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Master of Science in
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BUSINESS IMPACT ANALYSIS (BIA) OF IT RISKS

PIRELLI & C. S.p.A.

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INTERNSHIP IN PIRELLI&C. S.p.A.

An internship provides the opportunity to gain hands on work experience that you just can't get in the classroom. First time job seekers and career changers aren't usually desirable candidates, but companies are willing to train them as interns and give them the experience they would need to get a job. Employers are usually more concerned with your work experience than your qualifications and internships are often the only way to get the work experience you need to secure a job, so they're a vital part of the resume. Many employers prefer or require applicants who have done an internship or relevant work experience and in many of the more competitive job markets it is essential to set you apart from the others.

That is why the opportunity to make the internship that provides Politecnico di Milano in collaboration with Pirelli is the essential one. During the six months I've been working in the Risk Management Department that makes part of the Financial division and responsible for the Insurance, Loss Preventions and Business Continuity activity. As a newcomer in a team I was assigned to follow the projects related to the Loss Prevention (LP) and Business Continuity.

In a frame of the LP activities together with my industrial tutor we made the visits at the two Pirelli's plants: Breuberg, Germany and Settimo Torinese, Italy. The main purpose of the visits is to continuously check the state of the plants, control the observance of the fire protection policies and Pirelli's LP practices, definition of HPR (Highly Protected Risk) indexes and creation of the Loss Prevention reports.

The main outcome of the internship in Risk Management department nevertheless was related to the Business Continuity. It was requested to develop an analysis that will help to define the Survival Time and Priority of Reactivation of the different IT applications in case if the server CED Cesano Maderno will crash. The purpose was to use the output of this study to create and sign the contract with the provider Telecom Italia that manages the server (CED Cesano Maderno).

Combining both parts of the internship into the day activities in Pirelli has given the opportunity to gain practical as well as theoretical knowledge in many areas related to the Master´s program in Management Engineering. Such areas include Project Management, Corporate Information Systems, Logistics, Business Strategy, Finance and Industrial Technologies, among many others. The internship is the perfect opportunity for getting a different perspective from the acquired knowledge. It is also a way to enter the job market with real work experiences, which help to further develop professional and organizational skills and at the same time experience an international environment, learning different business practices from Pirelli.

CHAPTER 1: INTRODUCTION

"If you fail to plan you are planning to fail"

Benjamin Franklin

Nowadays the Risk and Business Continuity Management play the key role for the successful and stable running of the Business with the long orientation and fast moving approach.

It is commonly known that IT systems have become increasingly crucial for the smooth operation of a company, and arguably the economy as a whole, the importance of ensuring the continued operation and the rapid recovery of the systems has increased.

It is estimated that most large companies spend between 2% and 4% of their IT budget on disaster recovery planning, with the aim of avoiding larger losses in the event that the business cannot continue to function due to loss of IT infrastructure and data. Of companies that had a major loss of business data, 43% never reopen, 51% close within two years, and only 6% will survive long-term.

As a result, preparation for continuation or recovery of systems needs to be taken very seriously. This involves a significant investment of time and money with the aim of ensuring minimal losses in the event of a disruptive event.

Pirelli was always in line with all the technologies and innovations. Now the company even more than before has a strong commitment to be ready to control and overtake different critical situations related to the IT systems and infrastructure.

The main idea and goal that Risk Management department will have to achieve in the nearest future is the developing of the Business Continuity Plans for each single Pirelli's plant and the most crucial activities and systems, such as IT system.

This project is the initial step on the way to perform the Business Continuity Plan that can be considered also as a Disaster Recovery Plan. It's shown in this paper the development of the Business Impact Analysis by using the FMEA (Failure Modes and Effects Analysis) methodology that helps us to define and assess the core company processes, IT applications and what is a very important *survival time* and *priority of reactivation* of the existing IT applications in case if the server Cesano Moderno will crash.

CHAPTER 2: LITERATURE REVIEW

In this chapter, Business Continuity is described firstly from a historical perspective and secondly by providing some definitions and basic terms which are necessary to comprehend what Business Continuity is and what it is not according to the purpose of this paper. In the second part of this chapter BIA is described from the historical and practical perspective in relation to the BCP.

Business Continuity

Business Continuity is still a relatively new and evolving discipline [Kildow 2008]. Originally being a product of Disaster Recovery, Business Continuity is now considered a broader issue than Disaster Recovery that is actually classified as its technology sub-component.

Their roots are found in early 1970s when companies realize that their increasing dependence on electronic data systems and new technologies posed a big threat to their core-operations. Thus the term Disaster Recovery was first used in the oil industry to refer to strategies aimed at protecting computerized processes. In particular, it was Shell that first invested in remote storage site to guarantee continuous availability of critical electronic data about prices and sells [Burton 2011]. Being this resulted in a competitive advantage, several other industries started thinking of Disaster Recovery strategies. By the end of 1970s companies such as the pioneering Sun Information Systems[1] and IBM had recognized an economic opportunity in that emerging demand and put themselves up for providing through contracts contingency equipped locations where re-establishing customers' IT operations [Burton, 2011; Kaye 2008, 185; Kildow 2011, 9]. These off-site locations were named *hot sites*[2] because of their complete availability of stand-by facilities in the event of disruption at the original location.

Then, during the 1980s, this newborn service industry firmly set up its boundaries in the market and several other similar companies were founded on this purpose. However, it was in the following decade that the discipline saw its turning point. As the organizations' IT department became larger and the rapid growth of the Internet made their dependencies even more complex, it was harder to find suitable recovery solutions [Drewitt 2008, 13]. At the same time, it was getting clear that recovering technology assets would not necessary result in recovering business

[1] Sun Information Systems was the disaster recovery service division of Sun Company. In 1983 its name was changed to SunGard Data Systems that is how it is well-known today.

[2] In developing their new market, disaster recovery service providers soon broadened their array of offers by distinguishing off-site facilities on the specific level of readiness. The disaster recovery site options are still classified as: hot, warm, and cold sites. The first ones are fully functional at any time, by completely duplicating the principal site. The second ones are not entirely synchronized with the original site and require some efforts (and so time) to be operational. The last ones are the less expensive solution but the most time consuming strategy because they generally do have neither hardware nor connectivity already established.

operations: a broader and more proactive approach was needed. This became particularly evident at the end of the last millennium, when the external threat of Y2K bug made grow the awareness of the need for business to continue operations and so plan for this: no downtime was acceptable at midnight of December 31st, 1999. «The new challenge was to plan for business continuity» [Kildow 2011, 12]. Once grown the awareness that the real need was a holistic business recovery, the discipline was soon known as Business Continuity.

However, the real bench test came up on September 11th, 2001, when many organizations realized that their critical activities relied not only on the continuous availability of IT. They had to cope with the loss of the most important and most neglected asset they have: people. Even the best equipped remote site is useless if there is no available staff to get to work. In that event, another relevant issue became evident, that is the domino effect. Many companies, though not being directly involved in terrorist attacks, suffered unprecedented secondary effects such as loss of communications, limitations in airline travel and lack of supplies [Burton 2011]. This is exactly what happened to a multinational financial company whose headquarters were directly involve in that terrorist attack. Though the company successfully re-established its critical operations from recovery off site locations, it had to soon realize that its technicians could not keep working because the software code was exclusively owned by a small software house based in the same World Trade Center tower [Kaye 2008].

Therefore, Business Continuity scope rapidly broadened during its brief history so much as business environment itself changed requirements. In fact, initially being technology-focused when organizations were relying more and more on then little-known IT dependencies, then developing into a more comprehensive approach after 9/11, Business Continuity has achieved its own independence both in business and academic field. However, this does mean neither that its borders are static, nor that there is an universal consensus on its terms and definitions.

In the first decade of 21st century, many governments and regulatory agencies recognized the benefits that Business Continuity brings and they developed several publications to spread the discipline, by making more or less mandatory issues. Business Continuity Institute [2012], which has itself given a deep impetus to Business Continuity since its foundation in 1994, competently gathered all existing legislations, regulations and standards, also those indirectly dealing with Business Continuity[3], and listed them by country. Although assuming there are regular changes, the document covers 35 countries[4] including, among the others, Brazil, Malaysia, and Sri Lanka; with

[3] Especially some legislation and regulations listed in this BCI document contains only indirectly Business Continuity issues. Some of them are specifically designed for emergency preparedness or crisis management, others deal with IT or information security. In general, most of the items gathered around the word refer to the bank and financial sector.

[4] For complete list and details see *Business Continuity Management Legislations, Regulations and Standards* downloadable from

USA and UK being the most prolific. As a result, these findings show how Business Continuity was formally developed between 2001 and 2010 (the majority of the items gathered by the Business Continuity Institute were published during that decade) and it is still maturing. In fact, it is also evident that there is no consensus on definitions and terms are used inconsistently.

Consequently, the next subparagraph firstly provides some basic definitions according to BS 25999.

Assuming that there is yet neither a total agreement on terminology nor a universally-established management practice, it is decided here to adopt the principles and methods of a standard published by the British Standard Institution in 2006[5]: the British Standard (BS) 25999. Among the reasons that led to choose BS 25999, there is the fact that it is not geographically limited in scope and is intended for use by organizations of all sizes and in all sectors. Whether a company is small or employs thousands of people, whether it produces goods or provides services, implementing BS 25999 will be tailored to its specific objectives. Moreover, the International Standards Organization (ISO) has confirmed its initial interest in this standard, recognizing its rapid success and is now developing the first international standards on Business Continuity: ISO 22301[6] (Societal Security – Business Continuity Management Systems – Requirements). This is expected to be complete for publication within the second quarter of 2012. And this certainly reflects also the effective importance that Business Continuity have achieved in its relatively brief evolution.

Generally, the starting point of any discipline is to consistently set up the basic terms and definitions. Particularly, Business Continuity as a management practice really needs to share a common glossary, at least within the same organization. «Having a common language with standard terminology provides a basis for understanding, developing, and implementing a successful enterprise- wide business continuity program» [Kildow 2011, 20].

Consequently, it is important also for the purpose of this paper to adopt unambiguous definitions of the basic terms. Thus the principal ones are provided as follows, with no claim to being definitive. According to BS 25999-1:2006, Business Continuity (BC) is:

«strategic and tactical capability of an organization to plan for and respond to incidents and business interruptions in order to continue business operations at an acceptable pre-defined level» [BS 25999-1 2006, 6];

Whereas Business Continuity Management (BCM) is:

Business Continuity Institute website.

[5] BS 25999 is made up of two parts. The first one (Code of Practice) was published in November 2006 and provides best practice recommendations. The second one (Specification) was published in November 2007 and provides the requirements for implementing a Business Continuity system that can be audited and certified.

[6] ISO 22301 is actually based on BS25999-2 and will likely replace it.

«a holistic management process that identifies potential impacts that threaten an organization and provides a framework for building resilience with the capability for an effective response that safeguards the interests of its key stakeholders, reputation, brand and value-creating activities» [BS 25999-1 2006, 6].

Moreover, the Standard distinguishes between Business Continuity Management Program, that is:

«an ongoing management and governance process supported by senior management and resources to ensure that the necessary steps are taken to identify the impact of potential losses, maintain viable recovery strategies and plans, and ensure continuity of products/services through exercising, training, maintenance, and assurance» [BS 25999-1 2006, 7];

and Business Continuity Plan (BCP), that is:

«documented collection of procedures and information that is developed, complied and maintained in readiness for use in an incident to enable an organization to continue to deliver its critical products and service» [BS 25999-1 2006, 7].

The BCM processes can be also represented by the value chain. As we can see, the first step is the Analysis and if to be more precise it is a Business Impact Analysis. While BCM has the aim in the reduction of the likelihood and impact of business interruption, BIA tries to understand the criticality and recovery priority of business processes.

Starting from this point and considering the main issue of the developing project is time to present and define the Business Impact Analysis (BIA).

Business Impact Analysis (BIA)

Historically, performing BIA would have involved rather straightforward tasks of estimating daily or hourly operating costs for the agency, and these costs would serve as a measure of the "value" at stake if the operations stopped. Twenty years ago, constructing a disaster recovery plan mostly focused on restoring computer and communication systems at recovery sites. The BIA provided cost estimates to trade off the anticipated duration of down time (without planned recovery capability) with the cost of maintaining restoration capability, typically measured in mean time (minutes, hours, days, weeks) to resume operations. This latter metric is sufficiently important that it has acquired its own acronym, RTO, or Recovery Time Objective.

The expectations of a BIA are expanding because of several trends and events. As

information technology facilitates more rapid performance of services and delivery of goods, expectations of customers and the public in general for responsiveness are lowering the limits of acceptable down time. Restoration times are now often measured in micro-seconds (e.g., no interruption), seconds, minutes, and hours instead of days or weeks. Because recovery site costs escalate as response times drop, management must examine more critically their customer's expectations. The BIA is thus becoming a vehicle for documenting variations in customer response requirements and differentiating response times required of recovery sites for different government functions.

The changing profile of operations risks is also shifting the focus or frame of reference for BIAs. The terrorist attacks of September 11, 2001 and the subsequent anthrax attacks raise the issue of loss of personnel and/or extended loss of facilities, not just computing centers. The deterioration in information security in new computer systems, the consequence of adoption of Internet-based operations, raises the possibility of cybercrime and cyberterrorism. Either angry individuals or organizations with hostile political objectives can mount these attacks, from within or outside of a government entity; if from outside, with the subject organization as either the intended target, a participant in a larger target, or an innocent bystander.

The consequence of these trends is that recovery strategies must account for disruption of more different types of resources, not only computing centers, and therefore the planning solutions are becoming more costly – and require more rigorous justification.

Business impact is a measure of how an organization might be affected by a process failure, caused by technology, premise, or human resource issues. Impact is classified as either revenue or non-revenue. Revenue impact includes the full or partial failure of any process which produces, collects, or processes business income. Non-revenue impact is caused by challenges that do not directly affect short term realization of revenue. Although causes of non-revenue impact might not result in immediate financial losses, some could result in long term financial damage through loss of investor or customer good will.

Business impact can be calculated using either a qualitative or a quantitative approach.

• Qualitative analysis depends on the experience of employees and consultants to arrive at risk scores.

• The results of the quantitative approach are estimates of potential money losses based on known costs or revenue streams.

Therefore now we can make the definition of the BIA:

"An impact analysis results in the differentiation between critical (urgent) and non-critical (non-urgent) organization functions/ activities"

BIA is an essential component of an organization's business continuity plan. It includes an exploratory component to reveal any vulnerability, and a planning component to develop strategies for minimizing risk. The result of analysis is a business impact analysis report, which describes the potential risks specific to the organization studied. One of the basic assumptions behind BIA is that every component of the organization is reliant upon the continued functioning of every other component, but that some are more crucial than others and require a greater allocation of funds in the wake of a disaster. As part of a disaster recovery plan, BIA is likely to identify costs linked to failures, such as loss of cash flow, replacement of equipment, salaries paid to catch up with a backlog of work, loss of profits, and so on. A BIA report quantifies the importance of business components and suggests appropriate fund allocation for measures to protect them. The possibilities of failures are likely to be assessed in terms of their impacts on safety, finances, marketing, legal compliance, and quality assurance. Where possible, impact is expressed monetarily for purposes of comparison. For example, a business may spend three times as much on marketing in the wake of a disaster to rebuild customer confidence.

Business Impact Analysis, is a study of an organization's functions for the purpose of estimating how well or poorly it can be expected to perform if its operations are disrupted. A BIA establishes a more rigorously defendable baseline for deciding how much continuity planning should be developed. Many continuity planners encounter the dilemma that after having identified solutions to avoid or minimize operating risk, senior management balks at the cost. This is especially the case when the benefits – not only for reduced impacts of risks but also improved daily operations – are nebulous or not clearly understood. A BIA provides a stronger analytical basis for making these decisions.

In general, planners and executives tend to underestimate the costs associated with disruptions because they overlook some sources of disruption costs. As a result, inadequate continuity plans may be constructed. This discussion provides a comprehensive list of the categories of "drivers" to reduce the likelihood that some costs are overlooked, and it examines the challenge of defining continuity planning correctly to provide a defendable base for decision-making.

Business impact analysis (BIA) helps business continuity/disaster recovery professionals identify business priorities and validate or modify them for plan development. Questionnaires must be formulated for pre-interview data gathering and/or in-person interviews. People with in-depth knowledge of and experience with the business functions being analyzed are ideal candidates for BIA interviews.

CHAPTER 3: METHODOLOGY

Failure Modes and Effects Analysis (FMEA) Description

Developing of the BIA as a first step for the Business Continuity Plan was aimed to identify the company core processes that can be affected or paralyzed by the problems related to the server running.

Therefore, one should identify first the right hierarchy of the processes and related IT applications inside each company department in terms of the impact on the business continuity and added value that they rather create or not. Further, any activities and related IT applications that don't add a great value for the department's efficiency or can be quiet easily replaced by putting in place new actions should be identified and eliminated from the list of the key IT application and will not be include in the contract with the service provider for the CED Cesano Moderno.

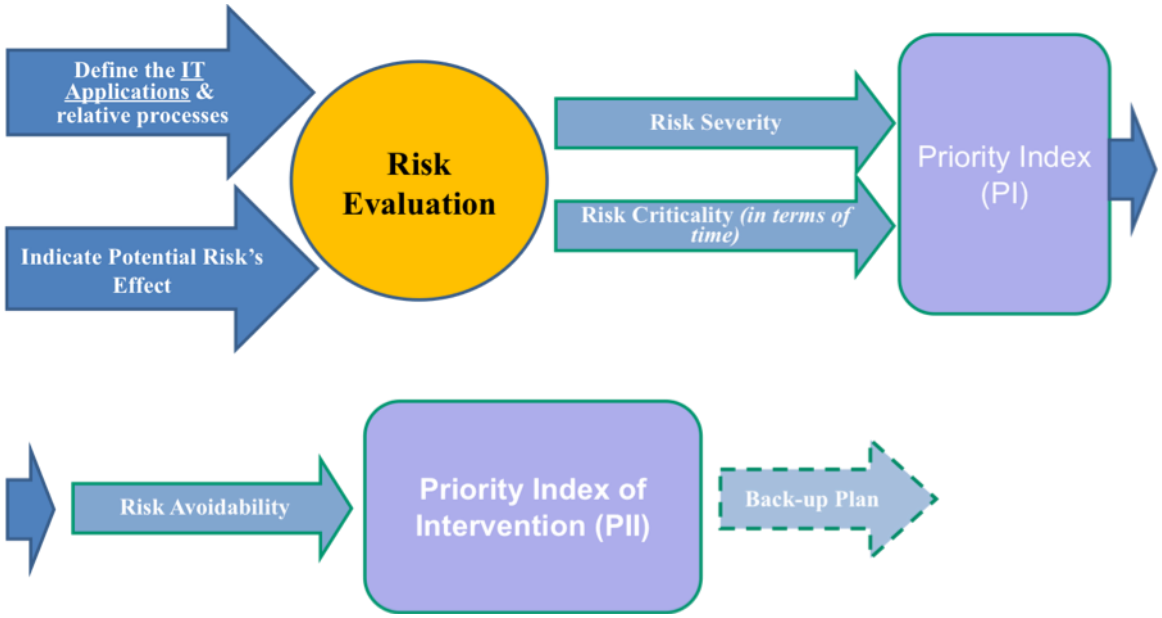
However, without a proper methodology to identify the most crucial IT applications it is practically difficult for the companies to access the importance of each single process and the possible impact on the overall company performance. So, this project is proposed to validate the method through multiple interviews across different company's departments and functions for its practical significances.

The idea and the logics of the method come from an already existing tool, ***FMEA (Failure Modes and Effects Analysis)***. It has been extensively used for the analysis of potential failure modes within a system for classification by the severity and likelihood of the failures. Moreover, in this paper FMEA has been used as a base for the identification of the *survival time* and *priority of reactivation* of the existing IT applications for following reasons: it is a prevalent tool used in many companies to identify and improve failures, and it is an effective method to relate multiple sources of failure modes with their severity.

We create a model capable of identifying, measuring and offering the possible corrective actions for the risks caused by the crash of the server. In order to achieve this we introduced a way to measure them. For each process we propose the calculation of several indicators that multiplied each other will determine a *Priority Index of Intervention (PII).* In this way risks can be ranked depending on their index and company will know there to intervene in at first based on the ranking of the PII value.

Since the input should come from a several persons inside the company (engineers, managers, department responsible, etc.), it must be easy to be used, quick to complete and the outcomes must be understandable. People, compiling the model, have only to choose the options that better describe the real case, than the model associate them a value, and automatically will

return the Priority Index of Intervention.



FMEA Description

The model is structured in Excel spreadsheet as follows: the aim, as explained before, is to assign a value to every IT application and related to it process in order to be able to rank them at the end. The list of all the applications represents the first part of the model. Each application constitute a line in the excel cartel. There are several columns. Below the description of each of them, through which the functioning of the model will be explained.

Risk (Process affected by the system's crash)		Risk Potential Effect	Risk Severity (S)						Risk Criticality (D)						Risk Priority Index	How much avoidable (A)				Priority Index of Interventi on	Recomendable Corrective Actions
Description	IT System	Indicate Potential Risk's Effect	*How much the Risk represents a problem for the company? How much is serious this Risk?*						*For how long can we survive without IT?*						PI = S*D	How much is Risk avoidable? Can we avoid the Risk by using alternative tools(excluding IT) for a period at about 3 days-1 week?				PII = PI*A	Indicate Possible Corrective Actions to implement to reduce PII
			Unimportant	A Little	Enough	Very much	Urgent	Total	Very easy (1week)	Easy Enough (3 days)	Hard Enough (24 hrs)	Impossible (8 hrs)	Urgent (4 hrs)	Total		Avoidable	Quite Avoidable	Difficult to avoid	Not avoidable		
			1	2	3	4	5		1	2	3	4	5			1	2	3	4		
Order Creation	SAP G20	Cannot deliver the orders. Customers, Products and Warehouses database will not be available					5	5					5	5	25				4	100	No back-up plan

FMEA model

- *Risk Potential Effect:* this is a qualitative column and must be completed indicated potential effects of the Risk.

There are quantitative indicators that we take into account to evaluate the Priority Index of Intervention:

- *Risk Severity (S)* – How much the Risk represents a problem for the company? How much is serious this risk? Respondent can choose between:

Unimportant (1); A Little (2); Enough (3); Very much (4); Urgent (5)

- *Risk Criticality (D)* – For how long we can survive without IT? This indicator helps as to identify the Survival Time. Respondent can choose between:

1 week (1); 3 days (2); 24 hours (3); 8 hours (4); 4 hours (5)

- *Risk Priority Index (PI)* : it is a first complex index defined by the indexes of Severity and Criticality. By this way it can be obtained a primary evaluation of the Risks

PI= S*D (Risk Priority Index)

However, it is not sufficient to consider only the priority of intervention. In fact the risk could have a higher priority index, but it could be at the same time quite easy to avoid the risk considering the activation of the alternative tools (excluding IT applications). Here the need to introduce an additional index, taking in consideration exactly this aspect.

- *How much avoidable (A)* – Is it possible to avoid the Risk? Can we avoid the Risk by using alternative tools (excluding IT) for a period at about 3 days - 1 week?

- Avoidable Risk. Related to the activity that can be easily substituted (1)
- Quite Avoidable Risk. Linked to the activity that is not too easy to manage, quite effort is required (2)
- Difficult to avoid Risk. It is disputable if it's strictly necessary or not to avoid this risk (3)
- Not avoidable. Related to the activities that cannot be substituted and can be accomplish only by using appropriate IT application (4)

Now obtaining all the indexes we can calculate the ***Priority Index of Intervention.***

- *Priority Index of Intervention (PII)*: it's the final index. It considers both the Risk Priority Index (PI) and the level of Avoidability (A).

PII=PI*A (Priority Index of Intervention)

All the aspects are considered in this formula. A value for each risk related to IT applications will be obtained. At this point these values compose the priority arrangement and the company can intervene in and overtake the problems related to the server crash just starting from the reactivation of the IT applications with the higher index. A further step can be to indicate how to act. And it is the subject of the next analysis that we will develop in the frame of the Business Continuity Plan.

- *Recommendable Corrective Actions*: Indicate Possible Corrective Actions to implement in order to reduce *Priority Index of Intervention*. This final column contains proposal on how to act.

Which strategies or activities could be implemented to eliminate or reduce the particular risk? The logic is to propose something to do in order to limit risk effect, as called back-up plan.

Back-up plans were not the issue of this project but were proposed for some activities and will be further developed in the future.

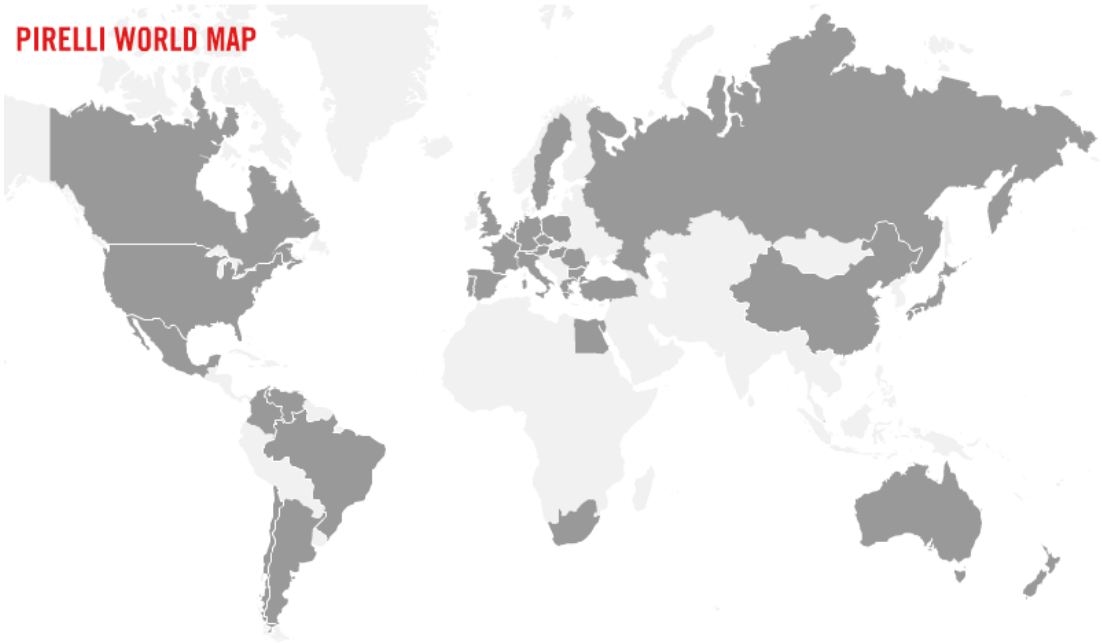
An interesting representation of the Risks arranged lists can be obtained using a histogram. It is a visual representation that instantaneously gives an idea on which are the major Risks the company should take into consideration.

We have interviewed the responsible from all the company departments, asking them the IT applications they use in their daily activities so far and what could be the possible impact in case the server will crash. On the base of their answers and evaluation of *Risk Severity*, *Criticality* and *Avoidability* we obtained the necessary results, such as *Priority index of Intervention* and *Survival Time.*

CHAPTER 4: THE PROJECT

The Pirelli Identity

The fifth largest global tire maker by revenues (5.6 billion euro in 2011), Pirelli is leader in the high-end segments with high technological content. The Company has 22 factories throughout the world, on five continents, and operates in more than 160 countries.



Founded in 1872 and listed on Milan Stock Exchange sin 1922, Pirelli is distinguished by its long industrial tradition, which has always combined a capacity for innovation with product quality and brand strength. A strength supported since 2002 by PZero fashion and high-tech project and further enhanced by Formula 1, for which Pirelli is the exclusive tire supplier for the three-year terms 2011-2013.

In line with its 'green performance' strategy, Pirelli - always focused on research and development - operates with ever increasing attention to products and services of high quality and technology and low environmental impact.

The Pirelli Group has a long industrial tradition and is ranked among the world's leaders in every sector in which it operates.

The efficient worldwide running of these business strands is totally dependent on SAP business software. Pirelli was one of the first SAP customers in Italy and for ten years it has run virtually every SAP module. All aspects of its business now rely on v4.6 modules of SAP, from customer relationship, supply chain and product lifecycle management to financials and

warehousing.

The high availability of Pirelli's SAP business applications is especially critical because Pirelli runs a 'one client' system from its Milan headquarters which supports operations in the UK, Germany, Spain, Italy, Greece, Poland, France, USA, South Africa, Egypt, Japan, Australia, Singapore, China, Brazil, Argentina, Venezuela, Mexico and Belgium.

"*All Pirelli offices in these countries connect to this one system through dedicated lines,*" said Ezio Bombardelli, IT systems manager at Pirelli's technology competence center. *"SAP represents the core business model for Pirelli and we have about 2,000 daily online users".*

"In theory we are allowed a maximum of three hours failure, but any downtime jeopardizes our ability to do business. Everything would stop - from warehousing to production, order management and sales. It would also cause downtime for other ancillary companies connected to Pirelli, so the constant availability of SAP is quite vital to the company's existence."

However, given the importance to the business of the G20 SAP R3 system, Pirelli decided to adopt an Oracle 9i Real Application Cluster (RAC) solution designed to provide scalability and high availability of the SAP R3 G20 database component. To further underline its business continuity and high availability requirements, Pirelli has also implemented the Service guard Extension for SAP (SGeSAP), which takes Service guard's powerful failover capability into the SAP R/3 environments and Service guard Extension for Real Application Clusters (SGe RAC), which ensures a high availability of databases even if a hardware component should fail. This is believed to be the first Oracle RAC implementation for SAP and stands as formal certification of RAC solutions with SAP. It demonstrates how Oracle RAC and SAP blend with Virtual Server Environment to create high-end availability.

It is supported by a critical systems contract that guarantees hardware repair within six hours and the resolution of software problems within eight hours.

"We believe that adopting these solutions will provide us with a much safer system," added Bombardelli. *"We are aiming for 100 per cent availability but 99.9 per cent will be good enough.*

Departments Analysis

Due to obtain the necessary information for the analysis it was performed the numerous quantity of the interviews with the Departments responsible.

For Pirelli's needs we have analyzed the following departments: Sales/Marketing, Logistics, Purchasing, Finance and Treasury, Quality, R&D, PR, HR. Below we can find all the information that was used or received by applying the FMEA methodology.

Sales Department

As it was described before, following the FMEA methodology, it was organized the meeting with Departments Responsible. *Sara Niger* gave us the list of IT applications that are currently used for the daily activities, such as: ***SAP G20, SAP APO, SAP CRM, B2F, B2B, eCRM, Data WH.*** For each of them it was also defined the relative processes.

Before the starting of the quantitative evaluation, the contact persons were asked to indicate the Potential Risk's effect.

SAP G20

In case of the unavailability of the **SAP G20** the indicated risks were the inability to create and deliver the orders, and unavailability of the customers, products and warehouses data bases.

In terms of *Risk Severity (S)* and *Risk Criticality (D)* the risk was assessed as urgent with the maximum index of *5 points*. It means that availability of this application is vital for the company and any defects in its work can have a significant impact on the overall performance, the *Survival Time* was defined as *4 hours*.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=5*5=25 (Risk Priority Index)

Creating the more full picture for the calculation of the *Priority Index of Intervention (PII)* it was necessary to implement also the index of the *Risk Avoidability (A)*. As far as there are no appropriate substitutes for the SAP G20, it was ranked with the maximum index 4, that means the Risk is not avoidable.

Consequently, *Priority Index of Intervention is calculated as:*

PII=PI*A=25*4=100 (Priority Index of Intervention)

In the attempt to indicate the possible corrective actions to implement to reduce PII we found out that currently there are no existing back-up plans could be found and the only option is to restart the work of the application as soon as possible.

SAP APO

The next application is **SAP APO** that is used for the forecasting activities. The Potential Risk Effect was identified as difficulty to make the sales forecast and the possible shortage of the information.

In terms of *Risk Severity (S)* the risk was assessed as "enough serious" with the index of *3 points. Risk Criticality (D)* in terms of time were defined as "hard enough" with the Survival time of 24 hours and corresponding index of *3 points*. It means that availability of this application is important for the company, but some activities can be postponed without a significant impact for the company's core activities.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=3*3=9 (Risk Priority Index)

For the calculation of the *Priority Index of Intervention (PII)* it was implemented the index of the *Risk Avoidability (A)*. Ms.Niger summarized that the risk is "Quite avoidable" by using the alternative tools that is why the index is just 2 points.

Priority Index of Intervention is calculated as:

PII=PI*A=9*2=18 (Priority Index of Intervention)

The risk was already defined as "quite avoidable" and it means that for the Corrective actions we can use the alternative tools, such as creation of the new forecast in Excel by using the historical database that is available in hardcopy.

SAP CRM Genesys

The application that is used for the Contact Center needs is **SAP CRM Genesys**. As a consequence of not having the possibility to use it were identified that it will be impossible to respond the calls and as a result inability to receive the orders from the client.

In terms of *Risk Severity (S)* the risk was assessed as "very serious" with the index of *4 points. Risk Criticality (D)* in terms of time were defined as "urgent" with the Survival time of 4 hours and corresponding index of *5 points*. Because the activity is an important and presents the significant impact on the company's revenue.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=5*4=20 (Risk Priority Index)

For the calculation of the *Priority Index of Intervention (PII)* it was implemented the index of the *Risk Avoidability (A)*. It was highlighted by Ms.Niger that currently there are no back-up plans for the SAP CRM Genesys and we can consider the Risk as "Not avoidable" with the corresponding maximum index equal to 4 points.

Priority Index of Intervention is calculated as:

PII=PI*A=20*4=80 (Priority Index of Intervention)

There are no back-up plans for this IT application and it's necessary to provide the Service level agreement that will restart the activity within 4 hours.

B2F

Usually B2F is used for the interaction with the dialers and leasing companies. The Potential Risks Effect of not obtaining this system will be stop in the business activities with the leasing companies and dialers.

As far as this situation can have an immediate impact on the Pirelli's image the Risk Severity is "Urgent", said Ms.Niger. In terms of *Risk Severity (S)* the risk was assessed as "very

serious" with the index of *3 points. Risk Criticality (D)* in terms of time were defined as "hard enough" with the *Survival Time* of 24 hours and corresponding index of *3 points*. Because the activity is an important and presents the significant impact on the company's revenue.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=5*3=15 (Risk Priority Index)

For the calculation of the *Priority Index of Intervention (PII)* it was implemented the index of the *Risk Avoidability (A).* It was highlighted by Ms.Niger that currently there are no back-up plans for the SAP CRM Genesys and we can consider the Risk as "Not avoidable" with the corresponding maximum index equal to 4 points.

Priority Index of Intervention is calculated as:

PII=PI*A=15*4=60 (Priority Index of Intervention)

There are no back-up plans for this IT application and it's necessary to provide the Service level agreement that will guarantee the reactivation of the system within 4 hours.

B2B

Business to Business, already from the name of this application it is evident that activity represent a significant impact on company's image and relationships with the important customers. The Potential Risks Effect is that the customers will not be able to create the orders by themselves and it will kind of slowdown the normal flow of activities.

The service level that Pirelli offers to its customers could be affected that is why the *Risk Severity (S)* is "Urgent" with the maximum index of 5 points, said Ms.Niger. *Risk Criticality (D) is* instead was defined as "hard enough", 3 points, and correspond to the Survival Time equal to 24 hours.

Obtaining the results of the *Risk Severity* and *Risk Criticality* it is easy to calculate the

PI= S*D=5*3=15 (Risk Priority Index)

For the calculation of the *Priority Index of Intervention (PII)* it was implemented the index of the *Risk Avoidability (A).*

Priority Index of Intervention is calculated as:

PII=PI*A=15*3=45 (Priority Index of Intervention)

The possible corrective actions could be to call the contact center and put an order (to be inserting through SAP G20).

Data WH

The next application is **Data WH** that is used for the business intelligence analysis. The Potential Risk Effect is inability to perform this analysis.

In terms of *Risk Severity (S)* the risk was assessed as "enough serious" with the index of *3 points. Risk Criticality (D)* in terms of time were defined as "hard enough" with the Survival time of 24 hours and corresponding index of *3 points*. It means that availability of this application is important for the company, but some activities can be postponed without a significant impact for the overall company's performance.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=3*3=9 (Risk Priority Index)

For the calculation of the *Priority Index of Intervention (PII)* it was implemented the index of the *Risk Avoidability (A)*. It was highlighted by Ms.Niger that currently there are no back-up plans for the Data WH and we can consider the Risk as "Not avoidable" with the corresponding maximum index equal to 4 points.

Priority Index of Intervention is calculated as:

PII=PI*A=9*4=36 (Priority Index of Intervention)

We can see from the analysis that even if the application is not a very important in terms of its impact but the impossibility to substitute it with the alternative tools makes the index to rise up. There are no back-up plans for this application.

Findings

In the table below we can find the summarize findings of the analysis that was performed in collaboration with the department responsible, Ms. Sara Niger. It was agreed that in case of some shortage in the normal work of the server and as a consequence in the availability of the IT applications that are necessary to perform all the department's activities in the full volume, according to the contract with the server provider should be reactivate in the following order, according to the Priority Index of Reactivation (PII): SAP G20, SAP CRM, B2F, B2B, Data WH, SAP APO. Service level agreement also has to guarantee the RTO (Recovery Time Objective) equal to 4 hours for SAP G20 & SAP CRM and 24 hours for B2F, B2B, Data WH, SAP APO.

RESULTS		
IT Applications	**Priority of Reactivation (PII)**	**Survival Time**
SAP G20	100	4 hours
SAP CRM	80	
B2F	60	24 hours
B2B	45	
Data WH	36	
SAP APO	18	

Financial Department (Administration& Treasury)

For the Financial Department as the main Reference persons were chosen *Silvia Gironi* and *Luigi Colombo*, who gave us a tremendous support in all the phases of the analysis. During the interview process we could defined the list of IT applications that are currently used for the daily activities, such as: ***Piteco, IT2, SWIFT , TLQ, FSCM SAP, Bloomberg, SAP HR and SAP G20.*** For each of them it was also defined the relative processes. Before the starting of the quantitative evaluation, the contact persons were asked to indicate the *Potential Risk's effect*.

Piteco

The main activities related to **Piteco** are: treasury services (Italian market) and debit&credit operations. Inability to use **Piteco** application can lead to the difficulties in debit payments and impossibility to know the current cash balance for Pirelli Group.

Risk Severity (S) was justified as an "urgent" with the assigned *5 points*, because the impact that this risk can bring to the company is huge.

Risk Criticality (D) instead is the medium and the *Survival Time* for this type of activity could be up to 24 hours that give us *3 points*.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=5*3=15 (Risk Priority Index)

Creating the fuller picture for the calculation of the *Priority Index of Intervention (PII)* it was necessary to implement also the index of the *Risk Avoidability (A)*. As far as there are no appropriate substitutes for the Piteco, it was ranked with the maximum index 4, that means the Risk is not avoidable.

Consequently, *Priority Index of Intervention is calculated as:*

PII=PI*A=15*4=60 (Priority Index of Intervention)

Even if there are no appropriate back-up plans for this application it was identified that it could be possible to check the current accounts and make all the bank operations manually (by phone, email).

IT2 and SWIFT

Both of these applications **IT2** and **SWIFT** make part of the activities related to the treasury services (International level). As a *Potential Risk Effects* were identified the stop of all the exchange and sell/buy operations and inability to send automatically transactions to the bank.

In terms of *Risk Severity (S)* the risk was assessed as "urgent" with the index of *5 points.* *Risk Criticality (D)* in terms of time was defined as "impossible" with the *Survival Time* of 8 hours and corresponding index of *4 points*. It means that availability of this application is crucial for the

company, but some activities can be postponed without a significant impact for the company's core activities.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=5*4=20 (Risk Priority Index)

For the calculation of the *Priority Index of Intervention (PII)* it was implemented the index of the *Risk Avoidability (A). Ms.Gironi* told us that there were no back up plans available to substitute this applications and the risk is "not avoidable" with the index of 4 points.

Priority Index of Intervention is calculated as:

PII=PI*A=20*4=80 (Priority Index of Intervention)

There were no corrective actions or back-up plans for these applications.

SAP FSCM

The application that is used to cover the exchange rate risks is **SAP FSCM**. It could be a real threat for the financial activities of the company.

In terms of *Risk Severity (S)* the risk was assessed as "urgent" with the index of *5 points. Risk Criticality (D)* in terms of time was defined as "urgent" with the Survival time of 4 hours and corresponding index of *5 points*. Because the activity is an important and presents the significant impact on the company's financial stability.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=5*5=25 (Risk Priority Index)

For the calculation of the *Priority Index of Intervention (PII)* it was implemented the index of the *Risk Avoidability (A).* Despite of high *Risk Priority Index* and importance of the application it still possible, even if difficult, to avoid the risk, *3 points.*

Priority Index of Intervention is calculated as:

PII=PI*A=25*3=75 (Priority Index of Intervention)

For the back-up plan Ms.Gironi has proposed to make only the biggest and the most crucial operations that could be done by phone or fax.

SAP HR

SAP HR makes part of the applications that are used for the Administration services and in particular for the HR Management. The *Risk Potential Effect* was identified as inability to respect the legal obligations such as IMPS, Agenzie entrate (Italian tax authority), LUL and also it could be difficulties in the payment of the employees' salaries.

The risk of having the problems with the legal entities because of the postpone in the payments and the possible delay in the payments to the employee are the reasons for the high *Risk Severity (S)* that is "Urgent" with the maximum index of 5 points, said *Mr.Colombo. Risk*

Criticality (D) is instead was defined as “hard enough”, 3 points, and correspond to the S*urvival Time* equal to 24 hours.

Obtaining the results of the *Risk Severity* and *Risk Criticality* it is easy to calculate the

PI= S*D=5*3=15 (Risk Priority Index)

For the calculation of the *Priority Index of Intervention (PII)* it was implemented the index of the *Risk Avoidability (A)*. The Risk was identified as “not avoidable”, 4 points.

Priority Index of Intervention is calculated as:

PII=PI*A=15*4=60 (Priority Index of Intervention)

There is no back-up plan reguarding the legal obligations, but the payments to the employees could be managed by using the historical data.

SAP G20

SAP G20 is widely used for the activities related to the Credits Management, the Potential Risks Effect will be the impossibility to control the activities related to the credits.

In terms of *Risk Severity (S)* and *Risk Criticality (D)* the risk was assessed as urgent with the maximum index of *5 points*. It means that availability of this application is vital for the company and any defects in its work can have a significant impact on the overall performance, the *Survival Time* was defined as *4 hours*.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=5*5=25 (Risk Priority Index)

Creating the more full picture for the calculation of the *Priority Index of Intervention (PII)* it was necessary to implement also the index of the *Risk Avoidability (A)*. As far as there are no appropriate substitutes for the SAP G20, it was ranked with the maximum index 4 that means the Risk is not avoidable.

Consequently, *Priority Index of Intervention is calculated as:*

PII=PI*A=25*4=100 (Priority Index of Intervention)

In the attempt to indicate the possible corrective actions to implement to reduce PII we found out that currently there are no existing back-up plans could be found and the only option is to restart the work of the application as soon as possible.

Findings

In the table below we can find the summarize findings of the analysis that was performed in collaboration with the department responsible, Ms.Silvia Gironi and Mr.Luigi Colombo. It was agreed that in case of some shortage in the normal work of the server and as a consequence in the availability of the IT applications that are necessary to perform all the department’s activities in the full volume, according to the contract with the server provider should be reactivate in the following

order, according to the Priority Index of Reactivation (PII): SAP G20, SAP CRM, B2F, B2B, Data WH, SAP APO. Service level agreement also has to guarantee the RTO (Recovery Time Objective) equal to 4 hours for SAP G20 & SAP CRM and 24 hours for B2F, B2B, Data WH, SAP APO.

RESULTS		
IT Applications	**Priority of Reactivation (PII)**	**Survival Time**
SAP G20	100	4 hours
IT2	80	8 hours
SWIFT		
FSCM SAP	75	4 hours
Piteco	60	24 hours
TLQ		
SAP HR		

Quality Department

The main Reference person for the Quality Department is *Laura Parini*. During the several interviews we found out the numerous quantity of the IT applications that they use for the different phases of the department's activities: design&development/industrialisation of the product, selection and approval of the suppliers, incoming materials monitoring, claims management and production control. We identified a lot of applications, such as: *Net IMS, Net GAMA, CFO, RMQ, SAP G20, PCS, Unique Lab, CED(only for Brazil), Multiman and Bond System*. In this paper will be described only some of them, the most crucial one:

SAP G20

In Quality department **SAP G20** is the applcation used for the claims management. The Potential Risk Effect is that dilers or contact centers cannt insert the information about the new claims, its impossible to generate the technical code of the failure and clients will not be able to pay.

In terms of *Risk Severity (S)* the risk was assessed as "very serious" with the index of *4 points. Risk Criticality (D)* in terms of time were defined as "easy enough" with the *Survival Time* of 3 days and corresponding index of *2 points*. It means that availability of this application is important for the company, but some activities can be postponed without a significant impact for the company's core activities.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=4*2=8 (Risk Priority Index)

For the calculation of the *Priority Index of Intervention (PII)* it was implemented the index of the *Risk Avoidability (A). Ms.Parrini* defined the risk as "Not avoidable", 4 points.

Priority Index of Intervention is calculated as:

PII=PI*A=8*4=32 (Priority Index of Intervention)

The risk was already defined as "not avoidable" but it was mentioned that it is possible to accomplish this activity by involving a lot labour forces from different departmests, i.e. logistics, contact center, quality and administration.

PCS

For the Production control is used **PCS**, the application that helps to control the real-time stock of the products and keep under control the maintenance of production mashine (mould washing and bladder change).

The *Risk Severity (S)* the risk was assessed as "very serious" with the index of *4 points. Risk Criticality (D)* in terms of time were defined as "impossible" with the *Survival Time* of *8 hours* and corresponding index of *4 points*. Because the activity is an important and presents the significant impact on the company's operational activities.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=4*4=16 (Risk Priority Index)

For the calculation of the *Priority Index of Intervention (PII)* it was implemented the index of the *Risk Avoidability (A).* Ms.Parrini identified that the Risk as "Not avoidable" with the corresponding maximum index equal to 4 points.

Priority Index of Intervention is calculated as:

PII=PI*A=16*4=64 (Priority Index of Intervention)

There are *no back-up plans* for this IT application and it's necessary to provide the Service level agreement that will restart the activity within 4 hours.

Bond System

Another application used fro the the Production control is the Bond System. The Possible Risk Effect mainly is that non-confromity product can be send to the client.

As far as it can represent the problem for the brand image and customers dissatisfation the *Risk Severity (S)* is "very serious" with the *4 points* index. Considering that usually it's possible to use the available stock of the tires at least for 1 day, the *Risk Criticality (D)* was identified as "hard enough" equal to the *3 points* and the *Survival Time* of *24 hours*.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI=S*D=4*3=12 (Risk Priority Index)

For the calculation of the *Priority Index of Intervention (PII)* it was implemented the index of the *Risk Avoidability (A)*. Inspite on the importance of this application the risk was identified as "quite avoidable", 2 points, because there are alternative tools that allows to manage related activities.

Priority Index of Intervention is calculated as:

PII=PI*A=12*2=24 (Priority Index of Intervention)

For the *back-up plan Ms.Parrini* has proposed to manage activities manually informing all the involved people by email.

Findings

In the table below we can find the summarize findings of the analysis that was performed in collaboration with the department responsible, *Ms.Parrini*. It was agreed that in case of some shortage in the normal work of the server and as a consequence in the availability of the IT applications that are necessary to perform all the department's activities in the full volume, according to the contract with the server provider should be reactivate in the following order, according to the *Priority Index of Reactivation (PII): PCS, SAP G20, Bond System, Net Gama, Net IMS, Unique Lab, CED, Multiman CFO, RMQ*. Service level agreement also has to guarantee the *RTO (Recovery Time Objective)* equal to 8 hours for PCS and SAP G20, 24 hours for Bond System and 3 days for the left applications.

RESULTS		
IT Applications	**Priority of Reactivation (PII)**	**Survival Time**
PCS	64	4 hours
SAP G20	32	
Bond System	24	24 hours
Net Gama	12	3 days
Net IMS		
Unique Lab		
CED		

Logistics Department

Logistics department is one of the most complex and important departments for the company that manages different complex of activities starting from Planning activities and ending with the Inbound Logistics, Warehouse Management and Domestic distribution, International Transportation. That is why we interviewed persons responsible for different type of activities. *Reference persons are Serafini Massimiliano, Luca Galantina, Flavio Colombini and Paolo Schiavon.*

All the applications somehow relate to the SAP and the most important are *SAP MRP, SAP VMI, SAP WMS, SAP G20, SLOT Management, SAP APO/R3.*

SAP MRP

This application is used for the Stock Management that makes part of the Inbound Logistics

In terms of *Risk Severity (S)* the risk was assessed as "urgent" with the maximum index of *5 points Risk Criticality (D)* instead was defined as "hard enough", *3 points*. It means that availability of this application is vital for the company and any defects in its work can have a big impact on the overall performance, the *Survival Time* was defined as *24 hours*.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=5*3=15 (Risk Priority Index)

Creating the more full picture for the calculation of the *Priority Index of Intervention (PII)* it was necessary to implement also the index of the *Risk Avoidability (A).* The risk is "difficult to avoid" , 3 points.

Consequently, *Priority Index of Intervention is calculated as:*

PII=PI*A=15*3=45 (Priority Index of Intervention)

It was indicate the possible back-up plan that is to assign the person to control the level of the stock (receipt and consumption) by using Excel.

SAP VMI

The next application is **SAP VMI** that is also related to the Inbound logistics. The *Potential Risk Effect* was identified as difficulty to manage inventory.

In terms of *Risk Severity (S)* and *Risk Criticality (D)* the risk was assessed as urgent with the maximum index of *5 points*. It means that availability of this application is vital for the company and any defects in its work can have a significant impact on the overall performance, the *Survival Time* was defined as *4 hours*.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=5*5=25 (Risk Priority Index)

For the calculation of the *Priority Index of Intervention (PII)* it was implemented the index of the *Risk Avoidability (A). Ms.Galantina* told us that there were no back up plans available to substitute this applications and the risk is "not avoidable" with the index of 4 points.

Priority Index of Intervention is calculated as:

PII=PI*A=25*4=100 (Priority Index of Intervention)

There were no corrective actions or back-up plans for these applications.

SAP WMS

The application that is used for the warehouse management is **SAP WMS**. The *Potential Risk Effect* is difficulty to obtain the update picture of all the warehouse activities.

In terms of *Risk Severity (S)* the risk was assessed as "very serious" with the index of *4 points. Risk Criticality (D)* in terms of time were defined as "hard enough" with the *Survival Time* of *24 hours* and corresponding index of *3 points*. Because the activity is an important and presents the significant impact on the company's revenue.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=4*3=12 (Risk Priority Index)

For the calculation of the *Priority Index of Intervention (PII)* it was implemented the index of the *Risk Avoidability (A).* It was highlighted by *Mr.Galantina* that risk is "difficult to avoid", 3 points, but it still possible to substitute this application by alternative actions.

Priority Index of Intervention is calculated as:

PII=PI*A=12*3=36 (Priority Index of Intervention)

The Possible Corrective action is to assign the person who will follow all the activities manually, by using Excel.

SAP G20

In case of the unavailability of the **SAP G20** the indicated risks it will be impossible to deliver the orders to the clients.

In terms of *Risk Severity (S)* and *Risk Criticality (D)* the risk was assessed as urgent with the maximum index of *5 points*. It means that availability of this application is vital for the company and any defects in its work can have a significant impact on the overall performance, the *Survival Time* was defined as *4 hours*.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=5*5=25 (Risk Priority Index)

Creating the more full picture for the calculation of the *Priority Index of Intervention (PII)* it was necessary to implement also the index of the *Risk Avoidability (A).* As far as there are no appropriate substitutes for the SAP G20, it was ranked with the maximum index 4, that means the Risk is not avoidable.

Consequently, *Priority Index of Intervention is calculated as:*

PII=PI*A=25*4=100 (Priority Index of Intervention)

There are no back-up plans.

SAP SLOT Management

SAP SLOT Management supports the activities related to the International transportation. The Potential Risk Effect is lack of knowledge what/where/when to ship and impossibility to control the stock movements.

In terms of *Risk Severity (S)* and *Risk Criticality (D)* the risk was assessed as urgent with the maximum index of *5 and 4 points* respectivly. It means that availability of this application is vital for the company and any defects in its work can have a significant impact on the overall performance, the *Survival Time* was defined as *8 hours*.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=5*4=20 (Risk Priority Index)

Creating the more full picture for the calculation of the *Priority Index of Intervention (PII)* it was necessary to implement also the index of the *Risk Avoidability (A)*. Inspite of the iimportancy of this application the risk is *"quite avoidable"* because some corrective actions could be put in place, *2 points*.

Consequently, *Priority Index of Intervention is calculated as:*

PII=PI*A=20*2=40 (Priority Index of Intervention)

The Possible Corrective Actions are the folowing: 1. Receive the Excel file from the Logistics department with the information about departure/arrival point, date of delivery, quantity and IP code. 2. Contactthe warehouses and inform them about the departure/arrival dates, type and quantity of product to ship; 3. Local contact center should call the client and report that the order is in place and arrived.

SAP APO/R3

The most crucial application among the tools used for the Planning is **SAP APO/R3** that is used for the Network planning and more precise for the Releasing of the Stock-Transfer orders. The Potential Risk Effect is impossibility to ship the products.

The impact on the company's efficiency could be huge that is why the *Risk Severity (S)* the risk was assessed as "urgent" with the index of *5 points.* The *Risk Criticality (D)* on the contrary is not so crucial and *Survival Time* is 24 hours and corresponding index of *3 points*.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=5*3=15 (Risk Priority Index)

For the calculation of the *Priority Index of Intervention (PII)* it was implemented the index of the *Risk Avoidability (A)*. It was highlighted by *Mr.Colombini* that currently there are no back-up plans for the **SAP APO/R3** and we can consider the Risk as "Not avoidable" with the corresponding maximum index equal to 4 points.

Priority Index of Intervention is calculated as:

PII=PI*A=15*4=60 (Priority Index of Intervention)

There are no back-up plans for this IT application and it's necessary to provide the Service level agreement that will guarantee the reactivation of the system within 4 hours.

Findings

In the table below we can find the summarize findings of the analysis that was performed in collaboration with the department responsibles, Mrs.Serafini, Galantina, Colombini and Schiavon. It was agreed that in case of some shortage in the normal work of the server and as a consequence in the availability of the IT applications that are necessary to perform all the department's activities in the full volume, according to the contract with the server provider should be reactivate in the following order, according to the *Priority Index of Reactivation (PII): SAP VMI, SAP G20, SAP APO, SAP MRP, SLOT Management, SAP WMS.* Service level agreement also has to guarantee the *RTO (Recovery Time Objective)* equal to 4 hours for SAP VMI and SAP G20, 24 hours for SAP APO and SAP MRP, 8 hours for SLOT Management and 24 hours for SAP WMS.

RESULTS		
IT Applications	**Priority of Reactivation (PII)**	**Survival Time**
SAP VMI		
SAP G20	100	4 hours
SAP APO	60	
SAP MRP	45	24 hours
SLOT Management	40	8 hours
SAP WMS	27	24 hours

Purchaising Department

It took quite a lot time to define which activities and applications to analyze, because Purchaising Department responsible for all the purchases made for the company such as machines, utilities, different type of equipment and etc. But all these acquisitions are the long-term. Instead, purchaising of Raw Materials is something that should be done on short-time basis. It was considered in the analysis and among the listed applications were chosen the most important *SAP MRP and SAP G20.* The interesting fact is that usually activities are considered as not urgent because all the contracts and purchases are made in advance.

SAP G20

SAP G20 is used to receive the request for RM, contact supplier and put an order.

The *Risk Severity (S)* the risk was assessed as "very serious" with the index of *4 points. Risk Criticality (D)* in terms of time were defined as "easy enough" with the *Survival Time* of *3 days* and corresponding index of *2 points*.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=4*2=8 (Risk Priority Index)

For the calculation of the *Priority Index of Intervention (PII)* it was implemented the index of the *Risk Avoidability (A). Mrs.Girelli and Brambilla* identified that the Risk as "difficult to avoid" with the corresponding index equal to *3 points*.

Priority Index of Intervention is calculated as:

PII=PI*A=8*3=24 (Priority Index of Intervention)

The possible back-up plan is to receive the request by phone/fax, put an order(the most important one) by phone without the order's serial number.

SAP MRP

SAP MRP is used to issue the purchase orders.

The *Risk Severity (S)* the risk was assessed as "very serious" with the index of *4 points. Risk Criticality (D)* in terms of time were defined as "easy enough" with the *Survival Time* of *3 days* and corresponding index of *2 points*.

Obtaining the results of the Risk Severity and Risk Criticality it is easy to calculate the

PI= S*D=4*2=8 (Risk Priority Index)

For the calculation of the *Priority Index of Intervention (PII)* it was implemented the index of the *Risk Avoidability (A).* The risk is "quite avoidable" but considering that in case of the critical situation it will be putted the limited quantity of orders

Priority Index of Intervention is calculated as:

PII=PI*A=8*3=24 (Priority Index of Intervention)

The possible back-up plan is to place orders by phone/fax.

RESULTS		
IT Applications	**Priority of Reactivation (PII)**	**Survival Time**
SAP G20	24	3 days
SAP MRP	18	

Final findings

Gathering and analyzing all the information that was obtained during the numerous interviews with all the departments responsible we can summarize that the most crucial applications are the one that related to SAP. All the applications were ranked in order to simplify the identification of the priority, it was agreed that the applications with the index 40-100 points have the 1st priority, 36-24 the 2nd and 12-18 3rd.

The tables below are represented the summary of all the information, from different departments, related to the *Priority of Reactivation and Survival Time*.

Priority of Reactivation (PII)		
Rank	**IT Application**	**Index**
I	**SAP G20** *(VMI, WMS, R3, MRP, FSCM, HR, FI)* **SAP SMS**	**100**
	SMS WEB **SAP CRM** **IT2** **SWIFT**	**80**
	SAP APO **Piteco** **TLQ** **B2F**	**60**
	B2B **PCS**	**45**
	SLOT Management	**40**
II	**Data WH**	**36**
	Bond System **Bloomberg**	**24**
III	**Net Gama**	**18**
	eCRM, CMA	**16**
	Net Planner, Net IMS, CED, Multiman	**12**

The ranking of the applications in terms of the Survival Time helps us to identify the recovery time objective (RTO) that is essential for the contract that should signed between Pirelli and the service provider. RTO is the duration of time and a service level within which a business process must be restored after a disaster (or disruption) in order to avoid unacceptable consequences associated with a break in business continuity.

Survival Time		
Rank	**IT Application**	**RTO**
I	**SAP G20** *(VMI, WMS, R3, MRP, FSCM, HR, FI)* **SAP CRM** **SAP SMS**	**4 hours**
	SMS WEB **IT2** **SWIFT** **PCS** **SLOT Management**	**8 hours**
II	**SAP APO** **B2F** **B2B** **Data WH** **Piteco** **TLQ** **Bond System**	**24 hours**
III	**Net Gama** **eCRM, CMA** **Net Planner, Net IMS, CED, Multiman**	**3 days**

CHAPTER 5: CONCLUSION

The purpose of this project was to perform an analysis that is able to identify the core company processes, related IT applications and as a result to get the information that can be used for the creation of the contract that have to be signed between Pirelli and the potential IT service provider till the end of the year.

As an input for the analysis were performed the numerous interviews where the Departments Responsible provided the information, assessed the IT applications reflecting different types of indicators. For this analysis was used the FMEA methodology that helped fully disclose the impact of different IT systems on overall company's efficiency and effectiveness.

The main constraints for the contract are the definition of the Priority of Reactivation and the Recovery Time Objectives (RTO). They are perfectly corresponding to the indicators that we introduced and assessed during the analysis, such as Priority Index of Intervention and Survival Time. Let's briefly see the obtaining findings.

The following applications were identified as the most important one to reactivate in case of the any problems with the server: ***SAP G20 (VMI, WMS, R3, MRP, FSCM, HR, FI), SAP SMS, SAP CRM, SMS WEB,IT2, SWIFT, PCS, SLOT Management, SAP APO, B2B, B2F, Data WH, Piteco, TLQ, Bond System, Net Gama and etc***.

Performed analysis also was aimed to identify the service level agreement (SLA) that is based on the RTO and equal to 4 hours for SAP G20, SAP CRM and SAP SMS, 8 hours for SMS WEB, IT2, SWIF, PCS and SLOT Management. Other applications such as SAP APO, B2F, B2B, Data WH, Piteco, TLQ and Bond System have to be reactivated within 24 hours.

As a shortage of this project is the not well developed corrective actions analysis. It was proposed some back-up plans for the different applications but they are not sufficient. It will be suggested to make the more deep study of this topic and perform the full analysis that will be a very useful in case of the real disaster situation that will affect the normal work of the server.

At the end I would like to mention that the results of this project were presented to the Pirelli Chief Risk Officer who is responsible for the project related to the contract with the IT provider that manages the server (CED Cesano Maderno). The work was accepted and all the obtained information formed the basis for the definition of the contract objectives.

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FIGURES AND TABLES

Sales/Marketing Department

Risk (Process affected by the system's crash)		Risk Potential Effect	Risk Severity (S)						Risk Criticality (D)						Risk Priority Index	How much avoidable (A)				Priority Index of Intervention	Recomendable Corrective Actions
Description	IT System	Indicate Potential Risk's Effect	*How much the Risk represents a problem for the company? How much is serious this Risk?*						*For how long can we survive without iT?*						PI = S*D	How much is Risk avoidable? Can we avoid the Risk by using alternative tools(excluding IT) for a period at about 3 days-1 week?				PII = PI*A	Indicate Possible Corrective Actions to implement to reduce PII
			Unimportant	A Little	Enough	Very much	Urgent	Total	Very easy (1week)	Easy Enough (3 days)	Hard Enough (24 hrs)	Impossible (8 hrs)	Urgent (4 hrs)	Total		Avoidable	Quite Avoidable	Difficult to avoid	Not avoidable		
			1	2	3	4	5		1	2	3	4	5			1	2	3	4		
Order Creation	SAP G20	Cannot deliver the orders. Customers, Products and Warehouses database will not be available					5	5					5	5	25				4	100	No back-up plan
Forecasting	SAP APO	Difficult to make the sales forecast			3			3			3			3	9		2			18	Create the new forecast in Excelby using the historical database
Sales Forces	SAP CRM	Salers cannot see the update information about sales and customers		2				2		2				2	4	1				4	Make the orders by phone/fax. Using SAP G20 as a provider of the information about the product and customers and directly put the order there.
Contact Center	SAP CRM Genesys	Cannot respond the calls and as a consiquence cannot receive the orders from the clients				4		4					5	5	20				4	80	No back-up plan
Leasing Companies	B2F	Stop in the business activities with the dialers & leasing companies					5	5			3			3	15				4	60	No back-up plan
B2B	B2B	Customers cannot create the orders by themself					5	5			3			3	15			3		45	Call the Contact center to put an order (to be insert through SAP G20)
Online promotions	eCRM	Stop in online activities (i.e: client loyalty programs)		2				2		2				2	4				4	16	No back-up plan
Business intelligence analysis	Data WH	Cannot make the business intelligence analysis			3			3			3			3	9				4	36	No back-up plan

Administration & Treasury Department

Risk (Process affected by the system's crash)		Risk Potential Effect	Risk Severity (S)						Risk Criticality (D)						Risk Priority Index	How much avoidable (A)				Priority Index of Intervention	Recomendable Corrective Actions
Description	IT System	Indicate Potential Risk's Effect	*How much the Risk represents a problem for the company? How much is serious this Risk?*						*For how long can we survive without iT?*						PI = S*D	How much is Risk avoidable? Can we avoid the Risk by using alternative tools(excluding IT) for a period at about 3 days-1 week?				PII = PI*A	Indicate Possible Corrective Actions to implement to reduce PII
			Unimportant	A Little	Enough	Very much	Urgent	Total	Very easy (1week)	Easy Enough (3 days)	Hard Enough (24 hrs)	Impossible (8 hrs)	Urgent (4 hrs)	Total		Avoidable	Quite Avoidable	Difficult to avoid	Not avoidable		
			1	2	3	4	5		1	2	3	4	5			1	2	3	4		
Treasury services (Italy). Debit&credit operations	Piteco	Cannot pay debits. Don't know the current cash balance					5	5			3			3	15				4	60	Verificate the current accounts and make all the bank operations manualy (by phone, email)
Treasury services (International)	IT2	All the exchange and sell/buy operations will be stoped.					5	5				4		4	20				4	80	No Back-up plan
	SWIFT	Strongly related to IT2. Cannot automatically send transactions (comes from IT2) to the bank					5	5				4		4	20				4	80	No Back-up plan
Homebanking	TLQ	Will lose the direct connection(to make the transactions) with the Italian banks					5	5			3			3	15				4	60	No Back-up plan
	FSCM SAP	Cannot cover the exchange rate risks					5	5					5	5	25			3		75	Make only the biggest and the most crucial operations
Online financial information	Bloomberg	Cannot get online the information about exchange rates, taxes and other financial informations				4		4		2				2	8			3		24	Call the banks and ask the exchange rates quatations
Manage WH	SAP MM						5	5						0	0					0	
	SAP FI	We will have to postpone the issue of the balance sheet.			3			3	1					1	3				4	12	No back-up plan
HR Management&Administration	SAP HR	Cannot respect the legal obligations such as IMPS, Agenzie entrate (italian tax authority), LUL. Difficult to pay employe's ssalary					5	5			3			3	15				4	60	No back-up plan requarding the legal obligations, but the payments to the employes could be managed by using the historical data from the GPC application
Taxes	Intratel	No communications with the Italian tax authority		2				2	1					1	2	1				2	All the services are provided by an external provider and according to the contract should be recovered within 8 hours
Top mangement and external workers payments	CMA	More flexibe compare to SAP HR, but have more less the same Risk's Effect				4		4		2				2	8		2			16	
Usage of historical data	Pitney Bowes	Don't have any historical database		2				2	1					1	2				4	8	
Credit management	SAP G20	Impossible to control all the activities related to Credits					5	5					5	5	25				4	100	No back-up plan
Reporting	Tagetik	Difficult to create the reports and control the situation with the credit limits		2				2			3			3	6		2			12	We can get all the necessary data from SAP and use it for the current activities, instead the reporting part should be postpone

Logistics Department

		Risk (Process affected by the system's crash)		Risk Potential Effect	Risk Severity (S)						Risk Criticality (D)						Risk Priority Index	How much avoidable (A)				Priority Index of Intervention	Recomendable Corrective Actions
		Description	IT System	Indicate Potential Risk's Effect	How much is the Risk represent a problem for the company? How much is serious this Risk?						For how long can we survive without iT?						PI = S*D	How much is Risk avoidable? Can we avoid the Risk by using alternative tools(excluding IT) for a period at about 3 days-1 week?				PII = PI*A	Indicate Possible Corrective Actions to implement to reduce PII
					Unimportant	A Little	Enough	Very much	Urgent	Total	Very easy (1week)	Easy Enough (3 days)	Hard Enough (24 hrs)	Impossible (8 hrs)	Urgent (4 hrs)	Total		Avoidable	Quite Avoidable	Difficult to avoid	Not avoidable		
					1	2	3	4	5		1	2	3	4	5			1	2	3	4		
Inbound Logistics		Stock Management (Goods receipt&Consumption)	SAP MRP						5	5			3			3	15			3		45	Assign the person to control the level of stock (Receipt&Consumption) by using EXCEL
		Vendor Management Inventory	SAP VMI						5	5					5	5	25				4	100	To inform the supplier and send the nesessary data by fax or insert it in the system manualy
		Warehouse Management	WMS				3			3			3			3	9			3		27	Assign the person who will follow all the activities manualy, by using Excel
WH Management & Domestic Distribution		Overview of all goods issues and warehouse stocks.	SAP WMS	Difficult to obtain the up-to-date picture of all of the activities in the warehouse, which means that we can't control the actual work in the warehouse				4		4			3			3	12			3		36	Assign the person who will follow all the activities manualy, by using Excel
		Receiving import&consignment from production and put on stock; Receiving orders from the client with deefined payments conditions; Picking activities; Bill issue with the individual IP number; Orders delivery	SAP G20	Impossible to deliver the orders to the client					5	5					5	5	25				4	100	No back-up plan
International Transportation (Control Tower)		Receive the Shipment Plan (from the Availability team, Planning Department)	SAP, SLOT	Don't know what/where/when to ship. Cannot control the stock movements					5	5				4		4	20		2			40	1. Receive the Excel file from the Logistics Planning department with the information about: Departure/Arrival point, Date of delivery, Quantity, IP code; 2. Contact the Warehouses and inform them about the departure/arrival dates; 3. Check the truck's availability; 4. Inform the departure WH which kind of product&quantity to ship; 4. Client should contact the WH to clarify either the ordered product arrived or not; 5. Local contact center contact the client that the order is in place and arrived
		Make the intercross of the information (Shipment Plan and Suppliers Database); Book all the necessary transportations; Supervision of the transportation flows	SLOT Mngt	Will lose the information and the possibility to control the flow of the information reguarding all the international and domestic transportations. In particular: type of the trucks (m3), dates, realtime tracking of the delivery dates, disponibility of the transport			3			3		2				2	6		2			12	Need acsess to SAP in other case should follow the back-up activities proposed to recover SAP
Planning	Moulds Planning	Create a requirement of the new equipment	Moulds Database	Cannot order the new equipment		2				2	1					1	2	1				2	We can postpone this activities
		Put an order	SAP G20	Impossible to put an order		2				2		2				2	4				4	16	No back-up plan
		Receive the approval	Net IMS	Cannot receive the approval	1					1	1					1	1	1				1	We can postpone this activities
		Data Collection: Receive Forecast from Demand Planning	APO DP	Difficult to get the demnd plan		2				2		2				2	4				4	16	No back-up plan
		Receive other input information (product in stock)	SAP R/3	Cannot control the real level of the stock		2				2		2				2	4				4	16	No back-up plan
		Identify Production Capacity	PCS (Mould database)	Cannot control the real-time stock level	1					1		2				2	2	1				2	Follow activities by Excel/phone
		Production Allocation	Net PDG	Can lose the opportunity to sell		2				2		2				2	4		2			8	Follow activities by Excel/phone
		Calculate the production requirements, Generate Production Plan, Calculate availability to promise	Net Planner	Production plan will not be available in time		2				2		2				2	4			3		12	Use the existing information
	Network Planning	Release Stock-Transfer order	SAP APO, SAP R3	Will be impossible to ship the product					5	5			3			3	15				4	60	No back-up plan
		Defenition of the needed number of trucks/containers	SLOT Mngt Tool	Difficult to define the optimal number of trucks and their capacity				4		4		2				2	8			3		24	Back-up plan can be applied only for the urgent cases. Manage all the activities manualy (by phone,fax) and followed by Excel
	Reporting	Control the Stock, Production&Sales	Data WH	Cannot perform the reporting activities in time		2				2		2				2	4				4	16	Postpone the issue of the report or perform the partial reporting from the dedicated IT Systems

Quality Department

Risk (Process affected by the system's crash)		Risk Potential Effect	Risk Severity (S)						Risk Criticality (D)						Risk Priority Index	How much avoidable (A)				Priority Index of Intervention	Recomendable Corrective Actions
Description	IT System	Indicate Potential Risk's Effect	*How much the Risk represents a problem for the company? How much is serious this Risk?*						*For how long can we survive without iT?*						PI = S*D	How much is Risk avoidable? Can we avoid the Risk by using alternative tools(excluding IT) for a period at about 3 days-1 week?				PII = PI*A	Indicate Possible Corrective Actions to implement to reduce PII
			Unimportant	A Little	Enough	Very much	Urgent	Total	Very easy (1week)	Easy Enough (3 days)	Hard Enough (24 hrs)	Impossible (8 hrs)	Urgent (4 hrs)	Total		Avoidable	Quite Avoidable	Difficult to avoid	Not avoidable		
			1	2	3	4	5		1	2	3	4	5			1	2	3	4		
Design& Development / Industrialisation of the Product	Net IMS (Logistics)	will not be possible to use K@W			3			3		2				2	6		2			12	Use the historical data (Excel spreadsheet updated once per week); update all the info manualy and insert all the data manualy when the system will be recovered; people from the plants can contact Net IMS responsible by email/phone
	Net GAMA (Marketing)	Will not be available all the information about the existing and future products, plus all the historical data			3			3		2				2	6			3		18	Use the historical data (from the last month)
Selection&Approval of the Suppliers	CFO (R&D)	RMQ will not work		2				2			3			3	6		2			12	
Incoming Materials Monitoring	RMQ/NRQ	Materials are not released for the production. Cannot automatically put the results		2				2			3			3	6		2			12	Manage manualy, based on results of the analysis from Pirelli's labs & suppliers. Put all the information paper, follow it and later insert the information in the system
Claims Management	Claims application (SAP G20)	Dilers/Contact centers cannot insert the information about the new claims; Impossible to generate the technical code of the failure; Clients will not be paid; Statistical report cannot be done				4		4		2				2	8				4	32	Manualy put all the info. *Needs a lot labour forces(contact center - logistics - quality - administration)
Production Control	PCS	Cannot control the real-time stock of the products (include all the stages); Difficult keep under control the maintenance of production mashine (mould washing & bladder change);				4		4				4		4	16				4	64	No back-up plan
	Unique Lab (R&D)	Stop all the materials&materials compound laboratory. Also will affect the materials R&D department			3			3		2				2	6		2			12	Follow all the activities, the urgent one, manualy and later on insert all the data in the system
	CED (only for Brazil)	will lose or not insert the data			3			3		2				2	6		2			12	Follow all the activities by Excel or by paper and later insert all the data in database
	Multiman	Cannot analyse the data (should be taken from PCS)			3			3		2				2	6		2			12	Connect the machine to the PC&upload all the data and then transfer to Multiman
	Bond System	Non-conformity product can be send to the client				4		4			3			3	12		2			24	Manage manualy . Inform all the involved people by email

Purchasing Department

	Risk (Process affected by the system's crash)		Risk Severity (S)						Risk Criticality (D)						Risk Priority Index	How much avoidable (A)				Priority Index of Intervention	Recomendable Corrective Actions
	Description	IT System	*How much the Risk represents a problem for the company? How much is serious this Risk?*						*How long can we survive without iT?*						PI = S*D	How much is Risk avoidable? Can we avoid the Risk by using alternative tools(excluding IT) for a period at about 3 days-1 week?				PII = PI*A	Indicate Possible Corrective Actions to implement to reduce PII
			Unimportant	A Little	Enough	Very much	Urgent	Total	Very easy (1week)	Easy Enough (3 days)	Hard Enough (24 hrs)	Impossible (8 hrs)	Urgent (4 hrs)	Total		Avoidable	Quite Avoidable	Difficult to avoid	Not avoidable		
			1	2	3	4	5		1	2	3	4	5			1	2	3	4		
RM-Planning (Operations or Supply Chain)	Planning (local level) & Request for orders	SAP MRP				4		4		2				2	8	1				8	Postpone the orders issue. Each plant should has it's own historical database and continue the planning activities by using Excel; Send the request by phone/fax to Purchasing department (Ambrogio Brambilla)
	Identify the quantity to be ordered	SAP G20			3			3		2				2	6			3		18	Follow by Excel
Purchasing (Raw materials)	Orders issue	SAP MRP				4		4		2				2	8		2			16	Place an order by Fax
	Receive the request for the Raw materials(RM), Contact suppliers and put an order	SAP G20				4		4		2				2	8			3		24	Receive the request by phone/fax; all the suppliers database exist in archive (paper version), We can put an order(the most important one)by phone/fax WITHOUT the order's serial number
	Confirmation from Supplier	email, phone			3			3		2				2	6			3		18	Continue using the email and phone
	Suppliers deliver the RM and issue the bill	SAP G20			3			3		2				2	6			3		18	Issue the bill WITHOUT the order's serial number
RM-Planning (Operations or Supply Chain)	Stock Management (Goods receipt&Consumption)	SAP MRP					5	5			3			3	15			3		45	Assign the person to control the level of stock (Receipt&Consumption) by using EXCEL
	Vendor Management Inventory	SAP VMI					5	5					5	5	25				4	100	To inform the supplier and send the nesessary data by fax or insert it in the system manualy
	Warehouse Management	WMS			3			3			3			3	9			3		27	Assign the person who will follow all the activities manualy, by using Excel
Quality Department	Quality Control	SAP, RMQ			3			3		2				2	6		2			12	Manage all the activities manualy(Excel). During the first 1-1,5 days use the safety stock. Starting from the 2nd day, use the data ("Analysis certificate") coming from the suppliers in order to perform the Quality control of the new raw materials.

PR Department

Risk (Process affected by the system's crash)		Risk Potential Effect	Risk Severity (S)						Risk Criticality (D)						Risk Priority Index	How much avoidable (A)				Priority Index of Intervention	Recomendable Corrective Actions
Description	IT System	Indicate Potential Risk's Effect	*How much the Risk represents a problem for the company? How much serious is this Risk?*						*How long can we survive without iT?*						PI = S*D	How much is Risk avoidable? Can we avoid the Risk by using alternative tools(excluding IT) for a period at about 3 days-1 week?				PII = PI*A	Indicate Possible Corrective Actions to implement to reduce PII
			Unimportant	A Little	Enough	Very much	Urgent	Total	Very easy (1week)	Easy Enough (3 days)	Hard Enough (24 hrs)	Impossible (8 hrs)	Urgent (4 hrs)	Total		Avoidable	Quite Avoidable	Difficult to avoid	Not avoidable		
			1	2	3	4	5		1	2	3	4	5			1	2	3	4		
Emails sending and appointment setting	Outlook	Difficult to communicate with internal and external world, news monitoring					5	5					5	5	25			3		75	Use the Fax
Connection to the Exchange Stock (by NIS), uploading the PDF version of the newspapers, preparation of the info for the Mr.Tronchetti	Internet	Cannot upload the PDF version of the newspapers; cannot provide the information to a Mr.President; cannot publish it on Intranet; Cannot follow all the upgrades of the				4		4					5	5	20			3		60	Communicate with the Exchange Stock by Fax. Prepare the PDF version of the newspaper by ourself.
Communication with the employees, purchaising orders preparation	Intranet	Impossible to see the news, Internal&External, and make the orders to be purchased			3			3				4		4	12		2			24	Make the photocopy of the original newspapers and send it by fax
Communication with the exchange stock	NIS	Cannot communicate with the exchange stock					5	5					5	5	25		2			50	Use the Fax
Press clipping downloading	Intranet	Cannot download the pressclipping					5	5					5	5	25			3		75	Read all the magazines, choose the appropriate articles and make the"hand
News monitoring	Orazio mail	Difficult monitor the news					5	5					5	5	25				4	100	No back-up plan
Usage of all the archives	My network	Don't have the access to the archives		2				2		2				2	4	1				4	Ask the partners to send us the necessary info