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DEPARTMENT OF MANAGEMENT, ECONOMICS AND INDUSTRIAL ENGINEERING

POLO REGIONALE DI COMO

Enterprise 2.0 adoption in Italian companies: Analysis of the maturity level

Supervisor: **Prof. Marianno Corso**
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By Thomas Philip
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INDEX

List of figures

List of Keywords: ICT (Information and communication technology), Virtual workspace, Web 2.0, Blogs, Wikis, Social Networking, Tagging, Rating Systems, Mash Ups, RSS (most commonly expanded as Really Simple Syndication), Enterprise 2.0, SLATES, Social Enterprise (SE), Open Enterprise (OE), Adaptive Enterprise (AE), Social Network & Community (SN&C), Unified Communication & Collaboration (UC&C), Enterprise Content Management (ECM), Enterprise 2.0 Observatory, Embryonic model, Focused model, Composite model, Complete model, Unified Communication, Centric Project Collaboration, Live Collaboration.

1. Abstract

Working together is the way to move ahead is today's approach at the workplace, offering competitive advantage to those who embrace the new tools that enable information exchange and collaboration to distributed workforces and networks of partners and customers.
Enterprise 2.0 is the concept and approach using technologies and business practices that provide the workforce access to collective, open and adaptive resources and solutions. Harvard professor Andrew McAfee coined the phrase Enterprise 2.0, defining it: " the use of emergent social software platforms within companies or between companies and their partner or customers ".

This study starts with trying to understand the evolution in ICT and how it progressed towards Enterprise 2.0. All the uses of digital technology that exist to help individuals, businesses and organisations use information are termed as ICT, more specifically ICT covers any product that will store, retrieve, manipulate, transmit or receive information electronically in a digital form.

Literature Review
The need for ICT evolution rises from primarily, the need for new organizational models and the growing importance of inter-organizational relationships.
In the knowledge society, ICT plays a key role as organization design lever and in the development of new Information Systems (IS).
ICT make the decision making processes more agile and effective, it enables sustainable and new forms of organizing work and foster innovation and change. The evolution of the intranet arose from the varying needs of companies to meet customer and competitive needs.

The later vision of Intranet emerged as: a tool centered and focused on people and their needs but with a strategic objective to create a complete workspace to support employees day to day operations, knowledge management, collaboration and communication processes. The boundaries between Intranet and other IS changed because of their mutual

convergence process. The vitual workspace (v-W) is composed of all web technologies-based ICT applications/ services that support business processes and which an organisation can put forward to its employees.
The major barriers to the process of integration do not appear to be technological but political and organizational.
Four stages of evolution have been identified in 110 cases analysed (Corso, 2009). The stages correspond to the different levels of progressive integration of the virtual workspace dimensions into a single, worker oriented environment. Evolution of the virtual workspace is fundamental for the growth of Enterprise 2.0. Experiences transfered from the virtual workspace gives rise to the foundation for Enterprise 2.0.

'Web 2.0' is commonly associated with web applications that facilitate interactive information sharing, interoperability, user centered design, and collaboration on the World Wide Web. A Web 2.0 site allows its users to interact with each other as contributors to the website's content, in contrast to websites where users are limited to the passive viewing of information that is provided to them. Examples of Web 2.0 include web based communities, hosted services, web applications, social networking sites, video sharing sites, wikis, blogs, mashups and folksonomies.

The transfer of Web 2.0 technologies into the business world set the stage for Enterprise 2.0, bringing more than just 'Web 2.0 for business' and releasing employees from the constraints and limitations of previuos communication and productivity tools, it came with numerous risks and difficulties as with any case of an upcoming concept, such as security, simply figuring out what to do, where to begin and whats the next step?

Companies use Web 2.0 technologies more frequently for internal than for external purposes and the rate of deployment remains high for almost all kinds of uses.
The heaviest users of Web 2.0 applications enjoy benefits such as increased knowledge sharing and more effective marketing. Web 2.0 technologies can be a powerful asset for an organization; their interactivity promises to bring more employees into daily contact at lower cost, encourage participation in projects and idea sharing thus deepening a company’s pool of knowledge bring greater scope and scale to organizations as well, strengthening bonds with customers and improving communications with suppliers and outside partners advantages are translating into measurable business gains.

The term Enterprise 2.0 derives from Web 2.0 and is often used to indicate the introduction and implementation of social software inside a company and the social and organisational changes associated with it. The term was coined by Andrew McAfee, a Professor at Harvard Business School, to refer to simple, free platforms for selfexpression (McAfee`s blog, 24 March 2006). He soon followed up with a refined definition, Enterprise 2.0 is the use of emergent social software platforms within companies or between companies and their partners or customers (McAfee's blog, 27 May 2006).

Enterprise 2.0 can be understood from SLATES, the term/ concept that describes the business impacting capabilities, derived from the effective use of Web 2.0 technologies in and across enterprises. It stands for Search, Links, Authorship, Tags, Extensions, Signalling. Enterprise 2.0 is closely related to Web 2.0, however, the concepts are not the same, on studying both we can infer that they are two individual sets that are built on similar foundations. Web 2.0 describes the shift in focus from static and singular media to dynamic, interactive community-oriented social media. The emerging needs (Enterprise 2.0 Observatory, 2008) that Enterprise 2.0 tries to respond are divided into key dimensions of Open belonging, Social networking, Knowledge networks, Emergent collaboration, Adaptive reconfigurability and Global mobility.

Main difficulties in Enterprise 2.0 implementation are not from the technical side but from a knowledge lack of opportunities, a difficulty in economic benefit identification and valuation, together with the need of organizational change. In other terms, the barriers are not technological but cultural ones: most of the companies manage the implementation project in a purely technical perspective without systematically facing the organizational and the change management aspects.

From the cases studied three Enterprise 2.0 models (Enterprise 2.0 Observatory, 2008) are identified as emerging in the companies Social Enterprise (SE), aims to create new collaboration, knowledge sharing and relation management models (24% of the cases).
Open Enterprise (OE), tends to a great extension and opening of the Virtual Workspace boundaries in terms of access methods and external players (14% of the cases).
Adaptive Enterprise (AE), focuses on flexibility and reconfigurability in corporate process management.

Social Enterprise is presently the most popular. It is the need for emergent collaboration, shared knowledge and development of internal and external social networks which drives the evolution of the organisational model

The Open Enterprise has the affinity for expanding and opening the boundaries of the virtual workspace in terms of access ways and external players.

Adaptive Enterprise is still an unfamiliar topic, it focuses on corporate process management, and not part of this study.

The analysis points the application areas (Enterprise 2.0 Observatory, 2009), Social Network & Community (SN&C), Unified Communication & Collaboration (UC&C), Enterprise Content Management (ECM) which are specific to the Enterprise 2.0 models. The Open Enterprise model stresses the dimensions of Global mobility, Open belonging, Social networking and Knowledge networks, while the remaining two dimensions are stressed to a lesser extent.

Enterprise 2.0 is already demonstrating real business value for many organisations. It has opened up new methods for communication and conversations, and has transformed the way that companies share and access information. Enterprise 2.0 removes the size and complexity of earlier systems, experts such as systems analysts and consultants who were required to make certain systems work and to maintain them are easily replaceable.

Enterprise 2.0 faces a large chunk of the problems that goes with ICT, security, control, productivity, content ownership, staff perception are areas with difficulties faced.

Methodology

To realize the concept of Enterprise 2.0, which is quite popular with companies and if the companies have followed through and translated the concept to its actual usage. To analyze the current initiatives and its impacts on the organization, an online survey was administered to a panel of CIOs of major Italian medium-large sized organizations. Their vision and opinions have enabled a view to the opportunities arising from Enterprise 2.0, the implications of the evolution of the information systems, the governance and

management of organizational change.

Results

The results from the study explains the use of Enterprise 2.0 technology in organizations today, their investments and future plans. The insight gathered from the study helps gain an understanding of the technological trend taking place.

The Maturity Levels

The maturity levels have been created with the intention of aiding the better understanding the position/ success of Enterprise 2.0, its adoption and use today.

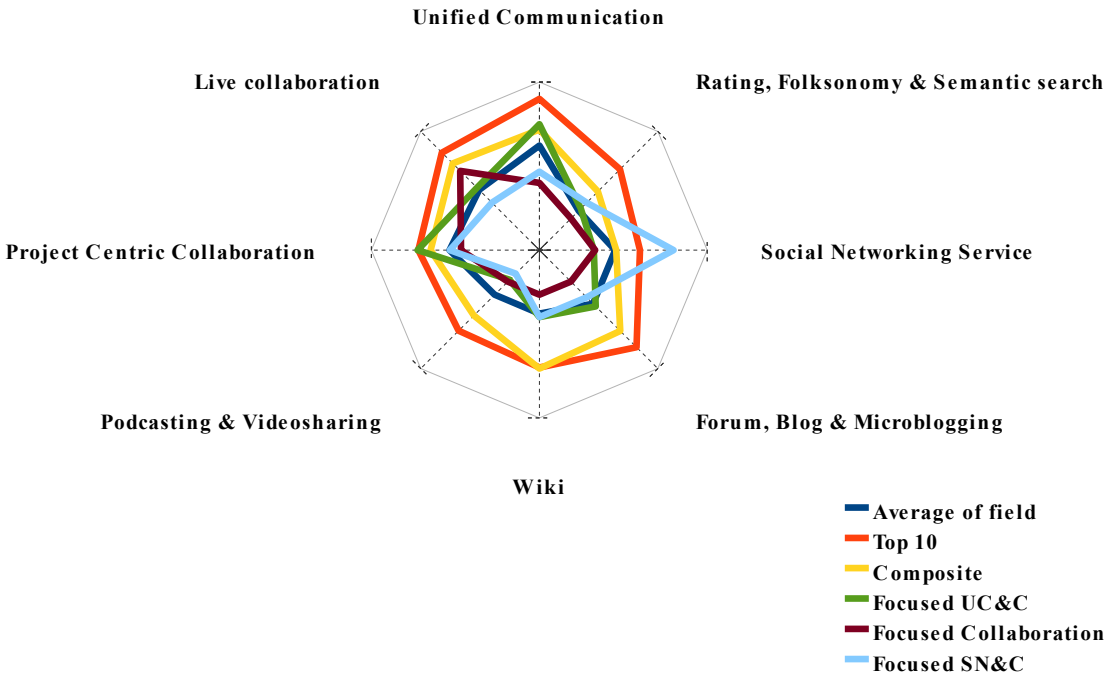

Fig 1: Study on Enterprise 2.0 fields and tools

From figure 1, we infer that most companies are yet to develope their Enterprise 2.0 technology and reach the level the top companies are at. Companies are more focused on Unified Communication and Collaboration than the other fields, Collaboration is not at a good state yet. Social Network & Community is a field with high readings but only a few companies strongly reccomending it. Rating & Folksonomy, Forum, Blog & Microblogging, Podcasting & Videosharing, Project Centric Collaboration and Wiki are

tools used in good standing by companies who are at the top the Enterprise 2.0 tecnology rehlm, whereas most of the other companies, industries and sectors are far behind.

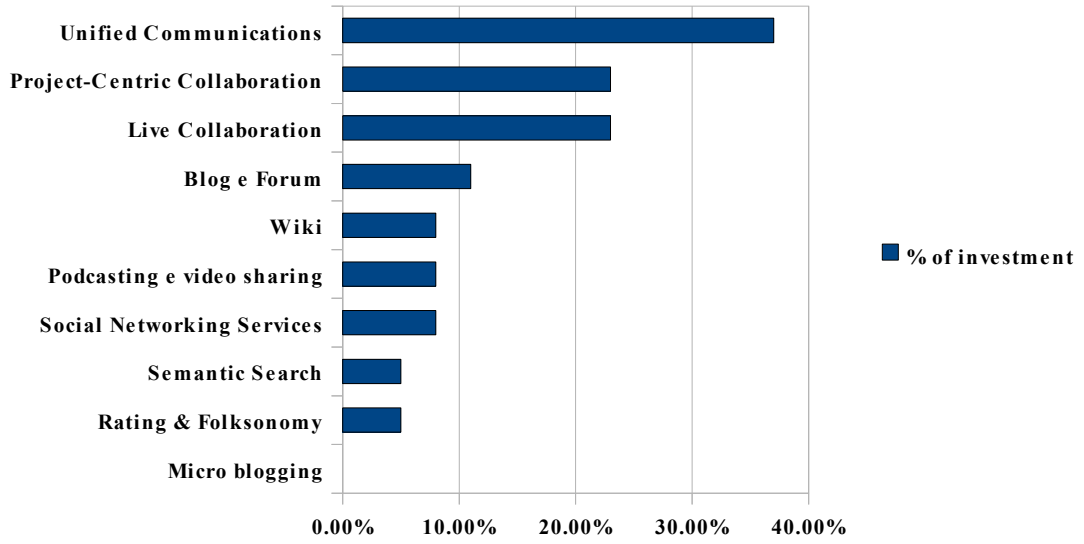

Fig 2: Planned investments in Enterprise 2.0 tools

The investigation of the planned investments (Figure 2) shows a strong bias toward unified communications tools, planned in 37% of companies in the sample, Project Centric Collaboration and Live Collaboration (23%) and other sectors.

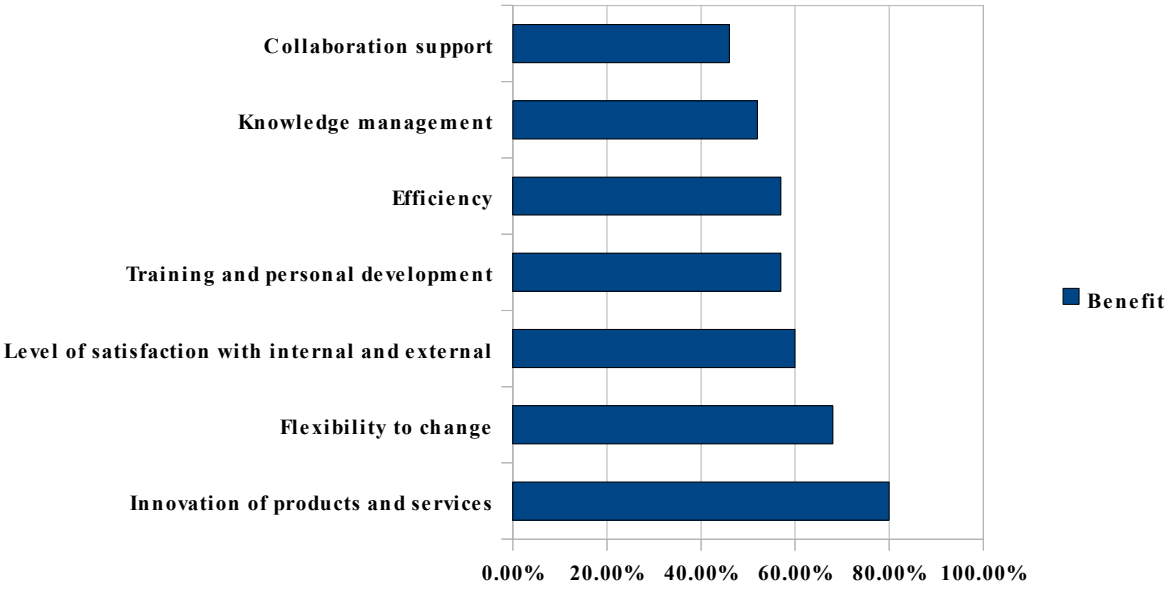

Fig 3: The benefits and the level of maturity of the tools 2.0

The ability of each tool to generate competitive differential can be better understood by crossing the beneficial impact with the spread and maturity of use, this makes it possible to

cluster the group tools as 'Must haves', which include tools with a high level of maturity and provide an immediate reduction in the estimated costs, with significant impact on the efficiency and effectiveness of processes; 'Differentiating', includes tools which are not very common but when used in a systematic manner can generate significant benefits; 'Question mark', these tools although have a level of deployment and maturity fairly high are often not perceived by firms as drivers of value; 'Marginal', includes tools not very common, used mainly in experimental cases and do not have an important role in the processes and generation of benefits.

Case Studies

Study on IBM's implemetation and use of Enterprise 2.0 solutions indicate its high level of maturity in Enterprise Content Management and Communication tools. AT&T indicates its emerging need of Unified Communication and Collaboration tools and the study shows the benefits of its application. Finally, Boston College impliments and encourages Social Network & Community tools with results benefiting students and the organization.

Conclusions

The Enterprise 2.0 buzz is strong but the application of its tools and services are still in the process of maturing to higher levels. Major software vendors such as IBM, Microsoft and Oracle are readying new technology offerings that are loaded with Enterprise 2.0 features which are soon to be popular in all businesses.

In the end, the adoption of Enterprise 2.0 technology is an issue of both risk and reward. Employees often don't understand their role and the application of Enterprise 2.0 tools.

2. ICT, evolution and the vitual workspace

In the knowledge society, ICT can play a key role as organization design lever for three primary reasons, which are also the priorities for the development of the new generation Information Systems (IS).
ICT can make the decision making processes more agile and effective, it can enable sustainable and new forms of organizing work and it can foster innovation and change.

The need for new organizational models

Increasing workforce dispersion creates barriers to the sharing of knowledge and expertise among individuals. Dispersion is both at geographical level, how people are integrated to the rest of the organization and at contractual one, how they relate to it. Nowadays the concept itself of the workplace is changing. People spend an increasing amount of their working time outside the physical boundaries of their company, often in mobility and interacting with customers or people from partner organizations. Also when working inside the company, people often change positions and work in multi-disciplinary virtual teams. As a consequence, individuals have fewer and fewer opportunities for face to face interaction with their colleagues and can hardly rely on their own experience.
The provisional nature of employment, loose forms of contractual links to the company and high level of turnover, while in many cases considered competitive needs, make people's stay with organizations temporary and partial thus creating barriers to the sharing of knowledge and expertise among individuals. (Corso et al. 2006)

Growing importance of inter-organizational relationships

Since competition occurs not so much among companies as among networks, the network, more than the single company becomes the context in which individuals have to assimilate and transmit knowledge.

Orientation to processes more than to functions: people working in multidisciplinary teams are less and less in touch with colleagues with the same “functional” competencies.

A new IS generation that integrates work environment, personal relations and collaboration

can play a key role in innovation (Magnusson and Martini, 2008) as it can promote process change and reconfiguration, shifting barriers to innovation, spread vision to give workers the sense of direction and innovation stimuli, support access to knowledge and new idea generation, enabling collaboration between different units and open organizations to capture stimuli from partners and collaborators.

2.1 The intranet

In this analysis, the intranet will be interpreted as all the web technologies based ICT applications/services that support business processes and which an organization can present to employees (Corso et al. 2008). In other words, an Intranet is a way of thinking and organizing people, work and interaction.

The intranet has evolved in scope, both in spatial and time terms. In the first case (space), it encompasses all the value chain processes and extend beyond the immediate internal work of the organization to include relationships with business partners and external agencies. Secondly (time), Intranet must develop from being conceived as a project to being conceived as a process for innovation and change management. In this sense, an Intranet initiative should not be interpreted as a una tantum project, but as a longer evolutionary process in which the system assumes an increasingly important position in facilitating and sustaining organizational change.

Evolution process: the 1st era

The Intranets analysed can be mapped on the basis of six macro functionalities and the value chain macro processes they support. These functionalities have been identified into three models on the basis of their focus, institutional intranets, knowledge intranets and operations intranets. (Corso et al. 2006)

Institutional Intranets are essentially aimed to value chain supporting activities (internal communication, management of human resources, administration and control, facility management, etc). They are mainly based on Publishing and Self-Service functions, with a certain tendency to incorporate Document Management applications as well.

Knowledge Management Intranets seek to facilitate the accumulation, archiving and

sharing of knowledge; they are based, in the main, on Document Management and Community functions, even if in some cases, Publishing and Collaborative Work tools are also present.

Operations Intranets are created to support the value chain primary activities (operations, sales, marketing, etc.); they are generally built on the Legacy Integration and Collaborative Work functions, address a specific group of workers (those involved in the process supported) and therefore have a more limited area of application; in some cases Document Management and Community functions also play an important role.

In the progress towards a more in-depth support of core processes, Intranets are going to converge increasingly with IS and ERP systems. A point of contact between Intranets and ERP is in the user interface but if ERP is the way in which processes work, Intranet is the way to interface these processes with the people who work with them.

Governance

Most manage implementation of projects from a purely technical point of view, without addressing organisational and change management issues.

Evolution

The evolution of the intranet arose from the varying needs of companies to meet customer and competitive needs. Three fundamental phases have been identified:

- The emergent stage: in this phase the birth of the Intranet is boosted by the local bottom-up initiatives, as a sort of collection of local applications implemented in order to answer to contingent stimuli and requests.
- The rationalization stage: it is characterised by a wider awareness of the Intranet presence and of its potential role. Its development happens through a top down process aimed at rationalising what was implemented in the past and to pursue strategic objectives.
- The strategic stage: it is the phase of greater maturity, characterised by the reassessment of the role of the Intranet that becomes a strategic tool to bring the processes on the web and to create new relational and collaborative spaces between people.

2.2 Evolution process: the 2nd era

In most of cases, the first era objectives were related to improving timeliness, transparency and reliability of internal communication through a unique and integrated information platform, simplifying the process of distribution and management of information, improving the sense of belonging and corporate identity and eliminating paper documentation and reducing hard costs. (Corso et al. 2006)

The new vision of Intranet emerges: a tool centered and focused on people and their needs but with a strategic objective to create a complete workspace to support employees day to day operations, knowledge management, collaboration and communication processes.
The 2nd era welcomes new emergents of Intranet. It is no longer a question of using the Intranet to improve internal communication, spread company culture or eliminate paper documents. The objectives concern operations and the creation of a profiled and customised environment involving users not only in work, but also in company life, creating and initiating a new system of relations. This also occurs via the integration in the Intranet of new communication tools and different company Information Systems, so providing a working environment that offers employees full operational support. On the basis of the research results, the advanced Intranets are starting to support core processes and are becoming increasingly integrated in management and legacy systems.
ERP and legacy systems with more web interface are progressively integrated with the intranet to provide extended functionality. This emergence of a new generation of Information Systems that is profoundly integrated with the communication system, which are fully functional virtual work environments which maintain a company's internal and external processes dynamically and flexibly.

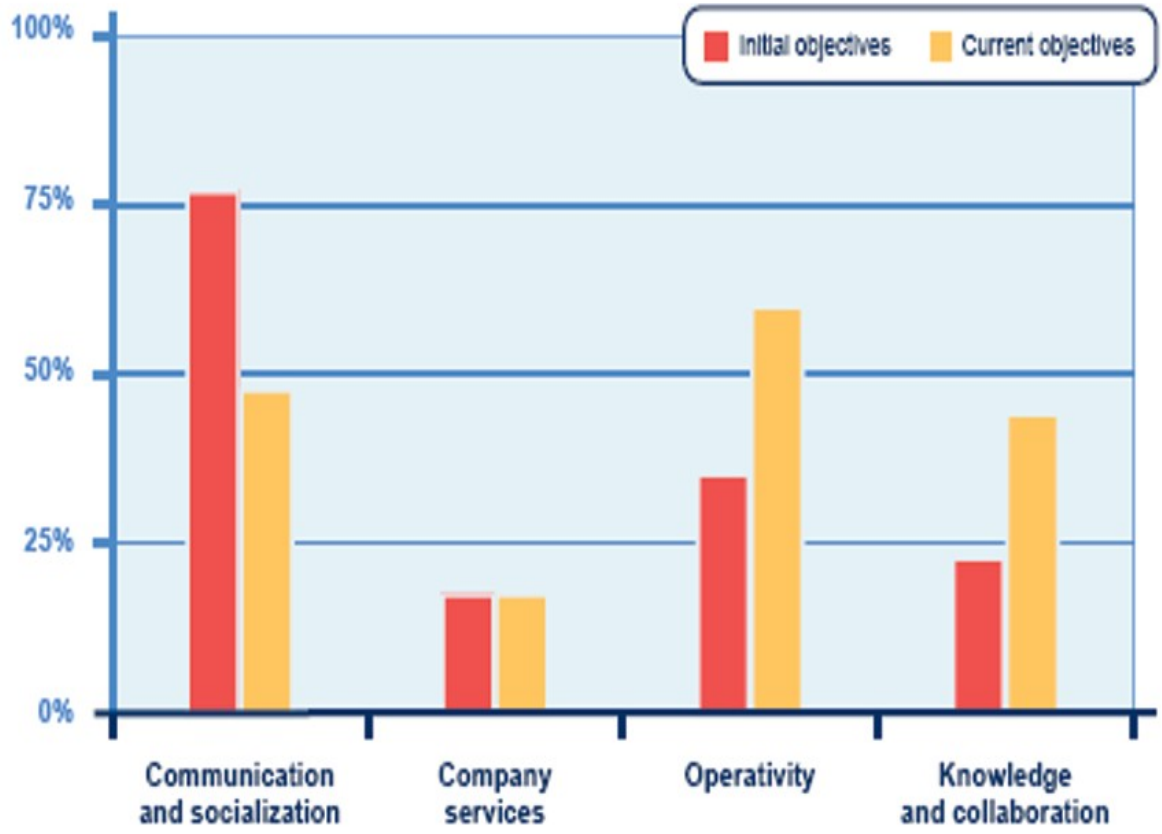

Fig 2.1: Differentiatng the 1st and 2nd era

Virtual workspace: the framework

For firms, the term “Intranet” groups very different ICT applications with respect to the objectives, supported processes, technologies and links with existing IS. Hence, whatever attempt to generalize is methodologically difficult and requires a clear definition of the boundaries and the typologies of the analyzed applications.

The boundaries between Intranet and other IS are changing because of their mutual convergence process; hence it is no longer useful to refer to functionalities and supported processes to distinguish an Intranet from other IS. Unlike other ICT applications, such as ERP and CRM, Intranets always have a stronger focus on the employee than on business processes.

The focus is on employees and how to support their work and interactions, rather than at

supported business processes and functionalities. The vitual workspace (v-W) is composed of all web technologies-based ICT applications/ services that support business processes and which an organisation can put forward to its employees. In order to work effectively, each employee needs a series of supports and conditions that a company can design and provide via the virtual Workspace. Four dimensions have been identified; each dimension represents a virtual personal "space" where the worker can find what he needs to do his job, to learn, to interact with others.

Company services

As workers and citizens of their company, employees need those services (e.g. work time management, refund of expenses, job posting) and those resources (booking facilities, purchase requests, IT help desk, library system) which allow them an effective and comfortable working life. At a rapidlydecreasing cost (using self-service systems) below that of traditional services, the virtual workspace provides better quality services.

Communication & socialization tools

Employees live in their working environment and try to find the answer to their socialization, sharing and membership needs there; with a virtual workspace, a firm can satisfy those needs by creating opportunities for socializing (usually through interactive IT services on after-work topics, leisure-time forums, bulletin boards, championships, etc.) even in situations characterized by physical dispersion of the workforce and high staff turnover and company restructuring that mean that people work for only limited and temporary periods for a company, so creating barriers to the sharing of knowledge and expertise. Institutional communication is both unidirectional to update employees on news related to the organization and its activities, bulletins, regulations and procedures and bi directional to collect suggestions and information from employees.

Knowledge management & collaboration tools

In order to be effective, employees need access to the codified knowledge, to be connected to the professional and social network and to be able to share experience and information; with a virtual workspace, a firm can connect staff and provide them with opportunities for interaction and learning. These tools can be collaboration-oriented, i.e. tools to manage projects and teams, share agendas and documents, send SMS, instant messaging and videoconference. Such solutions overcome geographical and temporal barriers in extended

organizations and are particularly utilized to help interfunctional/international teams to collaborate at limited cost and with little time effort. Alternatively, they may be Knowledge Management tools (more oriented to develop and share knowledge rather than support a team, i.e. forum, mailing list, tools to look for experts of specific topics, blog, wiki, document management systems, e-learning platforms). They can support both explicit knowledge sharing (as document management and business intelligence tools) and tacit collaboration (forums, surveys, expert search, blog, wiki, etc).

Operation tools

To provide personal and integrated access to operative tools (i.e. the web desk for banks, electronic patient data management) and information (product and service catalogues, operational manuals and procedures, customer and supplier information, competitive and market analysis, reporting). The virtual Workspace is not a mere technological evolution but it is above all a great opportunity to re-design the organization using ICT as an enabler, supportingbusiness strategy and process reconfiguration, stimulating innovation and collaboration between workers and units. The Intranet should develop its role from a tool for recovering local efficiency, to a tool developed to re-think processes, create new working spaces and collaboration spaces, prepare and anticipate the organisational change and accelerate the evolution of firms toward new strategies.

Observations from companies in the sector show the stages of development, which correspond to the different levels of progressive integration of the virtual workspace dimensions into a single, worker-oriented environment and the approaches followed by the companies.

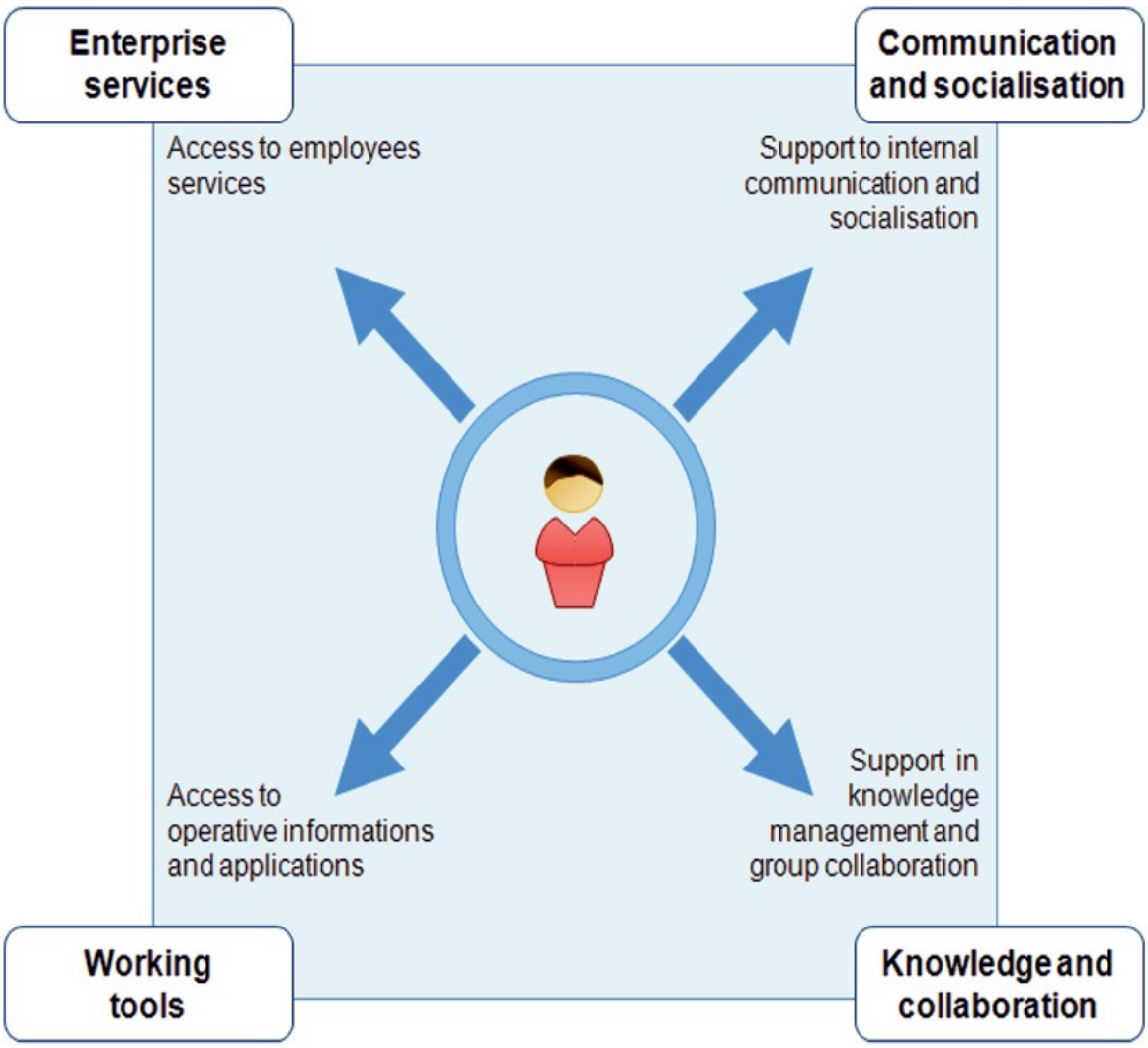

Fig 2.2: Virtual workspace dimensions

Governance

The major barriers to the process of integration do not appear to be technological but political and organizational. Control of development and of communications and operative environment management in particular, is often entrusted to different units and managers that find it difficult to pursue integration that would reduce their independence and require the unification of management and development approaches that have traditionally been separate.

The need to re-engineer the organization and its processes in the face of mergers and internationalization, the need to develop and manage new skills and professional families distributed across the country and the need to control and improve the processes within ever more complex and geographically dispersed competence networks are forces that can

rise to overcome barriers towards integrated environments.

In overcoming the limitations of traditional systems, the advanced virtual workspace contributes to the development of a creative and open environment, breaking down barriers and re-assessing stereotypes and prejudices such as space barriers, where the workplace is everywhere a user needs and/or wants to use on a network. Time barriers, eliminating fixed working hours snd so people can and must be asked to create value when it is needed and must be given frequent opportunities to find a new balance between their working and private lives.
Individuals can help create value for a company and/or employees without being limited by the boundaries of the organisation, the concept of competitor, supplier and collaborator needs to be reconsidered in terms more closely centered on the individual and the relation.

One of the fundamental determinants at the basis of the success/failure of intranet is the capacity to manage the organisational change process which is embedded in intranet introduction, development and management. This stresses the importance of intranet governance: the set of roles, decisional processes and organisational mechanisms that regulate and address intranets functioning and evolution, with the aim of creating an alignment with the strategic and organizational priorities.

Evolution

Four stages of evolution have been identified in 110 cases analysed. The stages correspond to the different levels of progressive integration of the virtual workspace dimensions into a single, worker oriented environment.

At the embryonic stage, the intranet provides little support in all of the virtual workspace dimensions. Functionality and content are implemented as contingencies and outside any clear or recognized plan. Depending on virtual workspace dimensions 4 further categorizsations can be made: Employee Service (ES), Internal Communication (IC), Business Community (BC) and Operative Work (OW). Depending on the function Human Resources, Internal Communication or a line, development tends to focus respectively on ES space (4% of the cases), IC space (20% of the cases) or OW space (11% of the cases) and hence this stage is referred to as the Focused stage. In the composite stage, governance is extended and the Intranet intergrates its different dimensions thereby making it possible

to overcome the technological, organizational and cultural barriers. The organizational and business impact becomes significant. And in the advanced stage, the Intranet becoms an integrated virtual workspace and the development objectives aligned with the company's organizational strategies.

Evolution of the virtual workspace is fundamental for the growth of Enterprise 2.0. Experiences transfered from the virtual workspace gives rise to the foundation for Enterprise 2.0.

3. Web 2.0

"Web 2.0" is commonly associated with web applications that facilitate interactive information sharing, interoperability, user centered design, and collaboration on the World Wide Web. A Web 2.0 site allows its users to interact with each other as contributors to the website's content, in contrast to websites where users are limited to the passive viewing of information that is provided to them. Examples of Web 2.0 include web-based communities, hosted services, web applications, social-networking sites, video sharing sites, wikis, blogs, mashups and folksonomies.

3.1 Understanding Web 2.0

Any business, company or principal in sales has the primary factor as the customer. People are individuals that make all the difference in the success and failure of products and services in any field. To understand Web 2.0 would involve understanding the people, their use and needs in the web 2.0 technology.

Market drivers

The Web 2.0's main driving force are the people's motivation to connect, communicate and participate. (O'Reily, 2007)

The customer base is global

The customer base for online applications is substantially larger than just five years ago. Network effects are increasing in importance due to sufficient critical mass. The world is becoming more interconnected, and it is now practical (and possible) to reach global micromarkets. The youth market shows where we are headed.

The customers are always on

Always on connections make the Internet part of the essential fabric of people’s daily lives (53 percent spend more time online after getting broadband). High speed connectivity is associated with higher levels of user generated content (73 percent of all users who post

content online are those with high speed connections). Fast upload and download speeds facilitate photo, video, and audio distribution,
which allows millions of media consumers to become media publishers.

The customers are connected everywhere they go

Pervasive Internet access is greatly expanding the reach of the network. There is an increased need for a platform-independent application strategy. Other issues to solve include anywhere data access and data synchronization issues, but there are opportunities for new forms of location aware applications.

The customers aren't just connected, they're engaged

The Web is becoming a true two-way, read–write platform. The mass media is being challenged by user-generated content, and these new decentralized means of participation and communication are disrupting established industries.

The costs of production have decreased greatly

Faster ROI and new opportunities are created. There are lower barriers to product entry. Venture capital requirements for startups are reduced as well as greater business model flexibility.

The opening of new revenue opportunities

There is reduced risk due to broader income alternatives, lower capital requirements and faster time to revenue. Ad-supported delivery models can now support a wider variety of online products and services. There is a fine-grained targeting of micro-markets.

Eight Core Patterns of Web 2.0

The patterns of Web 2.0 are the underlying factors that are essential in giving it its unique properties and without which Web 2.0 would hold no real value. (O'Reilly, 2007)

Harnessing Collective Intelligence

Create an architecture of participation that uses network effects and algorithms to produce software that gets better the more people use it.

Data Is the Next "Intel Inside"

Use unique, hard to recreate data sources to become the "Intel Inside" for this era in which data has become as important as function.

Innovation in Assembly

Build platforms to foster innovation in assembly, where remixing of data and services creates new opportunities and markets.

Rich User Experiences

Go beyond traditional web-page metaphors to deliver rich user experiences combining the best of desktop and online software.

Software Above the Level of a Single Device

Create software that spans Internet connected devices and builds on the growing pervasiveness of online experience.

Perpetual Beta

Move away from old models of software development and adoption in favor of online, continuously updated, software as a service (SaaS) models.

Leveraging the Long Tail

Capture niche markets profitably through the low-cost economics and broad reach enabled by the Internet.

Lightweight Models and Cost Effective Scalability

Use lightweight business and software development models to build products and businesses quickly and cost effectively.

Harnessing Collective Intelligence

Participation of users is the key to competitive advantage in Internet applications, users add their own data to what one provides. It is important to note that users add value that is added directly through active participation and indirectly as a side-effect of their actions. Users create content, comment, chat, upload, share, recommend, link, aggregate, filter,

search, and interact online in myriad other ways. Each of these actions adds value and creates new opportunities.

Network effects occur when a product or service becomes more valuable as the number of people using it increases. The Internet and many of its most essential applications demonstrate this: email, instant messaging (IM), peer-to-peer networks, newsgroups, blogs and the Web itself.

The best Web 2.0 software is inherently designed to harness collective intelligence through an architecture of participation. This is accomplished by actively involving users both explicitly and implicitly, minimizing the barriers to product adoption and use, and by designing products that encourage viral network-driven growth. The end result is that individual users and groups become the engine of better products, rapid growth, and new markets.

Success factors have been concepts such as “Pay the user first”, that is the users achieve their primary goals like sharing business documents or booking travel
quickly and efficiently without having second order benefits intefere with their primary objectives and “Set network effects by default”, “Involve users explicitly and implicitly”. By having multiple inputs opportunities for rapid, large-scale, user-driven growth arise, customer trust and loyalty can be built and the products get better as the user base grows.

Data and Databases

For Internet applications, success often comes from data, not just function. Every significant internet application to date has been backed by a specialized database: Google's web crawl, Yahoo!'s directory (and web crawl), Amazon's database of products, eBay's database of products and sellers, MapQuest's map databases, Napster's distributed song database. Therefore, for competitive advantage, establish a data strategy not just a product strategy.

Control of data: controling the database has led to market control and outsized financial returns. MapQuest, maps.yahoo.com, maps.msn.com or maps.google.com for example are sites with copyrights, the companies providing the maps have made substantial investments in their databases.

Concerns about privacy and the rights to users' own data: for earlier web applications copyright was only loosely enforced. For example, Amazon laid claim to any reviews

submitted to the site, but in the absence of enforcement, people re-posted the same review elsewhere. Google has taken the role of data source away from Navteq and themselves get and maitain data. Realizing the importance of certain classes of data; location, identity, calendaring of public events, product identifiers, namespaces, as building blocks for Web 2.0 applications is a key factor of survival and growth for companies today.

Innovation in Assembly

Web 2.0 has a strong dependance on the newly introduced features. Elements of difference between web 1.0 and web 2.0 can be observed from sample cases, Netscape's flagship product was the web browser, a "webtop" to replace the desktop, the standard bearer for Web 1.0. Whereas, Google began its life as a native web application, became popular for the use of that service, the various functions make it the best example for web 2.0.

DoubleClick operates as software as a service, has a core competency in data management and a pioneer in web services but limited by its business model, of publishing, not participation. Overture and Google's success came from an understanding of the collective power of the small sites that make up the bulk of the web's content rather than DoubleClick's offerings require a formal sales contract, limiting their market to the few thousand largest websites.

Akamai's strength is providing high quality online services, individuals depend their access to the high-demand sites at the center. BitTorrent, like other pioneers in the P2P movement, every client is also a server. It functions as files are served from multiple locations, transparently harnessing the network of downloaders to provide both bandwidth and data to other users. The more popular the file, the faster it can be served.

From these examples we infer that platforms provide a scalable growth model which reap further growth later and APIs foster third-party innovation.

The potential of the users is vital as the more users often how services are really used

Rich User Experiences

The static web page is giving way to a new generation of rich Internet applications that have the ability to combine many of the best elements of the desktop and online user experiences. Therefore, create a richer, more compelling experience to engage users and transition them from a desktopinterface model to an online model.

AJAX is a key component of Web 2.0, Ajax-style techniques support continuous

interactions, drag and drop and full rich media. The result is higher user satisfaction and genuine competitive advantages.

Google’s sophisticated mail and mapping applications are fine examples of today's user friendly applications.'Writely' (acquired by Google), are creating word processors and spreadsheets that go beyond their desktop legacy by adding collaboration and true platform independence.

Software Above the Level of a Single Device

The PC is no longer the only access device for Internet applications and applications that are limited to a single device are less valuable than those that are connected to a network. Therefore, it is advantageous to design an application from the start to integrate data and services across desktops, mobile devices, and Internet servers.

Any web application can be seen as software above the level of a single device, even the simplest web application involves at least two computers: the one hosting the web server and the one hosting the browser. The development of the web as platform extends this idea to synthetic applications composed of services provided by multiple computers.

As with many areas in Web 2.0, the realization gives insight into how to design applications and services for the new platform. iTunes is a good example of this principle, bringing web content to portable devices. The application reaches from the hand held device to a massive web back-end, with the PC acting as a local cache and control station. iTunes also demonstrate many of the other core principles of Web 2.0, such as use of collective intelligence. Though not a web application they leverage the power of the web platform by making it a part of their infrastructure.

Having the device connected to many others or a network opens new markets up for usage, gives the option to access the applications from anywhere.

Facilitating Web 2.0: the Perpetual Beta

When devices and programs are connected to the Internet, applications are no longer software artifacts, they are ongoing services. This has significant impact on the entire software development and delivery process. Therefore, don’t package up new features into monolithic releases but instead add features on a regular basis as part of the normal user experience. Engage users to be real-time testers and structure the service to reveal how people use the product.

Operations must become a core competency, for example, Google's or Yahoo!'s

commitment in product development must be matched by a commitment in daily operations thereby keeping the customers satisfied and also are able to market their products easier and faster. Google must continuously crawl the web and update its indices continuously filtering out link spam and other attempts to influence its results continuously and dynamically respond to hundreds of millions of asynchronous user queries, simultaneously matching them with context appropriate advertisements thereby reducing potential risks.

Users must be treated as co-developers, with Gmail, Google Maps, Flickr, del.icio.us, and the like have open source development practices. New features are introduced on a regular basis, if users don't adopt them, the features are taken down, if they like them, it becomes a permanent feature and this brings the customers closer to the company and other functions. Real time monitoring of user behavior to see just which new features are used, and how they are used becomes a required core competency whcih enable the users to make better decisions.

Leveraging the Long Tail

Small sites make up the bulk of the Internet's content; narrow niches make up the bulk of the Internet's possible applications. Therefore, use the reach of the Internet to monetize markets previously too small to profitably capture. Reach out to the edges and not just the center; reach out to the Long Tail and not just the head.

It is interesting to not what makes the Internet uniquely suited to leveraging the Long Tail. Many limiting factors in the physical world is absent from the Internet, infinite shelf space, fixed geographic location and spectrum on the broadcast airwaves provide great advantages.

Small sites make up the bulk of the Internet and narrow niches constitute the majority of the Internet's possible applications and audience which provide multiple offers and products. The very nature of online commerce can significantly lower distribution, inventory and sales costs.

Lightweight programming models and Cost Effective Scalability

As web services gained popularity simpler designs to support them emerged. RSS, a web service, which one of the most used web services is popular because of its simplicity. Lightweight programming models that allow for loosely coupled systems are important for

development and improvement of applications. Simple web services, like RSS and REST based web services are about syndicating data outwards, not controlling what happens when it gets to the other end of the connection, this idea is fundamental to the internet itself.

"Doing More with Less" through commoditized hardware, bandwidth, and software have driven prices lower by an order of magnitude. Powerful open source software, such as Linux, Apache, MySQL, and PHP (the LAMP stack), combined with large libraries of prebuilt components, have made it practical to create sophisticated web sites on short schedules and shoestring budgets. Lessons of the dot.com bust encourage significantly leaner approaches to new business financing and product development.

Viral word of mouth approaches to marketing and promotion combine with revenue models that scale with adoption. Adoption of agile development processes, highly iterative product cycles and tighter customer engagement reduce cost, time and risk.

Each pattern is unique and interdependent. A set of common Web 2.0 attributes support these patterns:

Network effects move us from the one to many publishing and communication models of the past into a true web of many to many connections. In this era, the edges become as important as the core and old modes of communication, publishing, distribution and aggregation become disrupted.

Connectedness also disrupts traditional control and power structures, leading to much greater decentralization. Bottom-up now competes with top-down in everything from global information flow to marketing to new product design. Adoption occurs via pull not push and systems often grow from the edges in and not from the core out.

The user is at the center of Web 2.0 and the network effects give users unprecedented power for participation, conversation, collaboration and impact. Consumers have become publishers with greater control, experiences are tailored on the fly for each user, rich interfaces optimize user interactions, users actively shape product direction and consumers reward companies that treat them well with loyalty and valuable word of mouth marketing.

In Web 2.0, openness begins with the foundation of the Internet's open technology standards and rapidly grows into an open ecosystem of loosely coupled applications built on open data, open APIs, and reusable components. Open means more than technology, it

means greater transparency in corporate communications, shared intellectual property and greater visibility into how products are developed.
A “less is more, keep it simple” philosophy permeates Web 2.0: software is designed and built by small teams using agile methods; technology solutions build on simple data formats and protocols; software becomes simple to deploy with light footprint services built on open source software; business focuses on keeping investment and costs low and marketing uses simple consumer-to-consumer viral techniques.

Rather than relying on fully predefined application structures, Web 2.0 structures and behaviors are allowed to emerge over time. A flexible, adaptive strategy permits appropriate solutions to evolve in response to realworld usage; success comes from cooperation, not control.

3.2 Web 2.0 prominent tools and services

More tools for more reasons

At many companies, Web 2.0 is now familiar but the mix of tools and technologies companies use is changing. Blogs, RSS, wikis and podcasts are becoming more common, perhaps because companies have a greater understanding of their value for business.
Companies use Web 2.0 technologies more frequently for internal than for external purposes and the rate of deployment remains high for almost all kinds of uses.
In 2007, for example, one key goal was to aid entry into new markets; today, more companies are focusing on interactions with their customers.

Web services (software that makes it easier to exchange information and conduct transactions) remains the technology with the highest level of use among respondents across all regions. Respondents also rate Web services as the most important tool, with Europeans providing the highest marks. Companies in all regions perceive wikis and blogs as fairly important and the use of both tools has increased.

Blogs

A blog, is a website designed to make it easy for users to create entries mostly used to express opinions on topical events such as sports, music, fashion or politics but in the past two years, they have emerged as established communications channels for businesses as

well as individuals. Google, Yahoo, Six Apart and MSN, among others, have blogging platforms, users and contributors have provided a large amount of blogs.

How bloggers use copyrighted material and the blogger's role in the dissemination of information are challenges to incumbent media and underscore the disruptive nature of blogging technology. As a result, media companies and brand marketers have to invest in monitoring tools in order to protect syndication policies in the case of media companies and brand integrity in the case of marketers. Sample Vendors: Bloglines; Movable Type; Six Apart; Traction Software; WordPress. Companies such as Yahoo or Google frequently announce newproduct betas on their blogs. Twitter's emergence as a very popular mobile phone application is a great example of how the blog platform has continued to evolve. Microblogging has emerged via a platform such as Twitter, which not only allow users to write posts and share them but also serves as an impressive news and information sharing tool.

The powerful effect of the blogosphere

Bloggers are often considered the trend setter in the use of web 2.0 technology.

- Search engines use link structure to help predict useful pages, bloggers, as the most prolific and timely linkers, have a disproportionate role in shaping search engine results.
- The blogging community is so highly self referential, bloggers paying attention to other bloggers magnifies their visibility and power.

Like Wikipedia, blogging harnesses collective intelligence as a kind of filter. Similarly, as PageRank produces better results than analysis of any individual document, the collective attention of the blogosphere selects for value.

Collective Intelligence and Hyperlinking

The central principle behind the success of the companies born in the Web 1.0 era who have survived to lead the Web 2.0 era appears to be that they have embraced the power of the web to harness collective intelligence. As users add new content to the web it is bound to be discovered by other users and link to it. Associations become stronger through repetition or intensity, the web of connections grows organically as an output of the collective activity of all web users.

Yahoo! now creates many types of content, its role as a portal to the collective work of the net's users remains the core of its value. Google had its breakthrough in search, PageRanking, a method of using the link structure of the web. Wikipedia, the online encyclopedia based on the unlikely notion that an entry can be added by any web user, and edited by any other, is a radical experiment in trust.

Wikis

A wiki is a simple collaborative system for creating and maintaining hyperlinked collections of Web pages. A wiki usually enables users to add or edit pages without having to worry about where and how the content is physically stored. A wiki is, an information synthesis tool that simplifies the modification and reorganization of existing information. This is the process of incrementally editing a wiki space to preserve continuity, make additional connections and links and generally clean it up.

Key enabling functions are:

- User friendly features for any wiki page that invites users to create, link, edit or reorganize the information they see on the screen, without having to understand the physical file organization.
- The ability to track changes, to compare different versions and to revert to a previous version easily.
- References and links from static web pages to any component of a wiki page such as a paragraph can be made easily.

Wikipedia is the best known publicly available wiki and it has raised awareness of the requirement for a wiki-style collaboration support. Although the wiki functionality is still at the core of many products, it is beginning to defy clean categorization as it expands into adjacent areas either through plug-ins and extensions or by enhancements to the core product that typically includes blogs, discussions, user profiles and tagging. Wikis are also increasingly being offered by content management vendors and archived/stored in content management repositories.

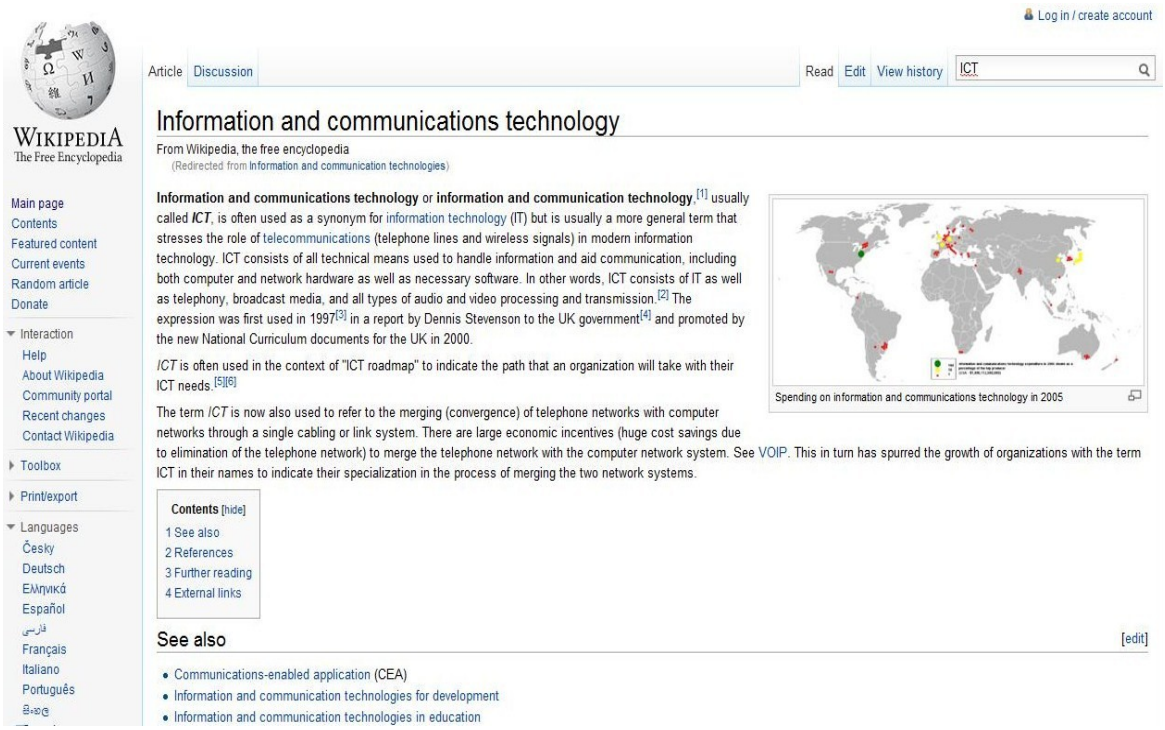

Fig 3.1: A search for ICT on the website Wikipedia

Tagging

Tagging allow multiple, overlapping associations of content over the web. Example sites: "del.icio.us" and "Flickr". A tag is a term assigned to a piece of information (such as an Internet bookmark, digital image, or computer file). This helps describe an item and allows it to be found again by browsing or searching. Tags are generally chosen informally and personally by the item's creator or by its viewer, depending on the system.

Folksonomy (in contrast to taxonomy), a style of collaborative categorization of sites using freely chosen keywords or terms, referred to as tags. Taxonomy is categorizing data heirarchically that don't necessarily include user generated tags and rarely are viewed as similar. Folksonomies may be sparked by companies for internal use or by website operators as a business function (such as the tagging available on YouTube).

Folksonomies are increasingly being used as corporate communication tools and as locations where users collect their bookmarks. Samples: Amazon.com (customer recommendation), del.icio.us (bookmark management), doof (social gaming), FaceTag (people search), Furl (website management), Flickr (photo management), Technorati (blogsearch), 43 Things (goal sharing), CiteULike (academic papers), craigslist (online communities), LinkedIn (job networking) and Connotea (reference management). Many knowledge workers are using folksonomies to support their work.

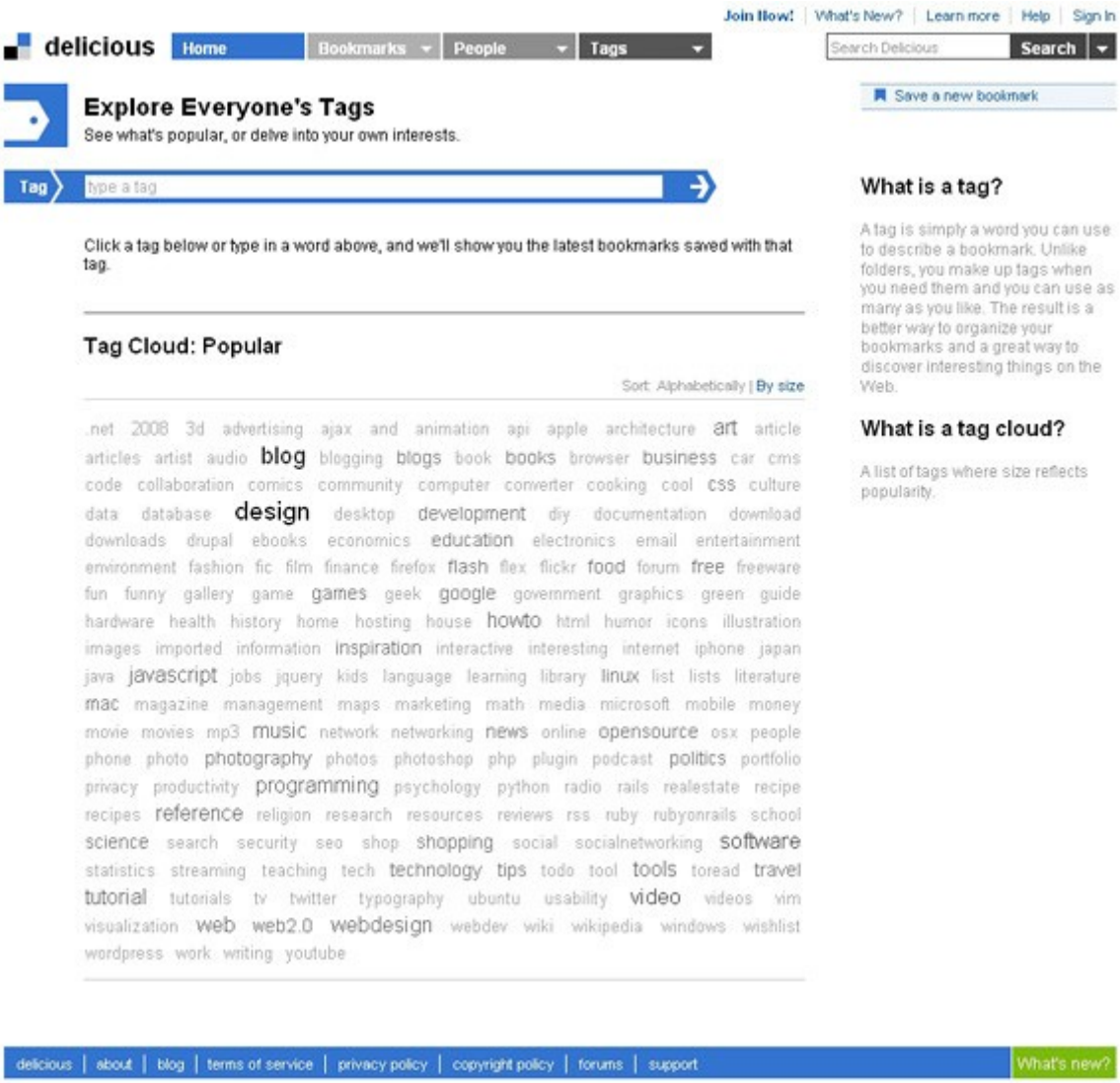

Fig 3.2: Exploring tags on the website del.icio.us.

RSS

RSS facilitates users to subscribe to a web page with notifications when the page is updated. RSS is used for all kinds of data updates such as to notify new blog entries, including stock quotes, weather data, and photo availability.

RSS (most commonly expanded as Really Simple Syndication) is a family of web feed formats used to publish frequently updated works such as blog entries, news headlines, audio, and video in a standardized format. An RSS document (which is called a "feed", "web feed" or "channel") includes full or summarized text, plus metadata such as publishing dates and authorship. Web feeds benefit publishers by letting them syndicate content automatically. They benefit readers who want to subscribe to timely updates from favored websites or to aggregate feeds from many sites into one place. RSS feeds can be

read using software called an "RSS reader", "feed reader", or "aggregator", which can be web-based, desktop-based, or mobile-device-based. A standardized XML file format allows the information to be published once and viewed by many different programs. The user subscribes to a feed by entering into the reader the feed's URI or by clicking an RSS icon in a web browser that initiates the subscription process. The RSS reader checks the user's subscribed feeds regularly for new work, downloads any updates that it finds and provides a user interface to monitor and read the feeds.

Mash ups

In web development, a mashup is a web page or application that uses and combines data, presentation or functionality from two or more sources to create new services. The term implies easy, fast integration, frequently using open APIs (an interface implemented by a software program that enables it to interact with other software) and data sources to produce enriched results that were not necessarily the original reason for producing the raw source data.

The main characteristics of the mashup are combination, visualization and aggregation. Mashup is important to make more useful already existing data, moreover for personal and professional use. Mashups can be considered to have an active role in the evolution of social software and Web 2.0. Mashups composition tools are usually simple enough to be used by end users therefore, these tools contribute to a new vision of the Web, where users are able to contribute.

Fig 3.3: Mashup of Google Maps and Twitter APIs to show where one's Twitter followers are coming from and what they're interested in

Public Virtual Worlds

A public virtual world is an online networked virtual environment hosted on a publicly accessible infrastructure in which participants are immersed in a 3D representation of a virtual space and interact with other participants and the environment through an avatar (a representation of themselves in the virtual space). Many of these environments are directly linked to specific commercial products or entertainment brands and user capabilities are strictly limited and/or moderated. Second Life (owned by Linden Lab) is the most popular of virtual worlds, it provides a less constrained environment and it supports a rich diversity of development tools allowing usergenerated content. Training and collaboration are its primary applications, enterprises and educationalists also look to trial 3D environments for a wide variety of purposes.

Fig 3.4: A still from the virtual world, second life.

Open Source Social Software

Open source social software relates to the tools available with an open source license that encourage, capture and organize open and free form interaction among employees, customers and partners.

Best of breed open source products that offer specific functionality tend to be at least as mature as their proprietary equivalents and at least some of them are very visible on the public Internet where they power high traffic sites. Other open source benefits are flexibility and low acquisition costs of software products.

Barriers of Open source softwares: misunderstandings about open-source software in general and in particular, about interpreting the conditions of different licenses; the lack of an accountable and dependable provider; and the extra responsibility for evaluation, deployment, support and general change management.

Some prominent examples of being used in organizations include wikicentric products such as MediaWiki, TWiki and MindTouch, as well as blog-centric products such as WordPress, Movable Type, Apache Roller and Serendipity.

Social Search

Social search uses elements of user behavior, implicit and explicit, to improve results for searches inside and outside enterprises. Such elements are typically stored as metadata, making social search a sort of metadata mining. It also enables users to more effectively disambiguate results from their queries. Examples include such steps as saving searches to shared folders, tagging searches or documents to express what they are about for other users and the use of implicit indicators of value such as saving documents as shared bookmarks or printing documents for later use.

Social Profiles

Social profiles are a description of an individual's characteristics that identify them on social media sites such as LinkedIn and Facebook, when using tools such as digg and del.ic.ous as well as collaboration applications such as Jive, Lotus Connections or Socialtext. Profiles describe any number of characteristics about individuals such as interests, expertise, professional affiliations, status, recent activity and geographic location. Profiles are the digital DNA of a person and are where tagging on people and people content will occur. Creating a robust social profile allows individuals to be discovered by people who could benefit from an association with them.

Companies are beginning to experiment with social profiles as a means of reinforcing their organization's brand identity.

3.3 Other benefits of Web 2.0

The heaviest users of Web 2.0 applications are also enjoying benefits such as increased knowledge sharing and more effective marketing. Web 2.0 technologies can be a powerful asset for an organization; their interactivity promises to bring more employees into daily contact at lower cost, encourage participation in projects and idea sharing thus deepening a company's pool of knowledge bring greater scope and scale to organizations as well, strengthening bonds with customers and improving communications with suppliers and outside partners advantages are translating into measurable business gains.

Using Web 2.0 technologies, they most often report greater ability to share ideas; improved access to knowledge experts and reduced costs of communications, travel, and operations. Also reducing the time to market for products and have the effect of improving employee satisfaction.

Besides providing better interactions with organizations and customers. Customer interactions have resulted in measurable increases in revenues.

3.4 Issues & Debates

Walled gardens 2.0

In Web 1.0, America Online (AOL) exemplified the walled garden, users were welcome to create content and community as long as it occurred within the walls of AOL. There are now Web 2.0 walled gardens, such as MySpace and LinkedIn, which have vibrant but in many ways closed communities.

Data and privacy

People are revealing increasingly more details about themselves online, including likes, dislikes, opinions, personal history, relationships, purchasing history, work history, dating history and so on. Therefore, it is increasingly being mined by other people, including employers performing background checks, singles investigating upcoming dates, government agencies mining social networking sites and tax assessors using homeowners' online comments about remodeling upgrades to increase property taxes. Not being sufficiently sensitive to privacy issues can result in legal and public relations disasters. Facebook suffered some high-profile PR fallout when it underestimated the privacy implications of new features deployed in September 2006. Within days, it was forced to

retract statements it had made and change service behavior.

All users are not created equal nor are their contributions. The most successful Web 2.0 companies have instituted mechanisms to encourage and reward their most valuable members. In a world of user generated content this issue cuts both ways: users can and should control their own data but this is often at odds with the commercial interests of companies whose key assets come from those contributions. It is crucial to establish, from the beginning, content ownership policies. Ensure that intellectual property guidelines are published and policies are in place. Not handling this properly can lead to serious customer relations issues. For example, a loud public outcry forced TextAmerica to reverse course after announcing it would delete data of free customers when it moved to a fee based model. If the data inside is user generated, service providers may have problems, some services have been able to seed their initial dataset; for example, Yahoo! Video leveraged its own search data to kick-start this new service. Other companies use a closed beta period as a means to build a sufficient dataset prior to public launch. Just as closed software applications gave rise to the open source movement, a rise in an open data movement has just begun. Primarily driven in response to walled gardens and the types of data ownership issues previously cited, this movement manifests in open data formats, such as RSS, GeoRSS, and microformats, as well as data access via import, export, and open APIs.

Copyright

Issues surrounding copyright often surface when people are given the ability to share content. Sometimes this takes the form of deliberately sharing material known to be copyrighted music, videos and books even though policy, including what exists on YouTube, states otherwise (often echoing problems from P2P networks like Napster). Other times the boundaries of ownership are pushed, such as when subsets of data are combined from multiple sources, or when layers of rights are involved. For example, the originating source has a license (e.g., a Yahoo! distribution of a Reuters feed) but the derivative work, e.g., a third-party mashup, does not. The agreements between an API provider and third-party developers have been the subject of some debate because services are often provided “as is” with few of the guarantees found in traditional service level agreements (SLAs). As an API consumer, be sure you understand these limits; API providers need to decide what level of support is appropriate. Instrumentation of applications and profiling user behavior must be done within appropriate privacy and

security guidelines.

Now that consumers can access digital media like music and movies from so many different devices, how should content owners control piracy? This question has led to a highly contentious debate and a range of anti-piracy measures with little agreement on what's best to balance the goals of content creators, publishers, and consumers.

Technology gaps

Many of today's web services are technologically incomplete solutions with gaps in areas such as transaction support, security and localization. In addition, few services share data or models in such key areas as identity. Browsers are again becoming a crossplatform issue because complex applications are often not compatible with all browsers. Technical complexity can increase development and support costs, as well as making top-quality developers hard to find. Although well designed rich applications can improve performance by decreasing network traffic and system load, poorly designed ones can do just the opposite. Early issues with Microsoft's Live.com product included complaints about sluggish performance. There are no "Ajax standards" and a proliferation of new toolkits and frameworks introduce design, development and standardization challenges. Browser based applications have yet to fully overcome the challenge of functioning when the computer is offline and without network connectivity.

The mobile market is one of the strongest bastions of walled gardens. Telecom carriers must first allocate space on their "decks" for features that customers are allowed to access from their phones. New, more open Web 2.0 mobile applications use standard web interfaces to allow access from any browser capable device.

Non-PC devices anything from phones to media players use a multitude of standards and device formats. Opt for simplicity and those standards with widest support (such as the XHTML Mobile Profile).

Just because you can quickly deliver new features to users does not mean you should. Avoid creating confusion or feature fatigue with your customers. Rapid release cycles quickly become counterproductive and inefficient if not supported by appropriate internal tools and processes.

Sevice

Do not underestimate the cost and effort necessary to achieve high levels of service availability (e.g., "five nines"). As seen with Salesforce.com's high-profile reliability

issues, any service quality failures can lead to customer- and public-relations challenges. Because every application has its own level of criticality an air traffic control system and an in-house collaboration tool are quite different so look to match servicelevel requirements to needs. There is always tension between the desire to release a product early and the reality of making a good first impression. This requires rigorous focus on feature prioritization understanding what's most important as well as ensuring that what is released is adequately functional and reliable. Digital goods, with their low (near zero) cost of production and distribution, are particularly well suited to leverage the Long Tail. Size matters for Long Tail markets. But some contexts, such as within a single enterprise, have an inherently smaller population than the global Internet. These smaller populations require finding the right incentives and means for demonstrating and reinforcing value. Exponential growth is wonderful as long as it doesn't catch you flatfooted it has sabotaged more than one Web 2.0 product. Rapid, network driven growth helped derail the Friendster service with near fatal performance and service reliability issues. Even MySpace, while in the process of overtaking Friendster, underwent substantial changes to manage its rapid growth.

Advertising

New interface techniques have the potential to completely break established models for web site and advertising metrics. Not every online business can rely on advertising as its sole or primary revenue source. The ad market goes through cycles and by creating a diversified revenue model, including subscription and premium services, companies can build long-term growth and stability.

These issues are being addressed actively and the debates on privacy and the use of these tools in enterprises continue.

Web 2.0 delivers benefits by multiplying the opportunities for collaboration and by allowing knowledge to spread more effectively. These benefits can accrue through companies' use of automatic information feeds such as RSS or microblogs, of which Twitter is the most popular manifestation. Although many companies use a mix of tools, the survey shows that among all respondents deriving benefits, the more heavily used technologies are blogs, wikis and podcasts, the same tools that are popular among consumers.

The usage of Web 2.0 tools remains uneven among the workforce at many companies. Only about one employee in four uses Web 2.0 tools, except for Web services. A higher level of usage is found at companies that encourage it by using tactics such as integrating the tools into existing workflows, launching Web 2.0 in conjunction with other strategic initiatives,and getting senior managers to act as role models for adoption.

Barries to web 2.0 exist inside and outside companies, as expected most companies satisfied with it encourage its use, while dissatisfied companies are likely to note the barries, including the inability of management to grasp the potential financial returns form web 2.0, unresponsive corporate cultures and less enthusiastic leaders.

Working with web 2.0 has changed the companies organize and manage, leading to Enterprise 2.0. It has changed how companies interact with clients and suppliers, has created new roles or functions inside the organization and even changed organizational structures. Web 2.0 has led to forming networks outside the company. Satisfied companies in large say, business units rather than IT departments are driving the selection of Web 2.0 technologies.

Web 2.0 is seen as a driver of competitive advantage, all companies plan to spend more on web 2.0 tecnology.

4. Enterprise 2.0

The term Enterprise 2.0 derives from Web 2.0 and is often used to indicate the introduction and implementation of social software inside a company and the social and organisational changes associated with it. The term was coined by Andrew McAfee, a Professor at Harvard Business School, to refer to simple, free platforms for selfexpression (McAfee`s blog, 24 March 2006). He soon followed up with a refined definition, Enterprise 2.0 is the use of emergent social software platforms within companies or between companies and their partners or customers (McAfee's
blog, 27 May 2006).
Since then it has been given different definitions by scholars and practitioners (Hinchcliffe, 2006), “We think that Enterprise 2.0 calls for a broader vision of either organisational and technological model evolution, which includes the design of
an adaptive architecture (SOA and BPM), Web 2.0 collaboration tools and the virtual workspace as enabling platforms for connections and processes.

Enterprise 2.0 is a set of organizational and technological approaches steered to enable new organization models, based on open involvement, emergent collaboration, knowledge sharing, internal/external social network development and exploitation. (Corso, Martini and Giacobbe, 2008)

4.1 Introduction

Enterprise 2.0 is the concept of using tools and services of Web 2.0 technologies such as tagging, ratings, networking, RSS and sharing in the context of the enterprise to assist employees, partners, suppliers and customers work together to build networks and share information. Enterprise 2.0 makes use of Web 2.0 technologies such as wikis and blogs inside the corporate intranet. The concept being let the employees and other users feed content to the Websites. Many organizations are publishing corporate blogs on their Web sites inviting customers and clients to openly comment and discuss their content, many companies are creating enterprise wikis that can be viewed and edited by anyone in the world, as part of Enterprise 2.0. This replaces the previous one-way communication of the

company talking to the site visitor, to being able to implement a multiple entitiy communication of sharing information and managing knowledge inside and outside the organization using blogs, wikis, social networking, tagging, rating systems and the like. The link among these tools is the ability of the individuals involved to participate and to control the process while they work together, share information and create networks of people.

Enterprise 2.0 tools and services take advantage of social software features such as social bookmarking and linking, tagging, rating, user commenting and discussion, open creation and editing policies and so on. These tools also incorporate sharing and networking to invite and encourage collaboration and contribution. Instead of a one way conversation of the company talking to the site visitor, Enterprise 2.0 lets you implement a multiparty conversation to share information and manage knowledge inside and outside the organization using blogs and wikis, social networking and tagging, rating systems and the like. The link among these tools is the ability of the individuals involved to participate and to control the process while they work together, share information and create networks of people with similar interests.

Tools to enable these functions have existed for a long time. The trouble is that few people used them, despite large amounts of resources expended to deploy these systems. What changed is the simplicity of the tools. If they're simpler, they're more likely to be used, an important component for knowledge management. (That is, nobody had an incentive to share information, particularly when doing so was a pain.)

This gives new hope to the idea of managing knowledge and sharing information, a goal that goes back to the 1990s when vendors began developing knowledge management and content management solutions. Instead of trying to implement huge, all encompassing enterprisewide systems, the simpler Web-based tools under the Enterprise 2.0 umbrella strip away the complexity of the '90s technologies while carrying on the spirit of the ideas.

The fact is, Enterprise 2.0 concepts are gaining credibility and it's not just startups that are paying attention to this space. More than 800 people attended the recent Enterprise 2.0 Conference in Boston, which included speakers from IBM, Microsoft, Cisco and a host of other smaller players. IBM introduced the Web 2.0 'Goes to Work package' for the WebSphere Portal, while Microsoft promoted Sharepoint, a natural collaboration environment, as a way to implement Enterprise 2.0 ideas along with Office and other Microsoft technologies.

4.2 Characteristics of Enterprise 2.0: SLATES

SLATES is the term/ concept that describes the business impacting capabilities, derived from the effective use of Web 2.0 technologies in and across enterprises. It stands for Search, Links, Authorship, Tags, Extensions, Signalling. (McAfee, 2006)

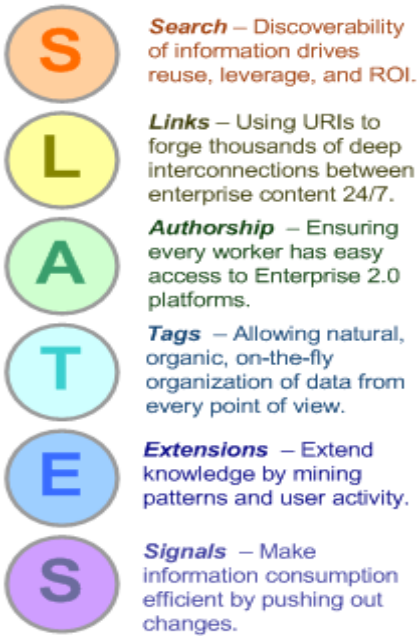

Fig 4.1: SLATES

Search

A web search query is a query that a user enters into web search engine to satisfy his or her information needs. Web search queries are distinctive in that they are unstructured and often ambiguous; they vary greatly from standard query languages which are governed by strict syntax rules.

Links

The use of links or Uniform Resource Identifiers are to forge deep interconnections between the information content across networks.

Authorship

The ability of all individuals to easily publish content accessible across networks.

Tags

Categorizing large contents of data. By folksonomy, categorizing over time by actions of users or taxonomy, upfront categorizing. Classification of data is important as it assists easier identification.

Extensions

The mining of previously gathered data relating to a users activities or transactions which allows users to be guided to initiate other valuable activities or transactions. Work as recommendations, "other customers who purchased this book also purchased these books".

Signalling

The sending of alerts to users of the changing state of an element of interest. Example: the Online Status of other users in instant messaging clients

FLATNESSES

Dion Hinchcliffe extends Andrew McAfee's SLATES (Search, Links, Authoring, Tags, Extensions, Signals) with the mnemonic, FLATNESSES. One issue in using SLATES in its present form to communicate Enterprise 2.0 is that it does not capture the social, emergent and freeform aspects that are essential.

FLATNESSES introduces three new concepts (in fig), that of the connecting content and people through links, being network oriented to reflect that all the aspect of Enterprise 2.0 must apply not only to applications that are fundamentally delivered over a network but that the content be fully Web-oriented, addressable and reusable and to emphasis on the non hierachical, transparent social nature of the concept. (Hinchcliffe, 2007)

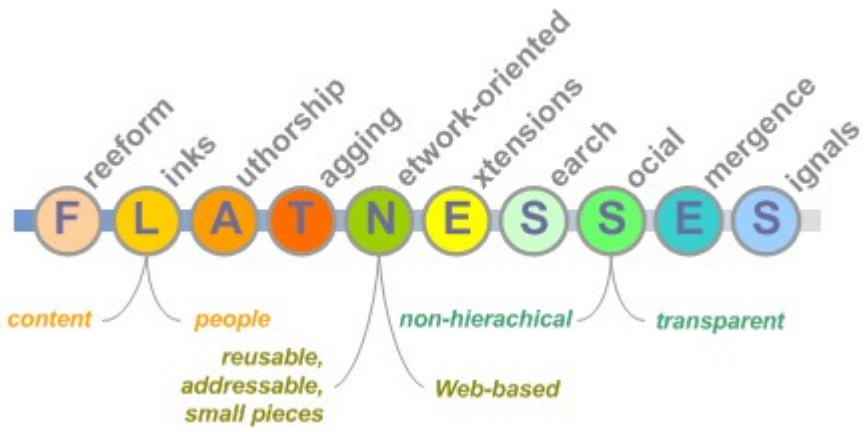

Fig 4.2: FLATNESSES

4.3 The relationship between Enterprise 2.0 and Web 2.0

Enterprise 2.0 is closely related to Web 2.0, however, the concepts are not the same, on studying both we can infer that they are two individual sets that are built on similar foundations. Web 2.0 describes the shift in focus from static and singular media to dynamic, interactive community oriented social media.

The Blogs and Web 2.0 relation is a good example, while blogs have been around much longer than the term Web 2.0, blogs are one of the finest examples of what Web 2.0 is all about. Earlier the practise was, for people to publish Web sites, static pages that usually provided information the owner of the Web site decided on. All of this information is one-way form of communication, without a provision for response, no interactive participation, leading to outdated content and even if the site were to be updated there was no way of informing the public unless the site is revisited.

Blogs provided a new form of communication with active interaction and involvement, more than an easy-to-use content management system. Blogs automatically syndicate your content using RSS feeds so that people can "subscribe" to your Web site using an RSS reader and receive timely updates whenever you publish new content. Blogs allow your visitors to comment on your posts, allowing interaction and discussion about the topics at hand, features such as trackbacks and pingbacks notify you when someone has mentioned your blog post on his or her Web site or blog.

The Enterprise 2.0 view of blogging is slightly different, an enterprise blog will often be a multi-user blog with multiple authors and contributors, or it will be a platform made up of many different blogs, each individually owned by a different person in the organization. Also, corporate blogging is not so much an extension of any prior concept. Sure, many companies posted bios for their employees on their Web sites in the past, but these were rarely controlled by the employees themselves. Blogging opens the door for employees to express their thoughts on the products and services they are working on and to interact with the community on any new ideas they may have for these products and services.

4.4 The transtion: Virtual Workspace to Enterprise 2.0

The term Enterprise 2.0 derives from Web 2.0 and is often used to indicate the introduction and implementation of social software inside a company and the social and organizational changes associated with it. The term was coined by Andrew McAfee, professor at Harvard Business School to refer to "simple, free platforms for self-expression" (McAfee's blog, March, 24 2006). He soon followed up with a refined definition: "Enterprise 2.0 is the use of emergent social software platforms within companies, or between companies and their partners or customers."

Enterprise 2.0 is a set of organizational and technological approaches steered to enable new organization models, based on open involvement, emergent collaboration, knowledge sharing, internal/external social network development and exploitation. The Enterprise 2.0 vision of the central role of the user is also not in itself something new but was already part of the 2nd generation of Intranets. Virtual Workspaces seek to support users who need to exploit corporate services and make use of socialisation, collaboration and operations areas.

From an organisational point of view, Enterprise 2.0 is a point of discontinuity that breaks the boundaries of the Virtual Workspace both in terms of opening up the organisation to external players (customers, suppliers, partners) and of rethinking the traditional schemes of collaboration, knowledge sharing, and management of functional and hierarchical relations.

Framework for Enterprise 2.0

The emerging needs (Enterprise 2.0 Observatory, 2008) that Enterprise 2.0 tries to respond to can be divided into six key dimensions.

Open belonging

People increasingly feel and actually are members of extended dynamic networks rather than single organisations: through Enterprise 2.0 technologies (content management systems shared by the Intranet, Extranet and Internet, Knowledge Management tools and collaboration tools open to external players, Intranet integrated operating applications such as the supply chain management systems) it is possible to supply secure and selective access to information, tools and connections that go beyond the company's boundaries, interacting in an increasingly rich and effective manner with suppliers, consultants, partners, customers and other networked players.

Social networking

People increasingly need to develop and maintain that network of relations that is becoming a more and more important asset for their professional efficiency (Cross et al. 2005; Surowiecki 2004). Enterprise 2.0 tools and approaches that track down people from basic information (such as the traditional telephone book or online presence) or by associating advanced profiles (such as competece mapping, expert search, social networks) support the development and management of relations to track and contact co-workers and experts inside and outside the organisation, keeping their interest, skill and role profiles updated at all times.

Knowledge networks

To prevent their knowledge and skills being “surpassed” soon, workers must be able to build their own network to have access to knowledge and information from different sources, both explicit (document management systems, Business Intelligence, video-sharing, pod-casting, RSS) and implicit (systems that ease interaction between experts, such as forums, mailing lists, surveys, blogs, folksonomies, wiki), (Dearstyne 2007).

Emergent collaboration

In an increasingly fast and unpredictable competitive scenario, people need to create cooperative settings in a fast, flexible way, even outside the formal organisational patterns. Enterprise 2.0 technology enables people to do this, through faster and richer opportunities for interaction, both synchronous (chat, instant messaging, video-conference) and asynchronous (diary sharing, project management, exchange and co-editing of work documents, texting) which enable them to overcome geographical and time barriers in extended organisations.

Adaptive reconfigurability

In response to the endless changes taking place in corporate policies and strategies, people need to quickly reconfigure their own processes and activities. Such technologies as SOA, BPM, mash-up, SaaS, RIA can give the companies, and sometimes the users themselves, the tools they need to redefine and adapt their processes in a dynamic, flexible and personal way that can hardly be given by any traditional technology.

Global mobility

People spend an increasingly large share of their time far from the workplace and often in a state of mobility. New ICT enables them to be connected in any place and at any time of day through their own network of tools, thus making the workspace and working time more flexible, using systems for supplying staff services (authorisation workflows), internal communication, mobile office services (from simple emails to mobile access to the Intranet) and operational services, such as sales force automation and field force automation.

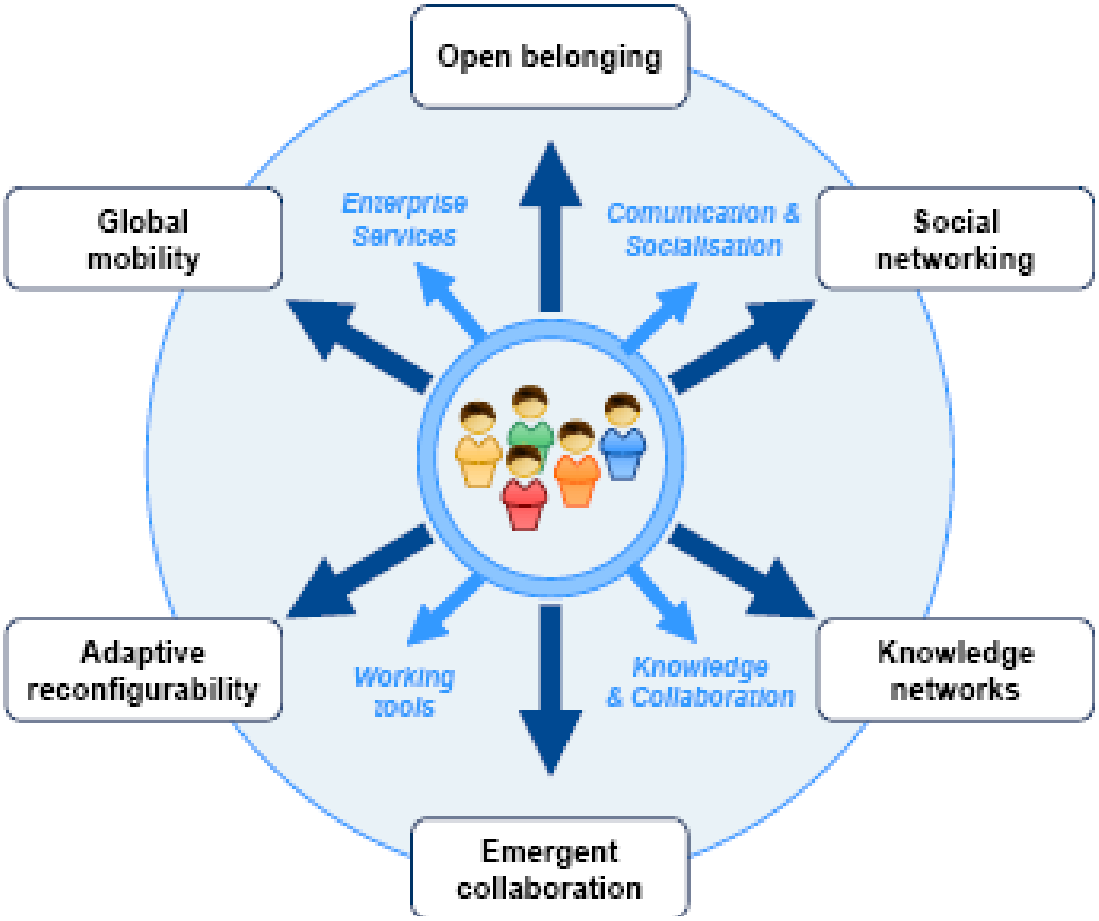

Fig 4.3: Models for Enterprise 2.0

Emerging Models for Enterprise 2.0

From the cases studied three Enterprise 2.0 models are identified as emerging in the companies (Corso, 2008):

Social Enterprise (SE), aims to create new collaboration, knowledge sharing and relation management models (24% of the cases).

Open Enterprise (OE), tends to a great extension and opening of the Virtual Workspace boundaries in terms of access methods and external players (14% of the cases).

Adaptive Enterprise (AE), focuses on flexibility and reconfigurability in corporate process management.

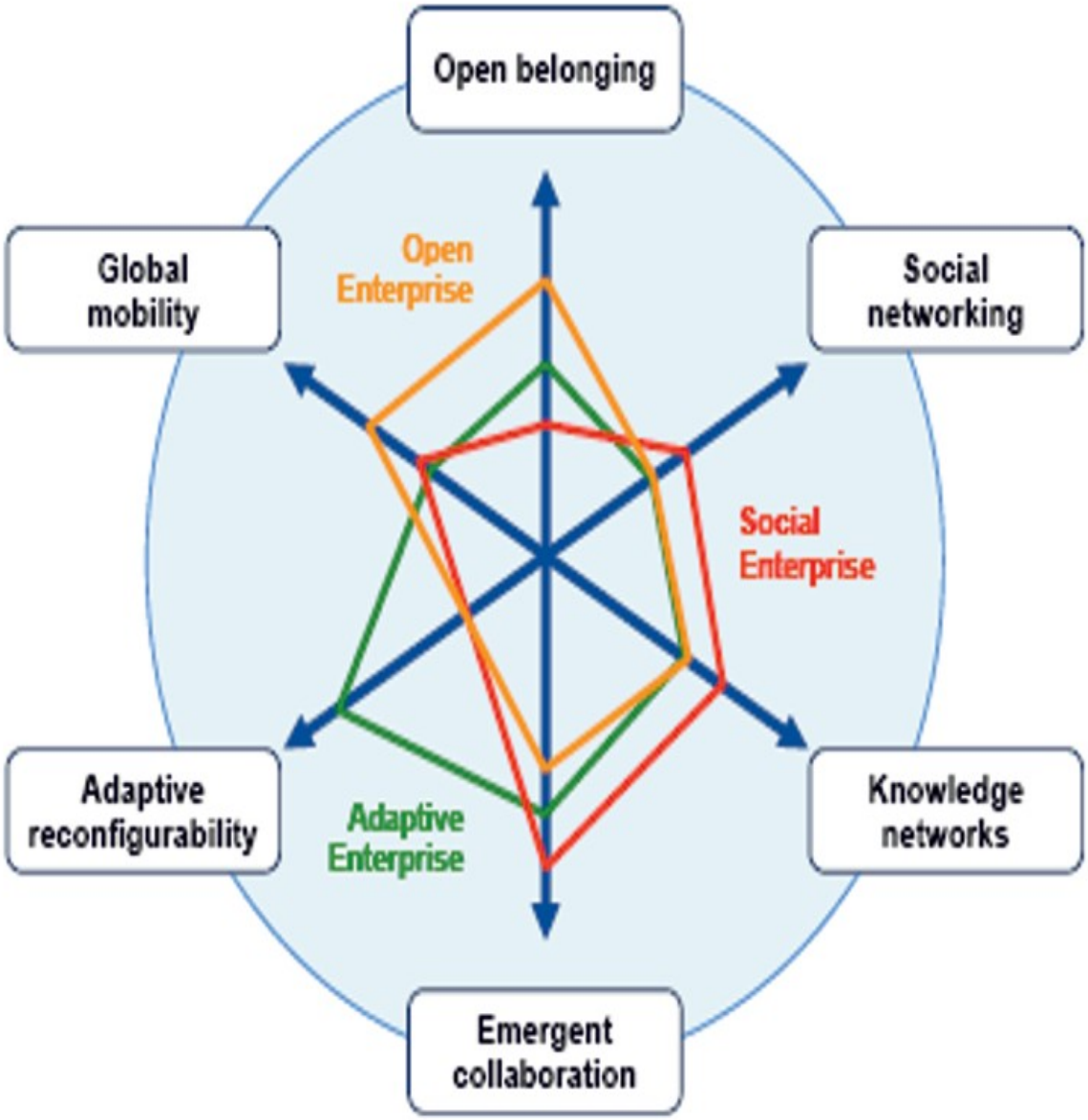

Fig 4.4: Enterprise 2.0 model

Though Adaptive Enterprise are considered fundamental by a growing number of CIOs, today the most radical interventions, ones that require investments and enormous organizational changes, are often slowed down since they are more difficult to justify economically. There is instead a tendency to use a more incremental strategy: an increasing number of CIOs try to take the path of Adaptive Enterprise Architecture by small, evolutionary steps, taking into consideration as well alternative offer models like those of Cloud Computing and Software as a Service.

Hence the AE model is not seen as a major advantage and investment not considered.

Social Enterprise is presently the most popular. It is the need for emergent collaboration, shared knowledge and development of internal and external social networks which drives the evolution of the organisational model. The level of users' participation and proactive involvement is high when they see the community as an important element to increase their wealth of knowledge, create new relations and increase their "organisational" effectiveness and visibility. In addition, a number of users, as well as using them, proactively participate in the creation of contents, take part in discussions and create interpersonal relations of trust and mutual engagement.

The Social Enterprise Case

Basing on the specific groups or community characteristics they are targeted to the focus level (specificity of the involved members and therefore of the subjects addressed), cohesion (intensity of bonds between members), stability of involvement (time the community members remain in the community) and interactivity (frequency of relations between members), four types of SE virtual environment can be selected (Corso, 2009).

Professional Families

Environments targeted to communities of "cohesive" people which the members permanently belong to, with the members sharing the same interests and problems, usually relating to the same job (for instance, Information System, Research & Development communities, etc). Their purpose is to ease the exchange of knowledge, share best practices and network the "experts" to tackle common problems. In professional families, interaction is key, value is given by the creation of contents by the members, and participation is boosted by the quality of the resources and the availability of experts. In such cases, the "interactive" means are of primary importance but they must be combined so as to promote relations, exchanges, and let the members create and disseminate contents.

Teams

Environments targeted to focused communities, which are often short lived because they are "instrumental" to achieving a shared but "transient" goal. A typical example are the communities that are created to manage projects the purpose of which is to support the operational process and encode implicit knowledge and documents that have not been

formalised yet so that they can be reused in other projects. The means used in these cases usually boost synchronous and asynchronous cooperation between people.

Clubs

Communities of people who have shared interests but are poorly cohesive (for instance, sales networks, promoters, etc.). They often stand out for a limited interaction between the members for whom contents are much more important than relations. The key ingredient to make it a community is therefore the involvement of the members in the creation of valuable contents. If the members do not participate in the creation of such contents, the benefits of a participatory system are thwarted, with the risk the community may disappear once the members have seen all they were interested in ("low stability"). Since at first the members are not prone to interacting with each other, "discussion" systems need not be used from the very start. However, with time, the most loyal members wish to be more involved in the contents and with other people with whom they share the same interests, so interactive tools need be introduced for such communities to turn into "stable families".

Agorae

"Open" communities with limited members' focus and cohesion, which often result in transient involvement and variable levels of interactivity. The subjects addressed may vary, and the members do not establish permanent relations. It is a temporary condition that risks disappearing unless it is ruled by the organisation (by setting up a focus, by pushing the members to be involved, etc.).

A classification of the aforesaid communities helps recognise how the members interact (with the others and with the content) and determine organisational and individual impacts. To do this, each SE case has been mapped in terms of impacts on three major dimensions (Corso, 2009).

Impact on processes

We checked whether the community led to a change in the processes in terms of improving performance (efficiency and effectiveness) and in terms of innovation and change (redesign of the process).

Impact on knowledge

It has been valuated the impact of the community on the creation and dissemination of implicit and explicit knowledge through systems that enhance people's skills and turn them into the organisation's shared assets.

Impact on connections

We considered the effects in terms of support to the creation of vertical and horizontal relations, overcoming the barriers of traditional organisational structures and promoting cross-cooperation.

As to the impact on processes, it results that families and sometimes clubs usually have an impact in terms of improvement of performance and innovation. Teams help improve efficiency and effectiveness in the achievement of a specific goal but because of their short life they hardly ever result in process innovation. Agorae usually have limited impact on processes because of their members' poor focus and short-lived involvement.

Looking at the impact on knowledge, families support both the creation of new knowledge and the dissemination of encoded knowledge to all the members involved. Because clubs have few relational tools, it has more impact on the dissemination of encoded knowledge but hardly result in the members' creating new knowledge.

Agorae usually help the members collect some information, which however is not often encoded and disseminated. Teams help disseminate and create knowledge between few members.

Looking at the impact on relations, families support both the creation of new connections, especially when the members are geographically distant and therefore could hardly come into contact with each other thus the management and enrichment of such relations occurs by providing several tools for mutual help and exchange. Teams are very effective in managing connections through several interactive systems but since they are closed and temporary, they hardly ever result in the creation of new, permanent relations. Usually, agorae are very open and help create new connections, which however are then managed in different spheres. At first, clubs do not support horizontal connections as much as they support instead vertical ones and interactions with contents and therefore these communities have the lowest impact on horizontal connections.

The analysis of the cases show that regardless of the implemented model, the SE is a great

opportunity and at the same time a fundamental challenge for the organisations as time and cost decrease continuously over time, new and more effective tools are generated, people can be connected with each other and large amounts of information can be shared, overcoming geographical and time barriers and organisational barriers that hinder communication and knowledge transfer, creating new spaces of effectiveness and strategic and organisational flexibility.

Governance

Main difficulties in Enterprise 2.0 implementation are not from the technical side but from a knowledge lack of opportunities, a difficulty in economic benefit identification and valuation, together with the need of organizational change. In other terms, the barriers are not technological but cultural ones: most of the companies manage the implementation project in a purely technical perspective without systematically facing the organizational and the change management aspects.

Particularly critical is the definition of governance, the organizational choices that determine the division of the responsibilities and the key criteria to be followed in the planning and management of an initiative. Inadequate decisions regarding governance are often difficult to be modified and can jeopardize the development possibilities and the project effectiveness.

Enterprise 2.0 governance will be emergent, open and collaborative. The traditional governance systems are put in crisis: all the roles tend to move, at least in part, to final user, who will decide what to do, achieve it and then handle it by himself. Without an appropriate governance the risk is the proliferation of different and not integrated IS.

Open Enterprise Model

The Open Enterprise (OE) has the affinity for expanding and opening the boundaries of the virtual workspace in terms of access ways and external players. Traditional information systems (ISs) are largely designed for close bound organisations. Information and tools are virtually only provided to those who formally and administratively belong to the organisation and only at the workplace and during working hours. Potential access in different situations or by other people (partners, clients, suppliers, consultants) is limited

and is considered complex to implement and manage, since appropriate levels of security need to be guaranteed. Such closed systems turn out to be increasingly unable to cope with the evolution of organisational models, with an increased scattering of activities and less organisational involvement.

In addition, the influence that other players may have on decisions and the contribution that they can make to innovation are underestimated. Confining ISs to the organization and so limiting the approach to external relations to structured and transactional flows of information which has two negative consequences, giving up on potential opportunities, ideas and contributions to decisions, slowing down and limiting the innovation processes and forcing the real organisation to create communication and cooperation channels with the external players outside the official system (through paper documents, e-mails, etc.) which, as well as being poorly integrated and efficient end up opening security 'leaks' that are far more dangerous than selective and controlled access to ISs might make for enterprise.

Decision making processes are slowed down and people are prevented from working effectively when not at the workplace or when in a state of mobility.

With OE environments, the IS and therefore the whole organisation are designed to be open to the contributions made by different people and sources and selectively offer services and information to external players and organisations, creating new ways to interact with clients, suppliers, partners and consultants which are often translated into veritable process, product and service innovations.

In these cases, the IS concurs in creating a creative, open environment, pulling down many organisational barriers and making one reconsider such concepts as co-worker, competitor, supplier and collaborator in a much more open approach focused on people and relations, rather than on formal involvement and hierarchy.

OE, as well as supporting open involvement, gives an effective response to the mobility and geographical distance of people and activities which is becoming more and more important in companies and is undermining their organisational models, pushing them to reconsider the very concept of workplace and 'closeness' to one's co-workers.

To support this increasing mobility, OE deeply revises processes and relations to make organizational models more sustainable, reconnect people with their networks and at the same time, ensure flexible, fast and robust operational and decision-making processes.

In an OE, the workplace is any place in which one needs to use their skills; working hours

become a blurred concept, with people called to create value when and where it is needed and able to look for new, personal work/life balances.

There are great potentials for innovation which, however, are set off by a great need for organizational change: from the simple automation of specific activities to the reconfiguration of entire processes through to the revision of chain relations and the setting up of new relations with end clients. At the same time, though, too few applications are designed from the beginning to be opened to a mobile approach and often turn out to be poorly integrated in the process and IS.

By improving network technology and the availability of more powerful terminals, mobile technology is becoming a key component in support of the Enterprise 2.0 organisational models based on openness and cooperation. The extension of the access methods (from home, from other mobile stations, through virtual worlds) enables companies to change their organisations and pull down space and time barriers (Chesbrough, 2003).

The Application Areas For The Open Enterprise Model

The analysis points out four application areas which are specific to the three Enterprise 2.0 models, each consisting of a different combination of the individual models. The Open Enterprise model stresses the dimensions of Global mobility, Open belonging, Social networking and Knowledge networks, while the remaining two dimensions are stressed to a lesser extent. Consecutively, 4 areas of application have been identified which form combinations in the Open Enterprise model. For each area, the drivers and barriers have been identified.

i. **Social Network & Community (SN&C)**

   Support in managing and creating relationships between individuals through tools promoting discussion, the exchange of ideas and involvement in networks of extended acquaintances, including those beyond company borders (blogs, forums, social network tools, expert research, advanced user profiles, etc).

ii. **Unified Communication & Collaboration (UC&C)**

   Work to support the managing of each type of communication and collaboration both within and outside the company, uniformly and independently of the media adopted to transmit contents (web, landlines, mobile, TV) through specific infrastructures and tools (audio/web/videoconferencing, instant messaging, VoIP,

etc).

iii. **Enterprise Content Management (ECM)**

Provide support in managing contents and documents within and outside an organization through tools that improve accuracy, accessibility and integrity (Web content management, document management, record management, enterprise search, etc).

These application areas go beyond simply responding to immediate needs and enable models and organizational rationales that answer the longer term needs of individuals and organizations that are at the foundation of the Enterprise 2.0 concept. Traditionally, these areas have not been a part of main stream ICT investments and even now represent only average levels of investment, lower in comparison to overall ICT spending. Budget growth rates over the next three years in single application areas are expected to be positive and much higher than those of the overall ICT budget, especially for UC&C and ECM areas.
An analysis of the role attributed to different application areas in supporting company processes (Figure 4.5) reveals varying levels of maturity between them.

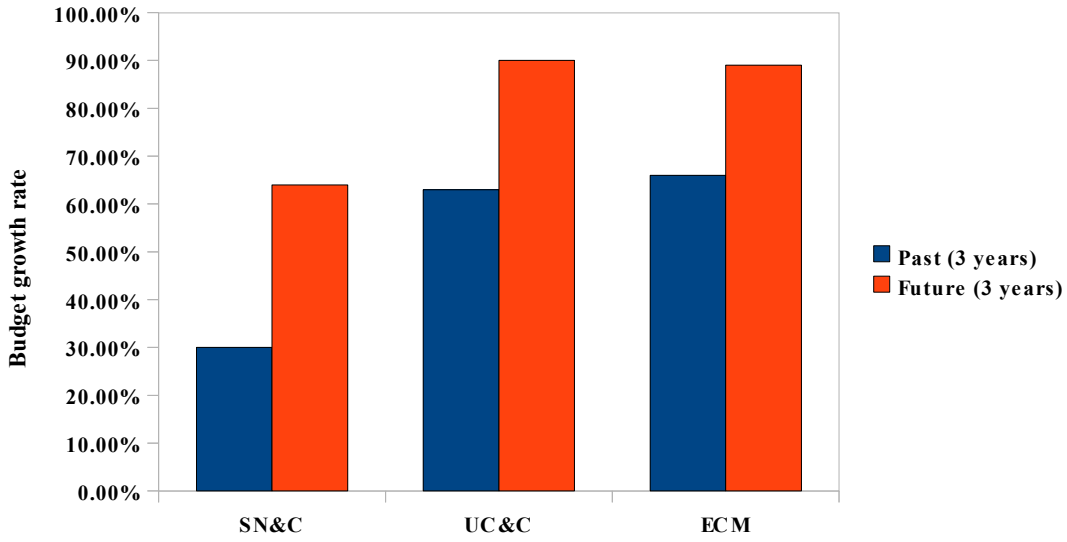

Fig 4.5: Application areas and support to processes

As for the role of these application areas over the last three years, there is a significant

difference between on the one hand, Unified Communication & Collaboration and Enterprise Content Management, which have already played an important role and Social Network & Community does not have an important role as expected.

Social Network & Community

Social Network & Community comprises of the initiatives whose goal is to promote relationships within and outside the company. In fact, individuals have an increasingly greater need to develop and maintain a network of relationships, which represents an increasingly important asset for their professional effectiveness.

Through more consolidated tools (like forums), as well as through much more innovative ones (like social network platforms, social voting mechanisms, etc) it is possible to promote the creation and management of relationships, helping individuals to find and contact colleagues and experts within and outside the organization and to keep their profiles up to date regarding interests, competences and roles.

Influenced by the media hype of phenomena like Facebook or LinkedIn, many companies are considering the potential and the possibility of transferring the use of tools and trends originating from the Web into strictly professional areas as well. As previously reported, predictions made by CIOs are higher than the growth percentages of the last three years. In contrast to the 10% of "pioneer" CIOs who have always felt that these initiatives are important, nearly half (41%) of "converted" CIOs now see the future role of these initiatives as increasingly important. However, a fairly significant number still appear skeptical, maintaining that in the future as well, Social & Networking Communities will have a marginal role (49%).

Alongside the ICT Dept, the departments of Human Resources and Communication (27%) and Marketing and Sales (25%) are the biggest supporters of Social Network & Community initiatives (Figure 4.6). In many cases, the Top Management (22%) are the first to offer their support, though theirs is typically an inconsistent commitment concentrated mainly in the initial phases of project launching. Many of the Social Network & Community initiatives are not limited to the confines of a single company but also involve external players from a perspective of open membership: in 28% of companies surveyed, the initiative involved clients directly, and in 13% secure and selective access to suppliers was guaranteed for a richer and more effective experience. Finally, these tools are used more and more for the sales force (22%), thanks to the strong sponsorship by the Marketing and Sales department.

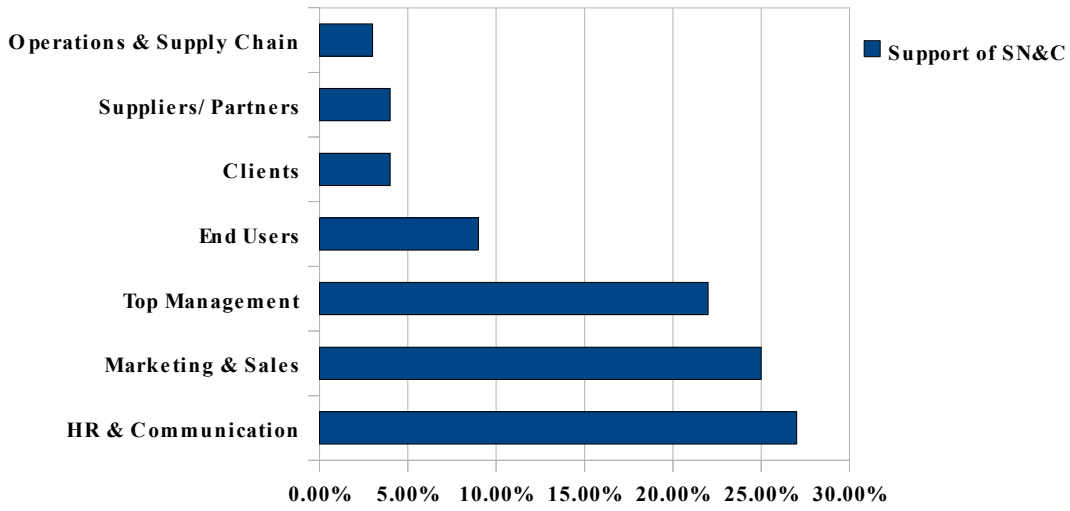

Fig 4.6: Main sponsors for SN&C initiatives

The motivations driving the introduction of Social Network & Community tools and paradigms (Figure 4.7) are respectively, the increased need to feel a sense of belonging and an improvement in company climate (37%), the increased need for collaborative support (37%) and the increased need for improved customer relations (29%). The impacts on organizational services like efficiency and cost reduction are mainly indirect, tied to the creation of a social and organizational "infrastructure" acting as a catalyst in making relationships more flexible, with significant impacts in terms of adaptability toward change (15%) and timeliness of processes and decisions (18%).

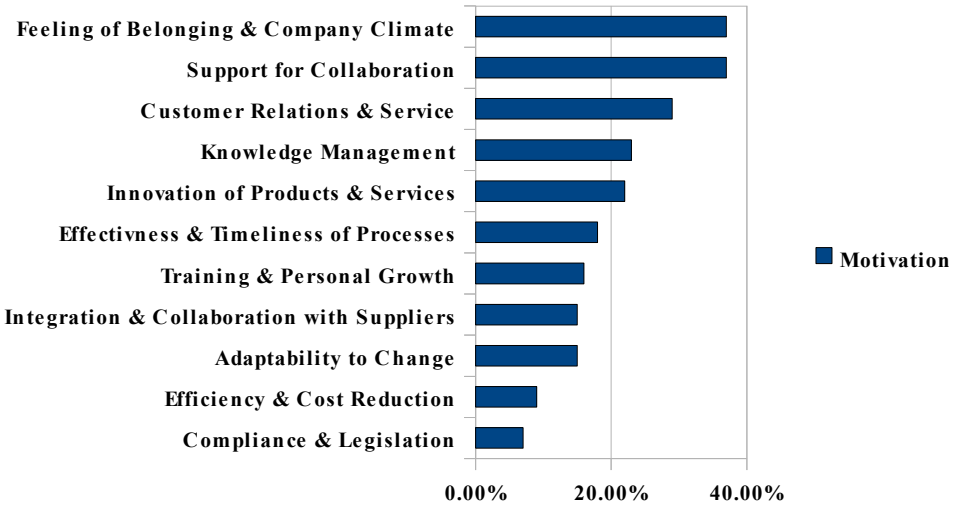

Fig 4.7: Motivations for SN&C introduction

As might be expected in light of the low level of maturity in these initiatives, the main

barriers to their diffusion (Figure 4.8) are the poor awareness of their potential (45%) and the resulting difficulty identifying and assessing the direct economic benefits (50%). Though time and costs can be fairly contained, the difficulties specifying and quantifying the benefits of the investment represent a fairly significant barrier, confirmed by the fact that, where these initiatives are adopted, the underlying motivations are related to the need to support organizational and strategic changes, rather to economic efficiency.

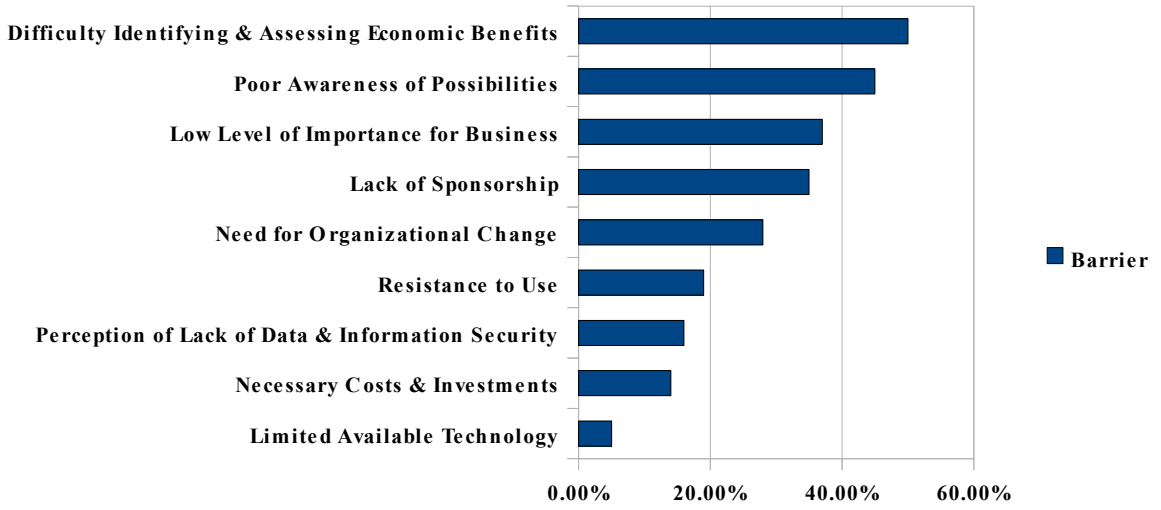

Fig 4.8: Main barriers to SN&C

Discussions with CIOs involved in these initiatives have revealed that companies find it difficult to justify big investments despite awareness of their importance for organizational change and for reengineering company boundaries, especially towards clients and partners. One of the consequences of this difficulty investing is that the initiatives in this area, though driven by consumer interest in this new fad, are actually very limited and conducted mainly from a perspective of initial experimentation.

Unified Communication & Collaboration

By Unified Communication & Collaboration we mean those initiatives supporting the management of all types of communication, both within and outside the company, in a uniform way independent from the means adopted to transmit contents through infrastructures and integrated tools. In a continuously more open and unpredictable competitive context, organizations must respond to the needs of the individual to create virtual environments for fast and flexible collaboration, even outside of the formal organizational frameworks. The technologies that we include under the name of Unified Communication & Collaboration offer the possibility for richer and faster synchronous and

a synchronous interaction.

People are spending an increasing amount of their time in mobility and the current technologies offer the possibility to connect anywhere, giving greater flexibility as to where and when work takes place.

The applications for Unified Communication & Collaboration, conceived separately and as such fairly consolidated, are today brought together in an application suite which, thanks to integration, gives the user the ability to be flexible and uniformly manage different communication channels and tools. Moreover, from the company point of view, the convergence on IP networks of all the communication channels offers significant advantages in terms of management simplification and new service set-up and start times. The perception of CIOs, as previously noted, is that the important role already played by these initiatives is destined to grow in importance over the next three years. It is precisely the ability to respond to concrete needs that makes Unified Communication & Collaboration one of the most important areas for company investments. While 9% of CIOs are skeptical and continue to feel that the Unified Communication & Collaboration initiatives are of little importance now and in the future, the majority (91% overall) of CIOs are completely convinced of the importance of these initiatives.

There are many sponsors of these initiatives, ranging from Top Management (25%), to the Marketing & Sales Department (22%) and the Human Resources and Communication Department (21%) (Figure 4.9) but it is also interesting to note that in a fairly significant number of cases, the push is coming directly from final users.

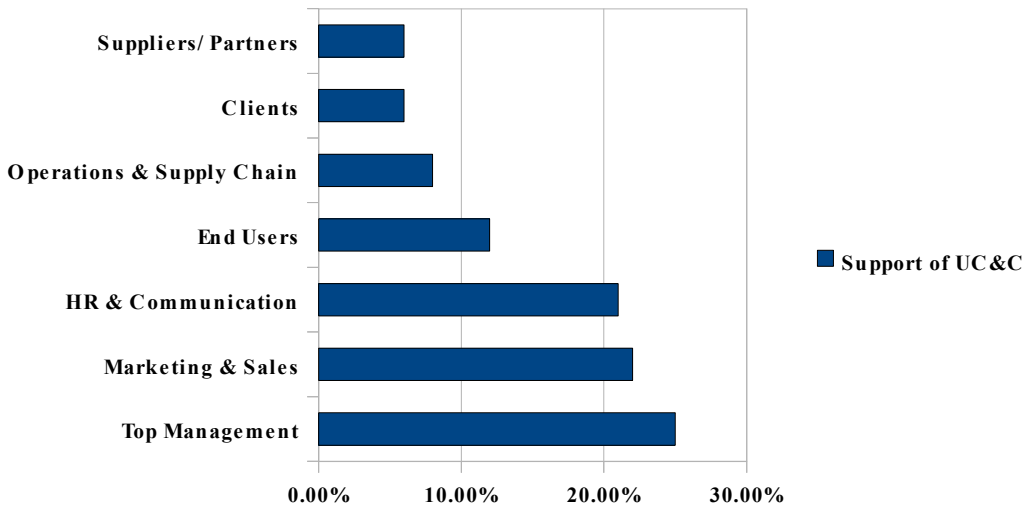

Fig 4.9: Main sponsors for UC&C initiatives

As already observed with Social Network & Community initiatives, Unified Communication & Collaboration tools as well often extend beyond the borders of a single company, involving external players from a perspective of open "belonging". In 46% of cases, for example, the initiative involves clients directly, whereas 56% of companies surveyed guarantee suppliers access to information, documents and processes for a richer and more effective interaction. But it is

in the management of the sales force that these innovative collaboration and communication rationales are increasingly more utilized (over 63%), thanks once again to the strong support from the Marketing and Sales Department.

From Figure 4.10 we can observe that the area of Unified Communication & Collaboration responds first to the need to support collaboration (60%), efficiency and cost reduction (54%) and timeliness of processes and decisions (43%).

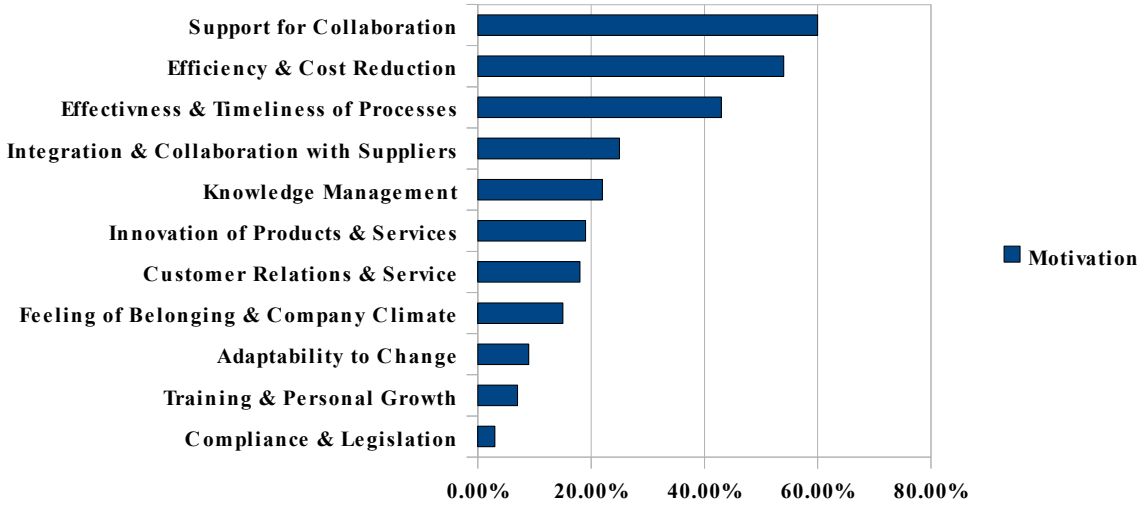

Fig 4.10: Motivations for UC&C introduction.

Once introduced, the greatest benefits in terms of productivity come from factors like the increased exploitation of flexible forms of work independent of the work place or the reduction of trips or "business trip" expenses which can now be effectively substituted by other forms of communication or by videoconferencing services.

Though not as easily measured or immediately perceived, the benefits brought on by the introduction of new forms of relationships and transversal collaboration strategies are still very high. The main barrier to Unified Communication & Collaboration (Figure 4.11) is the level of investment and costs required (37%). An investment in Unified Communication & Collaboration requires the complete reengineering of the

communication infrastructure, apart from the passage from requirements like the passage from analogue telephone to VOIP.

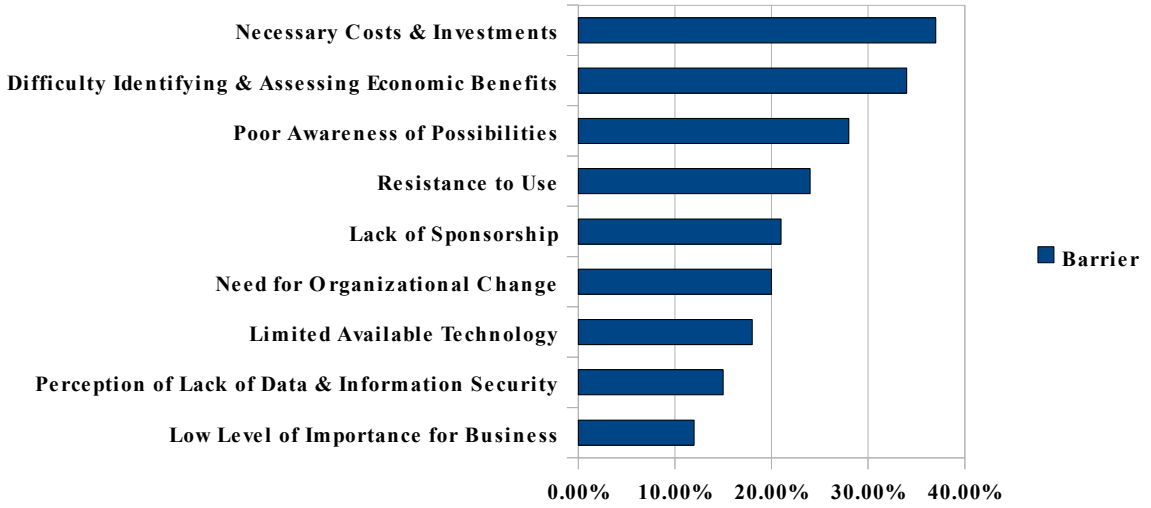

Fig 4.11: Main barriers to UC&C

Enterprise Content Management

By Enterprise Content Management we mean the initiatives supporting the management of informational assets, both inside and outside of the organization, through tools that improve accuracy, accessibility and integrity in the management of documents and contents in general. The growing attention to these tools derives from the increasingly intense need of individuals to have access to increasingly complex and variegated information both in terms of format and sources. Organizations find themselves having to promote rapid and flexible access but at the same
time secure access, to increasing volumes of unstructured content, which for their size and importance, today represent a value equal, if not superior to that of structured data coming from traditional transaction systems.

As previously noted, the perception of CIOs is that these initiatives have played an important role and will to an even greater extent in the next few years. The ability to respond to the concrete and immediate needs of individuals and at the same time, to contribute to creating innovative organizational strategies makes Enterprise Content Management one of the areas in which, even in this period of crisis, companies are continuing to invest. Whereas 12% of CIOs remain skeptical as to the present and future importance of Enterprise Content Management initiatives, 88% overall are
fully convinced of the future importance of these initiatives. Figure 4.12, stresses the

transversal support of Enterprise Content Management projects and their inclusion of lines of business as well, like the Operation and Supply Chain department (23%) amongst which the need is felt for a more systematic management of unstructured information. In this case as well, the Human Resources and Communication Department (19%) and Top Management (21%) have an important sponsorship role.

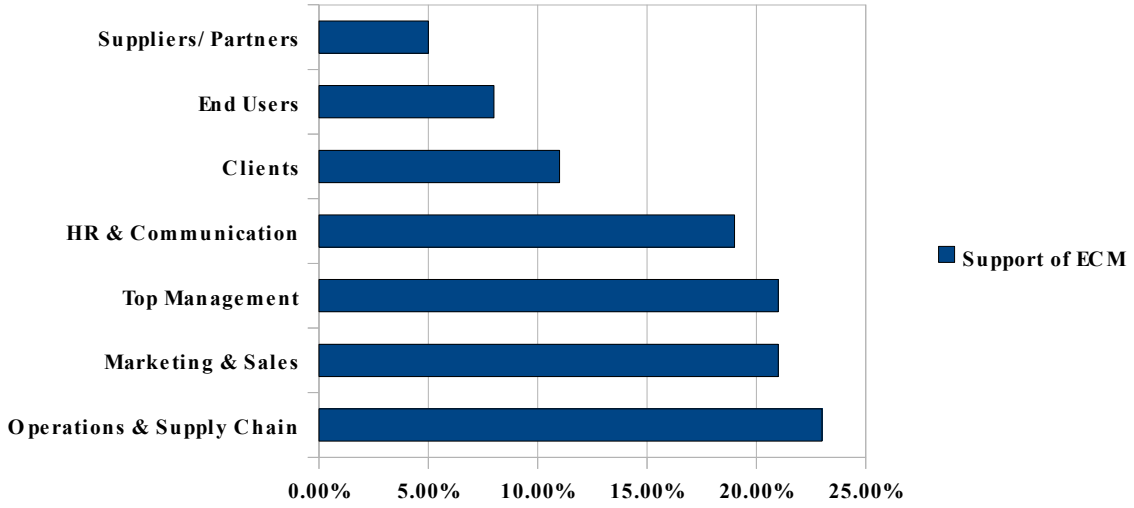

Fig 4.12: Main sponsors of ECM initiatives

As would be logically expected, these initiatives systematically involve suppliers and partners (67%) in an effort to go beyond company borders an involve the outside. There is a high level of openness towards clients (59%) and the sales force (50%).

The needs driving the adoption of Enterprise Content Management technologies are mainly operational and immediate in nature, like efficiency and cost reduction (51%); but important longer term needs include the support of knowledge management (50%), effectiveness in decision-making processes (35%) and innovation of products and services (18%) (Figure 4.13).

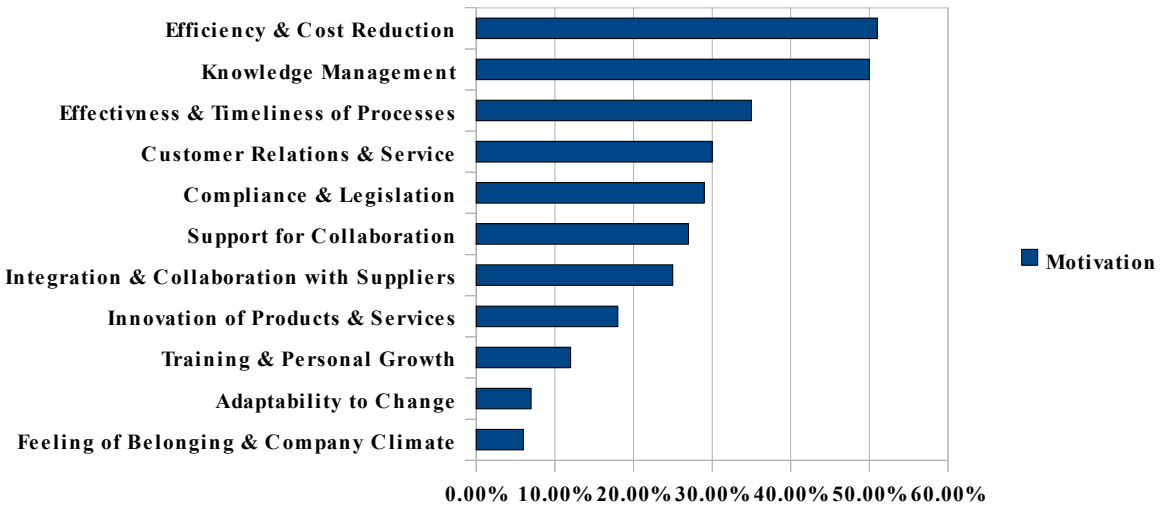

Fig 4.13: Motivations for ECM introduction

Despite the progressive reduction of costs of application suites and the diffusion of Open Source platforms, the main perceived barrier to the diffusion of Enterprise Content Management (Figure 4.14) remains the level of investment and costs required (49%). Criticalities are represented by the need for organizational changes (31%) and the resistance of final users to its use (28%), confirmation of the profound impact these initiatives have on organizational behaviors.

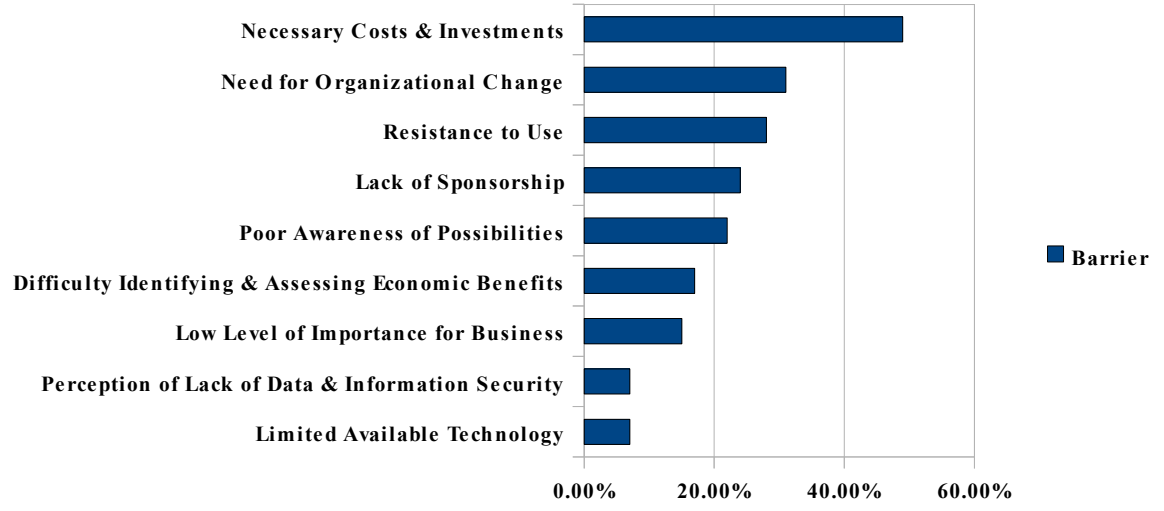

Fig 4.14: Main barriers to ECM

Enterprise Content Management systems are amongst the first to have attempted to take on the hot topic of company knowledge management, in particular moving towards the centralization and retrievability of company documents.

These tools have a good record and are now seen as an integral part of company

information systems, as they have been able to clearly demonstrate their value. For this reason, it is possible even in the current context, to justify further internal changes, driven by varied maturity levels and the promise of eliminating the barriers obstructing their effective adoption within the company.

These application areas once exploited will change the dynamics of the organizational functioning, employee relations, work and results.

4.5 Enterprise 2.0: A quick managerial overview

To a manger, the introduction of Enterprise 2.0 technology can be viewed as an initial con but a bliss in the long run.

Primary thoughts on Enterprise 2.0 is its ease of use and of having no preconceived notions for new users to structure outputs and processes but tools to emerge knowledge work. Information portals, knowledge mangement systems, work applications, intranets are highly structured from the start.

Enterprise 2.0 can let the intranet become what the internet already is, a stand alone platform with a constantly changing structure built by distributed, autonomus and largely self-interested peers. It can add to channels and portals already in place.

Finding a person, information can be a tedious task in a large ot growing organization. Enterprise 2.0 enhances the functinality in targeting precisely that which is required.

Actions

Managers will be required to promote collaborative practices, strong support to use and put tools into effect. Figure innovate approaches to inroduce collaborative approaches in areas that previously were independent. With no predefined rules for new unpublicized tools to guide users, managers have to encourage people to use tools creatively and define uses for themselves.

Challenges and opportunities

Busy knowledge workers do not tend to use new technology. Users of the internet rarely contribute to it though use it frequently, similar behavior cannot be ruled out for the intranet. Leaders will play an important role as they have to encourage use and stimulate technology at first and later not interfer too heavily on knowledge workers.

4.6 Enterprise 2.0 tools and services overview

Enterprise 2.0 tools aim at open sharing, organizing information and communication in an easy and convienient Web based form. Though most of these tools and services have been discussed in the Web 2.0 part of the study, the Enterprise 2.0 perspective of its usefulness in an enterprise was not mentioned. Tagging and rating provide a simple way to locate content and express opnions. Blogs and wikis are basic collaboration and communication platforms. Social network tools promote interaction between individuals.

Tagging

This concept suggests that users (not just the creator) should be allowed to enter tags to describe and categorize the content creating, editing, or viewing. This categorization makes it easier for the document to be found by others looking for the same information at a later date.

These user-generated taxonomies (or "folksonomies") are related to their creators, so people can see content generated by the same individual or content in the same categories to follow an information trail of sorts. Folksonomy, the concept of collaborative tagging or collaborative classification or categorization, instead of taxonomy, a fixed hierarchy to classifying.

Tagging also makes use of a graphic called a tag cloud, which illustrates the popularity of each tag. The more often a tag is requested, the larger it appears in the cloud. This can help people identify the most popular tags quickly and can be useful in tracking content.

Social Bookmarking

Building on the concept of tagging is the idea of social bookmarking. Social bookmarking allows people to store, manage and share their bookmarks on the Web enabling people to track websites to find at a later point and those with similar interests to uncover websites, also for tracking and sharing for research groups and enable marketing analysis and tracking.

Social bookmarking is an integral part of Enterprise 2.0, with offerings such as IBM Lotus Connections (coming soon to developerWorks) and Connectbeam Spotlight offering social bookmarking features aimed squarely at the enterprise.

RSS feeds and syndication

RSS (Really Simple Syndication) pushes information to individuals using a subscription model and is a key factor to enabling Enterprise and Web 2.0. RSS feeds can be subscribed to and accessed via a central application (known as a RSS reader) this makes it easy for people to keep up with their favourite web sites in an automated manner, without having to visit sites to check for updates manually.

Customers can now receive instant notification in their RSS readers of the launch of a new product, users can post a new blog post and add new pictures to web sites.

Rating and comments

Rating gives community participants the ability to assign qualitative and popularity values to content, such as a simple up or down ranking system or the most often read help files. A rating system provides a way for users to browse through a company's content and select the best options. Opening content up for users to rate and comment on tend to make companies nervous, many companies don't like the idea of allowing an open forum for people to freely criticize and their products and services. It also facilitates highly valuable customer feedback and opinions, this creates a channel of communication that can be used to get to know customers better and maintain positive customer relationship.

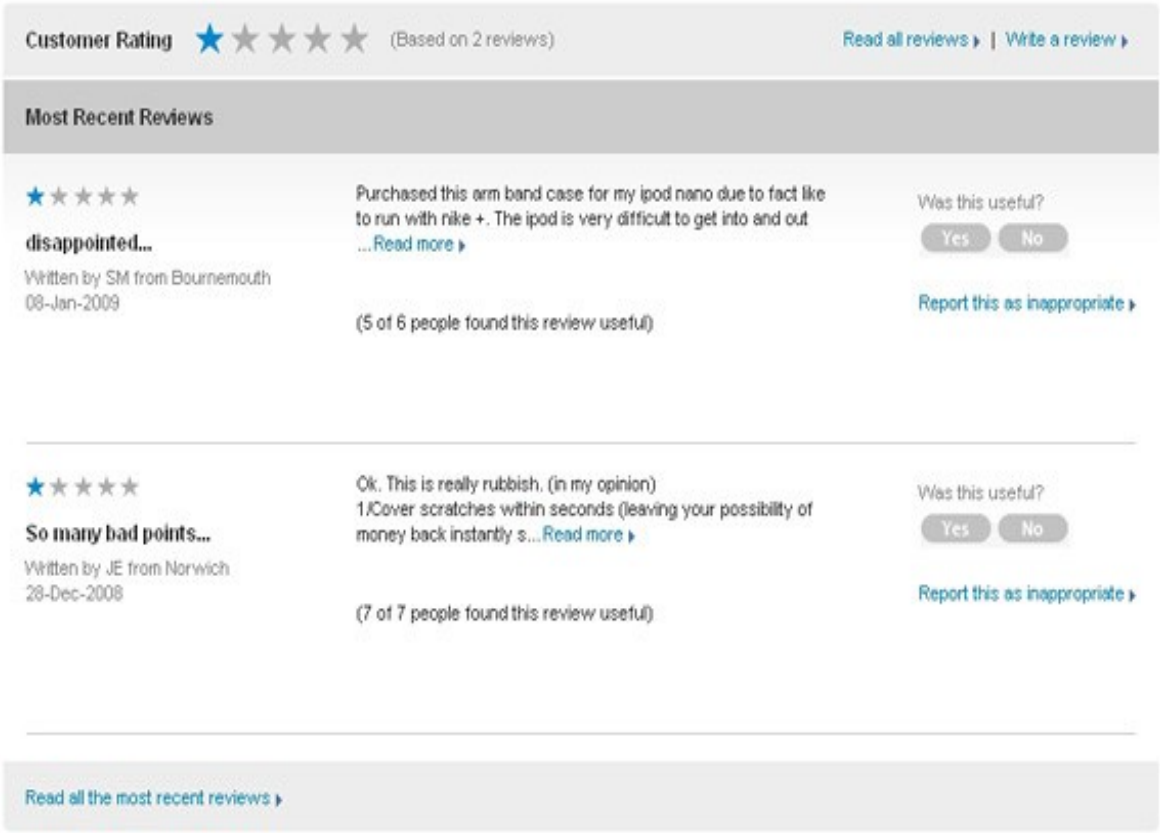

Fig 4.15: User ratings and comments

Mashups and Web application programming interfaces

Mashups are methods of combining multiple data-sources to deliver rich web-based content. The use of Google Maps is probably the best known example of an Internet based mashup, where websites display an embedded map on the same web-page as their location/address details. In business contexts, mashups have come to be utilized widely. With an array of sytems for storing and processing information, huge amounts of data, Companies have numerous options and capabilities of services and solutions.

Using this tecnology company's sales executives can see which regions are successful and which ones need a boost, by combining map technology with GPS, delivery trucks can be located at any given time.

Mash-ups tend to be cheaper and lighter weight than most enterprise applications, offering an inexpensive way to develop custom applications for your organization.

Social Networking

Social Networking tools empower you to build virtual business (instead of purely social) networks of like minded individuals. One of the better known business examples is

LinkedIn, which enables you to invite individuals to join your network; you can then see connections between the people you know and the people they know, providing new business opportunities. Social networking tools can help you, for example, find trustworthy vendor references. A project manager could build a team with the requisite expertise, and with the advantage of seeing who each person has worked with in the past (from whom, presumably, she could get more honest evaluations). Salespeople could find out which clients are attending the same conference, and set up meetings ahead of time, something you can do easily with a social networking tool called PairedUp.

Many companies view social netwroking negatively with respect to security and job productivity. Through social networking it possible to find experts and professionals for job specific tasks easier, combine data from new and legacy systems and enable end users to combine information for analysis. Enterprise 2.0 social networks are also emerging, such as the IBM Bluehouse network. These services are aimed at medium to large businesses that want to create an internal social network featuring contact information, blogs and wikis, and reporting structure information for all the employees in a company. The enterprise social network is much like a detailed and personalized corporate directory with features like tagging, social bookmarking and commenting, all integral components of the network.

Blogs and Wikis

Blogs and wikis give people an intuitive environment in which to share information and collaborate. Using a multiauthor system, people can easily contribute all types of content-text, video, pictures. Participants can continue the conversation, challenge each other and push ideas forward in a collaborative network.

Particularly useful for project updates, corporate communications and idea generation and discussion.

Wiki

A collaborative website that can be directly edited by anyone with access to it. Wikis are used to create spaces for collaborative authoring and sharing, they can provide affordable and effective Intranet, and Knowledge Management platforms. Full version tracking, access controls and revision histories make Wikis especially suitable for team-generated documentation. Wikipedia is probably the best known example of an Internet-based Wiki. Wikis are becoming a very popular way of managing documents and information inside

companies and are an important aspect of Enterprise 2.0. They allow true collaboration on the documents as anyone with access to the page can edit it, making any relevant changes or posting updated content. Most Enterprise 2.0 vendors provide integrated wikis as part of their platforms.

Conferencing and messaging tools

Conferencing tools have been around for a long time now but in the past they have suffered by requiring everyone attending the conference to have the same software installed on their computers. This meant, for example, that users of Mac OS, Linux and other non-Windows operating systems could not participate in a Microsoft NetMeeting conference. The answer to this problem is Web conferencing tools and services in this area are growing in popularity. Web conferencing tools usually come as either hosted services or downloadable modules that can be deployed to an organization's own Web server. Common features of Web conferencing software include slide show presentations, real time instant messaging and chat, VoIP for audio, video functionality, whiteboards, screen sharing facilities, and the ability to record the conference so it can be viewed again at a later date.

4.7 Benefits of Enterprise 2.0 in an organization

Enterprise 2.0 is already demonstrating real business value for many organisations. It has opened up new methods for communication and conversations, and has transformed the way that companies share and access information. Enterprise 2.0 removes the size and complexity of earlier systems, experts such as systems analysts and consultants who were required to make certain systems work and to maintain them are easily replaceable.

Openness

The Enterprise 2.0 approach promotes open communication that encourage respect and participation, even across geographic and cultural boundaries. Access to knowledge empowers and motivates people to strive towards common goals together.

Social networks

Providing easy access to connections between people are found to be essential at work in terms of productivity, work efficiency. The networks provide the user with the ability to find a person, experts, proffessionals inside or outside the organization, find information quickly, maintain good relations.

Knowledge creation and sharing

Enterprise 2.0 addresses ‘knowledge silos’ by enabling a common space for knowledge capture and sharing. Unlike information locked-up in email and discrete documents, this centrally captured knowledge is easier to find and use when people actually need it. It is more likely to be up to date, and it can be fully searched by all who have access.

Mobility

Through Enterprise 2.0 the user have no physical (location), time limitations. The user can have multiple connections, at any time and place.

Less duplication

Enterprise 2.0 enables a diverse, distributed workforce to work together efficiently on projects. Information is more accessible, and subject-matter experts can be found quickly. This avoids duplicated effort and saves time, leading to greater efficiency and improved productivity.

Information access

Information stored in an Enterprise 2.0 system allows employees and other stakeholders in the organization to access information that is timely, up-to-date, and relevant to their needs from anywhere in the world, as long as they have Internet access.

Instant notification

When new updates are made to a blog or wiki, subscribers to the RSS feeds can get instant notification via their RSS readers on their computers or mobile phones. People do not need to revisit sites to check updates.

Simplicity and cost effectiveness

Enterprise 2.0 just as Web 2.0, make it simpler and less expensive for users to share information, communicate with each other, and collaborate on projects. Enterprise 2.0 services are, by their nature, simple to set up and use, many services are available free-of-charge, even paid tools and services tend to be inexpensive compared to previous sofwares and services.

Recruit and keep talented employees

High calibre people are attracted to companies using cutting edge technology.

4.8 Potential pitfalls and issues of Enterprise 2.0

Enterprise 2.0 face problems that goes with ICT, especially security and content ownership.

Security

The internet has always had security threats in terms of hackers, viruses, malware, and so on, Web 2.0 and Enterprise 2.0 being dependant on the internet are also bound to many of these problems.

Web 2.0 is about openess and sharing but in the case of Enterprise 2.0 this concept has to be in a more controlled manner. Sharing information within the company is good and necessary but protecting this information from getting out can be an issue companies would like to oversee. Organizations have to take measures that classified data does not intentionally or unintentionally go out through employees. The balance of security, protection, openness and sharing is critical to Enterprise 2.0 and its development.

Content ownership

When some information is put up on the internet, it becomes public and can be accessed by anyone, the information can be used in any manner permited by law, hence once the information is published on the internet ownership of the information cannot be maitained. Ownership can be maintained under special conditions, but this can be expensive and tedious. This fact does not sit well with companies, for example, lots of companies spend good money trying to create a message and to build a brand which can be lost when open up for conversation.

IT control

Enterprise 2.0 functions on communication and collaboration which takes place mostly outside the boudaries of an enterprise and its IT system. Enterprise 2.0 puts most of the control in the hands of the user and less in the IT department. This is a shift in enterprise system functioning and questions on the operation of critical business systems come up. Some vendors are addressing control concerns by providing a dashboard that gives you control over which employees can access and use which tools, and this could help allay IT fears.

Expertise

Since Enterprise 2.0 depends on the users defining the use of its tools and services, it is often difficult for users to interact and communicate regard to development of the tools and services. For a user who knows little about a tool to follow, understand and assist a more knowledgable user is difficult.

Staff perception

The staff often consider Enterprise tools and services as for the use of experts. Enterprise 2.0 tools and services have the capability to be defined and used as sort by the user. Even if the users are aware, how much are they willing to use it?

Age of staff using Enterprise 2.0 definitely determine the type of use. Younger staff are more ready to experiment with tools and services, whereas the older staff are more resistent to its use.

Productivity

Many companies have a ban for employees from using social networks such as MySpace and Facebook, some do not permit the use of corporate social tools, others are cautious. The concern of enterprises is that the employee spends a lot of time on certain features such a chatting, blogging. Hence when companies adopt new and emerging technologies that incorporate ideas such as social networking and social bookmarking is to evaluate the use of these features and the gains the company stands to profit.

5. Methodology

This chapter describes the methodology used in conducting the research. Throughout this study, the surveys, research and analysis was conducted at the Enterprise 2.0 Observatory. After an initial phase of existing literature analysis, the research objectives were defined, then the data collection was carried out with questionnaires that has led to emperical and statistical analysis.

Enterprise 2.0 Observatory

The Observatory, now in its second year, is the natural continuation of the Centre's long experience on the Intranet and the new Information Systems.
The Observatory's Intranet and New Information Systems School of Management of Politecnico di Milano was created in 2002 as a Permanent Observatory on Intranet in Italy and then gradually expand its focus to the issue of evolution and integration of new information systems and their impact on processes, relationships and business models. The Centre has over time been a reference CIO community and developed an approach to the analysis and design of development strategies of new information systems based on the centrality of the person and the concept of technology as an enabling platform of processes and relations (Virtual Workspace).

In 2007, fully in keeping with this perspective and in light of developments taking place in Web technologies, the Enterprise 2.0 Observatory was founded, which, in its first year, analyzed the status and trends in the application of new technologies, Web 2.0 infrastructure and new paradigms in business and public administrations in Italy. Analyzing the current initiatives and their impact on the organization, the vision of project managers and CIOs is complemented and compared with that of other actors who have a significant impact on these initiatives including, those responsible for Human Resources and Marketing & Sales.

Analysis of the trends and scenarios in the supply of technologies, was carried out through direct interviews of the important players in the IT market. In 2007, a web community, Enterprise 2.0 Observatory (www.enterprise20.it), was created to moitor Enterprise 2.0

tools and services. Results of research, experiences, content and information are discussed which help understanding the evolution of web technologies and their impact on enabling new business models. The community has over 170 members, primarily CIOs, HR managers, Intranet Manager and other researchers and experts interested in the subject. Enterprise20.it is used to collaborate with the community, through blogs, cases and test results on the field are published, the results of the research are studied and discussed.

Enterprise 2.0 Observatory, presents this study to address managers and decision makers of companies to offer, specific research, case studies, benchmarks, event videos, convention notes, etc for in-depth information regarding the concrete opportunities offered by the most innovative solutions, with the ultimate goal of helping companies to make the most knowledgeable and effective decisions possible when it comes to ICT and enterprise 2.0 tools.

Continuing this research, the Observatory stands to investigate four key themes, Social Network & Community; these are initiatives in which it is given a key role in the use of social networking technologies to create and sustain internal and external to the community, Unified Communication & Collaboration; initiatives to support the management of all types of communication, internal and external to the company, in a unified and independent from the methods used to convey the content through integrated tools and infrastructure, Enterprise Content Management; helps efficient management of information across the enterprise, decline in content and document management within and outside the organization through tools that improve the accuracy and security, Adaptive Enterprise Architecture; support flexibility and reconfigurability of the processes, consistent with the changes in the organizational strategy for the flexible management of business processes.

5.1 Literature Review

The first step was to analyze the literature and provided articles, reports and key texts for reference that dealt with the topic of Enterprise 2.0.

National and international articles have been taken into account together with reports of the Enterprise 2.0 Observatory and Intranet Information Systems Observatory from the past years. From the analysis we note, the satisfaction of certain emerging needs of employees has led the company to create virtual workspaces and then to use the standard tools of Web 2.0.

Review of the literature showed that there were some areas of application directly related to the topic of Enterprise 2.0 that are rapidly spreading in Italian companies. Therefore, the different approachs and development projects related to Enterprise 2.0 were investigated. To explore this aspect, reports by consulting firms such as Gartner and McKinsey, at conferences, in articles from leading magazines and Blog of reference for this topic have been considered.

5.2 Research Objectives

The definition of research objectives can be summarized in the next steps:

- Analysis of the spread of Enterprise 2.0 tools and their maturity level in organizations;
- Analysis of the possible Enterprise 2.0 adoption models;
- Identification of the business processes where the Enterprise 2.0 tools are more integrated;
- Evaluation of the Benefits due to Enterprise 2.0 projects

Analysis of the spread of Enterprise 2.0 tools and their maturity level in organizations

The level of maturity in the various areas is often attributable to governance choices. One of the frequently cited barriers and most transversal is the necessity for organizational change, which can be managed through the creation of specific roles or procedures. For these initiatives to be managed strategically, dedicated budgets, explicit development plans and systems of governance must be available to allow their coherent and integrated management. The application areas 'Unified Communication and Collaboration', 'Social Networking and Community' and 'Enterprise Content Management' tools are grouped with respect to its presence and use as, 'Absent', 'Experimentation', 'Emerging Development', 'Unified Development' and 'Strategic Development'.

Analysis of the possible Enterprise 2.0 adoption models

To understand the company approach on the path towards Enterprise 2.0 adoption, an analysis on all the projects in the area helped determine the stage of the company's maturity with respect to the average of the Enterprise 2.0 tools adoption of other companies. The company's adoption maturity is classified into an 'Embryonic model', 'Focused model', 'Composite model' and 'Complete model'.

Identification of the business processes where the Enterprise 2.0 tools are more integrated

Focusing on business processes after the study of Enterprise 2.0 tools, one can understand the practical benefits and real changes Enterprise 2.0 makes. The areas where different tools are used and the main benefits of the adaptions are highlighted.

Evaluation of the Benefits due to Enterprise 2.0 projects

The benefits reported on the processes following the introduction of Enterprise 2.0 tools are set to support collaboration and knowledge management initiatives with significant benefits of training and personal growth , the level of satisfaction with internal and external tools, flexibility to change and innovation of products and services.

The ability of each tool to generate competitive differential can be better understood by crossing the beneficial impact with the spread and maturity of use. This makes it possible to identify the tools in categories of need, 'Must haves'; includes tools with a high level of maturity. These tools contribute substantially to the generation of benefits for the organization, such as Unified Communication, Project Centric Collaboration and Live Collaboration. These tools when used across the board in various business processes, provide an immediate reduction in the estimated costs of communication and collaboration, with significant impact on the efficiency and effectiveness of processes. 'Differentiating'; this category includes instruments which are not very common but when used in a systematic manner can generate significant benefits. 'Question mark'; these tools though have a level of deployment and maturity fairly high are often not perceived by firms as drivers of value. These tools lack effectiveness as a result of governance and use policies too restrictive and hierarchical thereby employees are not able to not take full advantage of these tools, when used in a systematic way the tools often bring intangible benefits to companies that are not understood or underestimated. 'Marginal'; includes instruments not very common, used mainly in experimental cases and do not have an important role in the processes and the generation of benefits.

The results of this analysis are consistent with the investment choices declared by the CIO of the sample and shows how companies tend to move towards tools that have a clear and immediate economic return, often underestimating the intangible component associated with the impacts of a structural nature.

5.3 Data collection

The collection of data necessary for the research was carried out mainly through an online survey administered to a panel of CIOs of major Italian medium-large sized organizations. On the basis of identified cases of interest from the questionnaire the investments in Enterprise 2.0 tools were studied. The survey was administered to 107 Chief Information Officers during 2010. (For details on the questionnaire, please refer Annexes).

5.4 Analysis of results

From the answers of the questionnaires, the analysis providess the fields of Enterprise 2.0 applications and help understand how certain organizational variables, such as the strategic scope, the level of top management sponsorship, the level of maturity and the diffusion among users, could influence the adoption of these new technologies.
The analysis of the results has identified key areas and tools that can be vital to organizational growth and success.

5.5 Case studies

To have a deeper understanding on Enterprise 2.0 tools and services, cases with important services implemented were studied.

The case studies are a research strategy suitable to detail the explanation of a phenomenon when quantitative analysis of the data is not sufficient.

The case studies present advantages as to analyze in detail all aspects of each case, rather than mapping just the measurable characteristics because they are based mainly on qualitative data and allow to integrate different data sources that relate to the same theme in order to have a complete overview of all aspects of this case.

The limitations however are mainly, generalization; it is a technique that focuses on only a few cases studied in detail, the results obtained are valid only for the case study and can not be generalized outside the specific initiative, subjectivity; because they are based primarily on analysis of qualitative data, their interpretation may be influenced by subjective analysis of the individual researcher.

6. Results: Analysis of Enterprise 2.0 maturity level

The results from the study explains the use of Enterprise 2.0 technology in organizations today, their investments and future plans. The insight gathered from the study helps gain an understanding of the technological trend taking place.

6.1 The Maturity Levels

The maturity levels have been created with the intention of aiding the better understanding the position/ success of Enterprise 2.0, its adoption and use today.

Classification by the presence of Enterprise 2.0 tools

From the application areas of the Open Enterprise model (4.4), the level of adoption for these environments have been mapped out to distinguishing between the five growing levels of maturity of the initiatives:

- Absent: no tools are present in the company;
- Experimentation: few tools are present and used in the testing phase;
- Emerging development: there are some tools that are not used to their fullest and integrated (like Social Network & Community tools that are little integrated into the management system of company knowledge and relations, Unified Communication & Collaboration tools used as stand-alone);
- Uniform development: there are many tools integrated amongst each other and used effectively in each environment;
- Strategic development: the tools present, besides being used effectively and integrated amongst each other with specific objectives, are also integrated with processes and other company business applications.

The comparison between the various initiatives (Figure 6.1) highlight how Enterprise Content Management and Unified Communication & Collaboration are the most matureof the application areas with Social Network & Community having a low rating with companies in moving forward with the initiatives. Adoption of these initiatives are still quite platonic as in the majority of cases companies have no active projects underway.

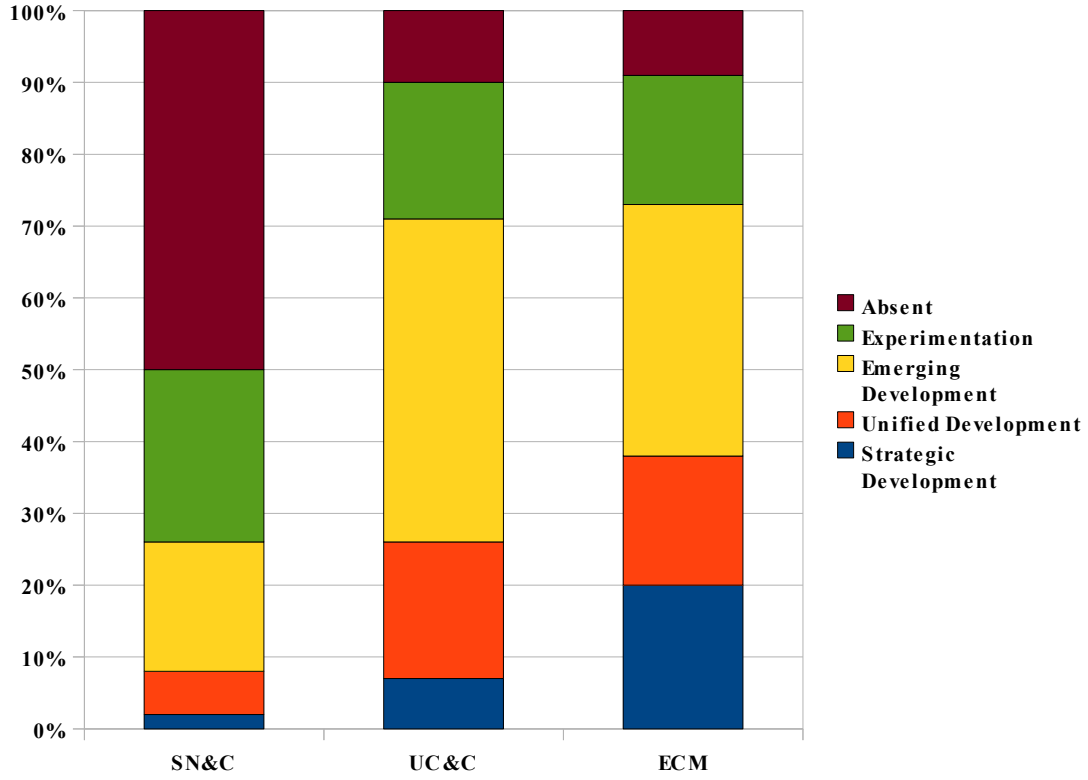

Fig 6.1: The maturity levels of the initiatives in the various areas

The level of maturity in the various areas is often attributable to governance choices. One of the frequently cited barriers and most transversal is the necessity for organizational change, which can be managed through the creation of specific roles or procedures. For these initiatives to be managed strategically, dedicated budgets, explicit development plans and systems of governance must be available to allow their coherent and integrated management.

The increased presence of development plans in Unified Communication & Collaboration and Enterprise Content Management (nearly 70%) is a sign of organizational maturity and, for more than 30% of other cases, have mechanisms established for the management of initiatives. Social Networking & Community is an area experiencing delays both in the definition of development and budget plans, as well as in the creation of standard governance systems.

In majority of the cases (51%), the ICT Department plays a key role in anticipating and soliciting needs, in promoting and implementing the different initiatives along with the lines and suppliers involved. In order to create greater understanding regarding the

potential strategic impacts of Enterprise 2.0 on business, internal participation in particular topics or the creation of programs that promote greater awareness are among the most effective strategies cited. Only in a mere 13% of cases, the department has no current role in the initiatives that are simply left to the business lines and suppliers. The remaining 36% respond reactively, guaranteeing operational support in the implementation of the lines or suppliers, or supporting standards chosen to guarantee continuity and coherence with existing infrastructures.

Another interesting aspect involves the role of suppliers in the development of this type of initiative. From the CIO perspective, the average supplier contribution especially for more advanced and less consolidated topics is still of little significance and for the most part reactive, especially in the case of Social Network & Community, where consolidated offer models are missing. Even for the more mature Enterprise Content Management environment, the percentage of suppliers considered proactive remains low.

Classification by the adoption and approach to Enterprise 2.0 tools

To understand the company approach on the path toward Enterprise 2.0, an analysis on all the projects related to the four areas were considered. Four primary models/ fields emerged:

- Embryonic model (40%): there are either few experimental services or the services are not integrated with each other;
- Focused model (36%): there is an integrated and strategic development but only in one area;
- Composite model (21%): there is elevated development of two areas;
- Complete model (3%): most of the areas are characterized by an advanced level of unified and strategic development.

The majority of companies are still in the embryonic stage or at most the focused stage (76%). Among the focused companies, the ECM model is the most widely applied (16%) followed by UC&C (13%). It is important to point out the current absence of a focused model based solely on the Social Network & Community area.

An analysis of various composite models (21%) shows a strict correlation between the two specific areas of Unified Communication & Collaboration and Enterprise Content Management. In 7% of cases companies are moving forward with initiatives in a

coordinated fashion in these two areas. The other viable combinations analyzed involve Enterprise Content Management with Social Network & Community (4%) while combinations with Unified Communication & Collaboration are less common, counting 1% each for Social Network & Community. Lastly, still few companies appear to have adopted a complete model (3%).

6.2 The three dimensions of Enterprise 2.0

A comprehensive understanding of the roles of Enterprise 2.0 tools is essential to organizations taking economic needs and organizational change required into consideration.

To verify the reality of the phenomenon of Enterprise 2.0 in terms of concrete benefits and structural effects, research has investigated three levels or dimensions of analysis.

The organizational Enterprise 2.0 trend

Enabled and accelerated by new technologies, new business models are emerging in the organization as more agile, open, adaptable and flexible than trying to respond to structural changes in the competitive and social aspects. Organizational trends are the main drivers of change in which companies must meet in order to seize opportunities and competitive advantages.

The tools of Enterprise 2.0

Organizations must be able to offer work environments with rich and adaptable tools, that cannot be standardized and centrally defined, thereby facilitating it with respect to individual needs. These new tools and technologies enable people to communicate directly with each other, to compose and enhance their work environments thanks to a growing availability of information, applications and communication channels, thus becomes a key factor to support the new organizational trend.

The Information System 2.0

From corporate and structured, the information system should reconfigure itself around people, directing the management of unstructured processes and a new balance between allowing access to internal and external resources. The information system is transformed into a kind of soft and adaptable connective tissue able to complement the various tools

and make the redundant mechanisms of governance that are hierarchical and formal often layered and complex. There are new models emerging that offer SaaS and Cloud Computing. These models affect the fundamental characteristics of information system, creating new opportunities for developments in flexibility and adaptability, as long as it is able to structure its borders and able to govern the mode of service delivery.

The analysis of cases show that the organization, the tools and information system are not related by simple relationships between cause and effect but affect each other on multiple levels and through virtuous circles "self-reinforcing" that can and should be managed actively and consciously. A correct assessment of each initiative on several levels, allows one to understand and exploit the limitations and benefits of the infrastructure, processes and the organization itself, with a combined effect much greater than the sum of its parts. In later chapters will consider the different dimensions of analysis in terms of relevance, maturity of businesses and the benefits generated. In the last chapter, finally, we will try to understand the dynamics and the levers with which it is possible to govern in a unified and consistent new business model.

6.3 Pricipal applications and benefits of Enterprise 2.0

The diffusion and use of tools

Enterprise 2.0 tools and technologies are becoming more common in companies, from the sample, over 90% of cases reserve a specific budget in 2010 to enable and enhance investments in various areas of Enterprise 2.0. Through empirical analysis it is clear that in many cases the presence of tools has not translated into real change. To understand the impact of the tools in business it is not sufficient to look solely at the propagation but one must delve into the details of how these are used within the various business processes. In figure 6.2, the main tools are mapped in terms of level of maturity of use. Tools grouped under the name of Unified Communication (chat, instant messaging, web / video conference), Project Centric Collaboration (asynchronous collaboration on documents, groupware, project management tools) and Live Collaboration (coediting and sharing of real-time slides and documents, collaboration tools, synchronous) were introduced in almost all companies in the sample and where present used in a systematic way across the business or organization.

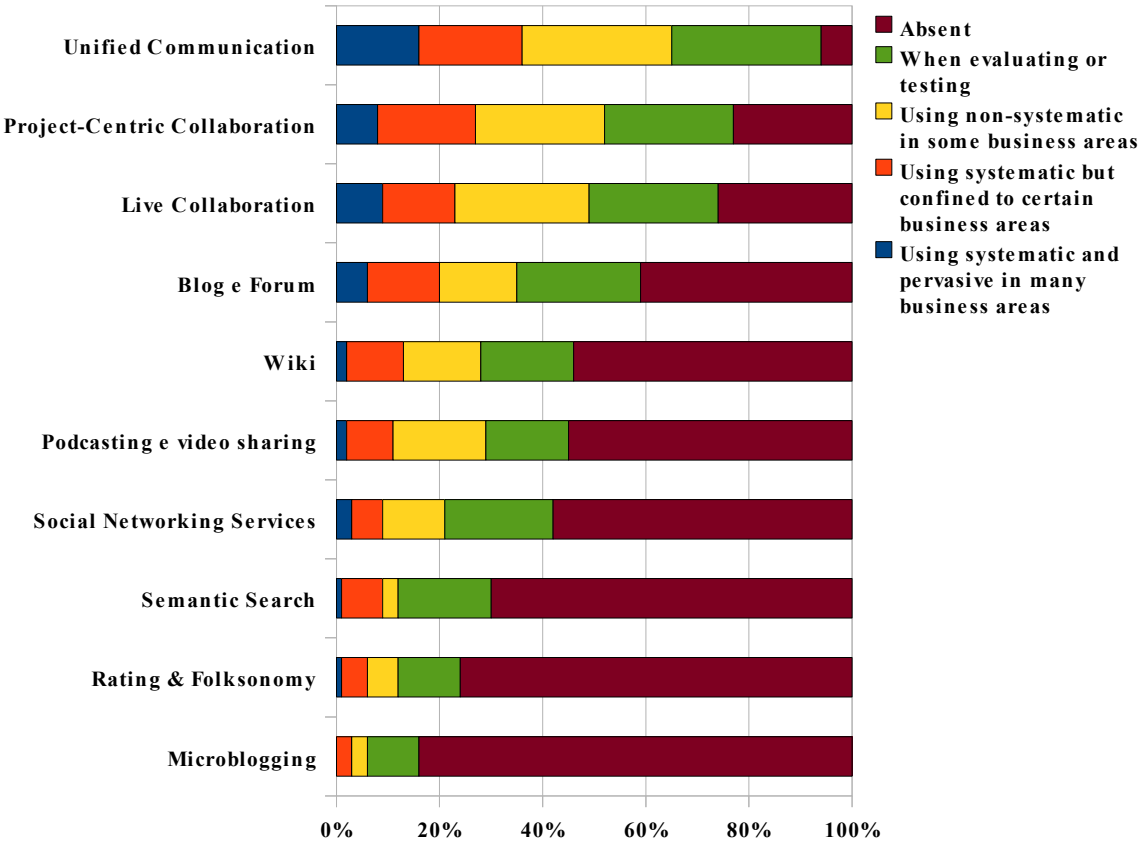

Fig 6.2: The level of maturity of the tools 2.0

In the study, all the organizations were rated and valued on their presence and importance of Enterprise 2.0. To understand the current and future trend, based on the study and prominence derived we consider the fields 'Composite', 'Focused Unified Communication and Collaboration', 'Focused Collaboration' and 'Focused Social Networking and Communication' and the major tools considered are categorized as 'Unified Communication', 'Live Collaboration', 'Rating & Folksonomy', 'Social Networking Service', 'Forum, Blog & Microblogging', 'Podcasting & Videosharing', 'Project Centric Collaboration' and 'Wiki'.

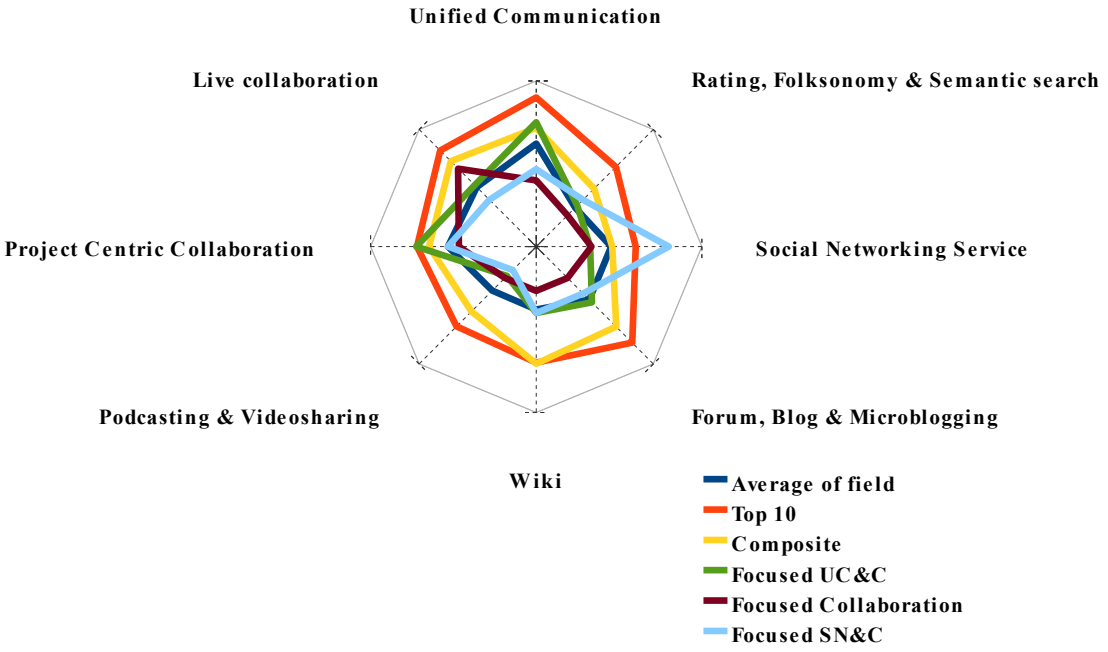

Fig 6.3: Study on Enterprise 2.0 fields and tools.

From figure 6.3, we infer that most companies are yet to develope their Enterprise 2.0 technology and reach the level the top companies are at. Companies are more focused on Unified Communication and Collaboration than the other fields, Collaboration is not at a good state yet. Social Networking and Communication is a field with extreme readings with a few companies strongly reccomending it most companies do not encourage its use. Rating & Folksonomy, Forum, Blog & Microblogging, Podcasting & Videosharing, Project Centric Collaboration and Wiki are tools used in good standing by companies who are at the top the Enterprise 2.0 tecnology rehlm whereas most of the other companies, industries and sectors are far behind.

Looking at the difference of maturity levels between the top ten companies and the average of companies in their respective fields (figure 6.4) indicate that Enterprise 2.0 usage in a few companies are high, whereas most companies are in the process realizing or adopting Enterprise 2.0 techniques.

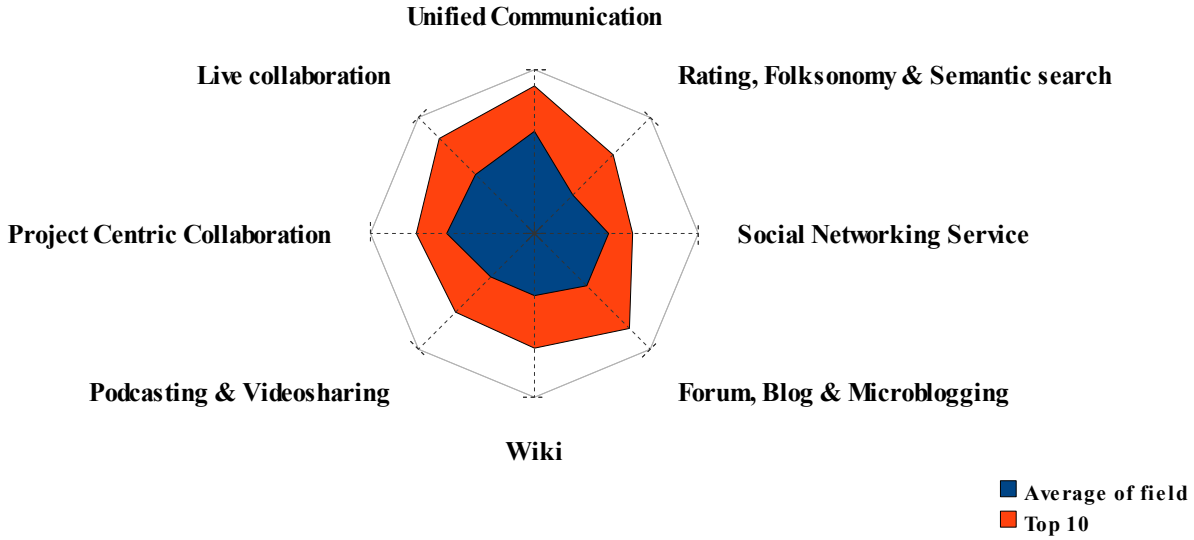

Fig 6.4: Average maturity levels of companies and the average of the top ten companies.

Other tools such as blogs, forums, wikis, and podcasting (podcasting is a system that allows one to automatically download files, usually audio or video), videosharing while depicting high prevalence rates (more than half of the sample) have a limited level of maturity, something that shows a growing interest in companies. However, there is difficulty to extend the use in a systematic way.
Finally, there is a group of tools which are used little, such as microblogging, rating & Folksonomy (social voting, tagging, social bookmarking), social networking and semantic search services. Among these, it is interesting to highlight a number of active trials on the topic of semantic search (18% of companies in the sample) and also specifically on the issue of information overload and information research is central to many companies.

Video sharing is the sharing of video over the network using file sharing programs or Internet sites specially created, such as Youtube, Yahoo Video or Google Video, MySpace, iFilm, DreamHost, DailyMotion, Porkolt. The areas of concern for business use such as training videos and interviews with employees and senior management are shared internally.

The ability of each tool to generate competitive differential can be better understood by crossing the beneficial impact with the spread and maturity of use. This makes it possible to identify four different clusters to group tools:

- Must haves: includes tools with a high level of maturity. These tools contribute substantially to the generation of benefits for the organization, such as Unified Communication, Project Centric Collaboration and Live Collaboration. These tools when used across the board in various business processes, provide an immediate reduction in the estimated costs of communication and collaboration, with significant impact on the efficiency and effectiveness of processes, particularly in companies heavily dispersed.
- Differentiating: this category includes tools which are not very common such as wikis, podcasting and video sharing but when used in a systematic manner can generate significant benefits.
- Question mark: these are tools such as blogs and forums that, although have a level of deployment and maturity fairly high are often not perceived by firms as drivers of value. These tools come in many cases, firstly the tools lack of effectiveness is often a result of governance and use policies too restrictive and hierarchical leading employees to not take full advantage of these tools and second, when used in a systematic way the tools often brings intangible benefits to companies that are not understood or underestimated.
- Marginal: includes tools not very common, used mainly in experimental cases and do not have an important role in the processes and the generation of benefits. This cluster includes the social network services, semantic search, microblogging, Ratings & folksonomy The results of this analysis are consistent with the investment choices declared by the CIO of the sample and shows how companies tend to move towards tools that have a clear and immediate economic return, often underestimating the intangible component associated with the impacts of a structural nature.

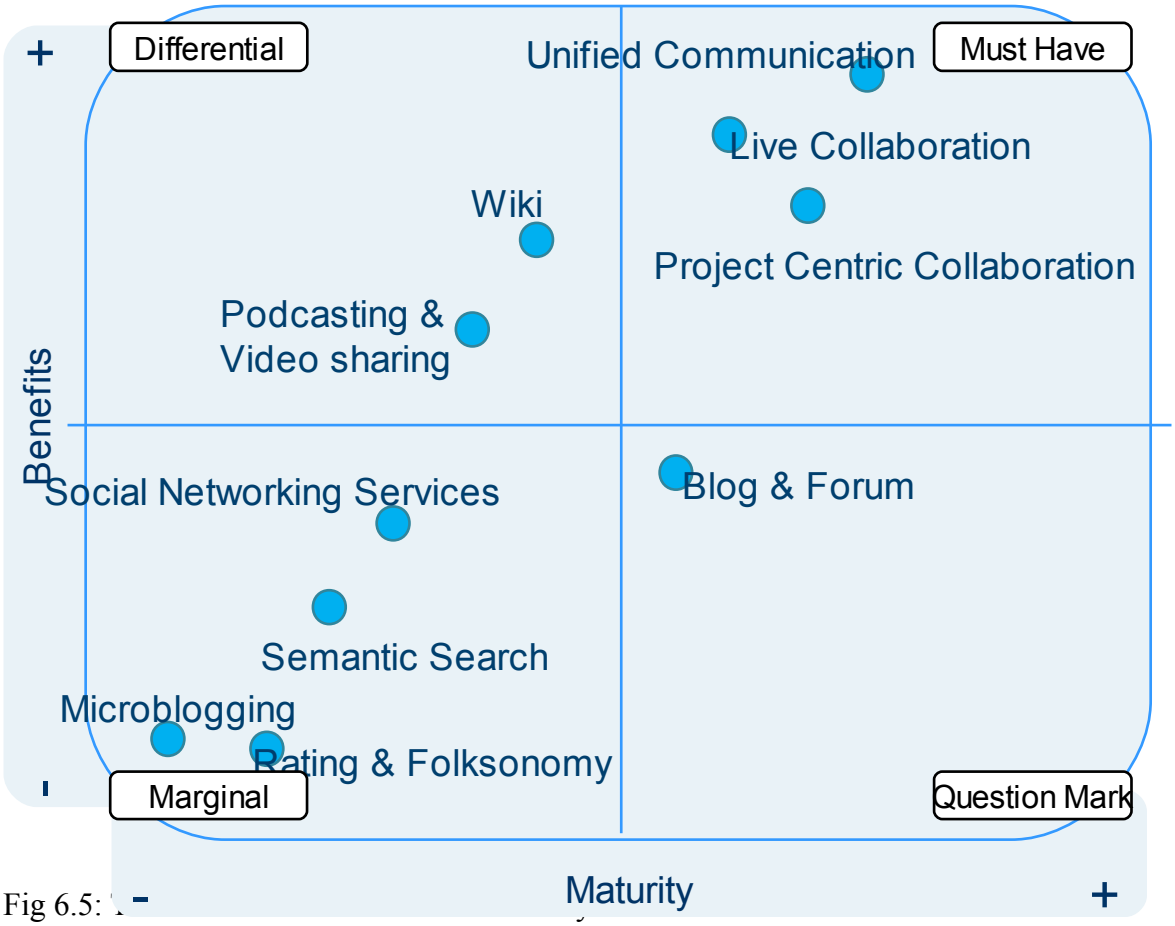

Fig 6.5:

The investigation of the planned investments (Figure 6.6) shows a strong bias toward unified communications tools, planned in 37% of companies in the sample, Project Centric Collaboration and Live Collaboration (23%). Other means 2.0 shows, however, more limited investment opportunities, ranging from 11% for wikis, blogs and forums for 8%, Social Networking Services, podcasting and video sharing, 5% for semantic search and Ratings & folksonomy.

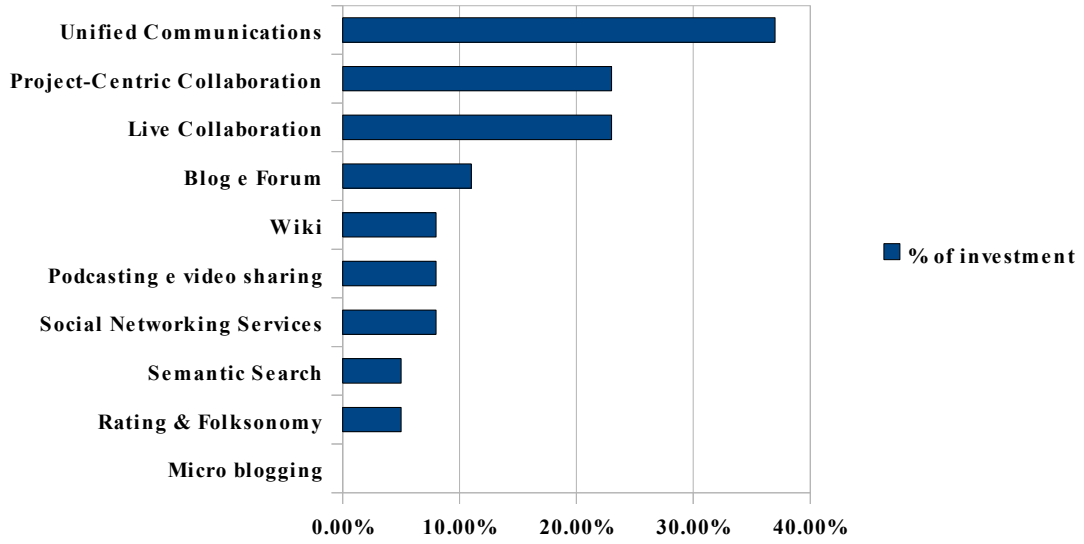

Fig 6.6: Planned investments in Enterprise 2.0 tools

The maturity of use and benefits of Enterprise 2.0 tools

The benefits reported on the processes following the introduction of Enterprise 2.0 tools are shown in Figure 6.7. Most are set respectively to support collaboration and knowledge management found respectively 80% and 68% of the initiatives. Soon after it indicates the efficiency (60%) while less significant are the benefits of training and personal growth (57%), the level of satisfaction with internal and external (52%), flexibility to change (52%) and innovation of products and services (46%).

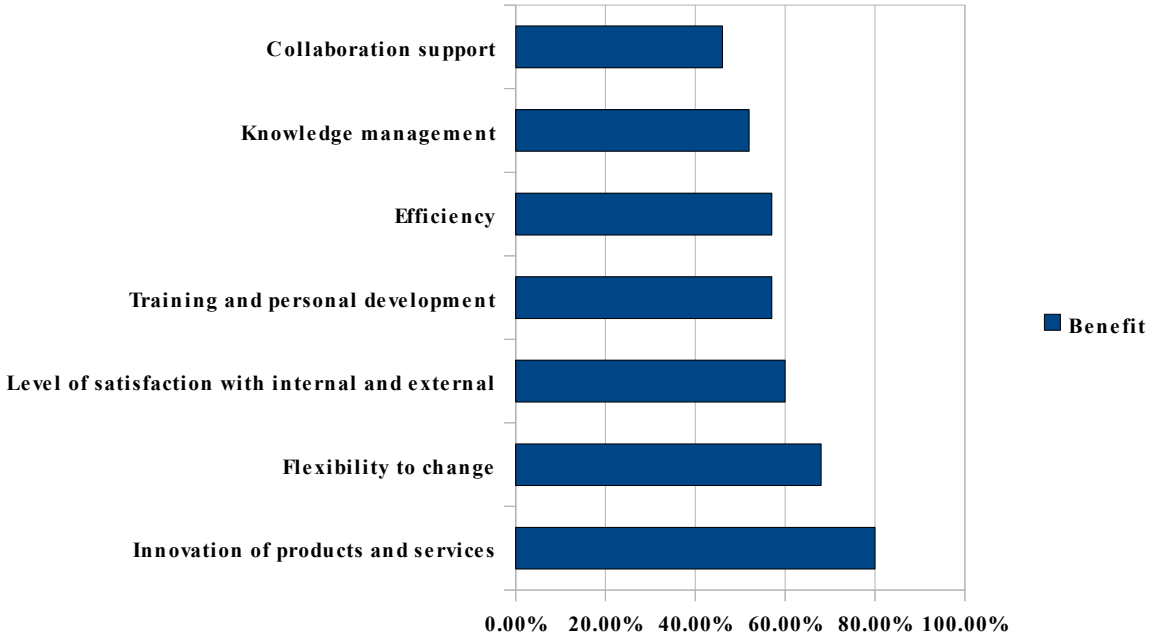

Fig 6.7: Benefits of Enterprise 2.0 tools and services

The processes involved: areas of use and benefits

By shifting the focus from tools to support business processes, one can understand the practical benefits and real changes enabled by Enterprise 2.0.

The graph in Figure 6.8 shows for each of the key business processes, the percentage of companies in the sample using Enterprise 2.0 tools in a systematic way. The more processes supported are those related to areas where there is a greater familiarity with the logic of Enterprise 2.0, Management of Information Systems (47%), Marketing (42%), Management of Human Resources and Internal Communication (41%), Management of Sales and Sales Network (39%), where Enterprise 2.0 is particularly appropriate to support relationships with players, Operations (34%), Customer Service (27%) and Research and Development (26%).

Figure 6.8: The spread of 2.0 initiatives to support business processes

In this section a detailed analysis of each process is carried out by studying the most significant initiatives with the aim of highlighting areas where use of different tools and the main benefits are achieved as a result of their adoption.

The development and management of Information Systems

The development and management of Information Systems are business processes with greater adaption of Enterprise 2.0 tools and has usage levels of the different tools well above the average of the sample, in particular with regard to Unified Communications,

Live Collaboration, Centric Project, Collaboration and wikis. The motivation being those who work with this field is "culturally" capable of using these technologies.

The introduction of Enterprise 2.0 tools in many companies is a progressive process and begins with an experimetal phase of internal information systems function, which should be followed by a gradual diffusion throughout the organization.

The activities most supported in the management of information systems are related to the preparation of technical and operational documentation that requires constant updates and fixes: this can be achieved quickly and effectively using the wiki. That is, this tool is used to formalize and have a single point of access to knowledge to the function and integrate internal processes and business practices. The significant increase of these items and the constant updates by users in initiatives analyzed attests to the usefulness of this tool to support coordination between people and knowledge management with important implications in terms of speed of information retrieval and reduction of the activities of support and staff training.

The wiki is often used to support help desk computer and build a knowledge base for solutions to various problems faced. The use of the wiki in this process has a significant impact on reducing problem-solving and therefore, the level of internal service. Instant messaging is another tool often used to support the processes of a computer help desk. The ability for direct contact and support from experts in certain areas is particularly useful in organizations with a high degree of spatial dispersion. Instant messaging in these cases has some limits due to the use of real-time nature of the tool that must be reconciled with differences in the actual presence of people or in global contexts, with different time zones.

Marketing

In business processes that involve marketing functions, require strong relationships with actors outside the organization, the potential of Enterprise 2.0 tools are used mainly with a view to greater involvement and retention of the end user rather than to support specific internal activities.

The use of Enterprise 2.0 tools to support marketing is observed as almost the same as its use with other business prosesses but for blogs, forums, microblogging and social networking services which are most used for end customers.

The cases analyzed reveal different ways of using the tools ranging from simple company participation in forums, blogs and community on the web with the role of responding to any requests for information or bug fixes from users, to the development and management

of platforms ownership in which the customer is actively involved in defining and design of new products in a logic of co-creation, or in promotional campaigns with a strong interaction. These cases have occurred mainly in companies where there is a strong attachment to the brand by customers who are motivated to contribute to the improvement of a product without resorting to incentive systems or awards. In addition, tools such as blogs and microblogging are important in communication and in corporate websites that allow attempt to close the gap with customers using simpler and more direct communication methods and making it possible to collect feedback and comments in real time.

Project Centric Collaboration tools are often used to support the management of campaigns to share documents progress and implementation plans and are often integrated with dashboards monitoring the progress of various projects.

Finally, the use of wiki, which is to a lesser extent than the rest of the sample, provide the opportunity to broaden and deepen the technical documentation and marketing for a product by presentations, documents, multimedia or by sharing success stories about past campaigns. In some cases, tools such as wikis and blogs are also used while brainstorming and for internal support to build new marketing ideas making it possible to reduce the time for the activity and to encourage co-creation of internal logic.

The development and management of Human Resources and Internal Communications

The Director of Human Resources interviewed believe that this function is the main sponsor of the Enterprise 2.0 initiatives in the company, with particular attention to push for organizational change. Hence the high propensity to experience the potentiality of Enterprise 2.0 tools to support the processes of development and human resources management and internal communications activities. Unified Communications, video sharing and podcasting, blogs, forums, microblogging are tools detected with a presence higher than that of the average of other processes.

In human resources application of Enterprise 2.0 tools can be identified in departments of selection, placement, training and evaluation.

In selection and recruitment the use of professional social network sites like LinkedIn that allow you to reduce the time of acquisition of information on potential candidates and increase the quality of the selection are popular.

Multinational organizations that need to hire local staff to work in different locations,

contacts the person online using unified communications tools, the selection is carried out by the interviewer from the headquarters through a web conference with the candidate while on site there may be a local representative of the company. This approach results in savings in terms of time and cost.

The addition and orientation of new employees are often supported by tools that enable social dynamics behind the creation of a sense of belonging to the company: some relevant examples concern the use of video-sharing environment to introduce the company and its characteristics by using interviews with employees or corporate videos, corporate blogs run by the Human Resources department or community dedicated to new employees where they can share problems and find answers interacting with the representatives of the Directorate.

The main benefits are to reduce production time and costs to recognize and manage problems with a positive impact on improving the business climate and the retention of employees.

Training is an important area for the use of Enterprise 2.0 tools for interactive lectures, a virtual community that allows you to create continuous learning experience among the participants, providing tools such as forums, blogs and social networking services that support informal learning and the creation of knowledge networks. Video sharing tools and activities in particular allow the asynchronous nature of interaction making educational content available in multimedia format (video instructions on assembling components, tutorial support for the use of software, etc) on an ongoing basis through the portal, while webconference tools and activities makes the virtual classroom sessions, reducing costs and time for travel.

These application examples have been found primarily in companies that need to update and train with some frequency that their employees are located in different countries and for which it is necessary to maintain a close interaction between teachers and students.

The work on internal communications were among the first to be Enterprise 2.0 initiatives supported by the possibility of using more direct and two-way communications with people through tools such as corporate blogs, podcasting and video sharing. The information that is disseminated through these new channels affect institutional communications, news, press releases, content being made available through posts and messages issued by top management, in other cases, short video content that are favored corporate events or tell stories of success thereby providing advantages of innovative communication, improving interaction with the possibility of collecting feedback and

comments from people with a positive impact on the business climate and a sense of belonging.

Sales and Sales Network

The commercial and network management business processes in sales and support to sales network, has a widespread use of tools of social networking and unified communications services, this is to support communication and to promote horizontal collaboration between sales agents. Tools such as instant messaging or webconference are required primarily by the sales force that needs more effective channels of communication to interact with headquarter offices. These allow you to reduce telephone costs and time involved in the acquisition of information by exploiting ways of interacting in real time.
In advanced cases, there are dedicated communities to sales force with the aim of improving the effectiveness of communications, share best practices and success stories. These initiatives come as a platform for sharing information on the company, market or competitors and material support for projects such as sales presentations, product catalogs and updated multimedia content such as images and videos (video sharing environments). For a community there are often online training modules (courses or courses on sales and communications products) that increase the professional skills of staff with time and cost savings compared to traditional training sessions and overcoming problems due to spatial dispersion of people. Tools such as forums and blogs allow horizontal collaboration and sharing knowledge, best practices, opinions about customers, reports on competitors, products and advice to offer. Wikis are exploited to encode best practices by replacing traditional manual which shows how to manage some problems with end customers, such as the management of specific procedures and reimbursement.

Operations and Production

The use of Enterprise 2.0 tools is often accompanied and complements the more traditional ICT applications to provide employees with better support for collaboration and communication in the primary operations and production processes. The main focus is on the tools of Unified Communications and Project Centric Collaboration that support cross-functional teams and project teams during design and implementation of products /services. Tools such as instant messaging and webconference have large impacts in terms of timeliness and effectiveness in long distance communication, allowing people real time interaction. The tools of Project Centric Collaboration also offer the opportunity to

collaborate on documents asynchronously in managing information in a structured way and ensuring the continuous updating of content.

Initiatives such as blogs and microblogging tools are used to communicate the state of progress of projects and short reports of the meeting in a simple and timely manner of collecting comments and feedback from team members.

Customer Service

Those firms analysed from the sample do not have a high usage of Enterprise 2.0 tools in Customer Service processes but show that the use of these applications will lead to practical benefits, in particular to support the front-end customer. The use of instant messaging to communicate with the customer and colleagues lead to immediate reduction of response time and improve the level of service benefits.

It is common to use instant messaging or chat to support call center operators that can interact with each other or with experts to provide real-time information and solve problems or requests from customers. In this case we also used the wiki to collect and share common solutions and best practices. Blogs and forums on the web provide a more direct link for a company to the customer and information is made available with easy access about products and resolutions to problems thus reducing the need for the service of Customer Service. Often these initiatives are being developed by the same customers who are looking for comparisons with other people on the web and can be a useful source of information.

Business customers use asynchronous collaboration tools (Project Centric Collaboration) to share information on products, for example, technical testing of products to ensure adherence to customer specifications. Initiatives to introduce Enterprise 2.0 tools to support Customer Service, although not widespread now, offer numerous opportunities for practical applications with the objective to improve the service and the relationship with business and consumer customers by collecting opinions for products and services and for the management of tacit and explicit knowledge for assistance.

Research and Development

The last process analyzed Research and Development of Enterprise 2.0 sees a number of initiatives currently limited within companies in the sample. The only tool that has a significantly above average use is the wiki that supports the process of creating and gathering information about new products (eg technical specifications). Unified

Communication & Live Collaboration tools provide support to the project teams that need international communication despite the spatial dispersion, at design, implementation and testing of new products / services. Web / videoconference systems facilitate high-quality audio and video needed to collaborate remotely on technical documentation, in some cases for the experimentation with virtual worlds, especially in the construction and engineering of major works, allowing a more effective representation of buildings and constructions, greatly reducing time and costs related to production of samples and scale models.

Project Centric Collaboration is popular for sharing documents and supporting a structured dynamic for co-creation among people during the process of producing a product / service and often, there is also the involvement of external actors as partners, suppliers or even end users especially in the context of Business to Business relations. Semantic search tools are being used to query heterogeneous databases easily and quickly but this use has not yet found significant importance or applications. Future use can include support to forums, blogs and such processes, to report interesting content, display ideas, solutions and share opinions.

7. Case Studies

7.1 Case study: IBM

Summary

IBM encourages a storng deployment of Enterprise Collaboration and Communication tools. IBM's 'New Media', part of corporate communications, look into the application of podcasting, wikis, RSS, blogging, videocasting, virtual worlds and online social networking tools.

Company Information

IBM has over 34 million employees, speaking 165 languages across 75 countries and serving clients in 174 countries. With departments in research, software, hardware, IT consulting, business consulting, management consulting, printing, financing, IBM is a globally integrated company.

Enterprise 2.0 solution

The IBM online working environment: W3, the site provides the interface for all entreprise related applications, communication and collaboration tools.
Wikis at IBM offer static content hosting with divisions as department, team, or group web site and authority to update and edit data. Team and project management functions are data repository, content collaboration with updating the team, meeting notes, etc.

Blogs at IBM

Bolgs encourage personal and group diary, team and project diary with updates, collection of links to articles, references, to do lists and provide work related and personal topics.

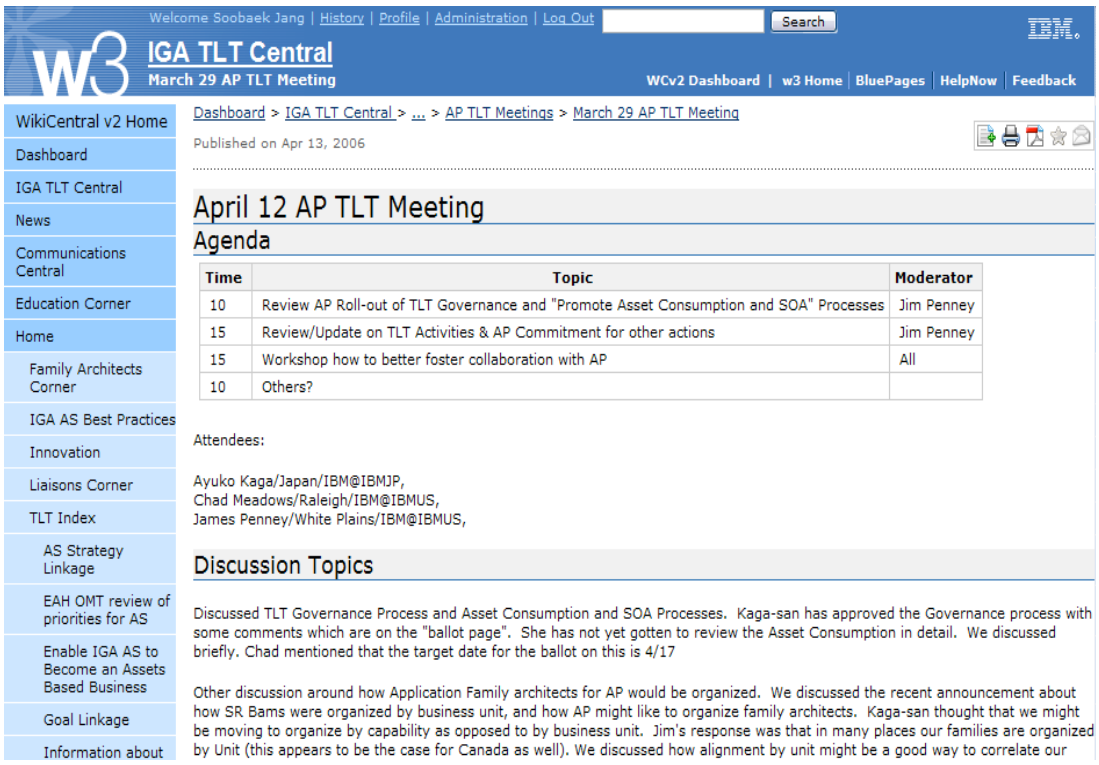

Fig 7.1: IBM blog regarding company meeting

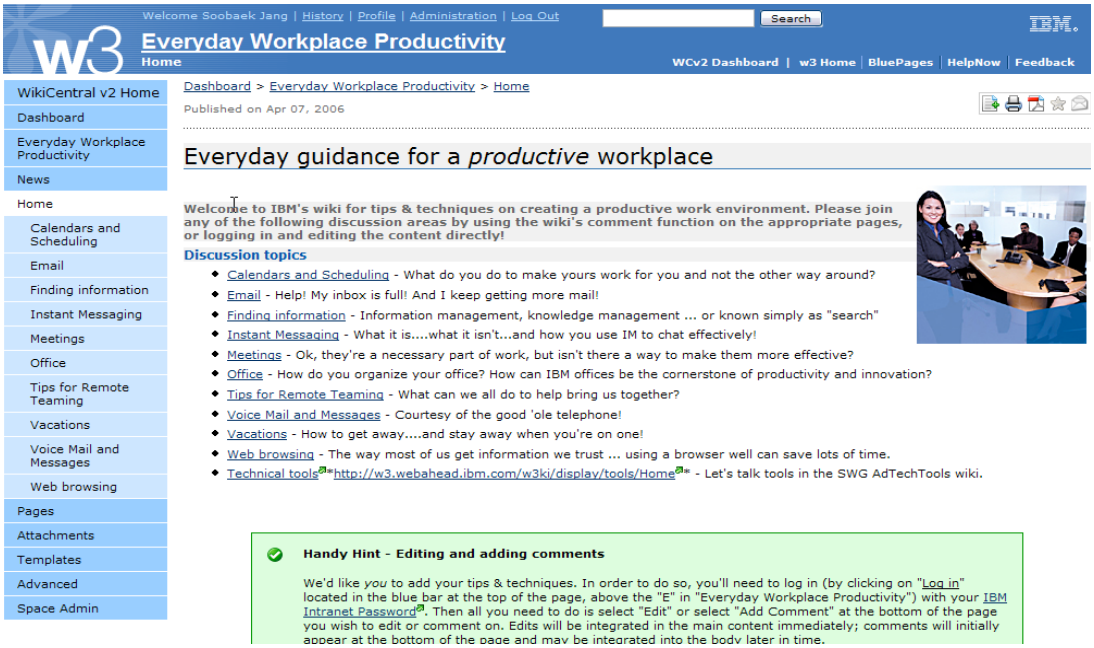

Fig 7.2: IBM employee blog

Podcasting at IBM

The podcasting applications facilitates time shifted conference calls, internal and executive communications, employee generated company news, internal corporate

networking/marketing, loosen corporate culture and boost morale, spread personal responsibility and initiative, stimulate ideas, creativity and innovation.

Fig 7.3: Podcasting facilities

Fig 7.4: RSS feeds of podcasts

Result and benefits

The implemetation of the Wiki help connections globally and across business lines with content availabile to every user. It has a broader, shared sense of ownership and shift content development among regions, geos, industries, products.

Bolgs support a high level of print, audio, video and joint development of tools. Bolgs can also rally the team, use centralized activities calendar linked to the content, have team based on campaigns and not on the organizational chart.
Blogs on w3 received 60,000 page views with more than 20,000 registered users in 73 countries and increased monthly posts.

IBM is oriented to support the culture of the people employeed as well as the corporate culture, company values and business guidelines that enforce a collaborative approach to accepte, promote and publish working.

7.2 Case study: AT&T

Summary

This case study provides an overview of the evolving journey with
Enterprise 2.0 applications in Unified Communication and Collaboration sector within a large telecommunications company.

Company information

The company under review is actually a combination of several companies due to
mergers and acquisitions which increased the employee population from 70,000 to 300,000. Thus, providing more opportunity to see what works and what does not in Enterprise 2.0, at a larger scale.

Case description

Initial response or demand was weak in that people didn't really understand the need
back in 2003. For over a year, the implementation struggled to get traction but when

it did; demand sky rocketed. Collaborative spaces, meeting spaces, web conferencing and shared document spaces started movement. As with many implementations, it's the small value add components that add up with volume. Sharepoint is considered the tool not really a product. Products are what you can do with the tool. Additional products and services were added as the implementation progressed. Services like search, PDF creation, and vanity URL are just a few add on services. The entire customer experience was reviewed from the initial knowledge that the tool existed to the killing of a decaying collaborative site. The goal was to create a single customer experience model that could be scaled as the user base grew.

Today, a new set of tools are being added including blogs, wikis, professional profiles, and many others. While some are inside the Sharepoint offering, many will be provided through development and open source. As we progress, the key will be to bring all of these tools together into a single offering for many-to-many communications. Cost transformation and business speed are the two principle problems being addressed with the portfolio.

Enterprise 2.0 solution

The case study shows little adoption by the business and technology communities. In 2004, a group of experts in deploying mass adoption software was brought in and asked to take this application to the scale defined by "mass adoption". The main metric of progression will be the collaborative site count. Teams, group, and individuals can order a collaborative site which allows for group communication. At the time of only 100 collaborative sites had been built. This is similar to the five other implementations seen by the author.

After implementing a business model with the support of Unified Communication and Collaborations tools that can hold a million document objects, the site count has increased to 13,000 users. Social Software, a subset of Collaborative Solutions, has been implemented at the enterprise level.

Microsoft's Sharepoint and MOSS provide the core collaborative solution set. Confluence Wiki Software is used for the Enterprise Wiki and various Open Source solutions providers (Drupal, Roller, etc).

Results and Benefits

With the implementation of the tools the Collaborative sites grew at 124% with over 4 million documents stored. The user awareness was 98% of the total population, with 8

million page view per month. Cost advantages were gained by reduction of staff and required number of servers and enabled faster business and decision making.

Hurdles and Challenges

Awareness of the solution and service provided by unified communication and collaborative tools is normal for most organizations. With a 60% awarness, applicatons were needed to address business development, marketing, branding, roadshows, announcements, newletters, etc. Though people are aware of the social application they were not sure how to use the software in a business setting.

7.3 Case study: Boston College

Summary

Boston College required social software to stimulate the education process and create lively interactions between students and faculty, thus supported Social Network & Community tools. Socialtext provided an easy to use platform for wiki collaboration that seamlessly integrated with email, RSS feeds, search and other popular web based technologies.

Company information

As one of the oldest Catholic universities in the US, Boston College confers more than 4,000 degrees annually in more than 50 fields of study through seven schools and colleges. Faculty members are committed to both teaching and research and have set new marks for research grant awards over the last ten years. Boston College has experienced tremendous growth in recent years, including a 43 percent increase in undergraduate applications over the past decade.

Case description

Educational institutions, like Boston College, increasingly depend on web based tools that facilitate learning and increase communication between faculty and students, as well as collaboration between the students. Furthermore, schools are increasingly under pressure to incorporate the latest Web 2.0 technologies into the education

process, since many students come to school expecting access to these tools and commonly use them in their personal lives as a way to collaborate with their peers. Websites and applications like MySpace, Flickr, Facebook, Wikipedia, instant messaging and blogging are already widely adopted by students. The challenge for educational institutions is finding ways to best incorporate these existing tools into the classroom experience, while also identifying new tools that can provide value in the education process.

Hurdles and Chanllenges

Over time, specifically for the requirements in the classroom, the existing solutions were found to not provide adequate discussion capabilities and for example lacked robust features for editing, commenting and general content creation. In addition, since the curriculum of the business class required constant updates to the content taught in the classroom, alternatives beyond just textbooks were needed.

Enterprise 2.0 solution

Boston College evaluated various options for increasing communication and collaboration in the classroom and decided to use social networking and communication tools and service for wikis. With Socialtext, Boston College found the wiki provided a valuable ability to enrich the classroom through up to date content and active discussion. For example an application integrates relevant news content, from sites like The Wall Street Journal, Businessweek and The New York Times, using RSS feeds and creates a 'virtual newstand' to support class activities. The faculty and students are registered with access to update the wiki using web based interface to publish content and intergrated with the email for both inputting content directly into the wiki page that needs updating, as well as using email to notify users of any changes to wiki content.

At Boston College, the wiki provides a valuable framework for real time discussions, following class curriculum, as well as incorporate input directly from the students based on topics they want to cover or have interest in. Students are encouraged to use the wiki to increase collaboration with one another. For example before submitting research papers, students use the wiki for real time peer evaluation so they can improve the quality of their final paper before submitting to the professor for grading. The professors at Boston College find the wiki useful to create better quality of

the overall course content.

Management graduate students are a large portion of the users for the wiki, powered by Socialtext. The professors find student contribution on the wiki higher than physical classroom participation and have a better ability to track student participation. One of the most interesting outcomes of Boston College's wiki use is a clear correlation of the wiki use to higher overall grades and test scores.

The professors plan to extend the current wiki deployment to include more students of other programs and departmental communications needs.

Results and Benefits

Some of the key reasons Social Network & Community tools was selected by Boston College was its robustness to handle hundreds of students, while continuing to deliver reliable and responsive service even as user counts increased and provide an intuitive design and ease of use features. Boston College found that on average it took less than 30 minutes for a new user to get trained up and familiar with using the Socialtext wiki and become productive with the tool. The solution was a true platform solution that provided rich collaboration using wikis, but also flexible integration with other important tools used in the academic environment, including RSS feeds, email, Google search, Facebook and social networking sites, and more.

8. Conclusions

Enterprise 2.0 is a concept that is widely spoken about, with almost all companies in all sectors investing in Enterprise 2.0 tools.

The presence of Enterprise 2.0 tools show Unified Communication (chat, instant messaging, web / video conference) with more than 95% of the companies using it, Project Centric Collaboration (asynchronous collaboration on documents, groupware, project management tools) with more than 75% of the companies using it and Live Collaboration (coediting and sharing of real-time slides and documents, collaboration tools, synchronous) with more than 70% of the companies using it. Rating & Folksonomy, 'Social Networking Service, Forum, Microblogging, Podcasting & Videosharing, Project Centric Collaboration and Wiki are tools with less than 50% usage except for Blogs and Froums which have more than 55% maturity in the sample companies.

As for the adoption of Enterprise 2.0 tools, 40% are in the Embryonic model, that is either few experimental services or the services are not integrated with each other; 36% are in the Focused model, that is there is an integrated and strategic development but only in one area; 21% in the Composite model, that is companies with elevated development of two areas and a mere 3% in the Complete model, that is have most of the areas are characterized by an advanced level of unified and strategic development.

On investigating the planned investments, it shows a strong bias toward unified communications tools, planned in 37% of companies in the sample, Project Centric Collaboration and Live Collaboration (23%). More limited investment opportunities, ranging from 11% for wikis, blogs and forums for 8%, Social Networking Services, podcasting and video sharing, 5% for semantic search and Ratings & folksonomy.

The key business processes using Enterprise 2.0 tools in a systematic way are Management of Information Systems with 47% usage, Marketing (42%), Management of Human Resources and Internal Communication (41%), Management of Sales and Sales Network (39%), where Enterprise 2.0 is particularly appropriate to support relationships

with players, Operations (34%), Customer Service (27%) and Research and Development (26%).

The benefits reported on the processes following the introduction of Enterprise 2.0 tools are support to collaboration and knowledge management found at 80% and 68% of company ratings respectively, efficiency (60%) while less significant are the benefits of training and personal growth (57%), the level of satisfaction with internal and external (52%), flexibility to change (52%) and innovation of products and services (46%).

Study on IBM's implemetation and use of Enterprise 2.0 solutions indicate its high level of maturity in Enterprise Content Management and Communication tools. AT&T indicates its emerging need of Unified Communication and Collaboration tools and the study shows the benefits of its application. Finally, Boston College impliments and encourages Social Network & Community tools with results benefiting students and the organization.

This study points to the importance of Enterprise 2.0 tools and that companies previously uninitiative are investing heavily on Enterprise 2.0 tools and services. Enterprise Content Management tools are leading in usage but Unified Communication and Collaboration tools are set to lead in the near future. Most enterprises still view the Social Network & Community aspect of Enterprise 2.0 as a distraction that lowers employee productivity and harmful to organizational values without proper control.

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10. Appendix: Questionnaire sent to company CIOs and managers

Please indicate the level of development of Enterprise 2.0 tools listed in the table within the company.
In some business areas it is confined to systematic use and in some areas systematic and pervasive business use in various business areas.

Enterprise 2.0 applications and tools	**Absent**	**Evaluation or test**	**Use of non-systematic tools in some business areas**	**Systematic tools used but confined to certain areas of business**	**Systematic and popular tools in business areas**
Podcasting is a system that allows you to automatically download files (usually audio or video) podcast called, using a program ("client") called an aggregator or feed reader. **Video sharing**, through the network, via file sharing programs or Internet sites specially created, such as Youtube, Google Video or					

Yahoo Video, etc.					
Unified communications (chat, instant messaging, presence, call, web / video conference)					
Live collaboration (real-time sharing and coediting of slides, documents, collaboration tools, synchronous data, etc).					
Blog and Forum					
Social Networking Services include any tools that facilitate "social networking" on-line or that set of activities in order to maintain contacts within a network of people share specific interests and or activities (management of advanced personal profiles with photos, personal interests, skills, projects they are working on, managing groups of contacts, people					

search, etc).					
Wiki					
Semantic search as opposed to interpret the meaning of a word, leads to an analysis of the context and according to the semantic definition of the word. Objects (typically multimedia) are associated with information and data (metadata) that specify the semantic context in a format suitable to the question, interpretation and for automatic development.					
Rating & Folksomy (social voting The voting is a method of classification of content and information on the basis of an evaluation by users, tagging, social bookmarking. Social bookmarking is a service for sharing bookmarks (bookmarks) created					

by the users to categorize web pages and internet sites, through the use of labels (tags). in the Web is an example delicious.com)					
Microblogging is a form of continuous publication of small online content in the form of text messages (usually up to 140 characters), images, video, MP3 audio, but also bookmarks, quotes, notes. These contents are published in a social network, visible to everyone or only to people in your community. The most popular service is Twitter.					
Project-centric collaboration (asynchronous collaboration on documents, groupware. The term groupware or collaborative software refers to technologies designed to make it					

easier and more effective cooperative work by groups of people. #,, Project management tools ...)					

Comments:

Relativamente agli strumenti Enterprise 2.0 elencati in tabella, potrebbe indicarne: il livello di sviluppo all'interno della sua azienda

Applicazioni/strumenti Enterprise 2.0	**Assente**	**In fase di valutazione o sperimentazione**	**Utilizzo non sistematico in alcuni ambiti aziendali**	**Utilizzo sistematico ma confinato in alcuni ambiti aziendali**	**Utilizzo sistematico e pervasivo in diversi ambiti aziendali**
Podcasting ll podcasting è un sistema che permette di scaricare in modo automatico documenti (generalmente audio o video) chiamati podcast, utilizzando un programma ("client") chiamato aggregatore o feed reader. e **videosharing** il video sharing è la condivisione di video attraverso la rete, per					

mezzo di programmi di file sharing o siti internet appositamente creati, come Youtube, Yahoo Video o Google video, MySpace, iFilm, DreamHost, DailyMotion, Porkolt. Gli ambiti di utilizzo aziendali riguardano per esempio video di formazione o interviste ai dipendenti e top management che vengono condivisi internamente.					
Unified communication (chat, instant messaging, presence, call, web/video conference)					
Live collaboration (condivisione e coediting in real time di slide e documenti, strumenti di collaborazione sincrona …)					
Blog e Forum					
Social Networking Services Con Social					

Networking Services si intendono tutti quegli strumenti che consentono di fare "social networking" on-line, ovvero quell'insieme di attività che permettono di mantenere i contatti all'interno di una rete di persone condividono specifici interessi e/o attività (gestione di profili personali evoluti con foto, interessi personali, competenze, progetti su cui sta lavorando, gestione di gruppi di contatti, ricerca persone, …)					
Wiki					
Semantic Search La ricerca semantica (semantic search), a differenza di quella puramente testuale, per interpretare il significato di una parola conduce un'analisi del contesto e in base alla					

definizione semantica della parola stessa. Agli oggetti (tipicamente multimediali) sono associate informazioni e dati (metadati) che ne specificano il contesto semantico in un formato adatto all'interrogazione, all'interpretazione e, più in generale, all'elaborazione automatica.#					
Rating & Folksomy (social voting Il social voting è un metodo di classificazione dei contenuti e delle informazioni in base ad una valutazione da parte degli utenti, tagging, social bookmarking Il social Bookmarking è un servizio di condivisione di segnalibri (bookmark) creati dagli stessi utenti per categorizzare pagine					

web e siti internet, tramite l'utilizzo di etichette (tag). In ambito web un esempio è delicious.com#)					
Microblogging l microblogging è una forma di pubblicazione costante di piccoli contenuti in rete, sotto forma di messaggi di testo (normalmente fino a 140 caratteri), immagini, video, audio MP3 ma anche segnalibri, citazioni, appunti. Questi contenuti vengono pubblicati in un servizio di Social Network, visibili a tutti o soltanto alle persone della propria community. Il servizio più popolare è Twitter.					
Project-centric collaboration (collaborazione asincrona su documenti, groupware. Il termine groupware o software					

collaborativo si riferisce alle tecnologie pensate per facilitare e rendere più efficace il lavoro cooperativo da parte di gruppi di persone, project management tools…)					

Commento: