object of the analysis, commissioned by IDI Gazeley - Brookfield Logistic Properties and rent by L'Oréal Company, was built in 2013. Located in the North of Italy, inside a productive area quite far from the urban centre and linked to the main highways and routes (distance from A1 highway, exit Lodi: around 7 km).

The building is mono-front dock stations with a round path ways and 44 dock stations for trucks (42 for the main building and 2 dedicated to the hazardous materials building facility).

The building covers a total area around 35.000 sqm: of which about 30.000 sqm are devoted to warehousing/stocking/receiving/shipping areas, about 1.500 sqm devoted to offices (divided in 2 floors) and about 2.500 sqm about other facilities spaces.

General building areas		
Surfaces, heights	U.o.M.	Quantity
(TGFS) Total gross floor surface	Sqm	34.860,00
(NS) Net surface or (LS) Leasable surface = 0.92* TGFS	Sqm	32.072,00
(CS) Covered surface	Sqm	34.115,00
(LS) Land surface	Sqm	54.675,00
(ES) External surface (LS-CS)	Sqm	20.560,00
(TH) Total external height	m	15,60
(UBH) Under beam height	m	12,35
Facility Areas	U.o.M.	Quantity
Offices	Sqm	1505,00
Battery Charger	Sqm	718,00
Waste and Recycling	Sqm	357,00
Tank and Pump Station	Sqm	150,00
External Pallets area	Sqm	244,00
Aerosol Area	Sqm	3128,00
Internal Stocking for hazardous materials	Sqm	-

Table 40 – Case Study - General Building areas

The **construction technology** adopted can be summarized as explained below:

- **STRUCTURAL PART** with pre-casted elements (foundations, pillars and beams);
- **EXTERIOR SUBSTRUCTURE:** shell with sandwich insulated panels, the front side with dock station doors and on the upper part with steel frame structure and sandwich panels and the roof with TPO and insulation system (fixed skylights for natural lightning system).
- **INTERIOR SUBSTRUCTURE:** with industrial slabs (stabilized gravel, crushed materials, reinforced concrete with fibres), pre-cast sandwich panels (not insulated) and the refuge-safety spaces with REI120 bricks (zone filtro). The main doors are for the fire safety, fire safety doorways and exit emergency doors.

- **PLANTS AND EQUIPMENT:** Fire safety system (water and foam for hazardous stocking part, no EFC for skylights), HVAC, Electrical lighting system (LED), smoke-flame detecting system, Lighting and grounding system, Security system (TVCC), ICT system, air draw system for ATEX, compression air system, mechanical system (for the dock station doors).

The Main Spaces Identification:

- **Battery Charger** for lifts and forks;
- **Waste and Recycling** spaces for packaging wastes;
- **Tank and Pump** station related to the fire safety system;
- **Aerosol Area** for dangerous and hazardous materials;
- **Hazardous area** (internal) for small picking hazardous materials;
- **Office Area** for managers and employees.



Figure 47 - Case Study main spaces.

The main spaces involved into the case study analysis are useful for better understanding the possible risks associated to the transaction and the operation. The document control process refers mainly to spaces and technologies that will be further explained through the already treated BBS – Building Breakdown Structure through which is possible identifying all the spaces and technologies linked to the building in a systematic way.

The **BBS** that will be treated in the next paragraph, can be divided into two main branches:

- **SBS** – Space Breakdown Structure, in which each space and subspace is classified and codified univocally;
- **TBS** – Technological Breakdown Structure, in which each technological system and technological element is classified and codified univocally.



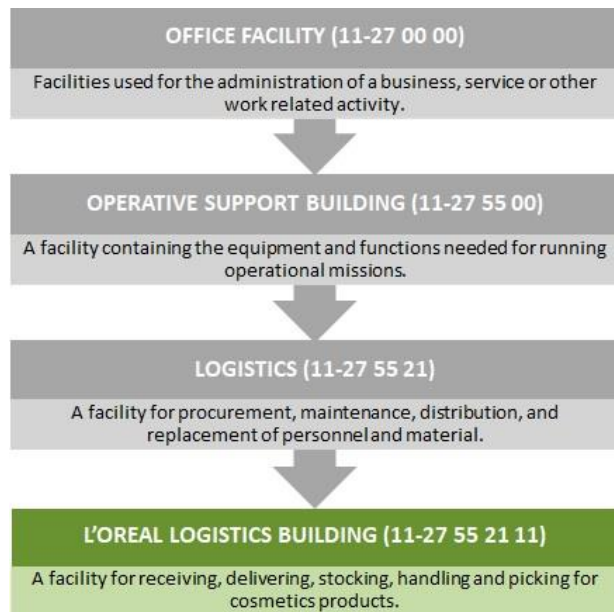
5.2 BUILDING BREAKDOWN STRUCTURE: SPACES AND TECHNOLOGIES

The building breakdown of all the elements, was done according to the OMNICLASS Standard, but since this regulation can't be easily applied for modern logistics buildings, it has been chosen to develop an internal building breakdown easier to made-up and understand.

According to the **Omniclass - Table 11** the building has a

logistics function (11-27 55 21) and furthermore, the regulation identifies only three levels of classification (Office Facility > Operative Support Building > Logistics). For this reason, there is an extra level of detail (in green) which defines in a better way the functional characteristics of the building. This Logistics Building (11-27 55 21 11) is a facility used for receiving, shipping, stocking, handling and picking of cosmetics products, divided into two main different kinds:

- Water based products;
- Alcohol based products



Omniclass - Table 13 was used for the SBS that allowed to identify the main spaces which characterise the building. In order to do a proper SBS, it was necessary to pick up categories from different levels of the standard, since it does not provide a proper structure suitable for modern logistics. Each space is associated to a specific code, depending on the level identified by the

regulation. In this case, the standard has been implemented with additional codes and spaces to obtain a complete breakdown.

Omniclass - Table 21 the whole building has been divided in technical elements that are components or construction entity parts which, in themselves or in combination with other parts, fulfil a predominating function. Even in this case, the standard has been implemented with additional codes and spaces to obtain a complete breakdown.

SBS (Space Breakdown Structure)							
LEVEL 1	LEVEL 2		LEVEL 3		LEVEL 4		
LB	Logistics Building	LB.10	Warehouse spaces	LB.10.10	Compart. 1	LB.10.10.10	Receiving & delivering area
						LB.10.10.20	Sorting area
						LB.10.10.30	Small pieces stocking & picking area
						LB.10.10.40	Returned goods space
						LB.10.10.50	Packaging area
						LB.10.10.60	WC
						LB.10.10.70	UPS
						LB.10.10.80	Pedestrian area
						LB.10.10.90	Forks lift area
				LB.10.20	Compart. 2	LB.10.20.10	Receiving & delivering area
						LB.10.20.20	Stocking area
						LB.10.20.30	Hazardous materials storage space (picking from aerosol area - buffer area)
						LB.10.20.40	Pedestrian area
						LB.10.20.50	Forks lift area
				LB.10.30	Compart. 3	LB.10.30.10	Receiving & delivering area
						LB.10.30.20	Stocking area
						LB.10.30.30	Pedestrian area
						LB.10.30.40	Forks lift area
LB.10.30.50	Small temporary office						

			LB.10.40	Aerosol area	LB.10.40.10	Receiving & delivering area
					LB.10.40.20	Stocking area
					LB.10.40.30	Pedestrian area
					LB.10.40.40	Forks lift area
			LB.10.50	Common spaces	LB.10.50.10	Filter North C1-2
					LB.10.50.20	Filter Center C1-2
					LB.10.50.30	Filter South C1-2
					LB.10.50.40	Filter North C2-3
					LB.10.50.50	Filter Center C2-3
					LB.10.50.60	Filter South C2-3
					LB.10.50.70	Filter C2-hazardous mat.
LB.20	Warehouse facilities		LB.20.10	Battery charger area	LB.20.10.10	Battery charger
					LB.20.10.20	Lift workshop
			LB.20.20	Other support areas	LB.20.30.10	Waste & recycling space
					LB.20.30.20	Compressed air/fire safety bell space
					LB.20.30.30	Small foam tank (for LB.10.20.30)
					LB.20.30.40	Pallet storage
					LB.20.30.50	Pump station
LB.30	Offices spaces		LB.30.10	First Floor	LB.30.10.10	Access Hall
					LB.30.10.20	Receiving office
					LB.30.10.30	Delivering office
					LB.30.10.40	Transport office
					LB.30.10.50	Truck's driver area
					LB.30.10.60	Infirmary
					LB.30.10.70	Male dressing rooms
					LB.30.10.80	Female dressing room
					LB.30.10.90	Archive
					LB.30.10.100	WC
					LB.30.10.110	Food storage
					LB.30.10.120	Common spaces
					LB.30.10.130	Lift shaft
					LB.30.10.140	Stair well
					LB.30.10.150	Distribution spaces
			LB.30.20	Second Floor	LB.30.20.10	Employees canteen
					LB.30.20.20	Meeting room 1
					LB.30.20.30	Meeting room 2
					LB.30.20.40	Executive office 1

					LB.30.20.50	Executive office 2
					LB.30.20.60	Executive office 3
					LB.30.20.70	Executive office 4
					LB.30.20.80	Executive office 5
					LB.30.20.90	Executive office 6
					LB.30.20.100	Executive office 7
					LB.30.20.110	Executive office 8
					LB.30.20.120	Archive
					LB.30.20.130	CED room
					LB.30.20.140	WC
					LB.30.20.150	Lift shaft
					LB.30.20.160	Stair well
					LB.30.20.170	Distribution spaces
					LB.30.20.180	External balcony
					LB.40.10.10	Parking lots for cars
					LB.40.10.20	Parking lots for managers' cars
					LB.40.10.30	Parking lots for trucks
					LB.40.10.40	Asphalt way
					LB.40.10.50	Trucks manoeuvring area (reinforced concrete)
					LB.40.10.60	Horizontal signals
					LB.40.20.10	Pedestrian way
					LB.40.20.20	Green areas
					LB.40.20.30	Guardian area
					LB.40.20.40	Laminating basing

Table 41 – Case Study SBS Space Breakdown Structure. Elaboration based on OMNICLASS standard - Table 13 Space by Function

TBS – Technical Breakdown Structure			
Level 1		Level 2	
Code	Name	Code	System - Element
ST	Structures	ST.10	Foundation plinths
		ST.20	Precast pillars
		ST.30	Precast beams
		ST.40	Precast tile wings
SUB	Substructures	SUB.10	Industrial slabs
		SUB.20	External reinforced concrete slabs
		SUB.30	Precast bricks slabs (autobloccanti)
		SUB.40	Protective paint slab (synthetic resin)
		SUB.50	Precast reinforced concrete sandwich panels
		SUB.60	Precast sandwich panels for dock stations
		SUB.70	Steel framework
		SUB.80	Steel shelter
		SUB.90	Aluminium sandwich panels
		SUB.100	Aquapanel plasterboards
		SUB.110	Roof and Tinplate works
		SUB.120	Skylights
		SUB.130	Warehouse internal walls
		SUB.140	Chimneys, cowls, aerations and extractions (canne fumarie, comignoli, aerazione ed estrazione)
		SUB.150	REI wall bricks
		SUB.160	External pedestrian slabs
		SUB.170	Precast WC box
		SUB.180	Steel works (stairs, railings, gates)
		SUB.190	Curtain wall (office)
		SUB.200	Floating floor (office)
		SUB.210	False ceiling (office)

DD	Doors & doorways	DD.10	Dock stations doors & External dock system
		DD.20	Entrance doors
		DD.30	Steel doors (technical rooms) & steel fixed window (shutters)
		DD.40	Exit emergency doors
		DD.50	Fire safety doors
		DD.60	Fire safety doorways
		DD.70	Internal doors (office)
EP	Electrical plant	EP.10	Internal spotlighting
		EP.20	External spotlighting
		EP.30	Electrical cab (MV - medium voltage)
		EP.40	Main electrical panels
		EP.50	Secondary electrical panels
		EP.60	Emergency spotlighting
		EP.70	Grounding system
		EP.80	Lighting system
		EP.90	Electrical power supplier (gruppo elettrogeno)
FS	Fire safety system plant	FS.10	Sprinkler system & pumps station
		FS.20	Foam system
		FS.30	Hydrants upper ground UNI70
		FS.40	Hydrants underground UNI70
		FS.50	Hydrants box UNI45 & motor pump connection
		FS.60	Trolley fire extinguisher (30 kg CO2)
		FS.70	Mobile fire extinguisher (6 kg CO2)
		FS.80	Trolley fire extinguisher (30 kg dust)
		FS.90	Mobile fire extinguisher (6 kg dust)
		FS.100	Smoke and fire detection
MP	Mechanical plant	MP.10	Elevators
		MP.20	Hydraulic dumbwaiters
H	HVAC and Heating-Cooling system	H.10	AHU/ATU
		H.20	Fan-coils and Ducts
		H.30	Expansion Vessel

		H.40	Domestic water distribution
		H.50	Space heaters
		H.60	Heating gas generator
SP	Special Plants	SP.10	Mechanical extraction ducts (filters & ATEX)
		SP.20	Basin & submerged electrical pumps
		SP.30	Grass irrigation system
		SP.40	Security system (cam-vid)

Table 42 - Case Study SBS Space Breakdown Structure. Elaboration based on OMNICLASS standard - Table 21 Technical Elements

Document control for DARM – Ranking Matrix application:

The following part of the chapter is devoted to report some critical documents taking into consideration for the **document control tool** application. As mentioned in the DARM procedure (4.6 DARM: The Tool Procedure), the application takes place starting from the DARM-Check List sending to the Property for having and gathering the main documents and information for carrying out the desktop activity, then the document control and review about the entire building analysed.

Once the documents have been collected, it has been possible to fill-in the DARM-Ranking Matrix considering some of the following information and documents showed.

5.3 DOCUMENT CONTROL

The documentation was gathered and analysed through the cloud at which the FM company and the Property have the access. Thanks to the systematic document set and information system classified and codified that the Property adopted; it was possible to have a check and deeper control on the documents available. The structure of the information at which was possible to have the access was summarised as follows:

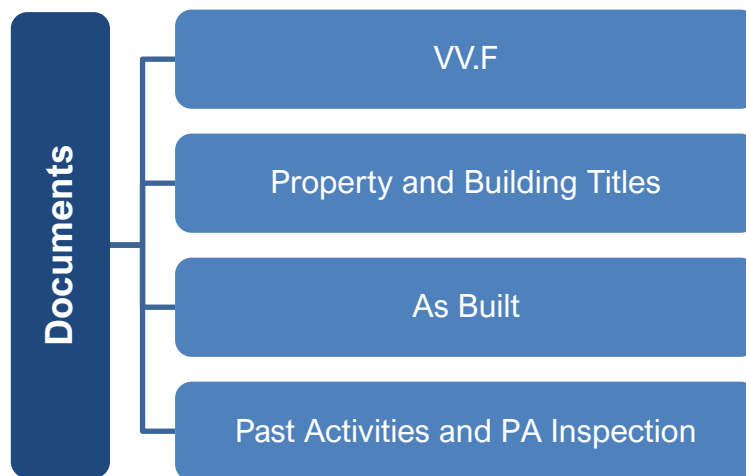


Figure 48 - Case Study Documents' Structure

Disclaimer:

Some documents reported in the following part have been hidden in the sensitive parts in order to don't expose people and organization involved. This part results just an example of the main documents that must be analysed in order to complete the DARM procedure and it could result useful for better understanding the main parts, players, sub-technical standards of the documents.

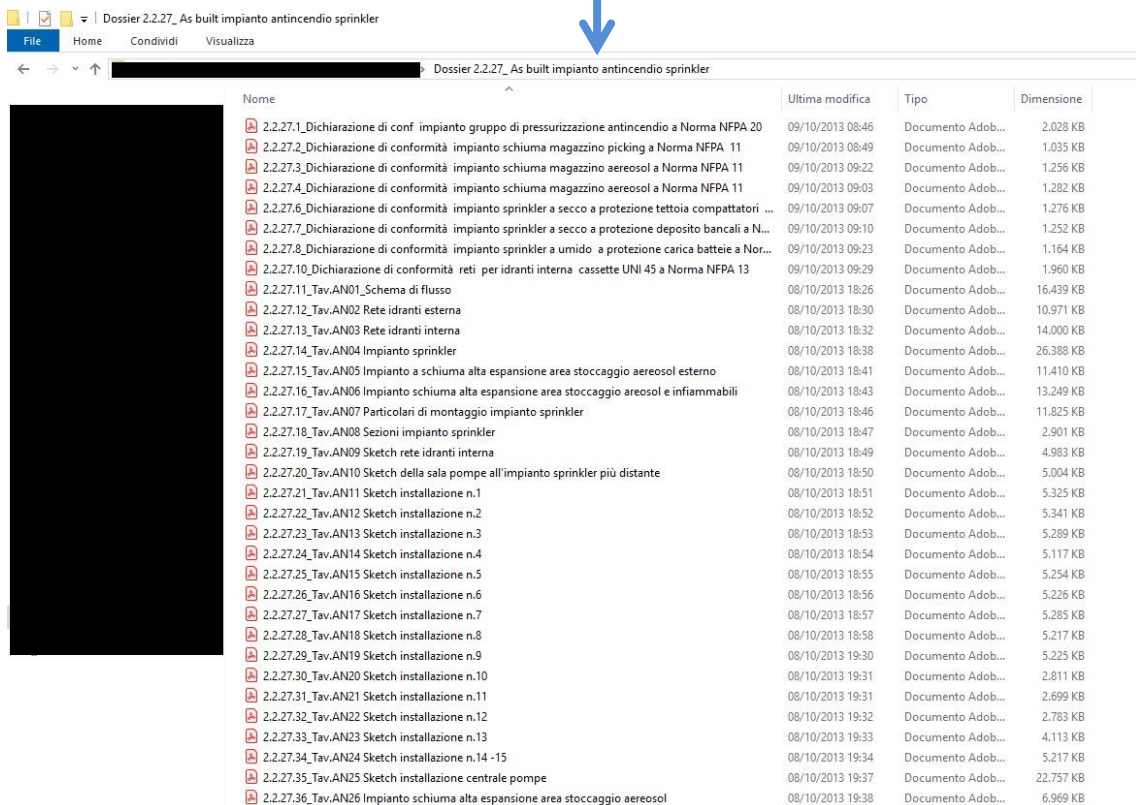
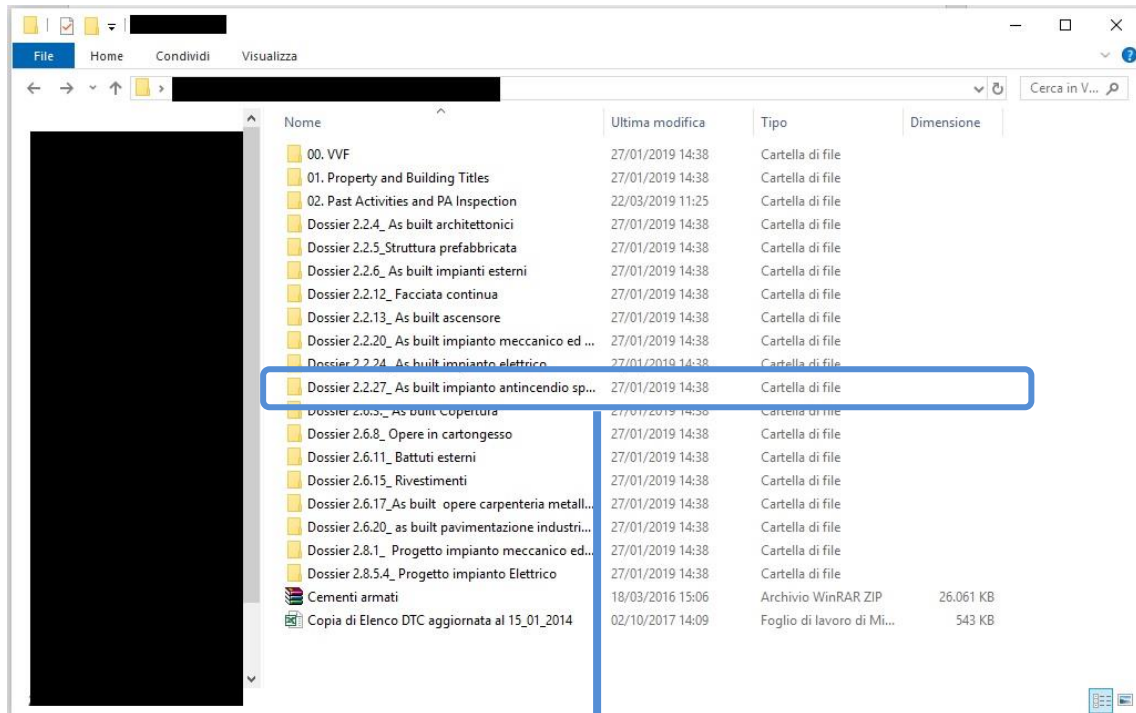


Figure 49 - Case Study Structure folders and sub-folders. Fire Safety As Built Documents focus.

Case Study - Dichiarazione di Conformità Impianto Ascensore

	Dichiarazione Conformità Impianti Nuovi	DM37 Rev. [REDACTED] pag. 1 di 1
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DICHIARAZIONE DI CONFORMITÀ DELL'IMPIANTO ALLA REGOLA DELL'ARTE (secondo l'ALLEGATO I, di cui all'art.7 del Decreto 22 Gennaio 2008, n.37)

Il sottoscritto [REDACTED], nato a [REDACTED] il [REDACTED] titolare o legale rappresentante dell'impresa [REDACTED] operante nel settore "ascensori-montacarichi-scale mobili" con sede in via [REDACTED] - PARTITA I.V.A. e CODICE FISCALE n. [REDACTED]

- Iscritta al Registro delle Imprese della CCIAA di [REDACTED] con n° [REDACTED]
- Iscritta all'albo provinciale delle imprese artigiane di [REDACTED] con n° [REDACTED]

esecutrice dell'impianto:

- ASCENSORE/MONTACARICHI
- SCALA/MARCIAPIEDE MOBILE
- PIATTAFORMA ELEVATRICE

inteso come:

- NUOVO IMPIANTO
- TRASFORMAZIONE IMPIANTO
- AMPLIAMENTO
- MANUTENZIONE STRAORDINARIA

Commissionato da [REDACTED]

Impianto n° [REDACTED]

Installato nei locali siti nel comune di [REDACTED]

Strada provinciale [REDACTED]

Di proprietà di (nome, cognome o ragione sociale, indirizzo [REDACTED])

In edificio adibito ad uso: industriale civile commerciale altri usi

DICHIARA

Sotto la propria personale responsabilità che i lavori sono stati realizzati in modo conforme alla regola dell'arte secondo quanto previsto dall'art. 6 del Decreto 22 gennaio 2008, n.37, tenuto conto delle condizioni di esercizio e degli usi a cui è destinato l'edificio, preso atto della dichiarazione del Committente, avendo in particolare:

- Seguito le norme UNI EN 81.1&2:2010 (per installazione, modifiche/trasformazioni di ascensori a Dir.95/16/CE)
- Seguito la Direttiva 95/16/CE (per modifiche/trasformazioni di impianti a modello o esemplare unico)
- Seguito le norme UNI 10411-1&2:2008 (per modifiche/trasformazioni di impianti antecedenti alla Dir.95/16/CE)
- Seguito la norma UNI EN 115-1&2&3:2010 (per installazioni o modifiche/trasformazioni di scale e marciapiedi mobili)
- Dove prescritto, seguito la Direttiva 2006/42/CE (per installazioni di impianti a Direttiva macchine, quali piattaforme elevatrici, servoscala o montavivande)
- Dove prescritto, seguito la norma EN81-41:2008 (per modifiche/trasformazioni di impianti a Direttiva macchine, quali piattaforme elevatrici, servoscala o montavivande)
- CEI 64-8 (Impianti elettrici)
- Installato componenti e materiali adatti al luogo di installazione (art.5 e 6 del Decreto 22 gennaio 2008, n.37);
- Controllato l'impianto ai fini della sicurezza e della funzionalità con esito positivo, avendo eseguito le verifiche richieste dalle norme e dalle disposizioni di legge.
- Seguito le indicazioni fornite dal fabbricante del singolo prodotto.

ALLEGATI

Copia del certificato di riconoscimento dei requisiti tecnico-professionali

DECLINA

Ogni responsabilità per sinistri a persone o a cose derivanti da manomissione dell'impianto da parte di terzi ovvero da carenze di manutenzione o riparazione.

[REDACTED]

Il responsabile tecnico

[REDACTED]

Il dichiarante

[REDACTED]

AVVERTENZE PER IL COMMITTENTE

- Art.8: "Il Committente o il Proprietario è tenuto ad affidare i lavori di installazione, trasformazione, ampliamento e manutenzione degli impianti di cui all'art. 1 ad imprese abilitate ai sensi dell'art.3"
- Art.9: "Il certificato di agibilità è rilasciato dalle autorità competenti previa acquisizione della dichiarazione di conformità di cui all'art.7, nonché del certificato degli impianti installati, ove previsto dalle norme vigenti"

Case Study - Dichiarazione di Conformità Impianto Meccanico ed Idrico Sanitario

DICHIARAZIONE DI CONFORMITA' DELL'IMPIANTO ALLA REGOLA D'ARTE	
"Allegato I" (di cui all' art. 7, del Decreto 22 gennaio 2008, n. 37) Decreto 19 maggio 2010 (G.U. n. 161 del 13.7.2010)	
Il sottoscritto _____	DICHIARAZIONE N° _____ del... _____
titolare o legale rappresentante dell'impresa (ragione sociale) _____	
operante nel settore IDRAULICA con sede in via _____ n. _____	
comune _____ prov. _____	
telefono _____ P.Iva _____	
iscritta nel registro delle imprese (D.P.R. 7/12/1995, n. 581) della C.I.A.A. di _____	
iscritta all'albo provinciale delle imprese artigiane (legge 08.08.1985, n. 443) di _____	
esecutrice dell'impianto (descrizione schematica) Nuovo impianto di riscaldamento/raffrescamento e ricambi aria a servizio degli uffici/mensa del nuovo deposito. Il tutto come da progetto n. 232.12M Tav. 02-05-06-07 redatto da progettista abilitato.	
inteso come: <input checked="" type="checkbox"/> nuovo impianto <input type="checkbox"/> trasformazione <input type="checkbox"/> ampliamento <input type="checkbox"/> manutenzione straordinaria <input type="checkbox"/> altro (1) _____	
tipologia gas distribuito _____ <i>Nota - per gli impianti a gas specificare il tipo di gas distribuito: canalizzato della 1ª, 2ª, 3ª famiglia, GPL da recipienti mobili; GPL da serbatoio fisso. Per gli impianti elettrici specificare la potenza massima impegnabile.</i>	
commissionato da _____	
installato nei locali siti nel comune di _____ prov. _____	
via _____ n. _____ scala _____ piano _____ interno _____	
di proprietà di _____ residente in via _____ n. _____	
comune _____ prov. _____	
in edificio adibito ad uso <input checked="" type="checkbox"/> industriale <input type="checkbox"/> civile <input type="checkbox"/> commercio <input type="checkbox"/> altri usi	
DICHIARA	
sotto la propria personale responsabilità, che l'impianto è stato realizzato in modo conforme alla regola dell'arte, secondo quanto previsto dall'art. 6, tenuto conto delle condizioni di esercizio e degli usi a cui è destinato l'edificio, avendo in particolare:	
<input checked="" type="checkbox"/> rispettato il progetto redatto ai sensi dell' art. 5 da (2)	
<input type="checkbox"/> Responsabile tecnico: _____	
<input checked="" type="checkbox"/> Professionista: _____ Collegio/Ordine di _____	
<input checked="" type="checkbox"/> seguito la norma tecnica applicabile all'impiego (3) UNI 10339 e UNI 10381	
<input checked="" type="checkbox"/> installato componenti e materiali adatti al luogo di installazione (artt. 5 e 6);	
<input checked="" type="checkbox"/> controllato l'impianto ai fini della sicurezza e della funzionalità con esito positivo, avendo eseguito le verifiche richieste dalle norme e dalle disposizioni di legge.	
Allegati obbligatori:	
<input checked="" type="checkbox"/> progetto ai sensi degli articoli 5 e 7 (4);	
<input checked="" type="checkbox"/> relazione con tipologie dei materiali utilizzati (5);	
<input type="checkbox"/> schema d'impianto realizzato (6);	
<input type="checkbox"/> riferimento a dichiarazioni di conformità precedenti o parziali, già esistenti (7);	
<input checked="" type="checkbox"/> copia del certificato di riconoscimento dei requisiti tecnico-professionali;	
<input type="checkbox"/> attestazione di conformità per impianto realizzato con materiali o sistemi non normalizzati (8).	
Allegati facoltativi:	
<input type="checkbox"/> allegati facoltativi (9) _____	
DECLINA	
ogni responsabilità per sinistri a persone o a cose derivanti da manomissione dell'impianto da parte di terzi ovvero da carenze di manutenzione o riparazione.	
data _____	il r. _____
AVVERTENZE PER IL COMMITTENTE: responsabilità del committente o del proprietario; art. 8 (10);	
Il sottoscritto _____	
committente dei lavori sopraindicati dichiara di aver ricevuto copia/e della presente per gli usi consentiti/obbligatori di legge.	
data _____	firma _____
COPIA PER ALTRI USI	

Case Study - Dichiarazione di Conformità Impianto Elettrico

Comm.: - Impianto Elettrico Magazzino

ALLEGATO I
(DI CUI ALL'ART. 7)

DICHIARAZIONE DI CONFORMITA' DELL'IMPIANTO ALLA REGOLA DELL'ARTE

Il sottoscritto titolare o legale rappresentante dell'impresa operante nel settore Elettrico, con sede in , tel. part. IVA

- iscritta nel registro delle imprese (d.P.R. 7/12/1995, n. 581) della Camera C.I.A.A. di
 - iscritta all'albo Provinciale delle imprese artigiane (l. 8/8/1985, n. 443) di n.
- esecutrice dell'impianto (descrizione schematica):

IMPIANTO ELETTRICO LUCE E FORZA MOTRICE NUOVO COMPLESSO IMMOBILIARE AD USO LOGISTICO
MAGAZZINO VILLANTERIO

inteso come:

- nuovo impianto
- trasformazione
- ampliamento
- manutenzione straordinaria
- altro

L'impianto ha una potenza massima impegnabile di 800 kW.

commissionato da: installato nei locali siti nel comune di , di proprietà di

in edificio adibito ad uso:

- industriale
- civile
- commercio
- altri usi (Logistica);

DICHIARA

sotto la propria personale responsabilità, che l'impianto è stato realizzato in modo conforme alla regola dell'arte, secondo quanto previsto dall'art. 6, tenuto conto delle condizioni di esercizio e degli usi a cui è destinato l'edificio, avendo in particolare:

- rispettato il progetto redatto ai sensi dell'art. 5 da:
- seguito la norma tecnica applicabile all'impiego: **DM 37/08; norme CEI 81-10 / CEI 64-8 / CEI 11-1 / CEI 11-37;**
- installato componenti e materiali adatti al luogo di installazione (artt. 5 e 6);
- controllato l'impianto ai fini della sicurezza e della funzionalità con esito positivo, avendo eseguito le verifiche richieste dalle norme e dalle disposizioni di legge.

Allegati obbligatori:

- progetto ai sensi degli articoli 5 e 7;
- relazione con tipologie dei materiali utilizzati;
- schema di impianto realizzato;
- riferimento a dichiarazioni di conformità precedenti o parziali, già esistenti;
- copia del certificato di riconoscimento dei requisiti tecnico-professionali.
- attestazione di conformità per impianto realizzato con materiali o sistemi non normalizzati.

Allegati facoltativi:

DECLINA

ogni responsabilità per sinistri a persone e a cose derivanti da manomissione dell'impianto da parte di terzi ovvero da carenze di manutenzione o riparazione.

data

Il responsabile tecnico

Il dichiarante

(timbro e firma)

(timbro e firma)

AVVERTENZE PER IL COMMITTENTE: responsabilità del committente o del proprietario, art. 8

Case Study - Dichiarazione di Conformità Impianto MT



SIPIE

Società Italiana per Istrumenti Elettrici
CAPITALE SOCIALE € 260.000 INTERAMENTE VERSATO
Via Martini, 9 - 20092 Cinisello Balsamo (MI)
Tel. 02 66014800 (r.a.) - Fax 02 66010429
E-mail: sipiespa@iscainet.it
Partita I.V.A. 02107770964 - Cod. Fisc. 00751420159
R.E.A. di Milano n. 370453 - Registro Imprese Monza n. 61620

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Case Study - Dichiarazione di Conformità Impianto Schiuma AI

DICHIARAZIONE DI CONFORMITA' DELL'IMPIANTO ALLA REGOLA D'ARTE

Il sottoscritto [redacted] legale rappresentante dell'impresa [redacted] operante nel settore
IMPIANTI ANTINCENDIO con sede in via [redacted] comune di [redacted] (prov. [redacted] tel. [redacted]
part. IVA [redacted]

- iscritta nel registro delle imprese (d.P.R. 7/12/1995, n.581) della camera C.C.I.A.A. di [redacted] n. [redacted]
 iscritta all'albo Provinciale delle imprese artigiane (l. 8/8/1985, n. 443) di.....n.

esecutrice dell'impianto IMPIANTO SCHIUMA MAGAZZINO AEREOSOL A NORMA NFPA 11

inteso come:

- trasformazione nuovo impianto ampliamento manutenzione straordinaria
 altro

Nota - Per gli impianti a gas specificare il tipo di gas distribuito: canalizzato dalla 1ª -2ª - 3ª famiglia; GPL da recipienti mobili; GPL da serbatoio fisso. Per gli impianti elettrici specificare la potenza massima impegnabile.

commissionato da: [redacted]

installato nei locali siti nel comune di: [redacted] prov. [redacted] [redacted] [redacted]

n.....scala..... piano.....interno.....di proprietà di [redacted]

[redacted] in edificio adibito ad uso:

- industriale civile commercio altri usi

DICHIARA

sotto la propria personale responsabilità, che l'impianto è stato realizzato in modo conforme alla regola dell'arte, secondo quanto previsto dall'art. 6, tenuto conto delle condizioni di esercizio e degli usi a cui è destinato l'edificio, avendo in particolare:

X...rispettato il progetto redatto ai sensi dell'art.5 da [redacted]

X seguito la norma tecnica applicabile all'impiego -NFPA 11

X...installato componenti e materiali adatti al luogo di installazione ;Art. 5 e 6

X...controllato l'impianto ai fini della sicurezza e della funzionalità con esito positivo, avendo eseguito le verifiche richieste dalle norme e dalle disposizioni di legge.

Allegati obbligatori:

X progetto ai sensi degli articoli 5 e 7 ;

X...relazione con tipologie dei materiali utilizzati ;

X...schema di impianto realizzato ;

riferimento a dichiarazioni di conformità precedenti o parziali, già esistenti ;

X...copia di certificato di riconoscimento dei requisiti tecnico-professionali.

Allegati facoltativi: _____

DECLINA

ogni responsabilità per sinistri a persone o a cose derivanti da manomissioni dell'impianto da parte di terzi ovvero da carenze di manutenzione o riparazione.

[redacted] Il responsabile tecnico

[redacted] Il dichiarante

Case Study - Dichiarazione di Conformità Impianto Gas

DICHIARAZIONE DI CONFORMITA' DELL'IMPIANTO ALLA REGOLA D'ARTE	
"Allegato I" (di cui all' art. 7, del Decreto 22 gennaio 2008, n. 37) Decreto 19 maggio 2010 (G.U. n. 161 del 13.7.2010)	
Il sottoscritto _____	DICHIARAZIONE N° _____ del... _____
titolare o legale rappresentante dell'impresa (ragione sociale) _____	
operante nel settore _____	con sede in via _____ n. _____
comune _____	prov. _____
telefono _____	P.Iva _____
iscritta nel registro delle imprese (D.P.R. 7/12/1995, n. 581) della C.I.A.A. di _____	
iscritta all'albo provinciale delle imprese artigiane (legge 08.08.1985, n. 443) di _____	
esecutrice dell'impianto (descrizione schematica)	
Nuovo impianto gas con partenza dall'impianto esistente fino ai 2 moduli termici posti in copertura. Il tutto come da progetto redatto da progettista abilitato	
inteso come: <input checked="" type="checkbox"/> nuovo impianto <input type="checkbox"/> trasformazione <input type="checkbox"/> ampliamento <input type="checkbox"/> manutenzione straordinaria	
<input type="checkbox"/> altro (1) _____	
tipologia gas distribuito Gas II^a famiglia (gas naturale/gas metano/canalizzato)	
<small>Nota - per gli impianti a gas specificare il tipo di gas distribuito: canalizzato della 1^a, 2^a, 3^a famiglia, GPL da recipienti mobili; GPL da serbatoio fisso. Per gli impianti elettrici specificare la potenza massima impegnabile.</small>	
commissionato da _____	
installato nei locali siti nel comune di _____ prov. _____	
via _____	n.: _____ scala _____ piano _____ interno _____
di proprietà di _____	residente in via _____ n. _____
comune _____	prov. _____
in edificio adibito ad uso <input checked="" type="checkbox"/> industriale <input type="checkbox"/> civile <input type="checkbox"/> commercio <input type="checkbox"/> altri usi	
DICHIARA	
sotto la propria personale responsabilità, che l'impianto è stato realizzato in modo conforme alla regola dell'arte, secondo quanto previsto dall'art. 6, tenuto conto delle condizioni di esercizio e degli usi a cui è destinato l'edificio, avendo in particolare:	
<input checked="" type="checkbox"/> rispettato il progetto redatto ai sensi dell' art. 5 da (2)	
<input type="checkbox"/> Responsabile tecnico:	
<input checked="" type="checkbox"/> Professionista: _____	
Collegio/Ordine di _____	
<input checked="" type="checkbox"/> seguito la norma tecnica applicabile all'impiego (3) UNI 7129:2008	
<input checked="" type="checkbox"/> installato componenti e materiali adatti al luogo di installazione (artt. 5 e 6);	
<input checked="" type="checkbox"/> controllato l'impianto ai fini della sicurezza e della funzionalità con esito positivo, avendo eseguito le verifiche richieste dalle norme e dalle disposizioni di legge.	
Allegati obbligatori:	
<input checked="" type="checkbox"/> progetto ai sensi degli articoli 5 e 7 (4);	
<input type="checkbox"/> relazione con tipologie dei materiali utilizzati (5);	
<input type="checkbox"/> schema d'impianto realizzato (6);	
<input type="checkbox"/> riferimento a dichiarazioni di conformità precedenti o parziali, già esistenti (7);	
<input checked="" type="checkbox"/> copia del certificato di riconoscimento dei requisiti tecnico-professionali;	
<input type="checkbox"/> attestazione di conformità per impianto realizzato con materiali o sistemi non normalizzati (8).	
Allegati facoltativi:	
<input type="checkbox"/> allegati facoltativi (9) _____	
DECLINA	
ogni responsabilità per sinistri a persone o a cose derivanti da manomissione dell'impianto da parte di terzi ovvero da carenze di manutenzione o riparazione.	
data _____	il resp. _____
_____	_____
AVVERTENZE PER IL COMMITTENTE: responsabilità del committente o del proprietario, art. 8 (10) ²⁹⁶	
Il sottoscritto _____	
committente dei lavori sopraindicati dichiara di aver ricevuto copia/e della presente per gli usi consentiti/obbligatori di legge.	
data _____	firma _____
COPIA PER ALTRI USI	

Case Study – Segnalazione di Agibilità



Provincia di [REDACTED]

prot. n° [REDACTED]

li [REDACTED]

Permesso di Costruire n. [REDACTED] rilasciato in data [REDACTED]
e successive varianti in corso d'opera
(Permesso di Costruire n. [REDACTED] rilasciato in data [REDACTED], S.C.I.A. n. [REDACTED]
presentata in data [REDACTED], Permesso di Costruire n. [REDACTED] rilasciato in data [REDACTED]
[REDACTED], Permesso di Costruire n. [REDACTED] rilasciato in data [REDACTED] e S.C.I.A.
n. [REDACTED] presentata in data [REDACTED]

ATTESTAZIONE FORMAZIONE SILENZIO-ASSENSO AGIBILITA'

IL RESPONSABILE DEI SERVIZI TECNICI

Visto:

- il Permesso di Costruire n. [REDACTED] rilasciato in data [REDACTED] alla società [REDACTED] con sede in [REDACTED] - [REDACTED] n. [REDACTED] inerente la realizzazione di "INSEDIAMENTI PRODUTTIVI";
- il Parere igienico sanitario preventivo n. [REDACTED] del [REDACTED] emesso dall'ASL di [REDACTED] - Dipartimento di Prevenzione Medica – Servizio di igiene e sanità pubblica;
- la dichiarazione di conformità del progetto alla normativa vigente in materia rilasciata dal Comando Provinciale dei Vigili del Fuoco di [REDACTED] prot. n. [REDACTED] del [REDACTED];
- il Permesso di Costruire n. [REDACTED] rilasciato in data [REDACTED] alla società [REDACTED] con sede in [REDACTED] - [REDACTED] inerente la realizzazione di "SISOLS DI STOCCAGGIO DI PRODOTTI INDUSTRIALI – variante al P.d.C. n. [REDACTED]";
- la Segnalazione Certificata di Inizio Attività n. [REDACTED] presentata in data [REDACTED] dalla società [REDACTED] con sede in [REDACTED] - [REDACTED] inerente il "RIPOSIZIONAMENTO PLANIMETRICO VASCA ANTINCENDIO";
- il Permesso di Costruire n. [REDACTED] rilasciato in data [REDACTED] alla società [REDACTED] con sede in [REDACTED] - [REDACTED] inerente la realizzazione di "SISOLS DI STOCCAGGIO DI PRODOTTI INDUSTRIALI – variante al P.d.C. n. [REDACTED] e [REDACTED]";
- il Permesso di Costruire n. [REDACTED] rilasciato in data [REDACTED] alla società [REDACTED] con sede in [REDACTED] - [REDACTED] inerente la realizzazione di "VARIANTE AL P.d.C. [REDACTED] E [REDACTED]";

COMUNE DI [REDACTED]
Provincia di [REDACTED]

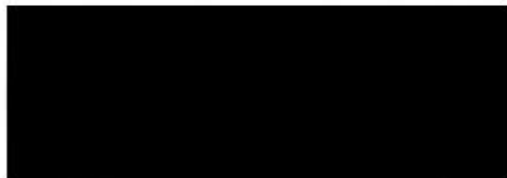
- la Segnalazione Certificata di Inizio Attività n. [REDACTED] presentata in data [REDACTED] dalla società [REDACTED] con sede in [REDACTED] ([REDACTED]) - [REDACTED] inerente il "VARIANTE FINALE";
- la comunicazione di ultimazione dei lavori presentata in data [REDACTED] in atti prot. n. [REDACTED], relativa a tutti gli immobili facenti parte del comparto produttivo di cui ai succitati titoli abilitativi;
- la richiesta di rilascio del certificato di agibilità presentato dalla società predetta in atti prot. n. [REDACTED] del [REDACTED] e relativa documentazione prevista dall'art. 25 del D.P.R. 380/2001 e ss.mm.ii, inerente gli edifici facenti parte del comparto produttivo ed identificati catastalmente al [REDACTED] foglio [REDACTED] particella [REDACTED] subalterni [REDACTED]

Richiamato l'art. 25 comma 4 del D.P.R. 6 giugno 2001 n.380 che dispone: *"Trascorso inutilmente il termine di cui al comma 3, l'agibilità si intende attestata nel caso sia stato rilasciato il parere dell'ASL di cui all'articolo 5, comma 3, lettera a). In caso di autodichiarazione, il termine per la formazione del silenzio assenso è di sessanta giorni."*

Constatato il decorso del termine di legge per la formazione del silenzio-assenso, senza che questa Amministrazione si sia pronunciata negativamente;

ATTESTA

che in data [REDACTED] si è formato il silenzio-assenso sulla domanda d'agibilità di cui in premessa, per cui tale domanda s'intende accolta e l'**agibilità attestata**.



Case Study - Certificazione REI materiali

MOD.PIN 2.2 - 2012_CERT.REI

PAG. 1

Rif. Pratica VV.F. n. _____

CERTIFICAZIONE DI RESISTENZA AL FUOCO DI PRODOTTI/ELEMENTI COSTRUTTIVI IN OPERA (CON ESCLUSIONE DELLE PORTE E DEGLI ELEMENTI DI CHIUSURA)

Il sottoscritto professionista antincendio Ingegnere [REDACTED] [REDACTED]
Titolo professionale Cognome Nome
iscritto al Ordine della Provincia di [REDACTED] con numero [REDACTED]
ordine / collegio professionale
iscritto negli elenchi del Ministero dell'Interno di cui all'art. 16 comma 4 del DLgs 139/06 [REDACTED]
n° codice iscrizione M.I.
con ufficio in [REDACTED]
via - piazza n. civico
[REDACTED] [REDACTED] [REDACTED]
c.a.p. comune provincia telefono
fax indirizzo di posta elettronica indirizzo di posta elettronica certificata

ai sensi e per gli effetti dell'art.4 comma 4 del D.P.R. 01/08/2011 n. 151, nell'ambito delle competenze tecniche della propria qualifica professionale, dopo avere eseguito i necessari **sopralluoghi e verifiche** atti ad accertare le caratteristiche tecniche di prodotti/elementi costruttivi presenti presso l'attività:

Deposito [REDACTED]
identificazione dell'edificio, complesso, etc.
Stazione di pompaggio - locale compressori
piano, locale, e quanto altro necessario per una corretta individuazione
sito in [REDACTED] [REDACTED] [REDACTED] [REDACTED]
via - piazza n. civico c.a.p.
[REDACTED] [REDACTED] [REDACTED]
comune provincia telefono
di proprietà di [REDACTED]
ditta, società, ente, impresa, etc.
con sede in [REDACTED] [REDACTED] [REDACTED]
via - piazza n. civico c.a.p.
[REDACTED] [REDACTED] [REDACTED]
Comune provincia telefono

CERTIFICA LA RESISTENZA AL FUOCO

dei prodotti/elementi costruttivi portanti (principali e secondari) e/o separanti riscontrati **in opera**, nel seguito specificati, e per essi attesta che la resistenza al fuoco si estende anche alle loro unioni, ai rispettivi dettagli e particolari costruttivi. Gli elementi costruttivi di cui al presente certificato sono elencati nella tabella della pagina successiva assieme all'elenco di tutta la documentazione resasi necessaria per la valutazione suddetta.

Il sottoscritto dichiara che la presente certificazione si basa sulle **reali caratteristiche riscontrate in opera** e relative a:

- numero e posizione
- geometria
- materiali costitutivi
- condizioni di incendio
- condizioni di carico e di vincolo
- caratteristiche e modalità di posa di eventuali protettivi.

La presente certificazione è composta da n. 2 pagine e da n. 1 tavole grafiche riepilogative, siglate dal sottoscritto, nelle quali è indicata la specifica posizione di tutti gli elementi identificati nelle successive tabelle.

_____ Data _____ Firma del professionista

TABELLA DEGLI ELEMENTI CERTIFICATI AI FINI DELLA RESISTENZA AL FUOCO

numero identificativo	elemento tipo e sua posizione ¹	classe di resistenza al fuoco
1	Blocco in cemento muratura portante	REI 120
sintetica descrizione dell'elemento tipo ²		
Blocco in cemento a due fori dim. 20x20x50 cm e 20x20x50 cm utilizzati per realizzare muratura portante		
tipo di valutazione condotta		
<input type="checkbox"/> metodo sperimentale	<input type="checkbox"/> metodo tabellare (da D.M. 16/2/2007)	<input checked="" type="checkbox"/> metodo analitico
Elenco allegati ³ :		
Dichiarazione REI del Produttore		

numero identificativo	elemento tipo e sua posizione	classe di resistenza al fuoco
sintetica descrizione dell'elemento tipo		
tipo di valutazione condotta		
<input type="checkbox"/> metodo sperimentale	<input type="checkbox"/> metodo tabellare (da D.M. 16/2/2007)	<input type="checkbox"/> metodo analitico
Elenco allegati :		

N.B. Per ulteriori elementi replicare in maniera analoga la tabella.

Data



Firma del professionista

¹ La certificazione deve essere predisposta per gruppi di elementi riconducibili ad un elemento tipo. L'individuazione degli elementi tipo deve tenere conto delle effettive differenze funzionali degli elementi costruttivi che rappresentano (elementi portanti, separanti, portanti e separanti), di quelle tipologiche (travi, pilastri, solai, muri, ecc.), di quelle costruttive (elementi di acciaio, di calcestruzzo, di laterizio, di legno, ecc.), della metodologia di valutazione adottata (sperimentale, analitica, tabellare) e della classe di resistenza al fuoco richiesta.

² La descrizione dell'elemento tipo deve almeno riportare le dimensioni significative, i materiali componenti, lo schema statico (se elemento strutturale) e i sistemi protettivi se presenti.

³ Relazioni di calcolo integrali, rapporti di classificazione relativi a prove di laboratorio condotte in conformità al DM 16.02.2007, ovvero rapporti di prova relativi a prove condotte in conformità alla circolare n. 91 del 14.09.1961, eventuali estratti dei fascicoli tecnici resi disponibili dai produttori in conformità all'allegato B del DM 16.02.2007 punto B.8; quanto altro richiamato dalla presente certificazione. Tali allegati, consegnati al titolare dell'attività, fanno parte del fascicolo da rendere disponibile presso l'indirizzo indicato nella Segnalazione Certificata di Inizio Attività.

Case Study - CPI Certificato Prevenzione Incendi

PRATICA N. [REDACTED]
PROT. N. [REDACTED]



C.P.I. 1

MINISTERO DELL'INTERNO COMANDO PROVINCIALE VIGILI DEL FUOCO

CERTIFICATO DI PREVENZIONE INCENDI

VISTI L' ART. N. 16 DEL DECRETO LEGISLATIVO DEL 8 MARZO 2006 N.139,
VISTI IL D.P.R. 01 AGOSTO 2011 N. 151 E IL D.M. 07 AGOSTO 2012.

SI RILASCIATA:

[REDACTED]

DATA PRESENTAZIONE SCIA [REDACTED]

Il presente C.P.I. viene rilasciato per l'attività individuata al n. 70.2.C dell'elenco allegato al D.P.R. 1/08/2011 N.151 relativo a:
Depositi di merci (materiali combust. > 5000 kg), con superf. oltre 3000 mq
e comprendente anche le seguenti altre attività:

- 15.3.C Depositi, rivendite di alcoli (concentr. > 60% in volume), capacità oltre 50mc
- 74.3.C Impianti produzione calore con potenzialità superiore a 700 KW
- 3.9.C Depositi gas infiamm. disciolti/liquefatti in recipienti mobili (> 1000kg)

Sita nel Comune di [REDACTED]

Sostanze che presentano pericolo di incendio o scoppio
VEDERE ELENCO SOTTODESCRITTO

Impianti e apparecchiature che presentano pericolo d'incendio
LOCALI ADIBITI A DEPOSITO E MATERIALI VARI CON SUPERFICIE TOTALE DI CIRCA MQ.35.000.
DEPOSITO DI ALCOOL CON CONCENTRAZIONE SUPERIORE A 60% IN VOLUME CON UN QUANTITATIVO DI T.138.
(relativamente all'attività 15)
IMPIANTO TERMICO A METANO CON POTENZ.TOTALE DI KW 1.725. (relativamente all'attività 74)
DEPOSITO GAS INFIAMMABILI IN BOMBOLETTE SPRAY DI T.154 max di propellente. (relativamente all'attività 3)

Limitazioni, divieti e condizioni di esercizio
Rispettare gli obblighi di cui all'art. 6 del D.P.R. 01/08/2011 N. 151

Il presente certificato annulla e sostituisce quello rilasciato il [REDACTED]

CONTROLLI DA EFFETTUARE PERIODICAMENTE:
SECONDO QUANTO PREVISTO DALLA NORMATIVA SPECIFICA E DAL MANUALE D'USO E MANUTENZIONE

Ai sensi dell'art. 5 del D.M. 7/8/2012 la richiesta di rinnovo periodico di conformità antincendio deve avvenire entro i termini previsti ai commi 1 e 2 dell' art. 5 del D.P.R. 1 AGOSTO 2011 N. 151, a decorrere dalla data di presentazione della prima segnalazione.

Il Titolare è tenuto ad osservare gli obblighi stabiliti dall'art. 6 del D.P.R. 01 Agosto 2011 N.151 durante l'esercizio delle attività riportate nel presente certificato nonché a richiedere il rinnovo periodico dello stesso secondo le modalità riportate all'art. 5 del D.P.R. 01 Agosto 2011 n.151. Qualora, durante il periodo di validità del presente certificato, vengano apportate modifiche alle strutture, agli impianti o alle condizioni d'esercizio, tali da comportare un aggravio delle preesistenti condizioni di sicurezza antincendio, il Titolare è tenuto ad avviare nuovamente le procedure di cui all'art.3, comma 1, D.P.R. 01.08.11 N.151.

Il Funzionario Istruttore Responsabile del Procedimento
Tecnico che ha effettuato il sopralluogo

[REDACTED]

[REDACTED] li [REDACTED]



Pagina 1 di 2

PRATICA N. [REDACTED]
PROT. N. [REDACTED]



C.P.I. 1

MINISTERO DELL'INTERNO
COMANDO PROVINCIALE VIGILI DEL FUOCO

CERTIFICATO DI PREVENZIONE INCENDI

VISTI L' ART. N. 16 DEL DECRETO LEGISLATIVO DEL 8 MARZO 2006 N.139,
VISTI IL D.P.R. 01 AGOSTO 2011 N. 151 E IL D.M. 07 AGOSTO 2012.

SI RILASCI A:

[REDACTED]

Sistemi, dispositivi e attrezzature antincendi

- n. 12 IDRANTE/I S/P SUOLO CON DUE BOCCHE UNI 70
- n. 7 IDRANTE/I SOTTOSUOLO DA 70 MM.
- n. 71 IDRANTE/I A CASSETTA DA 45 MM.
- n. 2 ATTACCO UNI DA 70 PER AUTOMEZZI VF
- n. 1 DEPOSITO ACQUA FINO A MC. 510
- n. 1 IMPIANTO SPRINKLER
- n. 1 IMPIANTO AUTOMATICO FISSO SCHIUMA
- n. 1 IMPIANTO RILEVATORE DI FUMO
- n. 1 IMPIANTO RILEVATORE GAS
- n. 1 ESTINTORE/I A CO2 CARR. DA KG. 30
- n. 15 ESTINTORE/I PORTATILE CO2 KG. 6
- n. 11 ESTINTORE/I A POLVERE CARR. DA KG. 30
- n. 124 ESTINTORE/I A POLVERE DA KG. 6

Ai sensi dell'art. 5 del D.M. 7/8/2012 la richiesta di rinnovo periodico di conformità antincendio deve avvenire entro i termini previsti ai commi 1 e 2 dell' art. 5 del D.P.R. 1 AGOSTO 2011 N. 151, a decorrere dalla data di presentazione della prima segnalazione.

Il Titolare è tenuto ad osservare gli obblighi stabiliti dall'art. 6 del D.P.R. 01 Agosto 2011 N.151 durante l'esercizio delle attività riportate nel presente certificato nonché a richiedere il rinnovo periodico dello stesso secondo le modalità riportate all'art. 5 del D.P.R. 01 Agosto 2011 n.151. Qualora, durante il periodo di validità del presente certificato, vengano apportate modifiche alle strutture, agli impianti o alle condizioni d'esercizio, tali da comportare un aggravio delle preesistenti condizioni di sicurezza antincendio, il Titolare è tenuto ad avviare nuovamente le procedure di cui all'art.3, comma 1, D.P.R. 01.08.11 N.151.

Il Funzionario Istruttore Responsabile del Procedimento
Tecnico che ha effettuato il sopralluogo

[REDACTED]
[REDACTED]



Pagina 2 di 2

Case Study - Messa a Terra e Scariche Atmosferiche

AlP A.S.L. Provincia di [REDACTED]
 Unità Operativa Impiantistica

MODULO DI TRASMISSIONE DICHIARAZIONE DI CONFORMITA' D.P.R. 22/10/2001 N° 462

PER NUOVO IMPIANTO A CURA DEL DATORE DI LAVORO IN PRESENZA DI LAVORATORI SUBORDINATI

Il sottoscritto [REDACTED] in qualità di LEGALE RAPPRESENTANTE
 della DITTA: [REDACTED] Sede Sociale [REDACTED]
 Via [REDACTED] n.° [REDACTED] Cap [REDACTED] Tel [REDACTED]
 Indirizzo di posta elettronica e-mail [REDACTED]

presenta e/o invia DICHIARAZIONE DI CONFORMITA' della Ditta Installatrice [REDACTED] di [REDACTED]
 con Sede in [REDACTED] [REDACTED] [REDACTED]
 Indirizzo di posta elettronica e-mail [REDACTED]

- Messa a terra
 Protezione contro le scariche atmosferiche
 Luoghi con pericolo di esplosione

(Gli allegati obbligatori previsti dal D.M. 37/08 sono conservati presso la Ditta utente)

Ubicazione dell'impianto:

Città: [REDACTED] [REDACTED] [REDACTED] Cap [REDACTED] Tel.

TIPO D'IMPIANTO SOGGETTO A VERIFICA:

- CANTIERE
 OSPEDALE E CASE DI CURA
 AMBULATORIO MEDICO
 AMBULATORIO VETERINARIO
 CENTRO ESTETICO
 EDIFICIO SCOLASTICO
 LOCALE DI PUBBLICO SPETTACOLO
 STABILIMENTO INDUSTRIALE..... Tipo attività
- ATTIVITA' AGRICOLA..... Tipo attività
- ATTIVITA' COMMERCIALE..... Tipo attività
- ILLUMINAZIONE PUBBLICA
- IMPIANTO A MAGGIOR RISCHIO IN CASO D'INCENDIO. Tipo attività .Logistica.....
- TERZIARIO..... Tipo attività
- ARTIGIANATO..... Tipo attività
- ALTRO: SPECIFICARE TIPO DI ATTIVITA'
- Numero degli addetti _____

Verifica impianto protezione contro i fulmini

- a) Parafulmini ad asta si no n.° 1
- b) Parafulmini a gabbia si no n.° 3
 N1 superficie protetta 1 mq 29.260-
 N2 superficie protetta 2 mq 3.088
 N3 superficie protetta 3 mq 240
- c) Strutture, recipienti e serbatoi metallici per i quali
 chiede la verifica dell'impianto di protezione
 si no n.° _____
- d) Capannoni metallici per i quali si richiede la
 verifica dell'impianto di protezione
 si no n.° _____
- e) Per cantieri edili indicare il numero di strutture
 metalliche per le quali si chiede la verifica
 dell'impianto di protezione dai fulmini n.° _____

Tipo di alimentazione

- Dalla rete B.T. _____
- Media tensione _____
- Alta tensione _____
- Imp. di produzione autonoma _____

Potenza installata kW 300
 N° Cabine di trasformazione 1
 N° Dispensori 8

Firma e timbro del datore di lavoro

[REDACTED]

N.B. Barrare le caselle che interessano
 Scrivere possibilmente in stampatello

5.4 TOOL APPLICATION AND RESULTS

Once the documentation was controlled as showed into the previous paragraph (5.3 Document Control); it was possible during the control, to fill in the DARM-Ranking Matrix following the procedure previously seen into the (4.6 DARM: The Tool Procedure).

Having the access to the documentation and related information, it was possible to carry out the **document control** though the **DARM Ranking Matrix**. The tool, working on two different fronts, **transaction** and **operations** as well; gave us the **flag analysis** based on these two different risks type. The control was carried out by following the document scheme reported (Figure 50).

As already mentioned, the tool DARM includes the risk assessment techniques for attributing the right importance to the documents based on their **Impact on people's safety and organization** and working in this way; it generated the following results:



Phase	Flag	Document missing list	Suggestion
Transaction		All documents are present	It is possible to sign the purchasing contract

Table 43 - Case Study DARM Ranking Matrix Transaction Results

Phase	Flag	Document missing / not valid or applicable	Doc. Code	Suggestion
Operations		Regolamento delle parti comuni	L.1.5	Not Present: (common areas ¹⁶²) This document was stipulated between the Tenant and the Municipality. This document missing could generate some limitations (art. 1138, c 3, cc) then the Q&A session must clarify the issue.
		Verbale di condominio	L.1.6	Not Present: These “Reports” could contain extraordinary works approved between the Tenant and the Property for which some costs can arise. Then the Q&A session must clarify this issue.
		Voltura catastale	L.2.5	Not Present: Document for which is possible to update the new Property subject of a Building. The Cadastre has not legal value. Then, this document is not critical.
		Estratto PGT	L.3.2	Not Present: Not critical but it would be useful to have it in order to make the assessment easier.
		Convenzione Urbanistica	L.3.3	Present, Not Applicable: Agreement between the municipality and the Property in which are present the Property’s obligations that must be fulfilled. L. 241/1990 art.11. Some Obligations

¹⁶² Common areas are often present into the so-called “Magna Logistics Park” for which green areas, external lightings, asphalt ways are present and ruled.

			have not been fulfilled yet, then some extra costs for alignment could arise. It is not carried out a bus line yard and related shelter.
	Certificato Omologazione CE	T.1.20	Not Present: this document must be present and showed according to the power electrical supplier plant. It can be gathered through the power electrical supplier.
	Libretto dell'impianto	T.1.26	Not Present: documents related to the dumbwaiters that, affects people's safety but past activities and facility reports ensure that the maintenance was carried out. It can be gathered through the mechanical lift supplier.

Table 44 - Case Study DARM Ranking Matrix Operation Results

Final Remarks:

- The general construction quality (structures and plants) is of high level compared to other standard logistic buildings that allowed a faster and precise analysis;
- The building, given the DARM Ranking Matrix Analysis follows all the main laws and regulations, therefore the execution of activities is not compromised;
- The documents missing can be managed through the Q&A, contractual clauses and low discounts. Regardless the missing, the low documents criticality do not represents a contractual transaction or operation high deal.

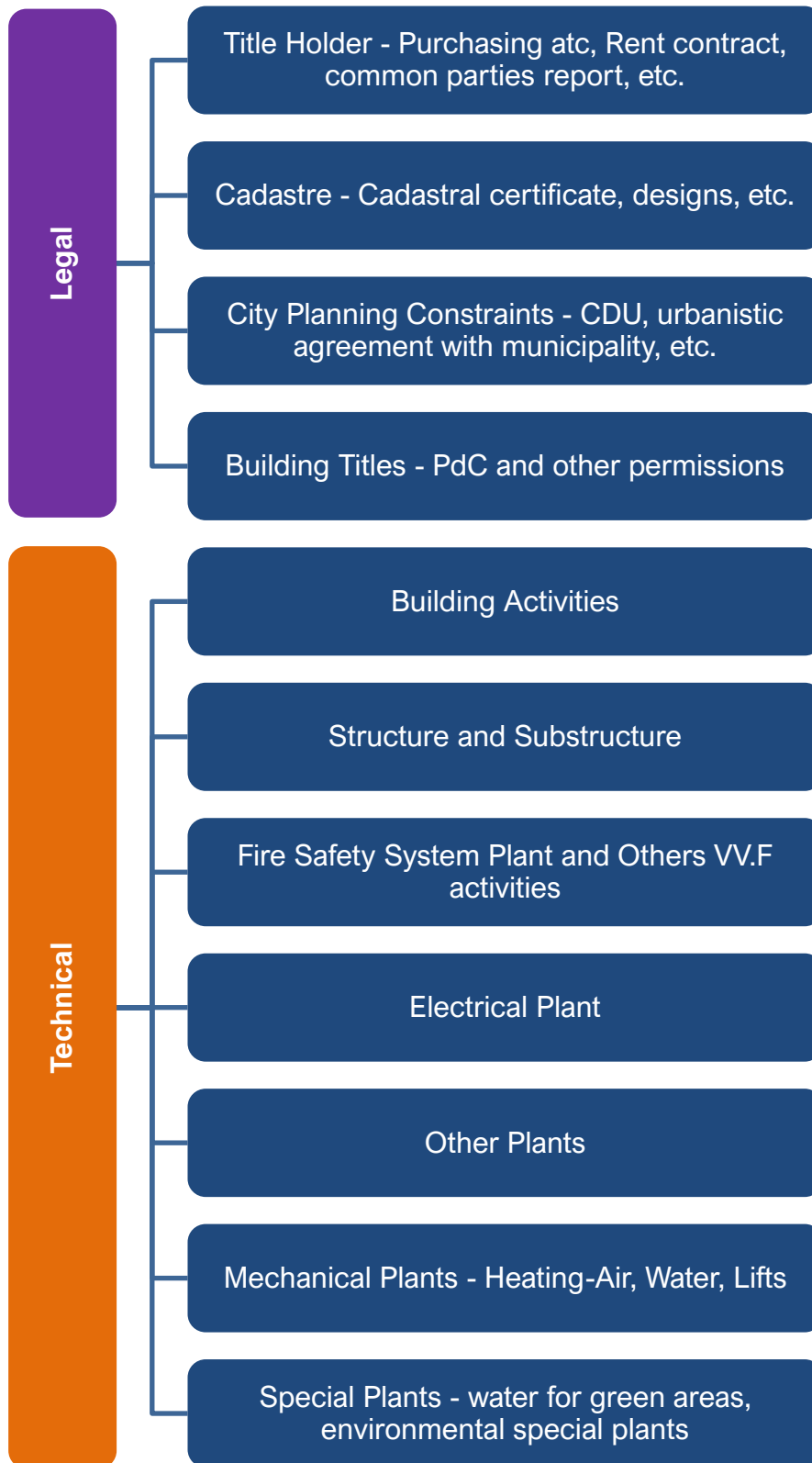


Figure 50 – Case Study - Document control structure

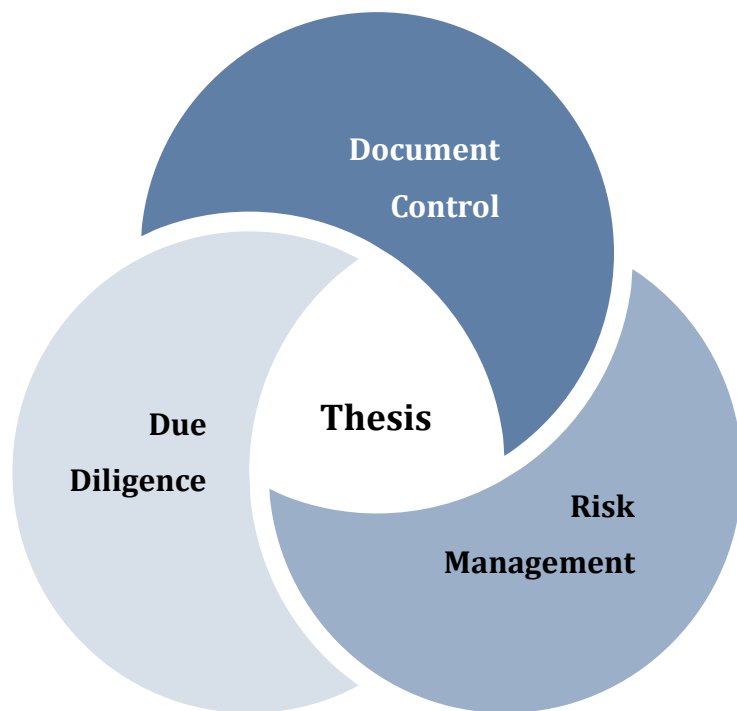
DARM - RANKING MATRIX									
CATEGORY	ISSUE	TOPIC	CODE	DOCUMENT TEAR 1	DOCUMENT TEAR 2	EXPIRY DATE STATUS	AVAILABILITY	NOTES	
LEGAL	Title Holder & Administrative	Property constraint	1.1.1	Atto notarile di compravendita	-	A	Y		
			1.1.2	Atto di conferimento	-	A	Y		
			1.1.3	Contratto di locazione	-	A	Y		
			1.1.4	Iscrizione ipotecaria	-	A	Y		
			1.1.5	Regolamento delle parti comuni	-	D	N	Not Present	
			1.1.6	Verbale di condominio	-	A	N	Not Present	
	Cadastral	Property's information and cadastral identifications	1.2.1	Certificato catastale	-	A	Y		
			1.2.2	Misura catastale (p/z elettronica)	-	A	Y		
			1.2.3	Planimetria catastale	-	B	Y		
			1.2.4	Denuncia di successione	-	A	Y		
			1.2.5	Voluntario catastale	-	A	N	Not Present	
			1.3.1	CDU - Certificato di destinazione urbanistica	-	A	Y		
	City Planning Strengths and Constraints	Prism's information and cadastral identifications	1.3.2	PIST o PRG (estratto)	-	B	N	Not Present	
			1.4.3	Lotizzazione urbanistica	-	A	N	Present, Not Applicable	
			1.4.1	Concessione edilizia	Concessione edilizia	A	Y		
			1.4.2	SCIA/autor. SCIA	SCIA/autor. SCIA	A	Y		
	Building Status	Safety and accessibility in use (built post 2016)	1.4.7	DM: Revisione di Contrato	DM: Revisione di Contrato	A	Y		
			1.4.8	CIA	CIA	A	Y		
1.4.3			APL	APL	B	Y			
1.4.4			Colloquio statico	Colloquio statico	A	Y			
BUILDING	Safety and accessibility in use	Activity	T.1.1	Certificato/Regolazione di agibilità	-	A	Y		
			T.1.2	Manuale delle manutenzione	-	D	Y		
			T.1.3	Verbale di consegna dell'edificio	-	A	Y		
			T.1.4	APF - Attestato di prestazione energetica	-	B	Y		
			T.1.5	Certificazione energetica volontaria (RELU BIPAV)	-	D	Y		
			T.1.6	SCA - Valutazione d'impatto ambientale	-	B	Y		
	Hygiene, health and environment	Safety and accessibility in use	1.1.7	AUA - Autorizzazione unica ambientale	-	B	Y		
			1.1.8	DVH ATEX - Documento Valutazione Rischi per Atmosfere Esplosive	Classificazione ambiente ATEX	D	Y		
			1.1.9	Certificato di collaudo statico	-	A	Y		
			T.1.10	Certificato di collaudo statico	-	A	Y		
			T.1.11	Certificato di omologazione CE	-	A	Y		
			T.1.12	Certificato di collaudo statico	-	A	Y		
STRUCTURE SUBSTRUCTURE	Load bearing structure (Warehouse - Battery Charge Offices)	Mechanical resistance and stability	T.1.9	Certificato di collaudo statico	-	A	Y		
			T.1.10	Certificato di collaudo statico	-	A	Y		
			T.1.11	Certificato di omologazione CE	-	A	Y		
FIRE SAFETY	Fire safety system	Safety in case of fire	T.1.13	Pratica VVT	-	B	Y		
			T.1.14	Dichiarazione di conformità per ogni tipo d'impianto antincendio (Cassa, Tank, SIK, Hydramet, Pumps, Special Alarm)	-	A	Y		
			T.1.15	Pratica VVT	-	B	Y		
TECHNICAL	ELECTRICAL PLANTS	Electrical plant	Safety and accessibility in use	1.1.14	Dichiarazione di conformità per ogni impianto e componente	-	A	Y	
				T.1.15	Pratica Grounding and Lighting System	-	A	Y	
				1.1.16	Pratica ATEX and MI	-	A	Y	
				1.1.17	DVH per scariche atmosferiche	-	A	Y	
				1.1.18	Dichiarazione di conformità per ogni impianto e componente	-	A	Y	
				1.1.19	CP per impianti con potenza > 25 kW	-	B	Y	
	OTHER PLANTS	Special Electrical plant (Power FI, Spallati)	Safety and accessibility in use	1.1.20	Certificato di omologazione CE	-	A	N	Not Present
				1.1.21	Dichiarazioni di conformità	-	A	Y	
				1.1.22	Dichiarazioni di conformità	-	A	Y	
				1.1.23	Dichiarazioni di conformità	-	A	Y	
				1.1.24	Dichiarazioni di conformità	-	A	Y	
				1.1.25	Libretto dell'impianto	-	A	Y	
MECHANICAL PLANTS	Hydraulic, elevators	Safety and accessibility in use	T.1.26	Libretto dell'impianto	-	A	N	Not Present	
			1.1.27	Libretto dell'impianto	-	A	Y		
			1.1.28	Dichiarazioni di conformità	-	A	Y		
			1.1.29	Verbal di prima messa in esercizio	-	B	Y		
OTHER PLANTS	Mechanical (Air cooling, heating system, air extraction)	Safety and accessibility in use	1.1.27	Libretto dell'impianto	-	A	Y		
			1.1.28	Dichiarazioni di conformità	-	A	Y		
OTHER PLANTS	Special plants (Isolatore)	Safety and accessibility in use	1.1.28	Dichiarazioni di conformità	-	A	Y		
			1.1.29	Verbal di prima messa in esercizio	-	B	Y		
TRANSACTION OPERATION									

Figure 51 – Case Study DARM Ranking Matrix Application.

6 CONCLUSIONS AND FUTURE IMPROVEMENTS

Improvements and Extensions

The aim of this dissertation, as described in the previous chapters, has been based on the specific need of synthesizing a broad and complex issue concerning the building's legal and technical assessment considering the due



diligence activity, especially focusing on the first and most critical phase; *the Information Preliminary Check*, so called *Desktop Activity*.

This thesis work has had the final aim of analysing the Real Estate Services focused on the importance of **document control** as support to the **legal and technical due diligence** involving the **operation** and **transaction risks** related to the missing of the main compulsory documents. The document control applied to the due diligence activity (that is itself a risk assessment tool) for the real estate and its players, showed during this study the huge importance of controlling and take care about these issues, often undervalued as it has been seen considering the events and consequences related to the legal sentences.

Mixing theory of due diligence procedures, document management standards, risk management-assessment techniques and including compulsory National laws; it has been possible to develop a **document control tool** for the due diligence real estate field. This tool represents just the starting point of the document management linked to the risk management techniques and infinite are the stakeholders, organizations, asset classes, etc. at which is possible to address this approach.

The **tool** implementation and application to the case study, generated good results in terms of practical usage and easy understanding of building assessment. Thanks to some interviews gathered through Company in the sector and the documentation present, associated to the National Law framework for which the tool has reached a practical validity; it has been possible to get more information for the tool updating, for example:

- Some documents, by Law were considered separately but analysing the real documentation; has been possible to group together because of their nature (e.g. grounding and lighting for the D.P.R. 462/2001 – T.1.16 modulo dichiarazione di trasmissione dichiarazione di conformità);
- Some documents, in the practical case study control, were more specific and detailed with respect to the one contained by Law (e.g. VV.F. folder in which, in addition to the CPI, SCIA, Materials Certificates some other critical documents have been added);
- Some documents not directly asked by law and moreover, not mandatory; have come up as critical thanks to the Company's interviews¹⁶³. Then updated into the tool. (e.g. documents for historical past P.d.C. and others, Convenzione Urbanistica and related sub agreements, etc.).

By considering the thesis work and related **document control tool** developed; it is possible to report the following final consideration about **strengths**, **weaknesses**, **Treats** and **improvements opportunities**, by considering the **SWOT**¹⁶⁴ analysis:

¹⁶³ **BNP Paribas Real Estate Company** – Due Diligence Division and **Savills Company** – Building and Project Consultancy Division.

¹⁶⁴ SWOT Analysis: Strengths – Weaknesses – Opportunities – Treats Analysis. Technique used for having a general overview about issues group in these categories applied in project management.

S

People Safety

- The tool applies the risk management techniques by using as risk criteria at first, the **people's safety** considering the today's compulsory tangible **Laws**; the D. Lgs 231/2001 and D. Lgs 81/2008;
- The tool applies the risk management techniques by considering the Laws sanctions but, moreover, to get a stronger consistency, increases itself structure by analysing the **legal sentences**;
- Using this tool for the organization's acknowledge, probably, some dramatic events (related to the sentences) could have been possible to avoid:
 - Sentence n° 8092 – 20/02/2017. Furniture lost during a fire because of **CPI missing** (smoke detector plant not in compliance);
 - Sentence n° 31210 – 20/07/2016. **People's death** during an explosion and flash-fire because of **ATEX document missing** (hydrogen extraction plant missing);
 - Sentence n° 31095 – 14/11/2011. Thyssen case. **People's death**. Voluntary killing sentence for **CPI missing**, fire safety plant underestimation and **insurance companies' assessment reports** voluntary not consideration.

S	<p>Risk Perception</p> <ul style="list-style-type: none"> • The tool once explained makes possible to make aware about all possible consequences in case of event occurrence and related critical document missing-validity-applicability. Then increase the Managers and Organization acknowledge about possible issues;
S	<p>Tool Application</p> <ul style="list-style-type: none"> • The tool application considering the case study about the logistics building has resulted easy to use and flexible in modifying its structure adapting its contents to different issues. This means that;
W	<p>Tool's Techniques Implementation</p> <ul style="list-style-type: none"> • The implementation, considering the risk assessment techniques, the laws and regulations research and information extract does not result easy at the beginning; • Some legal issues often are not clear in propose its information and the legislative frame-work sometimes results hard to understand; • Time for getting information, Technical and Legal skills are required for the final implementation.
T	<p>Risk Perception and National Laws</p> <ul style="list-style-type: none"> • The risk perception and then the legal consequences explanation, are useful and they work if the laws find

practical application. Sometimes, in Italy but not only here, this result could be a treat point because of the law and its sanctions find hard application, especially when we are talking about the first violation;

- This issue could compromise the scalability tool for other countries in implementing the documental risk assessment methodology.

Added Value for other Players and Scalability

- The **DARM tool** structure results flexible and, because of its systematic framework, could implement the other DARM Tool Sheets:
 - 3. **Action Plan**: before going ahead carrying out the walkthrough, given the DARM – Ranking Matrix results; it is possible to spot critical deficiencies to be deeper analysed during the inspection activity;
 - 4. **Alignment Costs Assessment**: for each documents of set of them, results possible to bestow a **subject accountable**, the **average time** for gathering for that document and the **costs**;
- The **DARM tool** structure results applicable to other Asset Classes set. It can be **scaled** to Retail and other similar industrial buildings.

O

- The **DARM tool** structure applied to logistics building bestowed a weight to **environmental issues** based on the specific activities. The weight-system, because of low environmental issue, does not represent a treat for people's safety. In this perspective, the environmental topics are relevant but not critical. In contrary, in case of **building** with a **production activity** (gasses, oils, etc.); it is simple to understand that; those issues are taken under the D. Lgs. 152/2006 (TU Ambientale). Considering the specific **building's destination use** is possible to "*weight*" the issues considering anyway the **people's safety** that, for a production field, is largely included.

Table 45 - SWOT Conclusions and Improvements Analysis.

ATTACHMENTS

- 1. DARM – Check List Full Print*
- 2. DARM – Ranking Matrix Full Print*
- 3. Overall Flow Chart Process*

DARM - CHECK LIST

CATEGORY	ISSUE	TOPIC	CODE	DOCUMENT TEAR 1	DOCUMENT TEAR 2	EXPIRY DATE STATUS	REGULATIONS & STANDARDS	Titles of laws			
LEGAL	Title Holder & Administrative	Property constraint	L.1.1	Atto notarile di compravendita	-	A	Codice Civile	Codice Civile			
			L.1.2	Atto di conferimento		A					
			L.1.3	Contratto di locazione		A					
			L.1.4	Ispezione ipocatastale		A					
			L.1.5	Regolamento delle parti comuni		D					
			L.1.6	Verbale di condominio		A					
	Cadastr	Property's information and cadastral identifications	L.2.1	Certificato catastale	-	A	L. 122/2010 art. 19	Conversione in legge, con modificazioni, del decreto-legge 31 maggio 2010, n. 78, recante misure urgenti in materia di stabilizzazione finanziaria e di competitività economica			
			L.2.2	Visura catastale (e/o storica)		A					
			L.2.3	Planimetria catastale		A					
			L.2.4	Denuncia di accatastamento		A					
			L.2.5	Voltura catastale		A					
	City Planning Strengths and Constraints	Property's information and cadastral identifications	L.3.1	CDU - Certificato di destinazione urbanistica	-	A	D.P.R. 380/2001 art. 30	Testo unico delle disposizioni legislative e regolamentari in materia edilizia			
			L.3.2	PGT o PRG (estratto)		B					
			L.3.3	Convenzione urbanistica		A			L. 241/1990 art. 11	Nuove norme sul procedimento amministrativo	
	Building Titles	Safety and accessibility in use (Built post 1967)	L.4.1	PdC - Permesso di Costruire	-	Concessione edilizia	A	D.P.R. 380/2001	Testo unico delle disposizioni legislative e regolamentari in materia edilizia		
			L.4.2			Licenza edilizia	A				
L.4.3			SCIA/super SCIA			A					
L.4.4			CILA			A					
BUILDING	Safety and accessibility in use	T.1.1	Certificato/Segnalazione di agibilità	-	APE	B	-	-			
					Collaudo statito	A					
					Conformità delle opere	A			D.P.R. 380/2001 art. 24	Testo unico delle disposizioni legislative e regolamentari in materia edilizia	
					Aggiornamento catastale	A			D. Lgs 222/2016	Individuazione di procedimenti oggetto di autorizzazione, segnalazione certificata di inizio di attività (SCIA), silenzio assenso e comunicazione e di definizione dei regimi amministrativi applicabili a determinate attività e procedimenti	
					Dichiarazione di conformità degli impianti	A			-	-	
					T.1.2	Manuale delle manutenzioni			D	D.P.R. 380/2001	Testo unico delle disposizioni legislative e regolamentari in materia edilizia
					T.1.3	Verbale di consegna dell'edificio			A		
					Activity	Energy economy and heat retention			T.1.4	APE - Attestato di prestazione energetica	-	-	B	Ex L. 10/91	Norme per l'attuazione del Piano energetico nazionale in materia di uso nazionale dell'energia, di risparmio energetico e di sviluppo delle fonti rinnovabili di energia
	D. Lgs 192/2005	Attuazione della direttiva 2002/91/CE relativa al rendimento energetico nell'edilizia									
	D.P.R. 380/2001 art. 128										
	L. 90/2013 art. 6	Disposizioni urgenti per il recepimento della Direttiva 2010/31/UE del Parlamento europeo e del Consiglio del 19 maggio 2010, sulla prestazione energetica nell'edilizia per la definizione delle procedure d'infrazione avviate dalla Commissione europea, nonché altre disposizioni in materia di coesione sociale									
	Hygiene, health and environment	T.1.6	T.1.6	VIA - Valutazione d'impatto ambientale	-	-	B	D. Lgs 152/2006	Norme in materia ambientale		
T.1.7							AUA - Autorizzazione unica ambientale	-	B	D.P.R. 59/2013	Regolamento recante la disciplina dell'autorizzazione unica ambientale e la semplificazione di adempimenti amministrativi in materia ambientale gravanti sulle piccole e medie imprese e sugli impianti non soggetti ad autorizzazione integrata ambientale
Safety and accessibility in use	T.1.8	T.1.8	DVR ATEX - Documento Valutazione Rischi per Atmosfere Esplosive	-	-	D	D. Lgs 81/2008 Titolo XI	Testo unico sulla salute e sicurezza nei luoghi di lavoro			
						Classificazione ambiente ATEX					
STRUCTURE & SUBSTRUCTURE	Load bearing structure (Warehouse - Battery Charge Offices)	Mechanical resistance and stability	T.1.9	Certificato di collaudo statico	-	A	ex L. 1086/71	Norme per la disciplina delle opere di conglomerato cementizio armato, normale e precompresso ed a struttura metallica			
							D.P.R. 380/2001 art. 128	Testo unico delle disposizioni legislative e regolamentari in materia edilizia			
	Curtain wall	Mechanical resistance and stability	T.1.10	Certificato di collaudo statico	-	A	ex L. 1086/71	Norme per la disciplina delle opere di conglomerato cementizio armato, normale e precompresso ed a struttura metallica			
							D.P.R. 380/2001 art. 128	Testo unico delle disposizioni legislative e regolamentari in materia edilizia			
Steel Frame for Sandwich panel	Safety and accessibility in use	T.1.11	Certificato di omologazione CE	-	A	D. Lgs 81/2008	Testo unico sulla salute e sicurezza nei luoghi di lavoro				
						ex L. 1086/71	Norme per la disciplina delle opere di conglomerato cementizio armato, normale e precompresso ed a struttura metallica				
						A	D.P.R. 380/2001 art. 128	Testo unico delle disposizioni legislative e regolamentari in materia edilizia			

DARM - CHECK LIST									
CATEGORY	ISSUE	TOPIC	CODE	DOCUMENT TEAR 1	DOCUMENT TEAR 2	EXPIRY DATE STATUS	REGULATIONS & STANDARDS	Titles of laws	
TECHNICAL	FIRE SAFETY	Safety and accessibility in use	T.1.13	Pratica VVFF	Dichiarazioni di conformità per ogni tipo d'impianto antincendio (Foam, Tank, SPK, Hydrants, Pumps, Special plants)	A	D.M. 37/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante riordino delle disposizioni in materia di attivita' di installazione degli impianti all'interno degli edifici.	
					Elaborati grafici VVFF e Relazione tecnica (siglati)	A	D.M. 26/06/1984 art. 9	Classificazione di reazione al fuoco ed omologazione dei materiali ai fini della prevenzione incendi.	
		Parere di conformità VVFF (favorevole)			A	D. Lgs. 139/2006 art. 16			Riassetto delle disposizioni relative alle funzioni ed ai compiti del Corpo nazionale dei vigili del fuoco
		Dichiarazione VVFF dei materiali (blocchi, porte tagliafuoco, portoni sezionali)			B		D.P.R. 151/2011	Regolamento recante semplificazione della disciplina dei procedimenti relativi alla prevenzione degli incendi	
		Asseverazione ai fini della sicurezza antincendio			A	D.M. 7/08/2012			Disposizioni relative alle modalita' di presentazione delle istanze concernenti i procedimenti di prevenzione incendi e alla documentazione da allegare
		SCIA (siglata)			A				
		Verbale tecnico d'ispezione (facoltativo)			D				
		CPI/Attestazione di rinnovo di conformità antincendio			B				
		Registro antincendio			C				
	ELECTRICAL PLANTS	Electrical plant	Safety and accessibility in use	T.1.14	Dichiarazione di conformità per ogni impianto e componente	-	A	D.M. 37/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante riordino delle disposizioni in materia di attivita' di installazione degli impianti all'interno degli edifici.
				T.1.15	Pratica Grounding and Lighting Systems	Dichiarazione di conformità	A	D.P.R. 462/2001 Capo II	Regolamento di semplificazione del procedimento per la denuncia di installazioni e dispositivi di protezione contro le scariche atmosferiche, di dispositivi di messa a terra di impianti elettrici e di impianti elettrici pericolosi.
						Modulo di trasmissione	A		
			Dichiarazione di conformità			D			
			Verifica a campione ISPESL (facoltativo)			B			
			T.1.16	Pratica ATEX and MT	Dichiarazione di conformità	A	D.P.R. 462/2001 Capo III	Regolamento di semplificazione del procedimento per la denuncia di installazioni e dispositivi di protezione contro le scariche atmosferiche, di dispositivi di messa a terra di impianti elettrici e di impianti elettrici pericolosi.	
					Modulo di trasmissione	A			
		Dichiarazione di conformità			A				
		Certificato di omologazione ASL/ARPA			C				
		T.1.17	DVR per scariche atmosferiche	-	A	D. Lgs 81/2008	Testo unico sulla salute e sicurezza nei luoghi di lavoro		
		Special Electrical plant (Power EL Supplier)	Safety and accessibility in use	T.1.18	Dichiarazione di conformità per ogni impianto e componente	-	A	D.M. 37/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante riordino delle disposizioni in materia di attivita' di installazione degli impianti all'interno degli edifici.
D.P.R. 53/1998	Regolamento recante disciplina dei procedimenti relativi alla autorizzazione alla costruzione e all'esercizio di impianti di produzione di energia elettrica che utilizzano fonti convenzionali								
Safety in case of fire	T.1.19		CPI per impianti con potenza > 25 kW	-	B	D.P.R. 151/2011	Regolamento recante semplificazione della disciplina dei procedimenti relativi alla prevenzione degli incendi.		
	D. Lgs. 139/2006		Riassetto delle disposizioni relative alle funzioni ed ai compiti del Corpo nazionale dei vigili del fuoco						
Hygiene, health and environment	T.1.20	Certificato di omologazione CE	-	A	D.M. 169/2011	Approvazione della regola tecnica di prevenzione incendi per la installazione di motori a combustione interna accoppiati a macchina generatrice elettrica o ad altra macchina operatrice e di unita' di cogenerazione a servizio di attivita' civili, industriali, agricole, artigianali, commerciali e di servizi			
OTHER PLANTS	EFC	Safety and accessibility in use	T.1.21	Dichiarazioni di conformità	-	A	D.M. 37/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante riordino delle disposizioni in materia di attivita' di installazione degli impianti all'interno degli edifici.	
	Smoke and fire detection	Safety and accessibility in use	T.1.22	Dichiarazioni di conformità	-	A	D.M. 37/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante riordino delle disposizioni in materia di attivita' di installazione degli impianti all'interno degli edifici.	
	Gas plant	Safety and accessibility in use	T.1.23	Dichiarazioni di conformità	-	A	D.M. 37/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante riordino delle disposizioni in materia di attivita' di installazione degli impianti all'interno degli edifici.	
	Water and sanitary system	Safety and accessibility in use	T.1.24	Dichiarazioni di conformità	-	A	D.M. 37/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante riordino delle disposizioni in materia di attivita' di installazione degli impianti all'interno degli edifici.	

DARM - CHECK LIST

CATEGORY	ISSUE	TOPIC	CODE	DOCUMENT TEAR 1	DOCUMENT TEAR 2	EXPIRY DATE STATUS	REGULATIONS & STANDARDS	Titles of laws
MECHANICAL PLANTS	Lift plant	Safety and accessibility in use	T.1.25	Libretto dell'impianto	Dichiarazioni di conformità	A	D.M. 37/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante riordino delle disposizioni in materia di attivita' di installazione degli impianti all'interno degli edifici.
					Certificato di omologazione CE e n. di matricola	A	D.P.R. 23/2017 (D.M 37/2008 e D.P.R 162/1999)	Regolamento concernente modifi che al decreto del Presidente della Repubblica 30 aprile 1999, n. 162, per l'attuazione della direttiva 2014/33/UE relativa agli ascensori ed ai componenti di sicurezza degli ascensori nonché per l'esercizio degli ascensori.
					Comunicazione della messa in esercizio	A	-	-
					Manutenzioni semestrali	C	-	-
					Verifiche biennali ente accreditato	C	-	-
	Hydraulic dumbwaiters	Safety and accessibility in use	T.1.26	Libretto dell'impianto	Dichiarazioni di conformità	A	D.M. 37/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante riordino delle disposizioni in materia di attivita' di installazione degli impianti all'interno degli edifici.
					Certificato di omologazione CE e n. di matricola	A	D.M. 11/04/2011	Disciplina delle modalità di effettuazione delle verifiche periodiche di cui all'All. VII del decreto legislativo 9 aprile 2008, n. 81, nonché i criteri per l'abilitazione dei soggetti di cui all'articolo 71,
	Mechanical (Air cooling, heating system, air extraction)	Safety and accessibility in use	T.1.27	Libretto dell'impianto	Dichiarazioni di conformità	A	D.M. 37/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante riordino delle disposizioni in materia di attivita' di installazione degli impianti all'interno degli edifici.
					Verbale di prima messa in esercizio	A	D.P.R 74/2013	Regolamento recante definizione dei criteri generali in materia di esercizio, conduzione, controllo, manutenzione e ispezione degli impianti termici per la climatizzazione invernale ed estiva degli edifici e per la preparazione dell'acqua calda per usi igienici sanitari
					Verbale di controllo efficienza energetica	B	-	-
					Risultati ispezioni PA	B	-	-
	Special plants (Disoleatore)	Safety and accessibility in use	T.1.28	Dichiarazioni di conformità	-	A	D.M. 37/2008	Regolamento concernente l'attuazione dell'articolo 11-quaterdecies, comma 13, lettera a) della legge n. 248 del 2 dicembre 2005, recante riordino delle disposizioni in materia di attivita' di installazione degli impianti all'interno degli edifici.

EXPIRY DATE STATUS

- A Documents with a validity > 15 yrs
- B Documents with a validity > 2 ≤ 15 yrs
- C Documents with a validity ≤ 2 yrs
- D Documents with a variable validity

DARM - RANKING MATRIX									
CATEGORY	ISSUE	TOPIC	CODE	DOCUMENT TEAR 1	DOCUMENT TEAR 2	EXPIRY DATE STATUS	AVAILABILITY	NOTES	
LEGAL	Title Holder & Administrative	Property constraint	L.1.1	Atto notarile di compravendita	-	A	Y		
			L.1.2	Atto di conferimento		A	Y		
			L.1.3	Contratto di locazione		A	Y		
			L.1.4	Ispezione ipocatastale		A	Y		
			L.1.5	Regolamento delle parti comuni		D	N	Not Present	
			L.1.6	Verbale di condominio		A	N	Not Present	
	Cadastrale	Property's information and cadastral identifications	L.2.1	Certificato catastale	-	A	Y		
			L.2.2	Visura catastale (e/o storica)		A	Y		
			L.2.3	Planimetria catastale		A	Y		
			L.2.4	Denuncia di accatastamento		A	Y		
			L.2.5	Voltura catastale		A	N	Not Present	
	City Planning Strengths and Constraints	Property's information and cadastral identifications	L.3.1	CDU - Certificato di destinazione urbanistica	-	A	Y		
			L.3.2	PGT o PRG (estratto)		B	N	Not Present	
			L.3.3	Convenzione urbanistica		A	N	Present, Not Applicable	
	Building Titles	Safety and accessibility in use (Built post 1967)	L.4.1	PdC - Permesso di Costruire	Concessione edilizia	A	Y		
			L.4.2		Licenza edilizia	A			
L.4.3			SCIA/super SCIA		A				
L.4.4			CILA		A				
BUILDING	Safety and accessibility in use	T.1.1	Certificato/Segnalazione di agibilità	APE	B	Y			
				Collaudo statuto	A				
				Conformità delle opere	A				
				Aggiornamento catastale	A				
				Dichiarazione di conformità degli impianti	A				
				T.1.2	Manuale delle manutenzioni		D	Y	
	T.1.3	Verbale di consegna dell'edificio	A	Y					
	Activity	Energy economy and heat retention	T.1.4	APE - Attestato di prestazione energetica	-	B	Y		
					T.1.5	Certificazione energetica volontaria (LEED, BREEM)	D	Y	
					T.1.6	VIA - Valutazione d'impatto ambientale	B	Y	
Hygiene, health and environment	T.1.7	AUA - Autorizzazione unica ambientale	-	B	Y				
							T.1.8	DVR ATEX - Documento Valutazione Rischi per Atmosfere Esplosive	Classificazione ambiente ATEX	D	Y
STRUCTURE & SUBSTRUCTURE	Load bearing structure (Warehouse - Battery Charge Offices)	Mechanical resistance and stability	T.1.9	Certificato di collaudo statico	-	A	Y		
	Curtain wall	Mechanical resistance and stability	T.1.10	Certificato di collaudo statico	-	A	Y		
		Safety and accessibility in use	T.1.11	Certificato di omologazione CE	-	A	Y		
	Steel Frame for Sandwich panel	Mechanical resistance and stability	T.1.12	Certificato di collaudo statico	-	A	Y		

DARM - RANKING MATRIX

DARM - RANKING MATRIX												
TECHNICAL	FIRE SAFETY	Fire safety system	Safety and accessibility in use	T.1.13	Pratica VVFF	Dichiarazioni di conformità per ogni tipo d'impianto antincendio (Foam, Tank, SPK, Hydrants, Pumps, Special plants)	A	Y				
			Safety in case of fire			Elaborati grafici VVFF e Relazione tecnica (siglati)	A					
						Parere di conformità VVFF (favorevole)	A					
						Dichiarazione VVFF dei materiali (blocchi, porte tagliafuoco, portoni sezionali)	B					
						Asseverazione ai fini della sicurezza antincendio	A					
						SCIA (siglata)	A					
						Verbale tecnico d'ispezione (facoltativo)	D					
						CPI/Attestazione di rinnovo di conformità antincendio	B					
						Registro antincendio	C					
	ELECTRICAL PLANTS	Electrical plant	Safety and accessibility in use	T.1.14	Dichiarazione di conformità per ogni impianto e componente	-	A	Y				
				T.1.15	Pratica Grounding and Lighting Systems	Dichiarazione di conformità	A	Y				
						Modulo di trasmissione	A					
						Dichiarazione di conformità	D					
						Verifica a campione ISPESL (facoltativo)	B					
				T.1.16	Pratica ATEX and MT	Dichiarazione di conformità	A	Y				
						Modulo di trasmissione	A					
						Dichiarazione di conformità	A					
						Certificato di omologazione ASL/ARPA	C					
				T.1.17	DVR per scariche atmosferiche	-	A	Y				
				Special Electrical plant (Power EL Supplier)	Safety and accessibility in use	T.1.18	Dichiarazione di conformità per ogni impianto e componente	-	A	Y		
					Safety in case of fire	T.1.19	CPI per impianti con potenza > 25 kW	-	B	Y		
					Hygiene, health and environment	T.1.20	Certificato di omologazione CE	-	A	N	Not Present	
				OTHER PLANTS	EFC	Safety and accessibility in use	T.1.21	Dichiarazioni di conformità	-	A	Y	
					Smoke and fire detection	Safety and accessibility in use	T.1.22	Dichiarazioni di conformità	-	A	Y	
Gas plant	Safety and accessibility in use	T.1.23	Dichiarazioni di conformità		-	A	Y					
Water and sanitary system	Safety and accessibility in use	T.1.24	Dichiarazioni di conformità		-	A	Y					

DARM - RANKING MATRIX

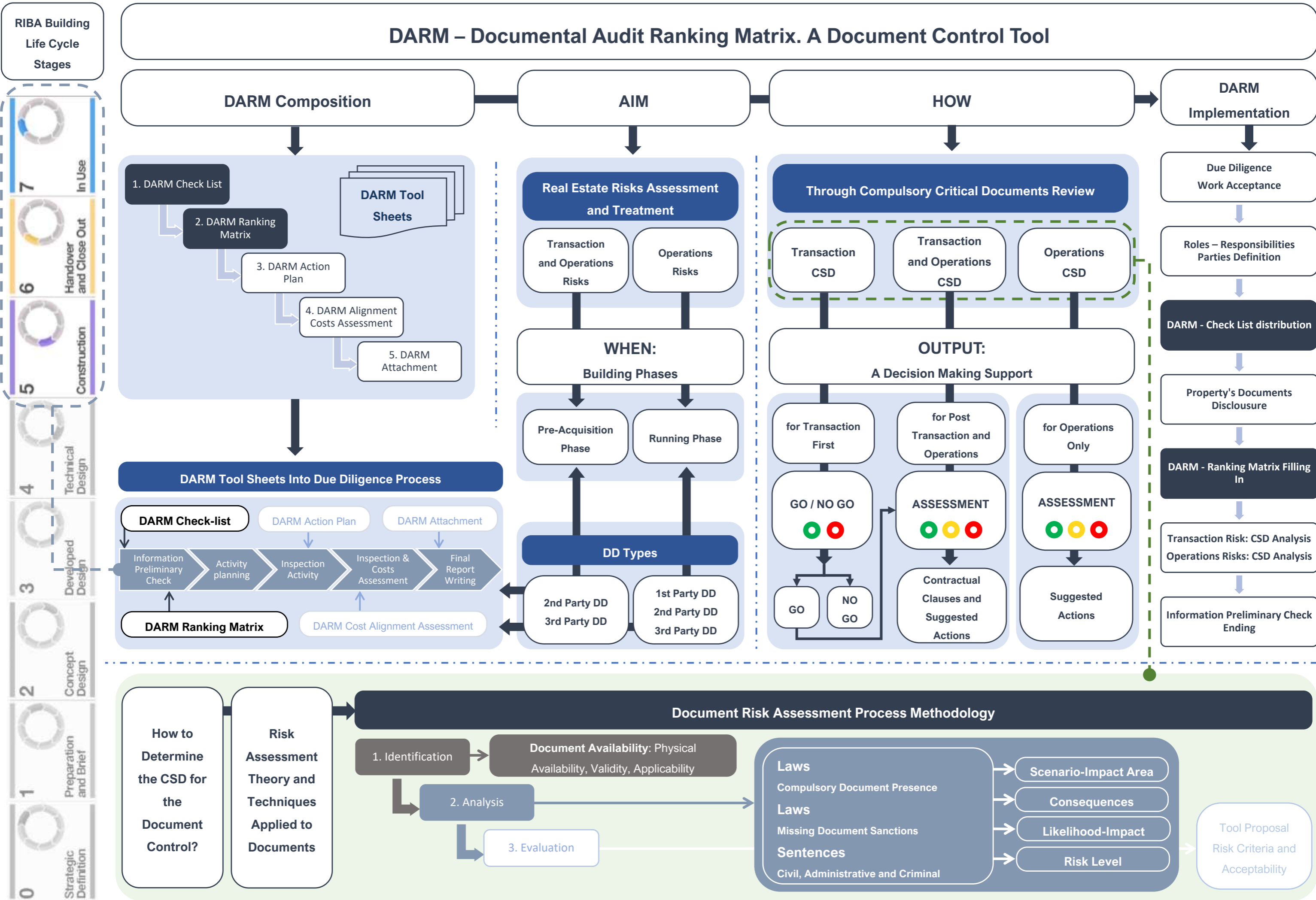
MECHANICAL PLANTS	Lift plant	Safety and accessibility in use	T.1.25	Libretto dell'impianto	Dichiarazioni di conformità	A		
					Certificato di omologazione CE e n. di matricola	A		
					Comunicazione della messa in esercizio	A		
					Manutenzioni semestrali	C		
					Verifiche biennali ente accreditato	C		
	Hydraulic dumbwaiters	Safety and accessibility in use	T.1.26	Libretto dell'impianto	Dichiarazioni di conformità	A		Not Present
					Certificato di omologazione CE e n. di matricola	A		
	Mechanical (Air cooling, heating system, air extraction)	Safety and accessibility in use	T.1.27	Libretto dell'impianto	Dichiarazioni di conformità	A		
					Verbale di prima messa in esercizio	A		
					Verbale di controllo efficienza energetica	B		
					Risultati ispezioni PA	B		
	Special plants (Disoleatore)	Safety and accessibility in use	T.1.28	Dichiarazioni di conformità	-	A		

TRANSACTION
OPERATION



EXPIRY DATE STATUS

- A Documents with a validity > 15 yrs
- B Documents with a validity > 2 ≤ 15 yrs
- C Documents with a validity ≤ 2 yrs
- D Documents with a variable validity



Document Risk Assessment Process Methodology

How to Determine the CSD for the Document Control?

Risk Assessment Theory and Techniques Applied to Documents

1. Identification → **Document Availability: Physical Availability, Validity, Applicability**

2. Analysis → **Laws** (Compulsory Document Presence, Missing Document Sanctions, Sentences: Civil, Administrative and Criminal)

3. Evaluation → **Scenario-Impact Area, Consequences, Likelihood-Impact, Risk Level**

Tool Proposal Risk Criteria and Acceptability

4 - Volutamente bianca per Attachments

5 - Volutamente bianca per Attachments

6 - Volutamente bianca per Attachments

7 - Volutamente bianca per Attachments

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