UNIVERSITY OF LJUBLJANA

FACULTY OF ECONOMICS

MASTER THESIS

**SLOVENIAN CORPORATE SECTOR AND THE CHALLENGES OF
THE SINGLE EUROPEAN ELECTRONIC MARKET:
A CASE STUDY OF AN E-LEARNING PROMOTION CENTER**

Ljubljana, December 2009                                  Urša Dobnikar

IZJAVA

Študentka Urša Dobnikar izjavljam, da sem avtorica tega magistrskega dela, ki sem ga napisala v soglasju s svetovalcem dr. Jurijem Jakličem, in da v skladu s 1. odstavkom 21. člena Zakona o avtorskih in sorodnih pravicah dovolim njegovo objavo na fakultetnih spletnih straneh.

V Ljubljani, 24.12.2009                                                                 Urša Dobnikar

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# INTRODUCTION

**"It's not the strongest nor most intelligent of the species that survive; it is the one most adaptable to change"** – Charles Darwin (Megginson, 1963, p.4)

One of history's great lessons is that whoever controls the principal assets of the new age wins. Thus the landowners gained control in the Agricultural Age; those who owned the machines became the big winners of the Industrial Age; and software barons have become the frontrunners of the Information Age (Levy, 2001, p. 1). The possibilities that the information technology can provide are vast, here we will concentrate only on one of them which we find important for the future survival of European small and medium enterprises.

Traditionally companies kept a broad range of competencies thus creating a value chain or at least parts of it on its own, in order to reduce the dependence on others. Unfortunately in a world of fast-moving global markets and fierce competition this is no longer possible, since the windows of opportunity are often frustratingly brief and only few companies boast the in-house expertise and resources to quickly launch diverse and complex products in different markets (Byrne, 1993, p.1).

In order to meet the fast changing market conditions, the increased requirement to offer specialized products that will satisfy individual customer needs and to meet the increased international competition, companies improve their flexibility, employ their core competencies[1] and concentrate on what they can do best (Franke, 2001, p.54).

Since a core competence on its own does not create any value and does not satisfy the identified customer need but rather a broad range of competencies, companies have to search for value chains where they can integrate their core competencies. In other words, companies do what they do best and obtain other capabilities they need by outsourcing or forming an alliance with an appropriate business partner.

The full business capability for producing a good or service is therefore exercised by a group of collaborating firms. By bringing something unique to the partnership, organizations are able to achieve a higher performance and an optimum value creation process.

When this becomes the mode of operating for a significant proportion of the economy, organizational boundaries begin to blur.

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[1] Prahalad and Hamels define core competencies 'as an area of specialized expertise that is the result of harmonizing the complex stream of technology and work activity'. Therefore, core competence is how an organization is able to perform with excellence compared to its competitors (Franke, 2001, p.56).

The vision of such distributed business enterprises became a pragmatic reality with the mainstream adoption of the Internet and by the evolution of technology architectures based on web services and grid computing. In this process of digital conversion, information and communication technology (ICT) is identified not only as a driving force towards virtual organizations, but also as an enabler and facilitator of this new organizational paradigm (Malhotra, 2005, p. 4).

In the context of virtual organizations, companies are extending internal systems to external users providing connectivity to customers, partners, suppliers and mobile employees.

However, as the boundary between internal and external information system continues to blur, the traditional security perimeter will disappear i.e. although organizations will have to protect their information systems, at the same time, they will have to open business critical data, making them accessible independent of user location and therefore susceptible to security infringements. Companies are thus challenged with two seemingly opposing trends; the need to increase access to information in a manner that will generate and support new business opportunities and the need to maintain security (ATACO sistemi, 2004, p. 10).

Creating a stimulating environment that would support the above scenario and in which all European companies could prosper is also the central element of the European Union's (EU's) initiative "Information Society for All", specifically of the implementation of a Single European Electronic Market (hereinafter referred to as SEEM), aiming to develop an electronic space in which different actors in the economy can collaborate without technological constraint. (Matthiesen & Shamsi, 2003, p. 2)

Developing basic grounds for a fully integrated e-Business and collaborative work, spanning from business-to-business to customer-to-customer and government-to-government poses new challenges that EU has to face and overcome in order to compete with other would economies.

The overall goal of realizing a SEEM is not easy attainable because of high complexity and fragmentation of the areas of interest. But still the pace for SEEM's implementation is defined by the Lisbon Agenda and under patronage and sponsorship of European Commission (above all 6th and 7th Framework Programme), several R&D project are currently running or soon to be started in order to foster the SEEM idea.

The purpose of this thesis is to elaborate on SEEM's vision and explain the impact on daily business through a real-life scenario, which would serve as the basis for further discussion on challenges posed by its implementation as well as on key actors that should be interested in participating in SEEM in order for its successful take-off.

According to Eurostat, Europe's small and medium sized businesses (hereinafter referred to as SMEs) constitute 99 % of all enterprises and two third of employment (excluding financial sector), and also because large enterprises have their own established business practices not to mention that they are usually more conservative and less flexible in implementing new ways and new ideas, it is reasonable to expect that the SEEM implementation focus will basically target on SMEs.

Being EUs member state, the implementation of SEEM will also affect Slovenian corporate sector. It is the purpose of this thesis to examine current state of Slovenian corporate sector and discuss possible influences of SEEM as well as what can be done in order for Slovenian companies effectively adapt to the arising changes.

Additionally, SMEs, especially small companies are often members of entrepreneurial associations or chambers of commerce, local development agencies, technology transfer centers or other organizations with similar roles that help them by providing a variety of services. It is expected that it is prerequisite for these mediators to take interest in SEEM as their support is fundamental for the introduction of small enterprises into SEEM. They are skilled and can correctly interpret companies' needs, deploy new solutions and assist them in adapting to the arising changes. Moreover, mediators can ensure rapid introduction of SEEM benefits to a critical mass of companies, putting them into position of main actors in making SEEM system work on a large scale.

With this in mind, it is the purpose of this master thesis to examine whether a mediator that would promote all necessary knowledge, services and assistance is feasible i.e. would be successful in bringing SMEs well into the SEEM main stream.

The objectives of this thesis are therefore three-fold:

- Firstly, is to discuss the SEEM's vision and the impact of its implementation on daily business. Elaborate on EUs efforts and to-date activities towards SEEM take-off.

- Secondly, as a response to the emerging changes in the global economy, new organizational and technological paradigms, such as virtual organizations, knowledge management, grid technology, web services and federated identity management, have emerged and gained in their importance for the corporate sector to adapt to the new, turbulent environment.

It is the objective of this thesis to elaborate on these new paradigms as the underlying reference framework for SEEM.

- Thirdly, it is the purpose of this thesis to define e-business promotion center and analyze whether such e-business promotion center, focusing on Slovenian corporate sector with the main purpose to aid their adoption to the arising changes and building their competitiveness in the "new market" would represent a welcome contribution to the Slovenian business environment.

For the purpose of this thesis, its structure will reflect discussions addressing the following main topics, e.g.

- The New Economy, discussing changes in a business environment defined by global competition, faster flow of information and communication, increasing business complexity, far-reaching technological advances and pervasive globalization, demanding a different type of firms to be dominant.

- The idea of Single European Electronic Market focusing on how changes in global economic and political environment have forced the European Union to adopt new strategies in order to embrace the emerging changes, resulting in an attempt to implement a Pan-European Electronic Market.

- Definition of Single European Electronic Market discussing SEEM's vision and explaining the impact on daily business through a real-life scenario, which would serve as the basis for further discussion on challenges posed by its implementation as well as on key actors that should be interested in participating in SEEM in order for its successful take-off.

- Reference framework for SEEM, discussing organizational and technological restructuring of the corporate sector in order to adapt to the emerging changes in today's turbulent environment, addressing new organizational and technological paradigms, such as virtual organizations, knowledge management, grid technology, web services and federated identity management.

- The inclusion of Slovenian corporate sector into SEEM, analyzing sector specifics and the needs that should be satisfied in order for Slovenian companies to successfully integrate into SEEM.

- Definition of an e-business promotion center, its activities and structure derived on the basis of a thorough analysis of the SEEMs challenges as well as on Slovenian corporate sectors specifics and needs.

**Methodology**

In writing my thesis I shall use:

- literature and other information resources on European Union's initiatives, directives, regulation and action plans;

- Surveys and benchmarking reports on the accomplishments to-date in the implementation of SEEM;

- Studies, reports and white papers on Single European Electronic Market, Virtual Organizations, Knowledge Management, GRID computing and Federated Identity Management as well as

- Other references in order to meet the objectives of this thesis.


## 1.    NEW ECONOMY

To grasp and understand the meaning of the new economy and new business environment I specifically liked the example Mayer gave in his book Relentless Growth (Mayer, 1998). We all know those birthday cards that play »Happy Birthday« when you open it. This seemingly simple product signals what growing through innovation is all about. For about five EUR, you get an absolute marvel of innovation.

The hardware alone is astounding. The card uses a long-lasting miniature battery that relies on complex chemical reactions to provide power and ensure a long shelf life. A micro switch triggers a computer that's half the size of a postage stamp, programmed with music, and attached to a miniature speaker. All this is secured by a strong, lightweight adhesive to recycled paper stock that might have started its life as the front page of a metropolitan newspaper. The complete set of knowledge required to create this product did not exist ten years ago, yet this inexpensive product exemplifies how sophisticated even the simplest products become.

But there is more. If one wants the card to be delivered, one can get a personal delivery service. In addition, if you want to check where the card is any time after it's picked up, you can call a toll-free number or even access the shipper's computer directly through the Internet. The service is as amazing as the product.

In this new world, the boundaries between products and services fade rapidly. Next year, the product will undoubtedly cost less, sing longer and louder, and perhaps be able to record your own voice. This is the new world of competition- a fierce contest set in a truly global context, more capable players, higher stakes, and vastly different rules of engagement from those what we have enjoyed to date.

## 1.1 New business environment

Why is today's business environment so different to the one say 30, 40, 50 years back? Earlier the world was divided into isolated zones. If you were given the task of leading a business, you were expected to keep your views confined to your particular zone only. But now, the world is one entity, despite the political divides. Communication technology has advanced so much that two persons in two different hemispheres can get in touch any moment and instantly.

It used to be that companies ventured offshore in search of raw materials or cheap labor. Raw materials (and the energy required to convert them) are less critical due to tremendous progress in process technology. Because of that the knowledge component of products and services- and the brains required to produce and use them- has increased dramatically in importance. Companies are applying the same fervor to finding *cheap knowledge* that they previously used to search for cheap labor.

In the industrial age, competitive strength was determined by who had access to raw materials, cheap labor, and the capital for conversion. Large machines characterized the thinking, as well as the work itself. Employees were treated as parts (oiled by wages) that could be replaced if they broke. Work processes such as the assembly line were designed to constrain rather than exercise human capabilities.

Knowledge work existed back then, too; it was called the boss. A machine needs direction, and that was the boss's job. As products and services became more complex, though, it became impossible for the boss to know every job detail or piece of equipment. Also while managing their business, companies have to constantly go through many formalities that have to correlate with their basic business activities. They have to register with many associations, maintain a list of different authorities so that they can seek advice and help, whenever the need arises, be conversant with the basics of tax matters and relevant rules and regulations.

This chaotic transition period to a new age - defined by global competition, rampant change, faster flow of information and communication, increasing business complexity, and pervasive globalization, also demanded a different type of firms to be dominant and

marked entirely new era of business. This new environment is also characterized by "more far-reaching technological advances and a consumer who has adjusted to this quicker pace and whose fickle preferences are revised with the speed of a television commercial" (Kotelnikov, 2009).

Table 1*: Forces driving the New Economy*

| Three Forces Driving the New Economy |
| --- |
| 1. **Knowledge** – intellectual capital as a strategic factor; a set of understandings used by people to make decisions or take actions that are important to the company |
| 2. **Change** – continuous, rapid and complex; generates uncertainty and reduces predictability |
| 3. **Globalization** – in R&D, technology, production, trade, finance, communication and information, which has resulted in opening of economies, global hyper competition and interdependency of business |

*Source: V. Kotelnikov, New Economy, Key Features of the New Rapidly Globalizing and Changing Knowledge Economy, 2009.*

In the **information economy** (1970 to 1995), the best strategy was to overinvest in crunching power. Competitive advantage accrued to those who invested more than their competitors to process more data and information more quickly. On the other hand in the **knowledge economy** (1995 to date), the best strategy is to invest in connecting power. Competitive advantage accrues to those who invest more than their competitors to connect to more people and share knowledge faster and farther.

The difference between the new and old economy is described below.

Table 2*: The difference between the old and new economy*

| ISSUE | OLD INDUSTRIAL ECONOMY | NEW KNOWLEDGE ECONOMY |
| --- | --- | --- |
| | | **Markets** |
| **Economic Development** | Steady and linear, quite predictable | **Volatile** - extremely fast change, with explosive upsurges and sudden downturns, and **chaotic** - the direction of the economy's changes is not perfectly clear[4] |
| **Market changes** | Slow and linear | Fast and unpredictable |

"Table continues"

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| ISSUE | OLD INDUSTRIAL ECONOMY | NEW KNOWLEDGE ECONOMY |
|---|---|---|
| **Markets** | | |
| **Economy** | Supplier-driven | Customer-driven |
| **Lifecycle of Products and Technologies** | Long | Short |
| **Key Economy Drivers** | Large industrial firms | Innovative entrepreneurial knowledge-based firms |
| **Scope of Competition** | Local | Global hypercompetition |
| **Competition: Name of the Game** | Size: The big eats the small | Speed: The fast eats the slow |
| **Marketing: Name of the Game** | Mass marketing | Differentiation |
| **Enterprise** | | |
| **Pace of business** | Slow | Appreciably faster with ever-rising customer expectations |
| **Emphasis on Business Development Approach** | Stability<br>Strategy pyramid: vision, mission, goals, action plans | Change management<br>Opportunity-driven, dynamic strategy |
| **Key Drivers to Growth** | Capital | People, knowledge, capabilities |
| **Key Sources of Innovation** | Research | Research, systemic innovation, knowledge management, integration, new business creation, venture strategies, new business models |
| **Key Technology Drivers** | Automation and mechanization | Information and communication technology, e-business, computerized design and manufacturing |
| **Main Sources of Competitive Advantage** | Access to raw materials, cheap labor, and capital for conversion; cost reduction through economies of scale | Distinctive capabilities: institutional excellence, moving with speed; human resources, customer partnership; differentiation strategies; competitive strategies |

"Table continued"

| ISSUE | OLD INDUSTRIAL ECONOMY | NEW KNOWLEDGE ECONOMY |
|---|---|---|
| | Enterprise | |
| **Scarce Resource** | Financial capital | Human capital |
| **Decision Making** | Vertical | Distributed |
| **Innovation Processes** | Periodic, linear | Continuous, systemic innovation |
| **Production Focus** | Internal processes | Enterprise-wide business process management and entire value chain |
| **Strategic Alliances with Other Firms** | Rare, "go alone" mindset | Teaming up to add complementary resources |
| **Organizational Structures** | Hierarchical, bureaucratic, functional, pyramid structure | Interconnected subsystems, flexible, devolved, employee empowerment, flat or networked structure |
| **Business Model** | Traditional: command-and-control | New: refocused on people, knowledge, and coherence |

*Source: V. Kotelnikov, New Economy, Key Features of the New Rapidly Globalizing and Changing Knowledge Economy, 2009.*

## 2. SINGLE EUROPEAN ELECTRONIC MARKET

## 2.1 Towards the Information Society

### 2.1.1 History Overview

In 1993 the Commission published a white paper on "Growth, competitiveness and employment: the challenges and courses for entering into the XXIst century".

This paper emphasized the significance of the newly opened opportunities that the utilization of information and communication technology offers for the future of the European Union, its economic growth and competitiveness, specifically a Pan-European system of information highways for the Community to allow the best means to create, manage, access and transfer information, involving the creation of infrastructures (cable and land or satellite-based radio communication), the development of services (electronic images, databases, electronic mail) and promoting applications (teleworking, teletraining, telemedecine and linked administrations) (European Communities, 1993, p.32).

Based on this proposal Bangemann's Report was presented at the European Council in Corfu in June 1994 suggesting concrete measures for creation of such Pan-European information space, highlighting the need to speed up the process of liberalization of telecommunication markets and to create a coherent common statutory framework. (Bangemann et al, 1994)

Baneman's report served as a starting point for the European Commission to develop a general framework within which actions in different fields were structured and mutually consolidated in order to achieve their common goal – a Pan-European information space. The so called "Europe's way to the information society. An Action Plan", was presented on 19th of July 1994 and was based on four main lines of action:

- Adaptation of the statutory and legal framework;

- Encouragement of initiatives in the field of Trans-European networks, services, applications and content;

- Social and cultural aspects: Emphasis was placed on exploiting the potential offered by the information society to promote Europe's cultural and linguistic diversity;

- Promotion of the information society: promotional actions were focused on explaining the stakes of the information society, its opportunities and risks. (European Commission, 1994, p. 4-5).

This action plan presents a first important step in reaching a very ambitious goal: to become, within a decade, "the most competitive and dynamic knowledge-based economy in the world, capable of sustainable growth with more and better jobs and greater social cohesion", also known as the Lisbon strategy (The European Council on Employment, Economic Reform and Social Cohesion – "Towards Europe of Innovation and Knowledge" in Lisbon in March 2000) (European Commission, 2001, p.49).


## 2.1.2 Meeting Lisbon's objectives

The central element to transform European Union's economy into a dynamic knowledge based economy were the so-called eEurope Action Plan.

There have been two action plans:

- the Action Plan 2002 endorsed by the EU leaders at Feira summit in June 2000 and

- The Action Plan 2005 approved by EU leaders in Seville in June 2002 (in force till the end of 2005).

Both plans pursued the aim of creating a competitive economy, however, since by the year 2002 new challenges have emerged, the second Action Plan updated EU's priorities.

While the scope of the first Action Plan was very wide and put the Internet at the top of the European political agenda, targeting on cheaper, faster and secure Internet, investing in people and skills and stimulating the use of the Internet, the second narrowed the focus and concentrated on providing a favorable environment for private investment and for the creation of new jobs, boosting productivity, modernizing public services and giving everyone the opportunity to participate in the global information society.

eEurope 2005 aimed to stimulate development of secure services, applications and content based on a widely available broadband infrastructure, and gave top priority to e-government, e-learning and e-health and the creation of a dynamic environment for the development of e-business (European Commission, 2002, p. 3-14).

The overall success in meeting the Lisbon's objectives has been assessed as fairly disappointing, even though the Commission continuously reviewed the progress made.

Although both action plans have managed to put in place many of the fundamental conditions for the "European renaissance", specifically the growth of internet connectivity, lower prices of broadband connections, higher levels of broadband penetration, developed e-services and e-Government strategies (European Commission, 2005), more efforts were needed in order to realize the Lisbon targets of competitiveness.

As a response to previous setback, in June 2005 the Commission set up a new start for the Lisbon Strategy and proposed a new strategic framework for the Information Society, entitled "i2010 - A European Information Society for growth and employment" in which it identified new priorities which would help the Union and its Member States drive up productivity and deliver stronger and lasting growth. The renewed Lisbon strategy covers actions in three main areas:

- creating an open and competitive single market for information society;

- fostering knowledge and innovation for growth through investment in research and the industry's development and deployment in ICT;

- promoting a borderless European information space with the aim of establishing an internal market for electronic communications and digital services (Commission of the European Communities, 2005, p. 4) by addressing the challenges posed by this digital convergence in the following key issues:

  • **speed**: faster broadband in order to deliver rich content;

  • **rich content and services**: encouraging new services and on-line content;

- **interoperability**: enhancing platforms that are interoperable and services that are portable from one platform to another;
- **Security, trust and dependability**: improving internet safety from fraudsters, harmful content and technology failures to increase trust among economic actors. (Commission of the European Communities, 2005)

## 2.2   The idea and definition of SEEM

The European Union has been built to achieve political goals, but its dynamism and success sprung from its economic efforts. By establishing a common market with a common currency and progressively approximating economic policies of member states, EU managed to overcome the obstacles to trade and barriers that entangled economic growth, consolidated continuous and balanced expansion, increased its stability, raised the standard of living and accelerated relations between the states belonging to it.

However, as we moved well into the 21st century, technological revolution along with globalization began transforming economies and ways of life around the world. Like all world economies, EU economy as well needed thorough modernization in order to compete with major world players. The challenge for Europe was to embrace the digital age and become a truly knowledge-based digital economy.

The Single European Electronic Market is perfectly aligned with i2010 strategy and contributes to the Single European Information Space vision.

Bonfatti and Borras (2006) describe SEEM as an electronic market:

- with an appropriate legal aspects and regulations across the whole of the EU, with no national exclusions or special conditions prevailing;
- which is affordable to all to participate in;
- An electronic environment in which numerous continuously changing networks of companies can create added value products and services and is supported by extremely high quality common tools and services for effective collaborative business,
- A place that will exist for all of European companies and individuals to participate, irrespectively of size or locality and where they can work and collaborate without relevant constraints.

One can look at it as an utopia since to achieve it, it requires (Jardim – Goncalves & Bonfatti, 2008, p. 1):

- Creating a self-organizing network of eRegistries/Repositories (RRs) where companies can classify their profiles, offers, qualifications and product specifics in order to be become visible to potential customers and partners;

- Providing advanced semantic-rich searchers in order to find and discover services and candidate partners in RRs, based on the information they individually decide to make accessible to the network users;

- Establishing conditions for secure dynamic relations, negotiations and information exchange based on common collaboration protocols and reciprocal trust in multi-linguistic and multi-cultural environment;

- Offering adequate and user friendly web applications to manage general-purpose and sector-specific processes and needs;

- Ensuring interoperable legacy systems.

SEEM could contribute in different ways to the realization of i2010 initiative:

- Help regulating the collaboration conditions between companies across EU member states in order to assure the necessary trust between economic actors that intend to establish business collaboration;

- Facilitate the access and understanding the rules (e.g. contracts, collaboration protocols, local or sectoral legal constraints) in business collaborations;

- Solve the multi-linguistic problem in practice by enabling collaboration entities to establish common lexicons and ontologies;

- Make huge amounts of knowledge already available at company web sites and databases become accessible to vast population of interested companies and professionals;

- Multiply the offer of interoperable digital services accessible anytime, anywhere and without technological, cultural or linguistic constraints;

- Provide a simplified access to collaboration by easy and cheap tolls in order to secure the inclusion of all (Jardim – Goncalves & Bonfatti, 2008, p. 3).

In synthesis, the impact of SEEM on European competitiveness can be summarized in the following benefits:

- **Improved processes**
  SEEM introduces new organizational and technological models, advances in visibility to customers, negotiations of service conditions, bidding and contractual agreement, document exchange, order execution monitoring, etc. Expected benefits of SEEM are in the increased companies' adoption to promote and take part in collaborative work as well as adopting new regulations and procedures.

- **Increased awareness**
  Firstly, companies will be forced to formalize processes, adopt regulations and keep track of events affecting the value chain. Also the analysis of eRegistries/Repositories can make companies better understand trends and changes based on which they can decide how to re-orient their offer.

- **Normalized approach**
  The constitution of companies' eRegistry/Repository hosted data will push them to adopt regulation and standards when entering their profiles, overcoming sectoral, geographic and technological obstacles that could leave most of the European companies out of the electronic market. (Jardim − Goncalves & Bonfatti, 2008, p. 3-4)


## 2.3  SEEM real-life scenario

SEEM's potential impact on daily business and the challenges it poses is better explained through real-life scenario translating the general long-term vision. I have taken the idea of a SEEM real-life scenario from the example Bonfatti and Monari gave in their article Pushing small companies toward the SEEM (Bonfatti & Monari, 2009) and adapted it according to my personal vision of daily operations in SEEM.

Let us assume company A, who has just registered in SEEM. After registration, the company has received an URL, together with a user name and password to access the SEEM e-Registry, which recognizes the company as a newcomer and guides them in the representation of their company in terms of profile, offer and other general features. In order to give a more complete view of their products and services, the company adds further information, such as technical documents, contract templates, etc.

Few hours later, company B, that company A did not know before, located company A in the SEEM e-Registry and launched a request for quotation for 1.000 pieces of their product. Their request for quotation was received by company A's system, which started the pre-defined automatic procedure:

- First it checked company's B financial state at financial service provider, which reported that the new potential customer is OK.

- Then the system checked the request for quotation. It included 1.000 pieces of a particular product with some customization included in company's A technical documents and expected delivery time 10 days.

- The system looks in technical documents for the procedure needed in order to prepare the quotation.

  Let's assume we need:
  - units of material 1
  - 2.000 units of material 2
  - 30 hours of engineering service 1 and
  - 15 hours of engineering service 2.

- The system then checks in company's ERP, if necessary materials are in stock and if engineers, caring services 1 and 2 are available.

- Let's assume that the ERP reports lack of material 1.

- The system proceeds in searching within SEEM e-Repository for appropriate providers and subcontractors and asks each of them for a quotation by sending them the specification necessary (material specification and quantity obtained from technical documents, expected delivery time based on the deadline requested by company B, time necessary for the production of 1.000 units of product 1, etc.)

- When quotations are received, the system ranks potential providers according to predefined parameters (financial, quality of services, proposed delivery times, etc.). Company C is selected.

- The system sends a contract (based on a template) and company C signs it electronically. The validity of this contract is electronically linked to the approval of company's A offer to company B.

- At the same time the system calculates prices and delivery times in a dialogue with the ERP and generates a "tentative" internal manufacturing order, booking necessary production resources keeping in mind the company C delivery times and prices.

- The quotation is delivered to company B.

- Company B accepts the offer and sends the contract (template that is used also by company A)

- Company A signs the contract electronically which generates an immediate validity of the contract between company A and company C (as it is validated within the acceptable timeout period agreed in the process by companies A system).

## 2.4  Challenges of SEEM

Based on the above scenario, the following challenges posed by the implementation of a Single European Electronic Market can be clearly identified:

- REGULATION;
  Regulatory issues are considered the most important barrier for the SEEM to be implemented, which suggests the importance of the participation of public authorities in the revision, improvement and adaptation of regulations. It is of high importance to have harmonized laws as the basis for market rules, business competitiveness and consumer protection as well as regulation on digital right management, intellectual property rights, electronic IDs and e-signatures.
  Also, to achieve SEEM, it is prerequisite to have contracts created and negotiated automatically based on predefined guidelines and common business processes across member states.

- STANDARDIZATION; Standardized negotiation and transaction procedures are highly important to facilitate the collaboration across different economic actors.

- CIRCLE OF TRUST; Keeping the above real-life scenario in mind, the following services across SEEM are vital in order to assure that companies within SEEM can be trusted on common grounds:

  - Trust-enhancement services, providing up-to-date trust-related information about organizations and individuals willing to make business in SEEM.

  - Independent certification agencies issuing certificates in conformance to SEEM related policies and regulations, ensuring reliability and interoperability

  - Trustable translation services, allowing participants in SEEM to collaborate across language borders.

- STANDARDIZATION WITHIN COMPANIES AND NEW ORGANIZATIONAL PARADIGMS; In order to participate, companies will be forced to standardize their business procedures and undertake new organizational behaviors.

- TECHNOLOGICAL; Advanced collaboration platforms are important in order to facilitate the dynamic collaboration within SEEM. Consequently this creates the need for creation of fully interoperable federated registries, supported by common ontologies, referenced framework and a set of IT standards and protocols for transactions and negotiations to provide access to services offered by organizations and individuals throughout Europe.

- ASSURING SOCIETAL AND LINGUISTIC COHESION;
  English as the main language is a high possibility. However, the adoption of English on all business transactions is seen as a major societal and cultural barrier and would have impacted mainly SMEs and individual EU citizens. As discussed previously, the multi-linguistic problem could be solved by enabling collaboration entities to establish common lexicons and ontologies. (The SEEMseed Consortium, 2005, p. 23)

Although we have set the challenges, overcoming them is something that takes time. Making business connections across cultural boundaries is a difficult task. In Europe there is a mixture of cultures, differing in demographics, languages, nonverbal communications and values. If we regard the culture as a complex that includes knowledge, belief, art, law, morals, customs, and any other capabilities and habits acquired by humans as members of society (Hawkins, Best & Coney, 2001, p.42), we can deduct that culture is a comprehensive concept – meaning it influences how we make decisions and how we perceive the world around us, it is acquired – it does not include inherited but learned responses and boundaries within most individuals think and act, and finally it is something that comes to us spontaneously. In order that SEEM becomes feasible these cultural boundaries should not only be over ridden but a new cultural behavior should emerge between the companies making business in this manner.

## 2.5   SEEM implementation focus

The SEEM implementation focus is basically targeted to SMEs. According to Eurostat, there were almost 20 million enterprises active within the EU-27 in 2005 in the non-financial business economy. The majority of these (99.8 %) were SMEs, employing 67.10 % of the non-financial business economy workforce and generating 57.6 % of non-financial business economy's value added. (Eurostat, 2008, p. 1)

Table 3: *Key indicators for enterprises in the non-financial business economy, EU-27, 2005*

| | Total | SMEs | Micro | Small | Medium | Large |
|---|---|---|---|---|---|---|
| **Number of enterprises (millions)** | 19.65 | 19.60 | 18.04 | 1.35 | 0.21 | 0.04 |
| **Share in total (%)** | 100.0 | 99.8 | 91.8 | 6.9 | 1.1 | 0.2 |
| **Persons employed (millions)** | 126.7 | 85.0 | 37.5 | 26.1 | 21.3 | 41.7 |
| **Share in total (%)** | 100.0 | 67.1 | 29.6 | 20.6 | 16.8 | 32.9 |
| **Value added (EUR billion)** | 5.360 | 3.090 | 1.120 | 1.011 | 954 | 2.270 |
| **Share in total (%)** | 100.0 | 57.6 | 20.9 | 18.9 | 17.8 | 42.4 |
| **Apparent labor productivity (EUR 1 000 per person employed)** | 42.3 | 36.4 | 29.9 | 38.7 | 44.8 | 54.4 |
| **Relative to total (%)** | 100.0 | 86.1 | 70.7 | 91.5 | 105.9 | 128.6 |

\* SMEs (1-249 persons employed); micro enterprises (1-9 persons employed); small enterprises (10-49 persons employed); medium-sized enterprises (50-249 persons employed); large enterprises (250 or more persons employed).

*Source: M.Schmiemann, Industry, trade and services. Eurostat, 31/2008.*

As shown in the table above, micro enterprises constitute for 91.8% of all EU SMEs, including a very large number of services and retail activities for the local market (e.g. hair dressers, car repairers, retailers and the like) that are at least in short term hardly interested in the SEEM perspective.

However, micro enterprises also include a variety of businesses in the industry sectors, typically supplying various niche services such as design, consulting, logistics and the like. Their interest in the SEEM is paramount for many reasons (Jardim – Goncalves & Bonfatti, 2008, p. 4):

- They represent the most numerous category of companies to search for as suppliers or partners,

- The quality of their products and services is normally high, with a relative degree of invention, thus assuring high value added to potential customers.

- They are very flexible in applying their skills and experience in the development of ever new products and services requested by the evolving market.

Although less numerous, small enterprises represent the backbone of the European economy in several sectors and regions, supplying huge variety of high quality, specialized products and services to their customers.

It is important for them to undertake SEEM for the same reasons as micro businesses, with the addition to (Jardim – Goncalves & Bonfatti, 2008, p. 4):

- They are used to participate in different supply chains. Hence they are experienced in collaborating in continuously changing environments, sharing responsibilities and revenues.

- They are often searching for new, qualified and more convenient partners in order to remain competitive which puts them in the best position to take advantage of dynamic relations encouraged by SEEM.

The importance of medium-sized enterprises comes from the fact that in those European regions, where large companies are few or absent at all, they represent the corner stone of the industry for the surrounding economy.

Their interest in SEEM is important mainly for the role they can play with respect to smaller companies (Jardim – Goncalves & Bonfatti, 2008, p. 5):

- In traditional markets they are often leaders with several suppliers and services including all phases of the value chain.

- To remain competitive, they are often outsourcing.

- They move towards electronic markets keeping in mind the cost/benefit ratio of new channels. Their decisions have a strong impact on smaller companies of their supply chains.

SMEs, especially small companies are often members of entrepreneurial associations or chambers of commerce, local development agencies, technology transfer centers or other organizations with similar roles that help them by providing a variety of services.
It is important for these mediators to take interest in SEEM as they are suitable candidates to (Jardim – Goncalves & Bonfatti, 2008, p. 5):

- Start up and manage SEEM eRegistries/Repositories and provide registered companies with adequate SEEM-based services.

- Increase company awareness about benefits that can result from participating in SEEM as well as undertaking proactive initiatives to help the associated  companies taking real advantage of their participation in SEEM.

- Enrich companies' profiles by identifying services offered through eRegistries and selecting collaboration protocols and contractual templates that better correspond to their nature and present status.

- Measure market changes and trends and inform companies on how they can improve their position.

- Make the transition, specifically the adoption of SEEM-supporting technology, smooth and affordable by providing proper start-up and training services as well as working on user friendly applications that can hide the complexity of the SEEM infrastructure and the international standards on which it is based.

Mediators support is fundamental for the introduction of small enterprises into SEEM. They are skilled and can correctly interpret companies' needs, deploy new solutions and assist them in adapting. Moreover, mediators can ensure rapid introduction of SEEM benefits to a critical mass of companies, putting them into position of main actors in making SEEM system work on the large scale.

## 3. REFERENCE FRAMEWORK FOR SEEM

## 3.1 Virtual organizations - New organizational paradigm

Today's business environment is characterized by an everyday battle to quickly launch specialized products or services that will satisfy individual customer needs in different markets which has shown to be difficult to achieve especially for small and medium enterprises (SME).

A possible response to this situation is seen in the creation of virtual organizations: temporary networks of independent companies, where each enterprise contributes what it considers its core competence[2]. (Erben & Gersten, 1997)

The concept of virtual organizations is not new. In 1993 for example, the Business Week covered a story on virtual corporations, a new model of business enterprises that could deliver anything, anytime and anywhere to potential customers by digitally connecting

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[2] The combination and co-ordination of know-how, human resources, technical resources and physical resources generate core competencies. Prahalad and Hamels define core competencies 'as an area of specialized expertise that is the result of harmonizing the complex stream of technology and work activity'. Therefore, core competence is how a firm is able to perform with excellence compared to its competitors (Franke et al, 2001, p. 56).

distributed capabilities across organizational and geographical boundaries. (Byrne, Brandt & Port, 1993, pp. 36-37)

The purpose of virtual organization is therefore the optimal use of opportunities which derive from the market and/or from resources. Modern ICT in this context in a constitutional feature, since ICT enables fast and extensive exchange of information between geographically dispersed and organizationally separated partner companies. Therefore, these technologies represent the nerve systems of the virtual corporations and are recognized as an enabler and facilitator of this new organizational paradigm. (Franke, 2001, p. 45)

## 3.2   The concept of virtual organizations

The research field of virtual organization is pre-scientific, with contributions that have not yet amalgamated into a broader theoretical framework.

Different definitions of virtual organization partly depend on the view taken on the concept of "virtual". There are four different sub-concepts of "Virtual" that are used to define the essence of virtual organizations (Burn, Barnett & Marshall, 2002, p. 16):

1. "Virtual" means "**unreal, looking real**". In this context a virtual organization has the appearance of a real (traditional) company for externals, but in reality this company does not exist; it is simply a conglomerate of independent network partners.

2. "Virtual" means "**immaterial, supported by information and communication technology**". This sub-concept of "Virtual" means that something does not physically exist and would have not existed virtually if it weren't for ICT - it is only created by data and have existence only in cyberspace

3. "Virtual" means "**potentially present**". In this context virtual can be defined as an attribute of an organization, which does not really exist, but has the possibility to exist as soon as the need for a certain configuration of organizations is detected.

4. "Virtual" means "**existing, but changing**". In this sub-concept the organization exists, however the composition of partners is temporary.

The dominant approach on virtual organizations understands "virtuality" to depict an organizational structure that is relevant when the boundaries of time, geographical space, organizational units and information access are less important while the employment of information and communication technologies is considered highly useful.

These so-called structure perspective definitions focus on the building blocks of the virtual organization and their properties.

Byrne (Byrne, Brandt & Port, 1993, pp. 36-37), for example defines virtual organization as a temporary network of independent companies that come together quickly to exploit fast-changing opportunities.

Goldman, Nagel and Preiss (Goldman, Nagel & Preiss, 1995, p. 7) as an opportunistic alliance of core competencies distributed among a number of distinct operating entities within a single large company or among a group of independent companies.

Davidow and Malone (Davidow & Malone, 1993, pp. 4-7) as a less a discrete enterprise and more an ever-varying cluster of common activities in the midst of a vast fabric of relationships.

On the contrary, the process perspective definitions introduce the term "Virtualness" to emphasize that an organization becomes virtual because of the way it is managed rather than because it employs various ICT systems.

It is argued, that the degree in which one organization uses information and communication technologies more than physical presence to interact, conduct business, and operate together determines the degree of "virtuality" of that particular organization.

Hence any organization could be positioned in a continuum of "organizational virtualness" ranging from non-virtual or less virtual to highly virtual (Steil, Barcia & Pacheco, 1999, p. 73).

Venkatraman and Henderson systematized an approach, in which organizational virtualness is reflected in three distinct yet interdependent vectors, i.e.:

- **Customer interaction**, which refers to the potential of new opportunities and challenges in the interactions between the organization and customers.

  Here, by the use of ICT, the organization enables customers to remotely visualize and experience products and services, indicate the parameters for dynamic customization and participate in customer communities.

- The **asset configuration** referring to requirements for organizations to participate in virtually integrated business networks, moving away from the traditional vertically-integrated model to a dynamic organizational network of complementary core competencies.

- **Knowledge leverage** concerned with the leveraging sources of expertise (creating and disseminating knowledge) within and across organizational boundaries. (Steil, Barcia & Pacheco, 1999, p. 74)

Table 4*: Organizational virtualness*

| Vectors and Characteristics | Stage 1 | Stage 2 | Stage 3 |
|---|---|---|---|
| Vector 1 – Customer Interaction (Virtual Encounter) | Remote experience of products and services | Dynamic customization | Customer communities |
| Vector 2 – Asset Configuration (Virtual Sourcing) | Sourcing modules | Process interdependence | Resource coalitions |
| Vector 3 – Knowledge Leverage | Work-unit expertise | Process interdependence | Professional community expertise |
| Characteristic 1-Target Locus | Task units | Organization | Interorganization |
| Characteristic 2-Performance Objectives | Improved operating efficiency (ROI) | Enhanced economic value added (EVA) | Sustained innovation and growth (MVA) |

*Source: V. Steil, M. Barcia & C. S. Pacheco, An Approach to Learning in Virtual Organizations, 1999, p. 74.*

Venkatraman and Henderson introduce the term "Virtualness" to emphasize that an organization becomes virtual because of the way it is managed rather than because it employs various ICT systems. They defined "Virtualness" as the ability of the organization to consistently obtain and co-ordinate critical competencies through its design of value-adding business processes and governance mechanisms involving external and internal constituencies to deliver differential, superior value in the market place (Venkatraman, Henderson, 1998, p. 34).

Travica followed the same idea and identified the term "Alternation" as one of the key characteristics of virtual organizations. He defined alternation as an organization's capability to dynamically alternate between different partners in order to complete the value creation process (Travica, 1997, p. 417).

Similarly, Mowshowitz introduced the "Principle of Switching" and defined virtual organization as a goal-oriented enterprise that delivers its highest customer value by implementing an appropriate assignment or reassignment of concrete satisfiers to the abstract requirements. Switching is the process of assignment or reassignment of concrete satisfiers (Mowshowitz, 1999, p. 4).

Although the organizational concept of virtual organizations does not follow a generally accepted definition, it is represented by its main characteristics:

- Virtual organization is a temporary network. Partnerships last as long as the market opportunities are beneficial for the co-operation partners. Virtual organization model provides independent companies with the option to continue their day-to-day business in addition to the involvement in partnerships. Partnering companies may also be involved in several virtual organizations at any given time.

- Cooperating partner companies, such as suppliers, customers and even competitors share skills, costs and access to one another's markets. The main emphasis of the virtual organization is to complement and share resources in order to improve competitiveness as a whole. Compared to the ability of a single company, this approach dramatically increases the partnership's ability to compete on a large scale.

- The ideal type of a virtual organization is fluid and flexible in its configuration, where cooperating partners contribute only their core competencies to the partnership. Once a specific market opportunity is allocated, partners quickly unite and pool their resources according to customer needs.

- Relationship between partnering companies has to be flexible and grounded on mutual trust in order to enable rapid market response. Uniting quickly and without the long lasting contract negotiations that are typical of other forms of cooperation, such as strategic alliances, is one of the major attributes of the virtual organization concept.

- Exchange of information is vital for virtual organizations. Recent developments in information and communication technology have made global communication with geographically dispersed partners and customers possible. Communication facilitates the coordination and synchronization of activities between partner companies and generates knowledge, which leads to innovative products and services, learning and continual securing of quality. (Haas, Koeszegi & Noester, 2007, p. 84)

## 3.3 Are virtual organizations feasible?

Considering key characteristics, the concept of virtual organizations assumes that independent actors are allocated on short-term notice and contribute their best (core competencies) to a partnership of strangers. This constant alternation of value chain configurations might be challenging in connection to SMEs.

One main problem is the risk associated with sharing know-how with potential competitors, since the competitive advantage is often based on unique and tacit production procedures, entrepreneurs are not willing to share them.

Secondly, the process of forming and coordinating a virtual organization that is able to react quickly to market opportunities not only demands flexibility but also predefined rules and roles for daily business and conflict resolution. Establishing these rules and cooperation agreements is difficult, especially for SMEs that usually dispose of little formalization and depend strongly on the owner of the business. (Haas, Koeszegi & Noester, 2007, p. 85)

Therefore, although the benefits of virtual organizations and networks are widely known and discussed, there are still some fundamental difficulties that have to be addressed:

- the search for suitable partner companies that keep complementary core competencies in order to design a successful value chain,

- the organizational fit of the selected partner companies,

- the necessary level of trust between the partner companies and

- the need for cooperation management in order to coordinate the activities of the dispersed partner companies and to build trustworthy relationships between the partnering companies (Franke, 2001, p. 51).

In order to overcome these obstacles for successful adoption of virtual organizations, Goldman et al. introduced the concept of virtual webs or virtual web platforms to facilitate the partnering process of unfamiliar partner companies where trust and common visions could prosper.

They have identified a virtual web platform as an open-ended collection of pre-qualified partners that agree to form a pool of potential members of virtual organizations within which necessary partners' available resources, capabilities and core competences are employed in order to meet the customer expectations and market opportunities (Franke, 2002, p. 3).

In such virtual web network member-companies would agree on certain standards, rules and regulations in order to establish organizational fit and to promote the partnering process, necessary level of trust among them as well as the cooperation in virtual organizations. In such a case, virtual organizations would need management and coordination of its members and activities, which would be the job of the net broker.

## 3.4 The net-broker and circle of trust

The idea of a network coordinator goes back to Hatch who defined the net-broker as *a facilitator and catalyst* (Franke, 2001, p. 53). According to Hatch, net brokers help companies to form strategic partnerships, organize network activities and identify new business opportunities. Their task is to spread the network concepts, promote cooperation, organize groups of companies and connect them.

Figure 1*: The virtual Web Organization*
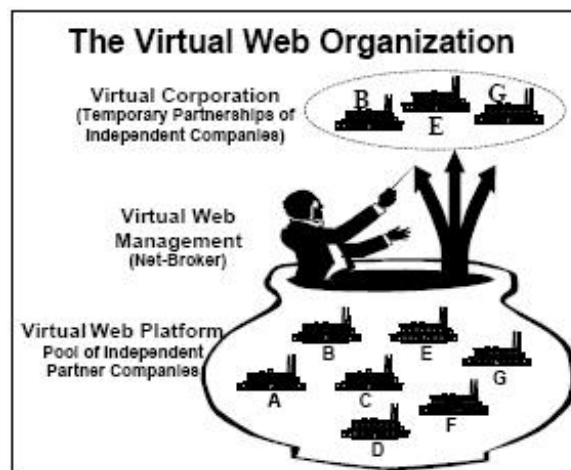


*Source: U. J.Franke et al, The Concept of Virtual Web Organizations and its Implications on Changing Market Conditions, 2001, p. 55.*

Primarily, the net-broker should undertake the following key responsibilities:

**Initiation of the virtual web platform.** The first task of a net-broker is to search for companies and organizations with complementary and competitive resources and capabilities. In this phase, the net-broker acts as a relationship promoter, whose main purpose is to create a common bond and to promote mutual trust.

The result of the initiation and preparation phase is partners' agreement on the memorandum of understanding stating the mission, vision, rules and regulations of the virtual web platform.

**Maintenance of the virtual web platform.** As soon as the virtual web platform is set up, the net broker is responsible for maintaining and improving the collaboration among partners of potential virtual organizations. The net-broker monitors the performance within the virtual web platform, takes care of weak members and supports them to achieve the required performance. The net-broker is also engaged in disciplinary actions - as an impartial organization as well as in conflict solving processes, which might arise between partners.

Furthermore, the net-broker observes the internal and external environment of the virtual web platform and makes proposals about how to adapt to the arising changes. It keeps track of the resources and core competencies of partners and their performance, which also includes its search for new partners with missing or complementary resources.

**Formation of virtual organizations.** As soon as a market opportunity has been allocated, the net-broker identifies required resources and competencies in order to match this market opportunity. The next step is creating an appropriate value chain, based on the selection of the right partners' competencies and resources.

Once the virtual organization is formed the net-broker withdraws from the coordination tasks in the partnership; the management of the virtual organization is taken over by a lead operator or multiple partners. In case of problems or conflicts the net-broker might interfere, allocate additional resources, replace a virtual organization member with another, or act as a neutral intermediate for conflict resolution (Franke, 2001, p. 53).

## 3.5 Knowledge management in virtual organizations

As the importance of virtual organizations grows in the international economy, the organizational ability to create and disseminate knowledge faster than competitors becomes critical.

### 3.5.1 Knowledge defined

**"Knowledge is of two kinds. We know a subject ourselves, or we know where we can find information upon it."** - Samuel Johnson (in Boswell, 1952, p. 258).

We established that the market environment demands new business knowledge based activities. But really what value can knowledge have and is all knowledge the same.

To understand the impact of knowledge to our case of virtual organization, we first have to expand our understanding of knowledge itself.

Knowledge is a set of understandings used by people to make decisions or take actions that are important to the company. As opposed to "information", knowledge is defined by its use and its relevance to work. It should be linked to the building blocks of how the organization creates value, especially unique know-how and capabilities. (Mayer, 1998, p. 11)

All knowledge isn't the same. There is explicit knowledge – the kind that can be easily written down (for example, patents, formulas, or an engineering schematic). The explicit knowledge can create competitive advantage, but its half-life is increasingly brief, as it can be replicated easily by others.

A second type is tacit or implicit knowledge which you may think of as personal and context-specific »know-how«. Tacit knowledge is far less tangible and so deeply embedded into an organization's operating practices that it's often nearly invisible, being described broadly as just »the way we do things around here«. For individuals, it's often referred to as experience or intuition; in organizations, we often call it culture. What we refer to as intuition, though, are really bits in ways that are not easily traced or described. Tacit knowledge includes relationships, norms, values, and standard operating procedures. Because tacit knowledge is much harder to detail, copy and distribute, it can be sustainable source of competitive advantage. (Mayer, 1998, p. 17)

### 3.5.2 Knowledge as the source of business value

In the new economy, the knowledge component of products and services has increased dramatically in importance and has become the dominant component of customer value. The shift to knowledge as the primary source of value, makes the new economy led by those who manage knowledge effectively – who create find, and combine knowledge into new products and services faster than their competitors.

Explicit knowledge is increasingly quick and easy to distribute worldwide and as such is the main subject and drive force for developing a virtual organization.

For thousands of years knowledge could only be passed on by word of mouth; centuries later, it was captured by monks in books. Now however it is distributed instantaneously through global electronic networks (in recent ad IBM portrayed monks as technology – Savvy Internet surfers).

### 3.5.3 Knowledge creation and accumulation

The concept of technological progress through innovation activities and knowledge creation as the main engine for economic growth is not new in economic doctrine; the importance of innovation and knowledge accumulation for long-term growth has already been stressed by economists such as Karl Marx or Joseph Schumpeter.

However, in »new economies«, knowledge has been given a greater importance, which could be explained based on the following:

According to Malhotra, there are four key components, based on which an organization or a business company can build on its knowledge assets and intellectual capital: market capital, process capital, human capital and renewal and development capital, where:

$$Market\ value = financial\ capital + intellectual\ capital \qquad (1)$$
$$Intellectual\ capital = human\ capital + structural\ capital \qquad (2)$$

While financial capital reflects the company's history and achievements to date, intellectual capital represents the hidden potential for future growth (Department of Economic and Social Affairs, Division for Public Administration and Development Management, 2003, p. 102-103), hidden in its:

- knowledge, skills, innovativeness, wisdom, expertise, intuition and ability to carry out value creating tasks and goals,

- market and trade relationships the company holds and

- capabilities such as organizational structures, information and communication systems, patents, trademarks and everything else that supports innovation and productivity through sharing and transmission of knowledge.

The growing importance of knowledge for industrial competitiveness is closely related to the emergence of new information and communication technologies (ICTs) as well as the rapid growth in international electronic networking, which have made it possible to codify, store, share and manage certain kinds of knowledge more easily and cheaply than ever before (Hansen, Nohria & Tierney, 1999, p. 108).

As a consequence of the increased potential for codification, exchange and communication of knowledge, ICT can be considered as the first truly global technology with its potential to share knowledge over both distance and time allowing knowledge to become to some extent globally available.

The following chapter deals with the challenges and strategies virtual organizations face in creating and disseminating knowledge. The focus is grounded on the premise that although technology plays a crucial role in virtual organizations, the issue should not be about the latest technologies, but about what technologies can be used for facilitating a culture of information sharing, relationship building, and trust, thus success is the result of the cooperative effort of people acting in concert (Steil, Barcia & Pacheco, 1999, p. 70).


### 3.5.4 Technology push v.s. strategy pull models

Technologists never evangelize without a disclaimer: "Technology is just an enabler." Fair enough, but enabler of what? One flaw in knowledge management is that it often neglects to ask what knowledge to manage and toward what end (Malhotra, 2005, p. 3). Daily we employ knowledge management activities such as building databases, establishing corporate libraries, building intranets, installing groupware and broader knowledge management business applications, which include learning, education, training etc.

Based on today's practice, the impact of knowledge management can be seen everywhere but in knowledge management technology – performance statistics. Despite the tremendous improvement and increasing sophistication of information and communication technologies as well as knowledge management applications, we are observing significant failure rates of knowledge management technology implementations as well as negative correlation between tech investments and business performance. Some industries estimate the failure rate of technology implementations for business process reengineering efforts at as high as 70 percent (Malhotra, 2005, p. 4)

Separate individual surveys of more than 200 American and European companies, carried out by the Brint institute have revealed that:

- Companies with best-performing IT investments are often most frugal IT spenders. Surprisingly, some of these high performance "benchmark" companies have the lowest tech investments and are recognized laggards in adoption of leading-edge technologies.

- top 25 performers invested 0.8 percent of their revenues on IT in contrast to overall average of 3.7 percent; and

- Highest IT spenders typically under-performed by up to 50 percent compared to best-in-class peers (Malhotra, 2005, p. 4-6).

Findings suggest that increasing failure rates of knowledge management technologies often result from their rapid obsolescence given the changing business needs. Also knowledge management models are often driven by technological systems that are out-of-alignment with strategic execution (**technology push models**).
While these models have served the needs of business performance given more manageable volumes of information and lesser variety of systems within relatively certain business environment, with recent unprecedented growth in volumes of data and information, the continuous evolving variety of technology architectures and the radically changing business environment, they have outlasted their utility (Malhotra, 2005, p. 6-7).

In order for knowledge management systems to capture and focus the universe of knowledge resources in support of individual and enterprise performance, the dominant business logic incorporated in such systems has to be kept in tune with company's competitive and strategic goals (**strategy pull models**) (Malhotra, 2005, p. 5).

Thus, it should be recognized that all emerging technology architectures and knowledge management systems are just the highway, the infrastructure to exchange information in real time, whereas the real competitive advantage lays in close cooperation, creation, use, transfer and management of ideas and knowledge.

### 3.5.5 The Concept of organizational learning

Steil, Barcia and Pacheco defined **organizational learning** as a social construction that transforms knowledge created at the individual level into accountable actions toward organizational ends.

In this context learning is organizational when (Steil, Barcia & Pacheco, 1999, p. 71):
- it is done to achieve organization purposes;
- it is shared or distributed among members of the organization; and
- learning outcomes are embedded in the organizations' systems, structures, and culture.

The process of sharing knowledge includes both – exchanging existing knowledge (tacit and explicit) and creating new knowledge. Creating or building new knowledge that transcends the limits of current knowledge is highly dynamic and interactive in nature. During this process individual knowledge is translated into organizational knowledge, thus making knowledge sharing a valuable process for organizations (Komsi, Pöyry & Ropo, 2005, p 37).

### 3.5.6 Organizational learning and knowledge

Davenport and Prusak define **knowledge** as "a fluid mix of framed experience, values, contextual information and expert insights that provides a framework for evaluating and incorporating new experiences and information". Their view in knowledge can be defined as the underlying notion of the knowledge management since it stresses the value of knowledge in its use and not in its existence per se (Cranefield & Yoong, 2005, p. 3).

As already mentioned in chapter 2 in the knowledge management theory two categories of knowledge are recognized, explicit knowledge, defined as knowledge that can be codified and tacit knowledge, representing "know-how" type of knowledge that is highly personal and difficult to formalize and communicate to others cannot be codified.

Both types of knowledge reside in all four levels of an organization's social hierarchy; individual, group, organization and inter-organizational at which organizational learning is created and disseminated through the interplay between tacit and explicit knowledge (Komsi, Pöyry & Ropo, 2005, p 37).

The process of creating and disseminating knowledge in organizations occurs by converting:
- tacit knowledge into tacit knowledge,
- tacit knowledge into explicit knowledge,
- explicit knowledge into explicit knowledge,
- explicit knowledge into tacit knowledge

and is a social process between individuals (Steil, Barcia & Pacheco, 1999, p. 73).

### 3.5.7 Creation of tacit knowledge

Due to its nature, **the conversion of tacit knowledge to new tacit knowledge** occurs through observation, imitation, and practice. It is called **socialization**, stressing that tacit knowledge is exchanged through joint activities rather than through written or verbal instructions. The process of exchanging tacit knowledge depends on the development of empathy between co-workers and on the understanding of others (Steil, Barcia & Pacheco, 1999, p. 75).

The **acquisition of new tacit knowledge from existing explicit knowledge** is called **internalization**, emphasizing that an existing explicit knowledge is reframed by the individual, and internalized as new tacit knowledge, thus leading to the broadening, extension, and reframing of the individual tacit knowledge.
Here the individual identifies the knowledge that is relevant for him or her within the organizational knowledge and experiments within his or her daily tasks (Steil, Barcia & Pacheco, 1999, p. 76).

### 3.5.8 Creation of explicit knowledge

**Conversion of explicit to new explicit knowledge** is relatively easy even in virtual organizations. The process is called **combination**, stressing the sorting, adding, re-categorizing and distribution of explicit knowledge that can lead to the creation of new explicit knowledge.

In practice, the conversion of explicit to new explicit knowledge relies on three processes:

- capturing and integrating new explicit knowledge, which involves collecting knowledge from inside or outside the company and then combining that data.

- dissemination of explicit knowledge, which is based on the process of transferring this form of knowledge directly through presentations or meetings. Here, new knowledge is spread among the organizational members.

- editing or processing of explicit knowledge in order to make it more usable (e.g., documents such as plans, reports, market data) (Steil, Barcia & Pacheco, 1999, p. 78)

**Converting tacit knowledge to explicit knowledge** is a key process in organizational learning, called **externalization**, emphasizing the necessity to translate one's tacit knowledge into comprehensible forms so it can be assimilated by other people (Steil, Barcia & Pacheco, 1999, p. 79).

Externalization is difficult to accomplish, since (Steil, Barcia & Pacheco, 1999, p. 79):

- tacit knowledge has semiconscious and unconscious dimensions of which the individual has no awareness;

- some types of tacit knowledge are embedded in physical abilities and are therefore unlikely to be wholly explicated and formalized; and

- some people may be unwilling to reveal their rules-of-thumb.

### 3.5.9 Knowledge management strategies

In 1999 Harvard Business Review published an article entitled »What's your strategy for managing knowledge?« by Hansen, Nohria and Tierney. The authors analyzed the strategies for managing knowledge in consulting firms and identified two main approaches which suggested that organizations in general employ two very different knowledge management strategies:
- **codification strategy**, centering on the information and communication infrastructure; knowledge is carefully codified and stored in databases, where it can be accessed and used easily by anyone within the organization.

- **personalization strategy**; knowledge is closely tied to the person who developed it and is shared mainly through direct person-to-person contacts. The main purpose of the information and communication infrastructure in such organizations is to help individuals to communicate knowledge (Hansen, Nohria & Tierney, 1999, p. 107).

3.5.9.1 Codification strategy

Knowledge is codified using a »people-to-documents« approach: it is extracted from the person who developed it, made independent of that person and reused for various purposes. Ralph Poole, director of Ernst & Young's Centre for Business Knowledge, described this approach: »After removing client sensitive information, we develop »knowledge objects« by pulling key pieces of knowledge such as interview guides, work schedules, benchmark data and market segmentation analyses out of documents and storing them in the electronic repository for people to use« (Hansen, Nohria & Tierney, 1999, p. 108).

This approach relies on the "economics of reuse"; once a knowledge asset (software code or a manual for example) is developed and paid for, it can be used many times over at very low costs, provided that it doesn't have to be substantially modified every time it is reused. This model therefore opens up the possibility of achieving scale in knowledge reuse and of growing the business.

3.5.9.2 Personalization strategy

On the other hand, knowledge that hasn't been codified and probably couldn't be is transferred in brain storming sessions and one-on-one conversations, where individuals collectively arrive at deeper insights by going back and forth on problems they need to solve. To make their personalization strategies work, information technology infrastructure is used to share and exchange knowledge.

This strategy relies on the logic of "expert economics"; the company offers their clients products and services that are rich in tacit knowledge (Hansen, Nohria & Tierney, 1999, p. 108).

Since the sharing of tacit knowledge can be time consuming, expensive and slow and cannot be truly systematized, so it can't be made efficient, personalization strategy builds on highly customized offerings allowing companies to brand their products and services, thus allowing them to charge much higher prices (Hansen, Nohria & Tierney, 1999, p. 110).

An organization's choice of strategy depends on the way the company serves its clients, the economics of its business as well as its human resources. Although it would seem that organizations would use both approaches, the survey suggested that effective organizations excel by focusing on one of the strategies and using the other only in a supporting role (Hansen, Nohria & Tierney, 1999, p. 107-109).

Nevertheless, organizations should adopt some common strategies in order to foster a supporting environment for creation and dissemination of knowledge. These strategies should include (Steil, Barcia & Pacheco, 1999, p. 77):

- **organizations should move away from highly bureaucratized procedures** to a more organic functioning and a culture that rewards knowledge sharing, trust, and commitment

- **promoting intensive socialization activities**, it is through a process of socialization (including training activities, sharing organizational stories, etc.) that employees internalize the organizational culture.

- If successfully managed, socialization activities also build trust that is essential to knowledge creation and sharing in virtual organizations.

- **promoting experience sharing** among experts and non-experts and workers in general,

- **using simulation techniques and computer-based training** in order provide a safe environment for endless experimentation of explicit knowledge in the employees' daily

routines. In this virtual environment, one can experiment without fear of committing mistakes, which is also essential for the development of creative ideas; and

- **promoting communication among organizational members**, in order to faster the rate of creation and dissemination of tacit knowledge in virtual organizations.

## 3.6  Standardization and technological challenges

Until now, we could assume an ICT environment that was homogeneous, reliable, secure, and centrally managed. However, if SEEM was to be implemented, there will be a growing need for collaboration, data sharing, and other new modes of interaction that involve distributed resources.
The basic idea is thus for organizations not only to be able to work securely with autonomous internal and external strategic business units (e.g. within a trusted domain inside the enterprise) but also with third party identity services (e.g. amongst other trusted domains).

As the boundary between internal and external information system continues to blur, the traditional security perimeter will disappear. That is, although organizations will have to protect their information systems, at the same time, they will have to open business critical data, making them accessible independent of user location and therefore susceptible to security infringements. Organizations are thus challenged with two seemingly opposing trends; the need to increase access to information in a manner that will generate and support new business opportunities and the need to maintain security.

These evolutionary pressures generate new requirements for distributed application development and deployment.

### 3.6.1 Grid computing

Grid computing has emerged as an important new field, distinguished from conventional distributed computing by its focus on large-scale resource sharing, innovative applications, and high-performance orientation. It focuses on a flexible, secure, coordinated resource sharing among dynamic collections of individuals, institutions, and resources (Foster, Kesselman & Tuecke, 2001, p. 1).

The sharing that we are concerned with here is about more than simply document exchange. It can involve direct access to computers, software, data and other resources that is highly controlled, with resource providers and consumers defining clearly and carefully what is shared, who is allowed to share and the conditions under which this sharing occurs (Foster et al., 2002, p. 5). Resource sharing is thus conditional. Each resource owner constraints his available resources on when, where, and what can be done.

Sharing relationships can in terms of the resources involved vary dynamically over time. The nature of the access permitted and the participants to whom access is permitted are usually defined implicitly by the policies that govern access to resources. For example, an organization might enable access by anyone who can demonstrate that they are a "customer".

Commonly, these relationships are not simply client-server, but peer to peer as well. Sharing relationships can exist among any subset of participants and may be combined to coordinate use across many resources, each owned by different organizations.
In such situations the ability to delegate authority in controlled ways as well as mechanisms for coordinating operations across multiple resources becomes important (Foster, Kesselman, Tuecke, 2001, p. 5).


### 3.6.2 Grid architecture and interoperability

The basic technological background that enables Grid technologies is the so-called **Grid architecture** which identifies fundamental system components, specifies the purpose and function of these components, and indicates how these components interact with one another (Foster, Kesselman & Tuecke, 2002, p. 5).

Grid architecture is first and foremost protocol architecture, with protocols defining the basic mechanisms by which virtual organization users and resources negotiate, establish, manage, and exploit sharing relationships.

Figure 2*: Grid Architecture*
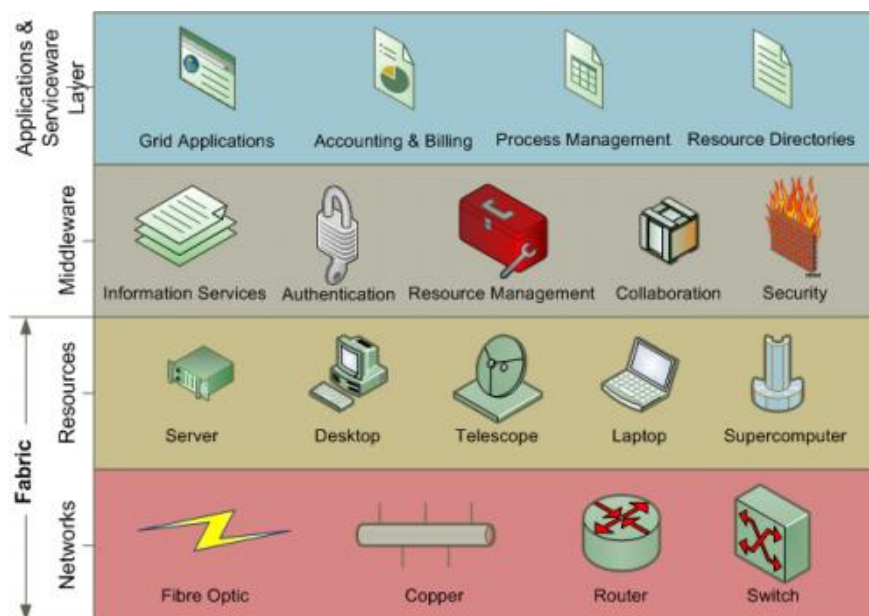


*Source: Beacon computer technology, Grid diagram 2009.*

In order for the Grid to be successful in establishing sharing relationships among any potential participants, Grid architecture has to base on a common protocol and ensure interoperability across organizational boundaries, operational policies, different resource types, platforms, languages, and programming environments (Foster, Kesselman & Tuecke, 2002, p. 5-6).

Unfortunately there are several grid architectures that are not absolutely compatible; for example, for using resources of certain virtual organization or infrastructure one needs to obtain identity certificate in a format specific to the infrastructure employed and must go through the certification process, which is, again specific to the organization owning the resources. Interoperability difficulties represent a major obstacle to the implementation of the SEEM vision - accessibility to all without technological constraint.

At the heart of this problem is the electronic identity, its employment and recognition in multiple global computing infrastructures. With this in mind a federated identity management service across heterogeneous global computing platforms that would counter current disarray of unrelated and incompatible global computing infrastructures is an absolute must (ATACO sistemi, 2004, p. 22).

Such architecture would enhance interoperability among different economic actors through the use of ICT as it would free them from having to be constrained to the same (i.e. one type fits all) technologies and therefore truly contribute to the realization of the EU's vision "Information Society for All".

To meet these new challenges, emerging Federated identity and the standards for federation established by OASIS (SAML), Liberty Alliance Project (ID-FF, ID-WSF and ID-SIS), Microsoft and IBM (WS-Roadmap) and Internet2 (Shibboleth) are recognized as a key ingredient for organizations to share identity information between domains and integrate applications with general authentication requirements (i.e. the paradigm of Single Sign On SSO).

As a consequence of the paradigm of SSO, and the interdependency, which is assumed in such interactions, organizations are faced with issues such as liability and risk associated with establishing trust and security in a quality conscious manner. These new challenges give rise to the questions of specifying the rules, which will govern the exchange of identity information while ensuring compliance with privacy requirements, questions of technological implementations and issues concerning the maintenance of security.

In analyzing the complete spectrum of technical and business issues surrounding wide-scale federation, the following challenges must be addressed:

**Interoperability standards;**
Technical interoperability is the cornerstone of efficient wide-scale federation, without which the full potential of identity federation will never be achieved. Addressing interoperability requires cross-industry cooperation to ensure that the resulting solutions address the wide range systems with which it must integrate.

**Expanding Circle of Trust**
Establishing agreements will become even more important as companies engage ever larger circles of trust, moving from known and trusted trading partners to first time interactions with a growing number of entities. Furthermore, every interaction, which involves a third party, inherently introduces new risks. Therefore, addressing the issue of managing trust within the larger context of federation is necessary.

**Privacy compliance**
As identity authentications and attributes are shared within the identity federation, organizations are compelled through privacy legislation to respect individual's privacy rights and preferences.

Within identity federation an individual is subjected to differing privacy policies and must be aware of such fact as he moves from one trusted domain to the next within a SSO interaction (ATACO sistemi, 2004, p. 31-35).

### 3.6.3 The economy of Grids

Apart from technological issues, the economic side of the grid computing should be also addressed in order to create a real world scalable Grid. By this I am referring to the promotion of interest to participate in a grid network or rather a mechanism for regulating the Grid resources demand and supply that offers incentive for resource owners to be part of the Grid and encourages consumers to optimally utilize resources and balance timeframe and access costs.

To date, individuals or organizations that have contributed resources to the Grid have been largely motivated by the public good, prizes, fun, fame, or collaborative advantage. This is clearly evident from the construction of private grids or research test-beds such as Distributed.net, SETI@Home, Condor pool, DAS (Distributed ASCI Supercomputer) and the like. Even commercial companies such as Entropia, ProcessTree, Popular Power and Mojo Nation are exploiting idle CPU cycles from desktop machines to build a commercial Grid without paying any incentives to the resource providers.

A typical market-oriented Grid environment is shown in the Figure bellow.

Figure 3: *A Generic view of interaction between players in an Economy Grid*
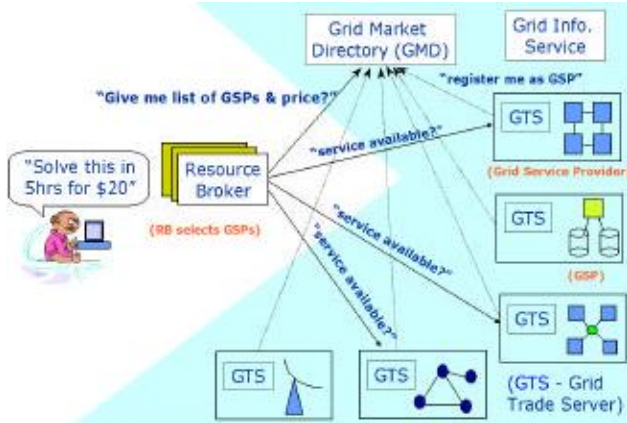


*Source: R. Buyya, D. Abramson & J. Giddy, A Case for Economy Grid Architecture for Service Oriented*
*Grid Computing, 2009.*

As shown, the users in global Grid environment essentially interact with a Grid resource broker (GRB) that hides the complexity of resource management and scheduling. The broker discovers resources using Grid information services (GIS), negotiates with grid-enabled resources or their agents for service costs, performs resource selection, maps and schedules tasks to resources, stages the application and data for processing on remote resources, and finally gathers results and hands them to the user.

It is also responsible for monitoring application execution progress along with managing and adapting to changes in the Grid environment such as resource failures.

The two key players in market oriented Grid are therefore resource providers (hereafter GSPs—Grid Service Providers) and resource consumers (hereafter GRBs—Grid Resource Broker that acts as a consumer's software agent). Both have their own expectations and strategies for being part of the Grid.

On the one hand, resource consumers adopt the strategy of solving their problems at low cost within a required timeframe whereas resource providers adopt the strategy of obtaining best possible return on their investment. The resource owners thus try to maximize their resource utilization by offering a competitive service access cost in order to attract consumers, where the users (resource consumers) have an option of choosing the providers that best meet their requirements.

The Grid resource consumers interact with brokers to express their requirements such as the budget that they are willing invest for solving a given problem and a deadline, a timeframe by which they need results.
They also need capability to trade between these two requirements and steer the computations accordingly. On the other hand the Grid service providers need tools for expressing their pricing policies and mechanisms that help them to maximize the profit and resource utilization.

Various economic models for resource trading and establishing pricing strategies have been proposed in the so called economy grids, including (Buyya, Abramson & Giddy, 2009, p. 3):

- A Commodity Market (Flat or Demand & Supply driven pricing) Model, where resource providers competitively set the price and advertise their service in business directory as service providers. Consumers choose resource providers through cost-benefit analysis.

- A Posted Price Model; this model is similar to commodity market model except that it posts offers long before scheduling.

- A Bargaining Model; providers and consumers negotiate for resource access cost and time that maximizes their objectives.

In these three models other consumers do not influence the price for access to services. The negotiation happens privately between a consumer and a provider and there is no way for a consumer to know how much others value the resource services. Accordingly, the consumers need to decide whether to accept/reject offer depending on its private objective function.

- A Tendering/Contract-Net Model; the consumer (GRB) invites sealed bids from several GSPs and selects those bids that offer lowest service cost within their deadline and budget.

- An Auction Model; producers invite bids from many consumers and each bidder is free to raise their bid accordingly. The auction ends when no new bids are received. The auction can be performed through open or closed bidding protocols.

- A Bid-based Proportional Resource Sharing Model; the amount of resource allocated to consumers is proportional to the value of their bids.

- A Community/Coalition/Bartering Model; a group of individuals can create a cooperative computing environment to share each other's resources. Those who are contributing resources to a common pool can get access to resources when needed. A more sophisticated model can also be employed for deciding the share of resources a contributor can obtain and can allow a user to accumulate credit for future needs. Systems like Mojonation.net employ this credit-based bartering model for storage sharing across the community network. This model works when all participants in the Grid are both service providers and consumers.

The resource providers and consumers can use any one or more of these economic models or even a combination of them.

Several research systems have attempted to apply the concept of Grid economy for information management, CPU cycles, Storage, and Network access. They include Java Market, JaWS, D'Agents, Mojo Nation and others.

# 4. SLOVENIAN CORPORATE SECTOR AND THE CHALLENGES OF SEEM

## 4.1 Slovenian corporate sector structure and the role of mediators

SME sector is known as an important part of EU as well as of the Slovenian economy. Out of 88.000 enterprises in 2005, SMEs constitute for 99.7 % of all enterprises, employing 66.4 % of all work force and generating 60.4 % of value added. (Eurostat, 2008, p. 3).

Table 5: *Companies according to industry (C-K) and the number of persons employed, Slovenia, annually*

| | Micro enterprise (0-9) - Total | | | | Micro enterprise (0-1) | | | |
|---|---|---|---|---|---|---|---|---|
| | 2004 | 2005 | 2006 | 2007 | 2004 | 2005 | 2006 | 2007 |
| Number of companies | 87.315 | 88.786 | 93.430 | 97.649 | 58.347 | 59.620 | 60.059 | 63.024 |
| | Micro enterprise (2-9) | | | | Small enterprise (10-49) | | | |
| | 2004 | 2005 | 2006 | 2007 | 2004 | 2005 | 2006 | 2007 |
| Number of companies | 28.968 | 29.166 | 33.371 | 34.625 | 4.898 | 5.127 | 5.601 | 6.017 |
| | Middle-sized enterprise (50-249) | | | | Large enterprise (250+) | | | |
| | 2004 | 2005 | 2006 | 2007 | 2004 | 2005 | 2006 | 2007 |
| Number of companies | 1.179 | 1.183 | 1.255 | 1.311 | 305 | 303 | 283 | 295 |

*Source: Statistical Office of the Republic of Slovenia, Gross domestic product and gross national income, 2000–2004 (First Release), 2004.*

The fact that Slovenian corporate sector is based on an SME structure should be a major reason for its strength and flexibility, since smaller companies can adapt more efficiently to changes in the economic environment and will therefore identify and occupy market niches quicker than bigger entities.

However, as the study, carried out by the Institute of Macroeconomic Analysis and Development of the Republic of Slovenia (hereinafter referred to as IMAD) has shown, the majority of Slovenian SMEs lack knowledge in management tools, established practices and resources for effective identifying new trends and customer requirements in time. (IMAD, 2002)

One of the reasons for this lies in the fact that managers of most Slovenian SMEs started their company based on some business idea but without relevant management training in business performance. In addition, although individual consultants, vocational training institutions, technology parks and other entrepreneurship promotion centers support SMEs in terms of various trainings, improvements, setting up innovation projects and the like, only few organizations are well placed to support significant improvements in the competitiveness of SMEs.

The study, carried out by IMAD has shown that SMEs are unwilling to pay for supporting services provided by local intermediaries due to:

- lack of trust in quality,
- efficiency of investment,
- ability to obtain actual measurable change
- unwillingness of most SMEs, specifically family-owned, to disclose any financial information to outsiders.

This creates confusion to SMEs as it often happens that the enterprises which rely on such assistance may often result in lost of money and wasted time, creating a negative bias against all intermediaries as some of these service providers are not well qualified and are not capable to build up necessary capacities for bringing the change. Such intermediaries, specifically business promotion centers are often seen as someone that, at the best, can rise public funding in favor of company, technology parks are often perceived only as landowners and technical and vocational training in many cases is wholly divorced from industry needs.

Also, most enterprises lack external support in addressing these issues by regional governments, banks, providers of new technologies including large Information and Communication Technology (ICT) suppliers.
The reasons include little interest to customers with limited resources, low margins for the product/services while with considerable variety of diverse customization requirements. As a result SMEs are left alone in their fight for survival.
With coming era of e-business, increasing need for high qualifications of the personnel and learning/adapting to innovations, SME management faces steadily increasing gap between the feasible rate of their own progress compared to the major international producers and national corporations having the resources to meet the world of change. Such environment results in high SME mortality or premature bankruptcies after its successful start-up.

In the context of SEEM another weakness affects Slovenian corporate sector potential progress/integration in this Pan-European e-business space and that is an inherent bias of the Slovenes against changes and risk taking. The reflection of such attitude can also be

discerned in week entrepreneurship and innovation culture present in Slovenia. Since such characteristics are historically embedded and change very slowly, they could affect the capabilities of businesses and of individuals to grasp and utilize new challenges and opportunities provided by the ICT.

The progress of ICT utilization is also affected by demographic and educational characteristics of the Slovenian population. As most European countries Slovenia is also faced with an increasing share of aging population, which has not acquired education and skills of efficient use of ICT, thus representing a segment of population with inadequate level of education or skills necessary for active participation in Information Society.

## 4.2  Regulatory issues

The main strength in terms of the regulatory background related to the Information Society is the adoption of legislation in telecommunications (The Telecommunication Act, completing the deregulation of the market and adopted in 2000) and others Information Society services, such as electronic signature and e-commerce (Electronic Commerce and Electronic Signature Act, adopted in 2000), which are harmonized with the EU regulations and are already in place.

In addition, the government adopted a Strategy of E-commerce in the Public Administration of the Republic of Slovenia, which is an important step to help foster implementation of the Information Society, its development and progress.

Weaknesses mostly arise from slow implementation of the adopted legislation as it requires the setting up of new institutions (regulatory as well as supervising), a skilled labor force and usually additional financial resources. In addition, the fixed telephony operator is trying to maintain its monopolistic position and is very slow in complying with the new regulation. Such developments can seriously hamper the dynamic development of the telecommunications market and the introduction of new services which would foster ICT diffusion and the Information Society's implementation.

Besides the regulation directly related to ICT industries, other laws (Regulation on electronic signature, the Act on Access to Information of a Public Character) have been accepted, which, if implemented smoothly, could have a major positive impact on the continuing development of the Information Society.

## 4.3 E-Readiness

According to **e-Readiness Index**[3] ranking report, published annually by the Economist Intelligence Unit, assessing country's ability to promote and support digital business and information and communications technology (ICT) services**,** Slovenia is on 28th place (of 69) in the overall world ranking, with an e-readiness score 6.66 out of 10 (Economist Intelligence Unit, IBM Institute for Business Value, 2007). Survey of ICT use in different sectors carried out by the Institute of Macroeconomic Analysis and Development (IMAD) also suggests that Slovenian society has been relatively quick in taking on the new technology. Both studies do however show that companies introduce ICT with different dynamics, depending primarily on their size and financial situation.

So far, companies have not fully integrated the use of ICT in their complex business operations due to different obstacles, such as lack of necessary skills as well as security considerations. ICT is mainly used in individual business functions and only top ranking companies have introduced IT as part of their comprehensive business processes reorganization. The experience with the latter demonstrates that the emphasis is predominately on the informatization of existing processes without necessary organizational change and change in business culture.

The public administration has however undertaken more vigorous actions leading towards the intensive introduction of ICT. The effective implementation of different actions, such as electronic filing of income tax returns and the availability of a broad range of e-government services ("e-uprava" and "e-vem", connecting services of governmental institutions such as AJPES, JAPTI, GZS and DURS) as well as e-services provided by banks and insurance companies (on-line banking, e-health insurance policies), are critical to future dissemination of ICT among population as well as to building up citizens' confidence in ICT.

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[3] E-readiness is a comparative index measuring countries e-business environment, a collection of factors that indicate how amenable a market is to Internet-based opportunities.

The e-readiness rankings are a weighted collection of nearly 100 quantitative and qualitative criteria, organized into six distinct categories measuring the various components of a country's social, political, economic and technological development (Connectivity and technology infrastructure, Business environment, Consumer and business adoption, Legal and policy environment, Social and cultural environment, Supporting e-services) (Economist Intelligence Unit, IBM Institute for Business Value, 2004)

# 5. E-BUSINESS PROMOTION CENTER

New economy, accompanied by global competition, rampant change, faster flow of information and communication, increasing business complexity and pervasive globalization demands a different type of firms to be dominant and changes the way we do business.

In this new environment, also the perspective and focus of customers changed. Customers are more informed and demanding and therefore expect more complex and personalized products or services. To make things even more complex, their preferences are revised with the speed of a television commercial.

**How do we maneuver in this business environment?**

Based on the extensive analysis of theoretical concepts, discussed in the first part of the master thesis, the collaboration of companies and integration of their services and products in order to meet current market demand is crucial.
In such partnerships, each company contributes what it does best and of course what is its core competence.

**Slovenia is specific. Is such an approach to daily business even possible?**

Our idea of the so-called e-business promotion center has also developed based on the analysis of the Slovenian economy.
The fact that Slovenian corporate sector is based on an SME structure should be a major reason for its strength and flexibility, since smaller companies can adapt more efficiently to changes in the economic environment and will therefore identify and occupy market niches quicker than bigger entities.

However, as explained in chapter above, Slovenian SMEs face the following challenges:

- lack of knowledge in management tools, established practices and resources for effective identifying new trends and customer requirements in time

- an inherent bias of the Slovenes against changes and risk taking. The reflection of such attitude can also be discerned in week entrepreneurship and innovation culture present in Slovenia. Since such characteristics are historically embedded and change very slowly, they could affect the capabilities of businesses and of individuals to grasp and utilize new challenges and opportunities.

- demographic and educational characteristics of the Slovenian population. As most European countries Slovenia is also faced with an increasing share of aging population,

which has not acquired education and skills of efficient use of ICT, thus representing a segment of population with inadequate level of education or skills.

In addition, although individual consultants, vocational training institutions, technology parks and other entrepreneurship promotion centers support SMEs, their effectiveness in helping these companies in terms of gaining significant improvements in their competitiveness is extremely limited.

For the purpose of this case, I analyzed web pages of the most prominent organizations whose mission is to represent the interests of small and medium-sized enterprises, such as: Chamber of Commerce, JAPTI, PCMG, Technology Incubator, Ljubljana University Incubator, incentive programs of municipalities, ministries and the like, but it appears that the latter are more or less found in the role of business consultants, landlords, organizers of training workshops and at best as the intermediary of business information that are otherwise relevant and useful.

This creates confusion as it often happens that the enterprises which rely on assistance may often result in lost of money and wasted time, creating a negative bias against all intermediaries for bringing the change.

Taking into consideration that small and medium-sized enterprises in order to succeed in a turbulent environment need more, in terms of new and adapted business supporting services, I propose a new centre, that would be integrated in the framework of the Slovenian Chamber of Commerce, as the most suitable institution, capable to offer Slovenian economy stimulating environment in which a new way of doing business could prosper.

## 5.1  Slovenian Chamber of Commerce (GZS)

Slovenian Chamber of Commerce operates in seven regional units whereas it collaborates with local regional chambers in other Slovenian regions. It is active in the field of twenty-five industries, including chambers and associations whose members are mostly or entirely small and medium sized enterprises; for example Association of Local Public Economy, Association of Informatics and Telecommunications, Chamber of Business Services of Slovenia, Chamber of Small business and Trade and the like.

Association or chambers of industries take initiatives and proposals relating to regulation and management in individual economic branches, monitor current economic trends in the industry and formulate a position on the ongoing conflict and development issues.
GZS activities are organized in several centers, providing the following services:

- **Centre of Competitiveness**, whose mandate is to provide business support in the following areas:
  - entering and operations in foreign markets
  - establishing international links and implementation of development projects in foreign markets
  - promotion of technological and business development, innovation and competitiveness
  - acquisition of different funding sources.

Centre of Competitiveness thus represents a point of contact and a meeting point for Slovenian development and export-oriented enterprises.

- **Legislation and Policies Lobbying Centre**

In order to improve the competitiveness of the Slovenian economy, GZS continuously increases its strategic impact decision-makers at governmental and parliamentary level, and the National Council with the aim to foster carefully coordinated interests of its members in the field of strategies, policies and legislation at national, regional and industry level.

GZS also carefully monitors the progress made in key areas of Slovenian economy competitiveness, paying particular attention to the program of eliminating administrative barriers and burdens for 2009.

- **InfoCenter,** offering fast and efficient access to quality business information
  Information services provided by the Centre are:
  - GZS monitors and regularly reports on changes in Slovenian and EU legislation and other specific area regulation;
  - GZS provides information on interesting Slovenian and EU tenders, programmes and projects;
  - Business catalogue CD.GZS – current topics from different fields of business activities, 3 CDs issued annually;
  - Poslovni tednik and Mikroinfo – weekly electronic informative bulletin. Poslovni tednik with attachment Mikroinfo for small enterprises is issued fortnightly;
  - Glas gospodarstva – economic monthly with attachment Svetovalec;
  - E-novice GZS – current business announcements and information from GZS portal;
  - Restricted pages of GZS portal – professional materials, reports, analysis, presentations and forecasts of economic trends;
  - Branch associations and local chambers prepare separate information bulletins with specialized analysis of branch activities and regions;
  - Informiran.si web legal advice.

- **Legal Department**
  - Business advice
  - Infoptika provides professional advice on tax, finance, euro, labor relations, environment protection, legislation by economic segments and similar.


- **Strategic Communication Office**

  Assistance in marketing including:
  - Lists of contact addresses in Slovenia and abroad;
  - Local and foreign marker research and information on patents and foreign trademarks from reference local and foreign databases;
  - System of discounts in cases of offering of services or products to other members of GZS;
  - International exchange of offers and demands – search for local and foreign business partners and publication of offers and demands on www.borza.org and specialized magazines and other publications;
  - SloExport – comprehensive     list of Slovenian exporters and a market tool for establishing contacts with foreign partners;
  - E-catalogues – detailed electronic presentation of enterprises, members of GZS by regions and activities;
  - Advertising in electronic and printed media published by GZS, at GZS events, presentations of an enterprise or products within GZS premises.

All the above mentioned centers provide common services oriented on Business assistance including:
- Urgenca GZS – business assistance in case of urgency;
- Vprašamo namesto vas (we ask in your place); posing questions to professionals or institutions and transfer of relevant replies;
- Moj spletni odvetnik (my web legal counsel);
- Quick legal electronic manuals;
- miniMAX – web programme for accounting;
as well as training – specialized professional training and education.

Out of all GZS employees, 63 % hold university degree. The organization is aware of human capital, which is reflected not only in the education and skill of its employees but also in their commitment to the work and their satisfaction.

They respect all generations and avoid stereotypes. They encourage individuality and connectivity, creativity and flexibility and in-depth weighting of the arguments and problem solving.

From the above summary we can see that GZS is largely not focused on issues related to the daily business of small and medium size enterprises. In this respect an e-business promotion centre will form a superstructure on the platform of services already offered.

## 5.2   The idea of e-business promotion center

The idea for the e-business promotion center portal is to be a part of the SEEM, run by the Slovenian Chamber of Commerce. We can define the e- business promotion center portal as a window served for Slovenian companies to access a Pan-European electronic market where:

- they can participate irrespectively of size or locality
- can work and collaborate without technological, legal or other constraints
- can engage in numerous continuously changing networks of partners and create added value for products and services

E-business promotion center portal would be a user friendly web based application, accessible at anytime and anywhere.

From the organizational point of view, the e-business promotion center would take a form of a virtual net-broker, helping companies to form strategic partnerships (in form of virtual organizations) and identify business opportunities.

From this perspective, partnerships created between separate companies participating in e-business promotion center will follow the central logic and characteristics of virtual organization, that is:

- Temporal partnerships that last as long as the market opportunities are beneficial for the cooperating partners

- Partnering companies may be involved in several virtual organizations at any given time

- Partner companies complement and share resources in order to improve competitiveness as a whole

- Cooperating partners contribute their core competences to the partnership. Their relationship is flexible and based on mutual trust

- Grid technologies and web services, on which this virtual business environment is based would enable fast and extensive exchange of information between geographically dispersed and organizationally separated companies and their collaborative work.

The e-business promotion center will therefore enable potential partners to form a virtual organization and combine their knowledge into new products and services faster than their competitors.

In this context explicit knowledge will be used and shared as it is more tangible, easier to detail and communicate to e-business potential partners and customers.

Also, codification strategy as the means of knowledge dissemination would be applied, where organizations knowledge is carefully codified and incorporated into profile information (i.e. offers, qualifications, product specifics, etc.) available to all potential partners, while personalization strategy would be applied as supporting role, once the business is already established and well on the way (i.e. operations of virtual organization).

From the technological point of view the e-business promotion center portal will rely on the same technological backbone as it is anticipated for SEEM, i.e. grid technologies and web services.

**What does that mean in a real-life scenario?**
As described, e-business promotion center portal assumes a growing need for collaboration, data sharing as well as other modes of interaction. Companies will therefore have to open business critical data, making them accessible to other potential partners.

The sharing that we are concerned here is about more than simply document exchange. It can involve direct access to software, databases, etc. where all companies define the conditions under which the sharing occurs.

Let us take an example:

A registered company in the e-business promotion portal - The Buyer raises the demand for the delivery of a server with a specified configuration. The demand raised triggers Company's A system to prepare the quotation. The preparation of the offer is automated in a way that the system checks for the configuration in the product specifications, connects to Company's A ERP and checks for the price and stock of separate components.

Company A thus defined and allowed access to part of its business data stored in its internal business programs and data bases.

Additionally, e-business promotion center also addresses the problem of electronic identity as described in Chapter 4. In general we are talking about the problem of employment and recognition of one's electronic identity in a multiple domains, i.e. multiple partners internal

networks or simply put accessing all partners shared data only with one username and password (SSO – Single Sign On paradigm), that is primarily a consequence of:

- Problem of interoperability, that e-business promotion center solves with the use of web services. As already mentioned above, e-business promotion center will be a web based application, triggering job requests for accessing internal resources based on web standards, that are easier and what is even more important, possible to implement in/on every platform and databases.

- Circle of trust that becomes more important as companies move from known and trusting trading partners to first time interactions. E-business promotion center addresses the issue of managing trust within the larger context.

  As we will see, the center assumes the adoption of written rules as the base of cooperation between e-business promotion center and companies involved.

- The same goes for privacy compliance, where an individual is subjected to different privacy policies and must be aware of such fact as he moves from one trusted domain to the next within a SSO interaction.


As explained, the e-business promotion centre would act as a net broker with following roles:

- Establishing and maintaining a platform of enterprises with interest and potential for membership in an emerging virtual organization. In this respect the e-business promotion centre has the following functions:
  - establishing enterprise data base including complementary and competitive resources and capabilities;
  - together with member enterprises adopting written rules as the base for cooperation between GZS and enterprises including mission, vision, rules and regulations of e-business promotion centre and thus creating trust in GZS and its e-business centre, the system of supported business cooperation itself and potential business partners.
  - Observes internal and external environment of the platform and makes proposals about how to adapt to the arising changes. It keeps track of the resources and core competencies of partners and their performance, which also includes its search for new partners with missing complementary resources.

- E-business promotion
  - Assistance in creating profiles;
  - Applications training;
  - Drafting of template agreements and other business instruments;
  - Drafting of standardized business procedures.

- Support to the virtual originations' business operations
  - Assistance in building up of virtual organizations;
  - Monitoring of the work of a virtual organization and support for all involved partners;
  - Acting as a mediator in conflict situations;

- General services
  - Promotion of Slovenian enterprises abroad and seeking of foreign partners interested to participate in a virtual organization;
  - Connecting with other mediators, chambers of commerce and similar.

In order to secure a successful take-off, e-business promotion center would target all major economic actors, that is:

- Micro companies, representing the majority of GZS contractors and e-business promotion center partners

- Small companies, possibly representing the most active group of participating partners since they are experienced in collaborating in continuously changing environments, sharing responsibilities and revenues.

- Medium-sized companies and big companies, possibly representing e-business promotion centers' most frequents customer.

## 5.3 SWOT analysis

Before we explain in detail the e-business promotion center in real–life scenario, let us summarize the strengths, weaknesses, opportunities and threats we can foreseen for the e-business promotion center, compared to the current Slovenian business environment situation.

<div align="center">Table 6<i>: SWOT analysis</i></div>

| Strengths | Weaknesses |
|---|---|
| A substantial strength lies in a potential of GZS, which is tied fore mostly to:<br>- detailed information on Slovenian enterprises based on past government support in the form of compulsory membership which enables the establishment of new databases;<br>- the fact that GZS is synonymous with an organization providing support to enterprises;<br>- currently active role in market repositioning and focusing on small and medium sized enterprises, by which it builds knowledge and skills within emerging needs for new support services;<br>- Skilled, educated and foremost sufficient staff.<br><br>Slovenian Chamber of Commerce operates in all Slovenian regions and active in the field of many industries. It continuously increases its strategic impact on decision-makers at governmental and parliamentary level, and the National Council with the aim to foster carefully coordinated interests of its members in the field of strategies, policies and legislation at national, regional and industry level. | Weaknesses are mainly associated with the system itself. It is prerequisite to highlight:<br>- Interoperability, where it should be stressed that "one-type fits all technology" simply does not exist<br>- Circle of trust; it is impossible to expect that companies will be aloof from cooperation with complete strangers. The fact that GZS acts as a guarantor or better a promoter, the problem inevitably diminishes, but it does not go away.<br><br>The strength of e-business promotion center in enabling all participating companies to collaborate and with joined efforts satisfy emerging market needs also represents a weakness. This new environment assumes that all companies are equal and compete only on their core competences. Of course this includes also big enterprises as well as foreign companies. |

<div align="right">"Table continues"</div>

| Strengths | Weaknesses |
|---|---|
| With coming era of e-business, SMEs face steadily increasing gap between the feasible rate of their own progress compared to the major international producers and national corporations having the resources to meet the world of change. Such environment results in high SME mortality or premature bankruptcies after its successful start-up. E-business promotion center would most definitely limit the number of SME mortality and bankruptcies, since it would enable all participating companies to collaborate and with joined efforts satisfy emerging market needs. | |
| Companies will be able to participate in projects, which would be otherwise impossible to complete. In such way they will obtain new knowledge, skills, rise in income number of employees and profits. | |
| As a consequence of the successful take-off of the e-business promotion center, a new common business culture will eventually develop, that will base on a positive attitude, equality, respect and gentleman's agreement. | |

| Strengths | Weaknesses |
|---|---|
| SME share an additional problem beside their size. Their business processes are not defined, standardized and optimized. It is the e-business promotion center that represents the mechanism enabling such enterprises to standardize and optimize their operations and improving their competitive position on the market. | |

| Opportunities | Threats |
|---|---|
| Although various mediators support SMEs, only few organizations are well placed to support significant improvements in the competitiveness of SMEs. This gives great opportunity for the e-business promotion center take-off, since it would be the only real SME supporting business environment.<br><br>New economy demands a different type of firms to be dominant and changes the way we do business.<br>In this new environment customers are more informed and demanding and therefore expect more complex and personalized products or services. E-business promotion center represents an electronic space stimulating companies operation in such environment. Within its success in the support to the arising changes lies its major opportunity for its successful take-off. | Slovenian SMEs face the following challenges:<br>- lack of knowledge in management tools, established practices and resources for effective identifying new trends and customer requirements in time<br>- an inherent bias of the Slovenes against changes and risk taking, reflecting in a week entrepreneurship and innovation culture present in Slovenia. Since such characteristics are historically embedded and change very slowly, they could affect the capabilities of businesses and of individuals to grasp and utilize new challenges and opportunities.<br>- demographic and educational characteristics ; Slovenia is also faced with an increasing share of aging population, which has not acquired education and skills of efficient use of ICT, thus representing a segment of population with inadequate level of education or skills. |

| Opportunities | Threats |
|---|---|
| The fact that Slovenian corporate sector is based on an SME structure should be a major reason for its strength and flexibility, since smaller companies can adapt more efficiently to changes in the economic environment and will therefore identify and occupy market niches quicker than bigger entities. | SMEs do not trust mediators due to their often negative experiences mostly resulting in lost of money and wasted time. |

## 5.4  E-business promotion center

E-business promotion centre would be based on the concept and platform as defined for Single European Electronic Market and would be fully transferred into electronic environment.

The centre would include:

- **Profile management**, including:

  - **Company profile:**
    - contact information and a brief presentation of enterprise,
    - scope of its activities, expertise as well as
    - services and products specifications with division into basic variants and with the possibility of upgrade.

  - **Contracts and procedures:**
    - predefined agreements necessary for providing services or supplying products as well as securing the basic grounds for doing business and partner collaboration within the e-business promotion center
    - predefined supporting business procedures such as ordering, acceptance and preparation of quotes, signing of agreements and similar.

  - **Resources:**
    Information on sources, intended for the system itself and summary of locations, where particular resources which an enterprise is willing to share within the system are based and mode or rights of access to such resources.

- **Project management**, including:

  - **Project definition**:
    - Customer information and request for quotation
    - Customer contact information
    - Definition of a project, scope of its activities as well as services and products specifications

  - **Project partners**; list of all project partners and a link to their profiles and partnership history

  - **Contracts and procedures**, including:
    - Project specific agreements necessary for providing services or supplying products as well as securing the basic grounds for doing business and partner collaboration
    - Project specific supporting business procedures such as ordering, acceptance and preparation of quotes, signing of agreements and similar.

  - **Status;** Sorting and monitoring of activities related to certain projects, including generation of virtual organizations and the implementation of all support business procedures, signing of agreements and similar.

  - **List of all projects**, on-going, closed and in preparation

- **Partners**, including:

  - **List of partners**; list of all partners with a link to their profiles and respective projects

  - **Contracts and procedures:**
    - Partner specific agreements necessary for providing services or supplying products as well as securing the basic grounds for doing business and partner collaboration within the e-business promotion centre
    - Partner specific supporting business procedures such as ordering, acceptance and preparation of quotes, signing of agreements and similar.

  - *Searching* for potential new partners

- **Monitoring of new business opportunities** published on portal by other partners and/or GZS.

As may be seen from the depiction bellow, ATACO sistemi d.o.o. is already a member of e-business promotion centre. It is a small enterprise with eight highly educated employees. The enterprise has high level of knowledge integrated into its own solutions. The enterprise perceives the advantage of membership especially in the access to projects which would be otherwise impossible to complete. In such way it expects obtaining new knowledge, skills, rise in income number of employees and profits.

Its positive attitude is the result of trust in the concept of e-business promotion centre, based on equality, respect and gentleman's agreement.

Within the portal, the enterprise has created its own profile with contact information and brief presentation. It has defined all services and products it wishes to offer to its partners within e-business promotion centre and the complete procedure necessary for the obtaining a quote or offer and drafting of necessary agreements for both buyers and suppliers.

Figure 4*: e-business portal home page*

## 5.5 Outline of the project and the creation of a virtual organization

An enterprise has identified a request for quotation by Eurostat for new servers. As it wishes to present a quotation, it starts generating a virtual organization, which will be able to offer full scope of services and products as required.

The enterprise firstly defines the procedure for the project:

- Eurostat's request is for 12 servers located at 12 call centers across Europe. The Servers have to be able to securely synchronize its contents at any given moment in the manner of »all contents on all servers«. A safety copy not older than 30 minutes has to be secured and continuous work with a maximum 15 minutes of cut out has to be maintained.
- The enterprise outlines the solution in the system based on 12 IBM Blade servers based on ESX environment and redundant technology connected into a cluster. In such manner a backup server is secured at each location, which may be any support server of the remaining 11 servers within the cluster and thus limits the possibility of cut-out, secures safe data synchronization among all servers at any moment and real-time security copy at 12 locations.
- The enterprise defines the project on the portal, including the specification of requirements and in such way generates an invitation to partners into a virtual organization.
- It invites the suppliers of IBM solutions, ESX solutions, cluster solutions and IT enterprises from the countries where Eurostat's call centers are located. The enterprise assumes that the quotes by solution developers and general importers will be most favorable and complete. The enterprise also assumes that the installation works shall be performed by local small IT enterprises, taking into account their flexibility and eagerness to participate on project. For such purpose the enterprise defines appropriate terms of reference.

As may be seen from the picture below, an enterprise has defined a project and has included in the description of the project the following:

a. Basic description of solutions offered by the project
b. Client's requirements, including the maximum time for project implementation and time limit for submitting the offer
c. Division of the project into different sections, such as:

  1. hardware: IBM servers, ESX environment and cluster software, where the enterprise has limited its partners that it wishes to invite to the project (virtual organization) to general importers or developers

2. <u>configuration</u> of ESX, cluster and back-up solutions will be done by enterprise itself. For this purpose the enterprise has defined that in obtaining an offer for this segment, the system will connect its own ERP.

3. <u>server set-up services</u>; where the enterprise has limited its potential partners to the locations where Eurostat's centers are located.

Figure 5: *Generating offer*

- The system proceeds in searching within e-Repository for appropriate providers and asks each of them for a quotation by sending them the specification necessary (material specification obtained from technical documents, quantity, expected delivery time based on the deadline requested by Eurostat, time necessary for the production of requested goods, etc.).

- When quotations are received, the system ranks potential providers according to predefined parameters (financial, partner preference, compliment with requests, etc.). Company selects appropriate partners.

Figure 6: *Partner selection*

projects: status

edit project ➤

**EUROSTAT**

| IBM servers | Price | Requirements |
|---|---|---|
| COMPANY A | 225.375,05 € | OK |
| COMPANY A1 | 158.472,63 € | not in stock |
| COMPANY A2 | 286.472,58 € | OK |

**ESX**

| COMPANY B | 127.274,00 € | OK |
|---|---|---|
| COMPANY B1 | 165.384,84 € | OK |
| COMPANY B2 | 153.482,08 € | OK |
| COMPANY B3 | 164.837,73 € | delivery time exceeded |

**CLUSTER**

| COMPANY C | 37.284,94 € | delivery time exceeded |
|---|---|---|
| COMPANY D | 39.273,94 € | OK |
| COMPANY D1 | 29.473,95 € | not in stock |

**SERVER SET-UP**

| SME Austria (Wien) | 1.583,84 € | OK |
|---|---|---|
| SME Italy (Verona) | 1.572,84 € | OK |
| SME Sweeden (Uppsala) | 1.583,95 € | OK |
| SME Germany (Koln) | 1.589,49 € | OK |
| SME France (Dijon) | 1.592,95 € | OK |
| SME Czech Republic (Brno) | 1.504,00 € | OK |
| SME Hungary (Budapest) | 1.489,00 € | OK |
| SME Netherlands (Zwolle) | 1.573.05 € | OK |
| SME Denmark (Kobenhavn) | 1.582,94 € | OK |
| SME Poland (Krakow) | 1.489,73 € | OK |
| SME Norway (Oslo) | 1.576,93 € | OK |
| SME Finland (Helsinki) | 1.497,57 € | OK |

- As may be seen from the above picture, more than one enterprise has submitted an offer for particular segments. The system has primarily checked whether the partners are fulfilling requirements and has in the second round chosen a partner in relation to the price being offered.

  Thus the system has chosen the enterprise A for the supply of IBM servers, enterprise B for the supply of ESX environment, enterprise D for the supply of cluster environment and for setting up servers SMEs from different locations in EU.

- At the same time the system looks in technical documents, stored under product and services specifications, for the procedure needed in order to prepare the quotation for server configurations.

  Based on the information in the documentation the system sent internal ERP the following requirements for information:
  - Price for the configuration of ESX environment, connection into cluster and the implementation of back-up solution
  - Necessary resources for the implementation, separating the requirements for staff and needed quantity of man hours
  - Time for implementation.

  Let's assume we need 10 engineering weeks for configuration of all 12 servers.
  Now, the system checks in company's ERP, whether engineers, caring out these services are available within the timeframe when the project implementation is foreseen.

  The system calculates prices and delivery times in a dialogue with the ERP and in respect to buyer's requirements and selected offers and calculates that the configuration must be adopted in the second week after the signing of the agreement, meaning the requirement for 10 engineers.

  Taking into consideration that the requirement exceeds internal capacities, the enterprise decides to channel part of the services to already selected suppliers. The ESX environment will be thus configurated by the enterprise B, enabling our enterprise to lower the needed engineer days by 3 and is consequently in position to execute the business.

- When the offer is prepared, the enterprise sends it to the client (buyer). As it wishes to protect itself it sends to all previously engaged partners a letter of intent[4] as well as a contract template (based on a selected template) which will be executed by all partners in case of the acquisition of business.

The confirmation of letters of intent is electronically linked to the approval of our offer to Eurostat. Therefore, as soon as the last letter of intent is signed electronically, our offer is sent to Eurostat.

Figure 7*: Submitting Offer*



projects: status

edit project >

**EUROSTAT**

| Selected offers | | Contract | L.of Intention |
|---|---|---|---|
| 12x IBM Blade servers | - Company A | View | signed |
| 12x ESX | - Company B | View | signed |
| 12x cluser software | - Company D | View | signed |
| Server set-up | - SME Austria (Wien) | View | signed |
| | - SME Italy (Verona) | View | signed |
| | - SME Sweeden (Uppsala) | View | signed |
| | - SME Germany (Koln) | View | signed |
| | - SME France (Dijon) | View | signed |
| | - SME Czech Republic (Brno) | View | signed |
| | - SME Hungary (Budapest) | View | signed |
| | - SME Netherlands (Zwolle) | View | signed |
| | - SME Denmark (Kobenhavn) | View | signed |
| | - SME Poland (Krakow) | View | signed |
| | - SME Norway (Oslo) | View | signed |
| | - SME Finland (Helsinki) | View | signed |

**Internal data**
12x serves configuration     - 10 engineer weeks
(ESX, cluster, back-up)

**Status**
Offer          sent
Contract       pending

---

[4] Letter of intention is an instrument suggesting that a partner company is interested in participating in the project, if its offer will be confirmed and under the conditions specified in their offer as well as in contract template sent along with the letter of intention.

Now let's assume that our offer has been confirmed. The system automatically sends a contract to Eurostat (based on the template selected in our partner parameters). As soon as the contract between ATACO sistemi and Eurostat is signed, all contracts between ATACO sistemi and other partners in virtual organization are signed automatically.

## 5.6   Working on a project and within a virtual organization

Once the contracts among partners are signed, our company is given access to all relevant partners ERP data and can now monitor project progress in different stages.

As may be seen from the picture below, the project is separated into phases or particular tasks performed by individual partners.
For example, in case of the company A, which will provide 12 IBM servers, we can see that the servers are already supplied, the invoice has been sent and paid.

The picture below contains only summary of the state of affairs in a particular moment, while the background operations are far more complex.

If we look back the example of the supply of 12 servers. The column status may contain 3 values:

- Pending, meaning that we are waiting with the supply because of a particular reason, which is noted in a segment of internal information of Company A which the system can access. By clicking the link on status, we would be able to receive detailed information on the reason for the delay.

- In progress, meaning that the supply is in course. Information at what stage is the supply is also available by clicking on the status link. In such case the system would access internal programmes and information of company A and would obtain the information on the situation of supply.

  At what stage is the supply the system evaluates from all available information, from the envisaged time for supply and necessary phases, which are indicated in the product specification and actually executed work, which may be accessed from internal business programme.

- Delivered, obviously meaning that supply has been successfully executed.

Same values may be included in the columns invoice and payment, which are linked to the issuing of invoice and its payment. The user has an option to access more detailed information such as when has the invoice been issued, date of sending the invoice, date of

receiving the invoice, copy of the invoice, date of payment, copy of proof of payment and similar.

Figure 8*: Monitoring project progress*



Once the virtual organization is established, the e-business promotion center portal is intended to monitor project progress and performance of the virtual organization as a whole.

The coordinating company, in our case ATACO sistemi is responsible for maintaining and improving the collaboration among partners, allocating additional resources, replacing a virtual organization member with another and the like.

It is e-business promotion center or rather GZS as a background institution that helps our company in every activity needed in order for the project to be successfully concluded. It is also GZS that is engaged in disciplinary actions - as an impartial organization as well as in conflict solving processes, which might arise between partners.

## 5.7 Evaluation

Networks and geographical clusters of firms are an important feature of the knowledge-based economy. Because of the rising cost, increasing complexity and widening scope of technology, companies find it increasingly necessary to work with other organizations and institutions in technology-based alliances.

Also, current economic environment has forced organizations to increase their flexibility in order to reduce waste and increase the productivity of both labor and capital by integrating 'thinking' and 'doing' at all levels of their operations.

Flexible organizations merge flexibility, high product quality and a degree of customization, with the speed and low unit costs of mass production. In contrary to the traditional producers when crafts produced small quantity of un-standardized products and later when companies attained higher levels of productivity in the production of many standardized products through economies of scale, today's flexible producers are forced to attain higher productivity levels in the production of a diversity of more customized products or services, without sacrificing economies of scale. They do this by fully utilizing their human resource capabilities as well as their information and communication technology systems.

The main element of the e-business promotion center is to promote the competitive advantage of those exposed on a particular market, i.e. SME, which are at the moment left to their own devices and are competing with a competition including local and foreign large enterprises, which are picking the best bits of business. The only solution for SME is to form partnerships with the aim of becoming dangerous competitors, able to better their larger counterparts.

In doing so, SMEs have to overcome additional problems beside their size. Their business processes are not defined, standardized and optimized. It is the e-business promotion center that represents the mechanism enabling such enterprises to standardize and optimize their operations, improving their competitive position on the market.

Small enterprises connected in such way could represent serious competition to large domestic and foreign enterprises, as they would be in position to benefit from all the advantages of large enterprises while retaining the competitive advantages of small enterprises, such as flexibility, adaptability and understanding of the client.

Based on the case study and the challenges of SEEM described in Chapter 3, the e-business promotion center would also contribute in different ways to the realization of SEEM, where in all cases the role of GZS is substantial.

- **Regulation**

  Regulatory issues are considered the most important barrier for the SEEM to be implemented, which suggests the importance of the participation of public authorities in the revision, improvement and adaptation of regulations.

  Given the GZS active role in continuously increasing its strategic impact on decision-makers at governmental and parliamentary level, as well as the National Council with the aim to foster interests of its members at national, regional and industry level, its e-business promotion center could well contribute to harmonized laws as the basis for market rules, business competitiveness and consumer protection.

- **Standardization**

  To achieve SEEM, it is prerequisite to have contracts created and negotiated automatically based on standardized guidelines, common business processes and transaction procedures. E-business promotion center will in a way operate as a virtual net broker, securing that all member enterprises adapt to common written rules, agreements and other business instruments as the base for cooperation, thus offering a well standardized electronic business environment.

- **Circle of trust**

  E-business promotion center assumes:
  - the adoption of written rules as the base for cooperation between e-business promotion center and enterprises, including rules and regulations for daily business
  - monitoring the work and respect of those rules by all partners
  - acting as a mediator in conflict situations and
  - continuous monitoring of existing circumstances, improving the state and implementing new adjustments into the system,

  thus creating trust in GZS and its e-business promotion center, the system itself as well as potential business partners.

- **Technological constraints**

As discussed, the e-business promotion center would be a virtual portal based on grid technology and web services. From technological point of view it will therefore base on common ontologies and set of IT standards for transactions and negotiations thus enabling a fully interoperable electronic environment.

- **Societal and linguistic cohesion**

Since the e-business promotion center assumes the creation of common lexicons and ontologies it assures linguistic cohesion.

As a consequence of inclusion in e-business promotion center, it could be argued that a new common business culture will eventually develop, that will base on a positive attitude, equality, respect and gentleman's agreement.

# CONCLUSION

Two guys were walking through the jungle. All of the sudden, a tiger appeared from a distance, running toward them. One of the guys took out a pair of Nikes from his bag and started to put them on. The other guy, with a surprised look on his face, exclaimed, "Do you think you will run faster than the tiger with those?" His friend replied, "I don't have to outrun it, I just have to run faster than you."

There is a truth in this joke though, the more adaptable will survive. Although we can laugh at it, today's business environment is all but funny. There is a general consensus of a new social and economic reality, largely based on new communication technologies. In particular, this applies to the business world, transformed by a number of forces such as globalization and the advent of the internet. The prevalence of terms such as "new economy", "information economy", "digital economy" and so on, suggests that we have a new business reality and that the role of IT and the internet are significant or perhaps even defining features or characteristics of this new business environment. Collaborative networks of businesses are becoming one of the most powerful strategic business trends. The emergence of this new business reality has led to dramatic redefinitions of the nature of organizations, underpinning the ideas and actions of strategic alliances and the notion of collaborative advantage.

With technological advancement business avenues have gone up rapidly. Let us take a simple example. Look around you and see the profusion of electronic gadgets in the market. But against all these rosy images, pressure on today's business leaders is on the rise since competition is getting stiff by the day. So unless one manages his business with all seriousness and with full utilization of his skills, it is quite possible that instead of rising

up the business ladder, he may fall head down. Therefore he has to learn the intricacies of different aspects of managing today's business environment.

Companies nowadays have to react quickly, must know all different legislations and regulations… Since SMEs usually do not have nor time nor resources for such instant reactions to the market, I believe that e- business promotion center - evolved around the existing Chamber of Commerce – could be solution for such companies.

One can look at the idea of SEEM as an utopia but I believe it has some good solutions that I emphasized and utilized also in my case.
We don't like the joke, because we don't like the world which it represents – *homo homini lupus est* - however the idea of SEEM has the potential to set a new foundation and a new environment based on collaboration and mutual prosperity.

The advantage of SEEM can be perceived in the access to projects which would be otherwise impossible for SMEs to complete. In such way companies can expect obtaining new knowledge, skills, rise in income, number of employees and profits.
Positive attitude toward SEEM could also be the result of trust in its concept based on equality, respect and gentleman's agreement.

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