SECTION 3:   APPLIED COMPUTER SCIENCE

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APPLICATIONS OF THE MONTE CARLO SIMULATION METHOD IN ECONOMY. ORIGINAL SOFTWARE APPLICATIONS.

Abstract
1. Introduction
 Monte Carlo methods are nowadays a reliable instrument in the numerical analysis. These methods are used in economics, engineering, military tactics and strategy, social models. In the paper are presented two case-studies which use the MC method.

2. Case study no 1: Streamlining of the production according to the performance of the actual manufacturing equipment
 Any business plan requires accurate data employed to asses the production capacity which is an important input parameter. The evaluation of a parameter may be done using several methods. In the paper is presented a case study which uses the Monte Carlo simulation method in order to predict the production for a given manufacturing unit.
 Synthetic results are presented in the figure above.
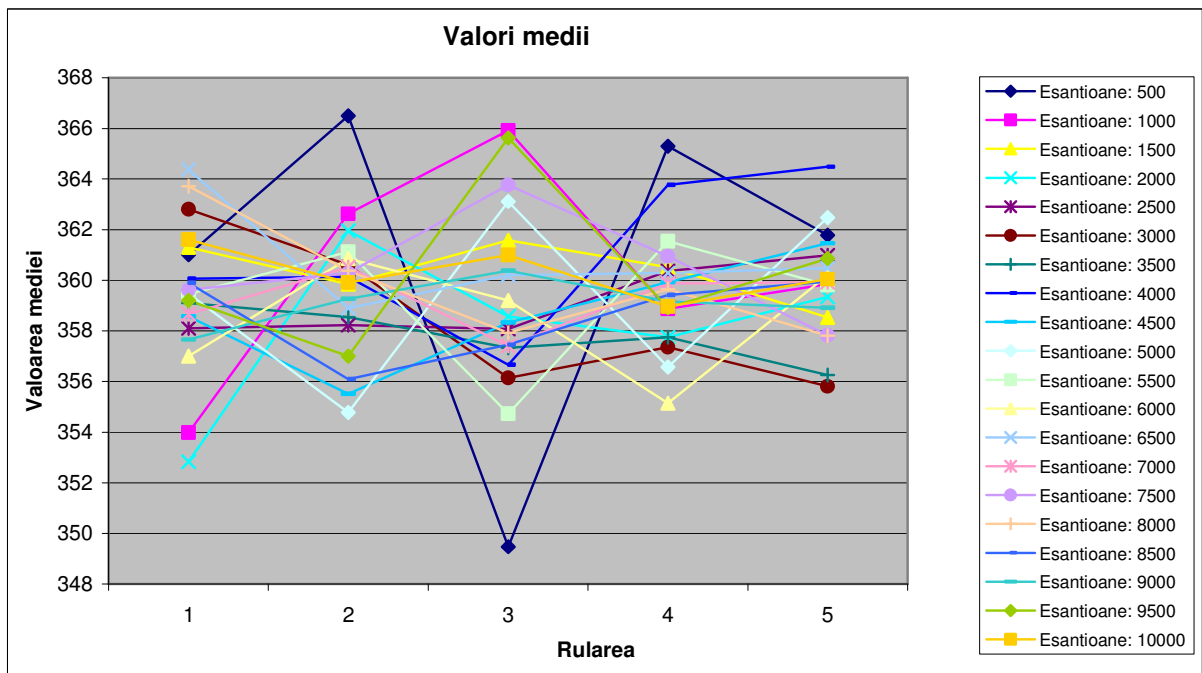
There was written an original software which uses different numbers of random values and for each such number there are considered several studies. The source of random numbers is

a table which may be generated in any programming language. In this way there may be compared the results based of each data source: function of a given programming language or random numbers generator. These results are more significant for an analyst rather then "pure" mathematical studies.

3. Case study no. 2: Simulation of the behavior of the market using the Monte Carlo simulation method

The behavior of the market regarding a product is important for both the manufacturer and the distribution chain.

Thus, in the life cycle of a product may be identified 3 great periods.

The first one is the period when the product is presented to the public in several sealing units. There is created a strategy of the marketing of the product: advertising, promotions, etc. The marketing presents the product as having its own "personality" and as being a very good and modern alternative to the existing products. The volume of sales is higher each day.

In the second period the public knows the product and buys it without the aid of a publicity campaign, promotions, etc.

In the last period the public is leaving the product and start buying other products. The solution is to rebrand the product which is presented with a new shape, color, flavor, etc. Another solution is to keep the product for a while and to launch another similar product in order to keep the customers buying the goods of the same manufacturer. Otherwise the competition will promote its own products to fill the gap of the market.

It is obvious that the study of the lifecycle of a product is paramount for a manufacturer. Knowing the exact moment of the age of the product, it can be promoted in an optimum way and the income is high.

One of the methods to asses the moment of the lifecycle of a product uses the Monte Carlo simulation method.

In the paper is presented the algorithm, the original software application and the results.

4. Conclusion

An actual concept is "Knowledge Based Business". It consists of researching business and management issues, and to create reports which synthesize the rigour of academic analysis, the practical know-how of experienced managers and the inspiration of original thinkers. These reports, similar to the customised agendas for the board of directors, are designed to be a valuable resource to be used by senior managers, project managers and all members of a team.

To create such accurate, easy to understand and instant generated reports there must be used advanced instruments of analysis consisting of modules of software which solve a given problem, these studies being installed in the actual software system of the company.

In the paper are presented two studies which use the Monte Carlo simulation method for two distinct problems:
- ➢ *evaluation of the performance of the actual equipment of the company;*
- ➢ *evaluation of the age of a given product.*

For each study there was created an original software which process the data and offers friendly output data: reports and graphs.

Keywords: Monte Carlo simulation method, case studies, original programs

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METHODS TO GENERATE AND TO TEST RANDOM NUMBERS.
ORIGINAL SOFTWARE APPLICATIONS.

Abstract
Design of random number generators is an issue which has evolved in close connection with the computer technology. Although, pseudorandom number generators can be found in most of the programming languages, the user cannot handle the algorithm behind this type of generators.
In the paper are presented several methods to generate uniform and nonuniform random variables. To process in a detailed way all the aspects of the algorithms there were created several programs, the results being visualized and presented in the figures of the paper. Thus, there are presented some interesting aspects of the linear congruential methods, a multiple prime random number generator, some methods to generate nonuniform distributed random variables.
An important aspect presented is the algorithm employed to identify the sequences of random variables which are repeating within a set of random values. The original algorithms and programs presented in the paper are general instruments which can be used in more complex studies.

Keywords: nonuniform random number generators, randomness test, original programs

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MODELING PRONUNCIATION DICTIONARY AND LEXICON ADAPTATION OF SPEECH RECOGNITION SYSTEM.

Abstract
 This work deals with the series of new experiments to use existing speech tools and speech resources for research the characteristics of East European Spoken Language and modeling of pronunciation vocabulary for adapting lexicon of Speech Recognition System to new words for building speech interfaces. Was used the open existing speech resources and speech tools.

Keywords: language modeling, Speech Recognition, Signal Processing, Tools.

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MODELING WORKFLOWS FOR BUSINESS PROCESSES

Abstract
Complexity of real systems requires adequate tools for their execution. Due to the wide range of activities that must be executed and due to a given set of resources used, the tools that allow an effective and efficient management become more and more important. All processes and business processes also involve coordination and efficient resource utilization. The complexity of applications that must be executed requires a sophisticated computer architecture that is spread in a wide range from a personal computer through the web and grid. For an efficient management was developed the workflow for a lot of processes.
The workflow can be defined as: the automation of a business process, in whole or part, during which documents, information or tasks are passed from one participant to another for action, according to a set of procedural rules. It interact with the Workflow Management System that can be defined: A system that defines, creates and manages the execution of workflows through the use of software, running on one or more workflow engines, which is able to interpret the process definition, interact with workflow participants and, where required, invoke the use of IT tools and applications.
Concerning the Business Process Management many standards were developed by the BPMI [3] and Oasis [1] and the Workflow main contributor is Workflow Management Coalition. The main components and interfaces of the workflow architecture proposed in the Workflow Reference Model [2] is given in the Figure 1.
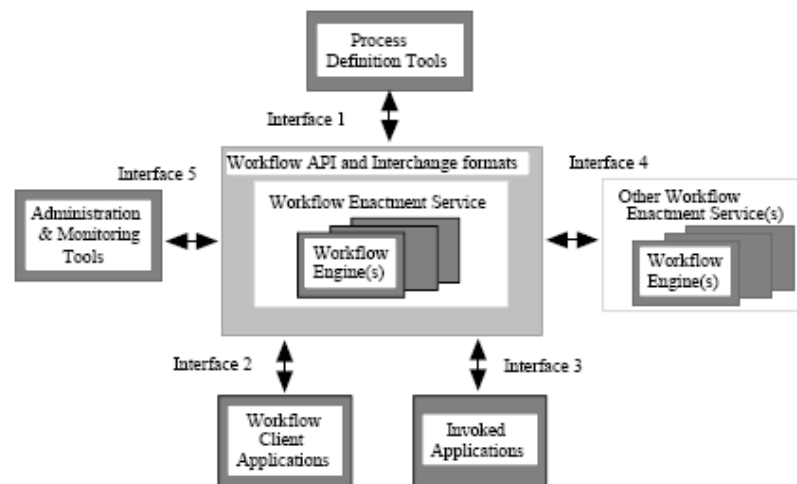
Figure 1 Workflow Reference Model: Components and Interfaces
Workflow design evolved also based on the work done by van der Aalst [4]. A set of patterns were proposed. These allow designing complex workflows and allow emphasizing the parallel execution (concurrency), synchronization, joining splitting and so on. As basis for design were used Petri nets and their derivatives for patterns in workflow design, while the Business Process Management was developed mainly on the basis of pi-calculus [5].

One of the major problems of small and medium sized companies is that the tools used for designing the workflow require not cheaper software. Between the projects that can help such companies is the Virtual Internet Service Provider (VISP) [6].

The patterns given in the [2], [3], [4] and [5] are not detailed here. In our intention is the fact that the designed workflow must achieve the user requirements. Some comparative analysys concenring the concepts used [4] and [5] will be shortly done. Another main feature of the workflow design is that the capability of the designed workflow allows to rollback in the case of failure of one activity during the process execution.

The paper intend also to detail some of the features of design oriented on services. In this case the details concerning the patterns are not significant. The services depend more or less by the area in that the workflow is used.

The workflow interfaces must be carefully designed due to the interaction of the workflowenactment services to the Designed process and its needs for updating during the execution phase, the user, another workflow engines, ERP (user applications).

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DESIGNING WORKFLOWS FOR BUSINESS PROCESSES

Abstract
Workflow management is a technology supporting the reengineering of business and information processes. It involves: (1) defining workflows, i.e., describing those aspects of a process that are relevant to controlling and coordinating the execution of its tasks (and possibly the skills of individuals or information systems required to perform each task), and (2)providing for fast (re)design and (re)implementation of the processes as business needs and information systems change.

To effectively support Workflo0w Management, organizations must evolve their existing computing environments to a new distributed environment that:

- *is component-oriented, i.e., supports integration and interoperability among loosely121 coupled components corresponding to heterogeneous, autonomous, and/or distributed (HAD) legacy and new systems;*
- *supports workflow applications corresponding to business or information process implementations accessing multiple HAD systems;*
- *ensures the correctness and reliability of applications in the presence of concurrency and failures, and*
- *supports the evolution, replacement, and addition of workflow applications and component systems as processes are reengineered.*

The commercial WFM systems can support document management, imaging, application launching, and/or human coordination, collaboration, and co-decision. Although many of these WFM systems meet some of the requirements above, they allow only limited interoperability (in terms of the types of HAD systems they can integrate and tasks they support), may not ensure correctness or reliability of applications in the presence of concurrency and failures, and suffer from performance and scalability problems. Therefore, commercial WFM systems currently cannot support enterprise-wide workflow applications effectively.

To satisfy these requirements, we believe that the following two key infrastructure technologies must be combined with the capabilities commercial WFM systems already provide:

- *distributed object management (computing) (DOM). It supports the interoperability and integration of HAD systems and applications implementing business or information processes. DOM allows WFM systems to cope with replacement, migration, and evolution of HAD systems or changes in their functionality and data. In addition, DOM provides an object model that facilitates managing complexity by the use of abstraction, inheritance, and polymorphism. Other distributed computing approaches that currently offer a lower level of interoperability than DOM may also be useful in providing interoperability for WFM.*
- *customized transaction management (CTM). It supports the interoperability and it ensures the correctness and reliability of applications implementing business or information processes, while permitting the functionality each particular process*

requires (e.g., isolation, coordination, or collaboration between tasks). In addition, CTM copes with changes in (i) the correctness and reliability requirements of the process, and (ii) the correctness and reliability guarantees HAD systems provide.

Concerning the workflow design we intend to take under consideration the following as main objectives: eliminate the buffers, one at a time processing, balancing bottleneck flows, minimize sequential processing and handoffs, scheduling based on job or event task, minimize multiple paths.

The two basic ways of organizing activities are by process and by product, depending on the company/department specificity. The process orientation (functional layout) groups activities according to the following:

- *most common when the same activity is used for producing different products or services or when serving many different customers;*
- *utilization of equipment and personnel tends to be high.*
- *Product orientation groups all necessary activities to complete a finished product or service into an integrated sequence of work nodes. In the case of product orientation, we obtain faster processing rate, lower WIP (Work In Process inventories), less unproductive time due to setups, less transportation time, less hand offs, a capital intensive way of organizing activities. Between the orientations one of the most frequent is that of the resource utilization perspective due to the product/service volumes that must be quite high. Another orientation that is a hybrid between product and process in manufacturing in the group technology (product clustering).*

The criteria for workflow design this concern:

- *dysfunctional of the workflow: extensive information exchange, data redundancy, long throughput times, high ration of control and iterations, many procedures for exception handling and special cases, poor service quality and customer satisfaction and conflicts across departments;*
- *importance of the workflow: it (the workflow) may contribute more or less to the critical success factors of a company, its profitability, customer satisfaction, market share;*
- *feasibility of the workflow concerns the costs, the scope and more other.*

As design criteria can be used: quality, costs and time.

The standards used see WfMC and those of OASIS must be used in order to improve a high compatibility of designed products. Also the specific works done by van der Aalst contain a lot of useful methods and proposals.

The paper intends to give a framework for designing the workflow in the larger context of existent standards and tools. The Business Process Management is one of the most required in many areas of today activities. The activities and also the tasks must be done in an efficient way and also in the shortest time interval. The parallelization and the resources used in the activities and by the tasks are also one of the main objectives of our proposal.

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SOLUTIONS FOR E-BUSINESS SECURITY

Abstract

Business transformation through e-business, allows companies to enhance their supply-chain operation, reach new markets, and improve services for customers as well as for suppliers and employees. Hence, implementing the e-business applications that provide these benefits may be impossible without a coherent, consistent approach to e-business security.

Conceptually, e-business security represents an accumulation and consolidation of information processing threats that identify the need to protect the integrity and confidentiality of information and the need to secure the underlying support technologies used in the gathering, storage, processing, and delivery of that information. E-business security also calls on the traditional disciplines of personnel and physical security to complete the picture of safeguards that will be needed when addressing threats to the electronic business.

Network security has focused on keeping intruders out using tools such as firewalls. This means that business partners and customers get into the network, essentially through the firewall, but in a selective and controlled way, so that they access only the applications they need. Therefore, organizations have controlled and managed access to resources by building authorization and authentication into each e-business application.

Another approach is to provide a role-based access control infrastructure for all of the enterprise's e-business applications. With this infrastructure, there is no longer need to code security features into each application. Thus, this access control infrastructure simplifies the deployment of new applications, cut maintenance costs, and give organizations a consistent security policy.

Therefore, there is no one-security solution for an e-business system because the e-business application sits at the pinnacle of modern computing and is therefore susceptible to all the security weaknesses of the various foundation technologies.

This paper first presents an outline and analysis of the security needs of organization e-business system. This is followed by description and evaluation of approaches for securing e-business systems. Thus, packet filtering and application firewalls, circuit-level gateways, application protocol and VPN solutions are analyzed, and the need to monitor security events across the enterprise, is stated.

Keywords: threats, e-business security, network and system security, transaction security, e-business applications

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E-BUSINESS – TENDENCIES, PERSPECTIVES AND CHALLENGES FOR ROMANIA'S SUSTAINABLE DEVELOPMENT

Abstract
*The term **"e-business"** refers to using the Internet for doing business. Every time a business uses the Internet to conduct business it is engaging in e-business.*
*The purpose of the paper is to emphasize the importance of **e-business** in each and every country worldwide.*
***E-business** represents in fact a number of processes, such as:*
***a)** The process in witch a firm communicates with customers or clients via email, or sends emails to other businesses, or orders/sells products and services via the website, represents doing **e-business**.*
***b)** In the same way, using the web to find information such as prices, phone numbers and reviews of products, or taking bookings and deposits via the website the process that takes place at that moment is called doing **e-business**.*
***c)** Also, using the web for research, such as the latest industry trends, or using the website to provide information about a firm's business, the activity itself means doing **e-business**.*
***d)** It is generally known that people are doing **e-business** if they use their website as a means of managing the information in the business, or if they use the Internet for online banking and to pay their bills using BPAY.*
*In March 2000, at the Lisbon summit, the European Union representatives set the goal of becoming the world's most dynamic and competitive knowledge-based economy by 2010 with the need to promote an "Information Society for All", and to address the issues of the digital divide in the adoption of Internet and **e-business** use.*
In the context of the Lisbon Strategy, which focuses on improving the competitiveness of the European industry and its sectors in a knowledge-based economy, the impact of information and communication technologies (ICT) for the acceleration of productivity growth is commonly recognized.
*That is why new business models and new ways of working are transforming the industrial world into a **"knowledge-economy"**.*
*Obviously, the productive use of information and communication technologies (ICT) to support both internal and external business processes is widely acknowledged as an important catalyst in this process. Information and communication technologies help enterprises to increase their efficiency and productivity, thus leading to an improvement of European competitiveness, only if accompanied and supported by organizational changes. Therefore, **e-business** has to be considered as a critical factor in achieving the Lisbon Strategy goals.*

*On the other hand, **e-business** is fundamental to the way in which business is done today: aided, abetted, supported and enabled by technology. No doubt, **e-business** is not just about the World Wide Web.*

*With all this arguments we can understand why **E-business** and **e-Economy**, in general, have become a high priority for the European Union. That why, as part of the Lisbon strategy, the e-Europe 2002 action plan has been focusing on bringing **citizens, businesses and administrations on-line** and creating a favorable framework for electronic communications and e-commerce. By accelerating e-business capabilities among the 19 million European small and medium-sized enterprises (SME), that are enabled to become more innovative and competitive.*

With the start of the follow-on initiative, e-Europe 2005, and the launch of a new phase of research and technological development activities under the Sixth Framework Programme, this is an opportune time to review what has been achieved and look forward to what still lies ahead.

In these circumstances the opinions of small and medium-sized enterprises have changed. Even more, today 55% of all SMEs think that e-business is just as important for them as it is for large enterprises. Nowadays, more than two-thirds of SMEs considered the Internet as an important business tool, and they use it to conduct business.

According the surveys the mid-sized enterprises have already closed the gap with large enterprises and the small. That why micro-enterprises are catching up rapidly.

The paper presents a complex analysis of the way in witch Romania uses e-business in comparison with other European countries.

Judging from the available data of Eurostat, it should be noted that, Romania uses its very limited infrastructures very efficiently: indeed, given its minimum level of adoption, its use of e-business is at the level of Portugal and Greece.

Only by implementing certain issues will enterprises begin to realize the full potential for ICT to improve productivity. Proving this, understanding the mechanism leading to productivity gains through the use of ICT, SMEs will be in an even better position to leverage new, emerging technologies with less risk.

The challenges ahead are plenty: new levels of interoperability of technology and business applications will lower costs and enable businesses to switch from one collaborative network to another. Technology development in broadband access and 3G mobile communications is emerging as a further driver for new forms of doing business. New ways of creating and exploiting knowledge will continue to build the foundations for the emerging knowledge-based economy of the future.

The paper considers the way in which new technologies might affect current and future legislation, and, on the other hand, how legislative developments might influence technology. Important factors to be taken in consideration are also interoperability and standardization. Because e-business involves significant cultural change, it is also necessary to study the socioeconomic impacts of new technologies, working practices and business models. This interplay between Research and Technological Development (RTD), policy, and implementation affects the business environment for all enterprises, but is of particular relevance in informing future policies for SMEs.

Key words: e-business**,** productivity, efficiency, competitiveness, cultural change, socioeconomic impacts, new technologies, working practices, business models

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THE STUDY OF VIRTUAL ECONOMY MODELS – A PRIORITY IN THE EUROPEAN UNION EXTENSION PROCESS

Abstract
 *Specialists have created several economic models used in **Virtual Economy** based on very complex data. Much of the **complexity** derives from the **simultaneity** in the some models.*
*For example studies of the **Virtual Economy models** were centered on the Treasury model, where the slightest change in interest rates has a direct and immediate impact on prices. This in turn feeds into output and unemployment which affects prices directly. It is generally known that Virtual Economy equations describe all the relationships and feedbacks between economic variables that its builders perceive to exist in the actual economy. However, solution of the model can take some time witch should be seriously taken into account.*
*The Virtual Economy model is an example of a "**reduced form**" model. Effectively the complex equations of the Virtual Economy models are rewritten in a form that no longer describes the linkages as they appear in the actual economy but in a manner which lends itself to a quick solution.*
*The paper investigates some of the manifestations and **major forces** driving the emergence of the **new virtual economy**. The main idea is to show the way in witch several models of the virtual enterprises can be proposed and investigated in the context of a virtual industry value chain. Studies have proven that the transition to the virtual economy is definitely technology-driven but is also shaped by social, economic and institutional forces.*
*The paper presents the link existing between **virtual economy** models and a number of significant issues concerning the **new governance**, **restructuring processes** and **social distancing worldwide**.*
*The **main questions** that should be answered are:*
- **a)** *What are the changing demands that a "knowledge-based economy" places on the day-to-day operations of countries, governments and their workforces?*
- **b)** *How are the forms of knowledge, work and workplaces changing?*
- **c)** *Which is the relationship between knowledge, the management of expertise and the private and public services of a country?*
- **d)** *How should private and public institutions be able to learn from experts, virtual economic studies, problem-oriented teams and informal networks?*

*In the interests of **competitiveness**, **public welfare** and **governance**, **national governments** have taken on the role of managing the knowledge resources that circulate globally in abstract forms in order to meet the changing demands of clients and publics in a multiplicity of local, context-sensitive applications. The changing demands for knowledge in a fast paced and global social and economic environment necessitate changes in the way knowledge itself is managed and the ways in which knowledge-workers and their work are organized.*
The process of bringing together diverse expertise and experts to solve practical client-centered problems as they arise requires flexible managerial responses as well as new recruitment and retention strategies. It is believed that the introduction of new information and communication technologies, the traditional contexts and places where key knowledge activities are done, styles of work, workplace values, practices, and norms, as well as career expectations are changing rapidly. These changes to the work environment are expected to impact on equity frameworks and to alter the assumptions underlying labor legislation. They

are expected to impact on the use of government buildings and client sites, home offices, and virtual economy models.

*The research is centered on the importance of knowledge and the mobility of knowledge professionals that should exist in each and every country. Case studies of the **diverse organizational forms** in which knowledge work is conducted, such as informal networks and temporary teams, will be complemented by examining the role of computer-mediated **"virtual teams"** and other forms of on-demand, need-based **"virtual organizing"** in large bureaucracies, and the implications of out-sourcing to temporary employment agencies, public-private joint ventures, temporary and flexible labor for the permanent workforce in both private and public service. The main goal of the project is to stimulate debate of **Virtual Economy Models** on the future organizational forms, working practices, core capacities and priorities of both private and public sectors in general and in **Romania** in particular.*

Key words: Virtual Economy Models, knowledge-based economy, complexity, simultaneity, productivity, efficiency, competitiveness, new technologies, working practices, business models, knowledge resources

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E-LEARNING – THE KEY TO CREATE PERFORMANCE AND EFFICIENCY IN THE EUROPEAN UNION'S EDUCATIONAL PROCESS

Abstract

"E-learning" refers to *computer-enhanced training*. E-learning is usually delivered using a personal computer. It includes learning delivered by other communications technologies. Methods include online lectures, tutorials, performance support systems, simulations, job aids and certain games. *Effective* e-learning is often a specific blend of different useful methods.

It is generally believed that *"E-learning"* is an approach to facilitate and enhance learning through both computer and communications technology. Such devices can include personal computers, CDROMs, Television, PDAs, MP3 Players and Mobile Phones. Communications technology enables the use of the Internet, email, discussion forums, collaborative software, classroom management software and team learning systems. E-learning may also be used to suit distance learning through the use of WANs (Wide Area Networks). It is also considered to be a form of flexible learning where just-in-time learning is possible.

The paper takes into account the *efficiency* of *the educational process measuring techniques*, stressing the fact that teachers need special help in order to organize their pedagogical perspective the best way possible. E-learning implicates several processes, such as: training, counseling, funding, development, dialogue, interaction, collaborative activities, enhancing thinking skills.

When approaching the E-learning subject, the *pedagogical* perspectives must be taken into account as well:

a) *Cognitive perspective* - which focuses on the cognitive processes involved in learning as well as how the brain works.

b) *Emotional perspective* - which focuses on the emotional aspects of learning.

c) *Behavioral perspective* - which focuses on the skills and behavioral outcomes of the learning process.

d) *Social perspective* - which focuses on the social aspects which can stimulate learning.

Nowadays, *Life Long Learning (LLL)* is considered being the key to any society's success and one of the main priorities of all countries worldwide. One of the big new markets on the Internet will be that of *education*.

The paper tries to answer to a number of questions regarding the way the educational process can become more and more *effective* and *efficient*, such as:

a) What are the *benefits* and *disadvantages* of *online learning* to both learners and institutions regarding the educational process?

b) What are the internal *management options* that could best accelerate the adoption of online learning by individuals, companies, universities and society as a whole?

c) What *strategic* and *developmental plans* would be appropriate in order to create a more efficient *educational process* measuring technique?

d) What are the main *obstacles* and potential *challenges* facing institutions?

e) How would collaboration as key issue sustain the *development* of the *European Union Extension Process*? If additional resources are needed, what are the top priorities that must be taken into account? Are there existing *governmental programs* and instruments that can be used?

f) What are the *priority actions* that need to be taken to accelerate the use of online learning? What can institutions do having in mind the existing *financial resources*?

Key words: E-learning, just-in-time learning, Life Long Learning (LLL), educational process, online learning, effectiveness, efficiency, performance in the educational process

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SUSE EMAIL SOLUTIONS BASED ON
LINUX ENTERPRISE SERVER 8

Abstract
 This paper describes the concept for the setup of scalable e-mail systems on the basis of the operating system SuSE Linux Enterprise Server. The concept represents a complete e-mail solution for medium-scale enterprises, public administrations, and all who depend on professional e-mail communication. By means of additional high availability and cluster concepts, the solutions presented here can be expanded for advanced requirements.
The utilization of proven Open Source components allows the realization of large and very large projects. SuSE Linux Enterprise Server is an ideal platform for establishing mail infrastructures that can be scaled from a few hundred to hundreds of thousands of users and customized according to their individual needs.
The availability of SuSE Linux Enterprise Server with the same code basis for all common hardware platforms from PCs to mainframes enables the gradual expansion of the implemented solution and direct recycling of its customizations and configurations. This helps to reduce investment costs and increases the investment security.
The e-mail solutions based on SuSE Linux Enterprise Server are characterized by the following customer advantages:
- *Modular and flexible structure*
- *Standardized interfaces*
- *High scalability and availability*
- *Possibility to configure an unlimited number of domains*
- *Use of an unlimited number of e-mail aliases*
- *Integration of an unlimited number of separate locations*
- *Support of all IMAP/POP3 clients*

Only SuSE Linux Enterprise Server packages with standardized Internet protocols and formats are deployed within the scope of the solution presented here. The use of internationally recognized standards provides several substantial advantages.
The use of the open standard LDAP (Lightweight Directory Access Protocol) as directory service facilitates the integration of existing structures such as LDAP servers, X500 services with LDAP interface, or any databases with LDAP interface. LDAP is a TCP/IPbased directory access protocol that is widely accepted as the standard solution for the intranet/Internet.
The integration of the existing structures is possible either by enabling direct access to existing structures or by synchronizing the information in regular intervals.

Keywords: scalable e-mail system, standard LDAP

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THE E-EUROPE, THE KNOWLEDEGE ECONOMY AND SOCIETY.
THE CONTEMPORARY "NATURAL-ARTIFICIAL" DUALISM

Abstract

Regarding the reconstruction of a World / e-World equilibrium: does exist a "Technology-Economy-Ecology" balance, sustained by the e-World, and a low balance of this type within a hypothetical (today) world without e-Concepts and e-Activities? Which is the embedded balance: Economy and Society/ Knowledege Economy and Society.
Which is the contribution of the e-Europe construct at the context of the above question?
Regarding all these the chairpersons have proposed a shift from analyzing the concepts toward integrating approaches. This shift would be based on dismantling myths, breaking up metaphors, and interfacing methods.
Two of the hard aggregated items belong to the e-natural stance of the world: artificial psyche and artificial society. New varieties of agents and human-internet interfaces would reduce the hardness of the aggregation. One integrative approach, as cognitive step, would be a triad (from triads) for the appreciation of these balances and, at last, worlds: t1 (faith; hope; will), t2 (prejudice; surprise; evidence), t3 (e-concepts; expectations; admisible time) - to fulfill the conceptual background regarding all the questions mentioned above.
Over this triad, the chairpersons have proposed the focalization on a new living structure: internetron (both systemic and non-systemic) into our world of systemhood and individualhood (alongside with: integron, metatron, netron, …, individicity). Also, new trends into the modeling, simulation and emulation *of the complex systems area: interactive modeling, representational multi-fuzzification onto hierarchical layers within probabilistic existence, correlation and concordance revised, subtleness, sublimation into wisdom.*
The members of a society (re)act according to their biological and technical spheres, to their aggregation, to their profoundness. So, a society is an implicit processor versus relative N sub-processors dealing with initial information-decision-action-renewed information cycles. The scientific approach upon the transit: societal processor <=> sub-processors may be an inter/trans-disciplinary one. The paper generates an incursion inside the gap between reality and reflection, involving: societal knowledge desire as a holistic aim, ecological aggregate attitude as eco-consciousness, an approach upon the Universal Consciousness and Evil terms and its connectionist corpus. Humankind development is melted with paradoxes and by model revealing/revising. So, the previous models of some paradoxes may be revised versus a new fuzziness approach (onto it N-1 / N ratio would converge to 1).
The gap between existence and reflection is the oldest topic, basic for these above mentioned question and balances, too.
Into this context, the chairpersons had referred the happiness and alienation status, and, together, had referred the Creative Partnership, the International Civil Society, the Creative e-Market, e-Economy,   e-Society, Knowledge Economy and Society – concepts and constructs.
The chairpersons propose this symposium into the 12th International Conference on Economic Cybernetics, November 2-4, 2006, as an intellectual bridge, in Bucharest, between Maribor, Slovenia and Wuhan, China - between WOSC (World Organization of Systems and Cybernetics) 13th International Congress of Cybernetics and Systems, July 6-10, 2005 and the 5th Workshop of the IIGSS (International Institute for General Systems Studies), June 2007.
Keywords: knowledge economy, e-concepts, society

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CHALLENGES OF THE E-BUSINESS ENVIRONMENT

Abstract
In order to compete in the global marketplace, businesses today must build a new generation of applications. Many of the requirements for e-business systems were not part of past application design. Enhanced user expectations and increased competitive pressures must be accommodated, along with changes in technology and a new business climate.

No company can ignore the availability of new technologies that, perhaps for the first time, truly support the redesign and implementation of new ways of doing business. The only question is how they can take advantage of these new technologies.

The Web is responsible for the biggest changes in business systems since the introduction of the computer itself, including new usage patterns, new user expectations, increased competition, and shortened product life cycles.

The larger portion of e-business comes from electronic commerce applications such as supply chain management. However, e-commerce applications are suitable for every business process. A Forrester Research study is predicting that North American online consumer sales, including auctions and travel, will hit US$329 billion in 2010 -- a cumulative average growth rate over the next five years of 14 percent. The latest sales forecast is US$13 billion higher than Forrester predicted in September 2004. And North America is only a part of e-commerce world. In this article our research focused on types of E-Business Applications, from simple Web-Site applications thru Business-to-Business Applications and some business model architectures.

As should be obvious to anyone who has been paying attention for the last couple of years, all organizations are dramatically impacted by e-business. This is true for manufacturers, hospitals, banks, schools, government institutions, etc.

E-business represents a deep and fundamental change in how things will get done in the world we live. At the most basic levels it changes the relationships between a company and its suppliers and customers. It affects how we get information as organizations and individuals and what information we share with others.

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KNOWLEDGE EVOLUTION AND THE SEMANTIC WEB

Abstract

The World WideWeb is an virtually unlimited information resource. However, it is difficult to unleash the entire potential of this information. The computers have dificulties to process and integrate this information meaningfully.

Recently, researchers have begun to explore the potential of associating web content with explicit meaning, in order to create a Semantic Web.

The first chapter is a short presentation of the World Wide Web versus the Semantic Web. Semantic Web is a concept that enables better machine processing of information on the Web, by structuring documents written for the Web in such a way that they become understandable by machines.

Next I will explore some of the most important concepts related to the Semantic Web: Information Representation, Ontologies and Agents.

Regarding the Information Representation in the Semantic Web I included a short presentation of XML and related technologies, RDF (Resource Description Framework) and RDF Schema and OWL (Web Ontology Language).

Another component of the Semantic Web is the ontology (collection of information). In philosophy, ontology is a theory about the nature of existence, of what types of things exist. In the Artificial-intelligence and Web research fields the ontology is referred as a database that formally defines the relations among terms. The ontology for the World Wide Web has a taxonomy (classification) and some inference rules.

To create more complex applications researchers have designed intelligent browsers, advanced Web Agents, global databases with the data from the Web. In the next chapter I will present some of the features of the Web Agents.

At last I will present some of the Semantic Web Development Areas.

Keywords: Semantic Web, XML, RDF, OWL, Ontologies, Agents, knowledge discovery.

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BUSINESS MANAGEMENT SYSTEM IN IT SECTOR IN ROMANIA

Abstract
Why are you in Business?
The Mission, Vision and Goal of an Enterprise
When asked, most managers would agree that the goal of a business is to make money. Some may say "I am in business to help the dissemination of the latest technologies throughout the economy or to contribute to the development of the Information Society in my country" - but if you do not make money, you will not be able to fulfil your goal of helping your community.
Let us think about making money as the ultimate goal of a business. Two questions immediately come to mind. First, how much money should an enterprise make? The answer, embarrassing as it may be, is: as much as possible. Second, how can you make this amount of money? The answer seems obvious: by conducting business.
But what can an enterprise do to make as much money as possible? Charge as much as possible? Not really; because there is a limit to what people are willing or able to pay and because it would encourage competition. The "price war" experienced in the last decade by the PC industry and the transformation of more and more IT products into "commodities" clearly indicates that raising prices is the last thing to do.
In this context, it seems that only way to increase the money you are making is to become better than your competitors at conducting your business. If you manage to be the preferred supplier of your clients, your bargaining power will increase and, more than that, if you become the only supplier in the market you will have absolute bargaining power. Is it possible?

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E-REGION PLATFORM

Abstract
An integrated e-Region platform could offer a large access to public and non-public services for various regional actors. The development of such an integrated framework needs to merge different viewpoints and technologies in order to create a life event regional portal supporting citizens and business needs. This approach aims at strengthening the regional partnership and the interaction between end users and public authorities at local and central level. This new generation of userfriendly digital tools offers connection to e-governmental portals supporting the 20 online public services, as stipulated in the eEurope 2005 programme, and creates links to a large scale of services, including e-business. This virtual framework stimulates the creation and facilitates the access to interoperable public virtual services and systems for the different user groups. The new perspective of integrated virtual services platform involves the process re-engineering, especially at the public entities level. The integrated e-region portal is a new concept for virtual multi-functional service development aiming at providing better services for the citizens and businesses available 24 hours a day for everybody and from everywhere, including wireless communication access.

The development of an e-region platform is in line with the Information Society Advisory Group (ISTAG) vision of creating intelligent, virtual public service.

The e-Region platform has as main goal a better interaction among regional actors, supported by various digital services including e-Democracy, e-Voting, e-Administration, e-Assistance, e-Justice, in some way even e-Healthcare or e-Education and e-Business. The active life-event regional platform focuses on main regional workflows which could facilitate administrative and operational processes supporting citizens and business in their interaction with regional entities. The structure of the online e-regional virtual services platform is built taking into account the regional organizational infrastructure and the relationship between the local and central public authorities and implements SOA concepts. In this view, the Regional development agency could be the integrator of the information workflows, ensuring interfaces with citizens and business (end users), as well as with other regional entities and public authorities, at local level (Regional Council, Town Halls etc) or at central level (Ministry of European Integration, other sectoral ministries).

The development of the e-region platform could implement a personalized treatement of life-events and also could offer an active way to involve citizens and organizations in the regional development. The innovation of the e-region portal consists in supporting through specific virtual services the development of the regional strategy and its implementation. This approach integrates different dimensions of the development framework to be applied in the creation of the e-region platform, such as: the users' expectations, the processes perspective and the technical aspects. The main needs of the end users focus on: information and intention building, contact, documents providing, documents filling in, contracts negotiations, electronic payments. One of the major goals of the e-region portal is the efficient interaction of the regional entities with the management and implementation units for the regional operational plan. The e-region platform could implement also the e-voting system for the local elections. The processes perspective takes into account the legal and organisational framework, data workflows and security.

The model implemented by the e-region platform involves the interaction of the following items (internal actors of the system):

- *Service Provider – the regional development agency an entity responsible for building, deploying, and managing services and to ensure the links with other regional and central public authotities;*
- *Service Requestor - an entity that requests a service (portal or application which wants to use a service);*
- *Service Runtime Administrator - a person or management system that performs management tasks for the portal;*
- *Service presentation - holds all information required for publishing, finding, and invoking services in the e-region platform;*
- *Service Repository - holds all information required for describing and executing services.*

At external level, the main actors who interacts with the portal could be citizens, representans of various public or private entities etc. The common operations executed by the external entities in their interaction with the e-region portal are:
- *main page of the portal opening;*
- *persistent and dynamic parts from the content metadata displaying;*
- *life-event choosing;*
- *service requested identification;*
- *link to the service.*

The technical issues focus on the best solutions for the front-end and back-end processes management and also on the best technical communication solutions to ensure the flexible and rapid online access and interaction using various devices, including mobile communication. The development of the e-regional platform involves the use of open standards, such as: W3C standards (XML, Web Ontology Language - OWL: URI and RDF, Web Service Description Language - WSDL, ebXML etc.) and OASIS standards (Universal Description, Discovery and Integration – UDDI).

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MODELS FOR EVALUATING IPO UNDERPRICING

Abstract
 When companies go public to gather financial resources, the stocks they sell in an initial public offering (IPO) tends to be underpriced, resulting in a substantial price jump on the first day of trading. Underpricing of IPO has attracted important researching efforts in the last time. The existence of underpricing in IPOs is significant to different models used in their measurement. However, there is a lack of consensus on what can explain underpricing among different researchers. It is well known that IPOs are underpriced in virtually all countries and that the number of companies going public and the extent of underpricing fluctuate over time. There is a large body of theoretical work explaining IPO underpricing, and most theories have been subjected to rigorous empirical testing. This paper is a review of the principal theories that have been proposed to explain IPO underpricing and discusses the main empirical models used to measure it.

Keywords: IPO, asymmetric information, underpricing

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THE ECONOMIC DYNAMIC MODELS USED IN THE
DIGITAL BUSSINES ECOSYSTEMS

Abstract
A ecosystem is a natural environment that includes all the living organisms: plants, animals, insects and all the interdependences between these. The dictionary definition of biological ecosystems goes like this: " A system of organisms occupying a habitat, together with those aspects of the physical environment with which they interact" (The New Shorter Oxford English Dictionary 1993); or "A community of living organisms with air, water and other resources" (The Merriam-Webster Third New International Dictionary of the English Language 1986).
The digital business ecosystem makes an analogy with the natural ecosystem; the studies on the natural ecosystems can be applied to business ecosystems in order to understand in inside mechanism that makes them move.
If one isolated species should evolve following the logistic mapping (as an isolated corporation would do), then the dynamics of two species would be expressed by a coupled system of two logistic equations. But in the nature there are three basic relationships between two species and these are: symbiosis, predator- prey and competition. Each model is described by a two-dimensional logistic equation with its own dynamical properties: stationary regime, periodicity, quasi-periodicity or chaos. So, these equations may describe a deterministic system or a chaotic one- it depends on the parameters of the equation.
These three models could be useful for thinking in the different interactions in the economic world: for instance two corporations may be in competition, may be in the situation of a predator and a prey or may be in a symbiotic relation. These models may be considered as the basic ingredients to construct more complex interactions in the ecological and economic networks.
The possibility of new simple views on the basic interactions between species in an ecosystem – or corporations in a market can enlarge the spectrum of combinations for building up more complex images of the ecosystem or of the market. Using these paths different models with a big number of elements that interact will appear and so all the three possibilities mentioned before may appear in different combinations. These three models can contribute and help to understand and to increase our knowledge about the evolution of ecological and corporation network.
Keywords: digital business ecosystem, model, corporation network

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E-DOCUMENT – A *NEW AND OLD* ELEMENT OF INFORMATIONAL SYSTEMS IN DIGITAL ERA

Abstract

In informational era, is a necessity for an organization that the information has been quickly interchanged? The highest ups must have the accuracy information about their business to fundament their decisions. This fact can be performed using computer technologies, Intranet, Extranet and Internet, and also electronic documents. Because these are insecure channels of communication, the documents must be confidence by use of digital signature. The digital signature has an official feature and protects electronic documents.

Keywords: digital signature, electronic documents, protection

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SOFTWARE SOLUTION FOR JOB SHOP SCHEDULING PROBLEMS USING GENETIC ALGORITHMS

Abstract:
The paper presents a software solution for job shop scheduling problems, which uses genetic algorithms for solving this class of problems. The paper describes the basic principles of the scheduling problems, the designed genetic algorithms and the resulting software.

KEYWORDS: job shop scheduling problem, genetic algorithm, software solution.

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THE DEVELOPMENT PROCESS FOR AN E-LEARNING COURSE

Abstract
 E-learning can be a very effective tool for organizations wishing to develop staff or provide training in new products and processes. His success comes from careful planning and execution. The development process for an e-learning course is a cycle of analyze, design, build, and test. This iterative process will continue until the final product is completed. This article presents some theoretical aspects of development an e-learning course.

Keywords: e-learning, development, design, learning materials

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BUSSINESS ON THE WEB

Abstract
For most business, it is not matter of whether they should be on the Internet, but when and how. This paper has also briefly discussed the main methods of marketing your product electronically. In this era of electronic communications, a mass-marketing approach is becoming less and less effective and the customer truly is becoming king.

Keywords: business, internet, electronic comunication

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AUTOMATIC DEVELOPMENT OF ELECTRONIC PRODUCT CATALOGUES

Abstract

Creating an electronic product catalogue is both a creative process and a software design problem. This paper proposes a development model for an electronic product catalogue that uses automated data extraction from the Web. The iterative software engineering process starts with the requirements analysis and goes on with the catalogue design. An automatic catalogue generation based on the design specification is the key of the rapid development of an electronic product catalogue.

Considering the availability of low cost computers and high quality of graphical user interfaces, electronic product catalogues become an increasingly important class of software systems. There are many different kinds of electronic catalogues: some present a large number of products with many variants, others present only few products with complicated and detailed descriptions. An electronic catalogue is an alternative to a paper catalogue, so it has to be produced rapidly with a limited budget. There are usually high requirements concerning the appearance of an electronic catalogue which demands iterative design cycles and layout variants.

An electronic catalogue is a software system and its development has to take into account all the problems and activities present in software development. Electronic product catalogues are special information systems with definable application fields and well identifiable characteristics like important multimedia product presentations and navigation facilities. An electronic catalogue typically appears as a CD-ROM or as a web application and its minimal functionality is comparable to a paper catalogue enriched with multimedia descriptions (audio, video, and animations) and cross references. The state of the art in electronic catalogues offer many more features which take advantage of the underlying computational power. We refer to these features as services. Services are: i) search functions to find products or explanations, ii) demos (animation or video) to illustrate the use of the electronic catalogue or some product, iii) inquiries and orders via online connection or by fax, iv) facilities to accumulate, compare, or combine products in one large order, or even v) games and animations to entertain and inform the customer.

An important problem in constructing an electronic product catalogue is product data collection and integration. The Web has become a major information provider for human and business consumption that also includes online product data.

The increasing number of e-commerce Web sites on the Web introduces numerous challenges in organizing and searching the product information across multiple Web sites. This problem is further exacerbated by various presentation templates that different Web sites use in presenting their product information, and different ways of product information they store in their catalogues. In order to have a good electronic catalogue, we have to solve the problem of automatically crawling and extracting of all products from online catalogues.

The advent of e-commerce has created a trend that has brought thousands of product catalogues online. Most of data-intensive shopping Web sites are made up of a combination of static and dynamic content, which is generated from an underlying database. Each of these

data-intensive Web sites present their product information in different presentation templates with different schema. In order to effectively make use of this information, we need to organize it and make it searchable for effective mediation over the Web.

Information extraction from Web can be categorized as wrapper development tools, semi-automated wrapper learning, ontology based approaches and template based automated algorithms. Wrappers are scripts that are created either manually or semi-automatically after analyzing the location of the data in the HTML pages. Wrappers tend to be brittle against variations and require maintenance and human intervention when the underlying Web sites change. Wrapper induction systems generate extraction rules from semi-structured Web pages. But these wrapper induction systems require labeled training examples. The template based systems employ a strong bias on the expected presentation of items within a list of products segment. Many of the shopping Web sites organize their content in a taxonomy of categories and present the instances of each category in a regular fashion. This could be a basis for automatic development of product catalogue.

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STANDARDS AND GUIDELINES FOR INFORMATION SECURITY POLICIES

Abstract
Security policies defines secure for a system or a set of systems. Policies are the foundation of effective information security. The task of policy creation is complicated by human and organizational resistance. Technology does not work alone. Rationality and substance are not enough to change human behavior. The process of development affects how people feel about policies and whether they see these rules as needless imposition of power or an expression of their own values.

Keywords: security policies, system

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DIGITAL BUSINESS ECOSYSTEMS – THE KEY TO SUSTAINABLE DEVELOPMENT IN THE EUROPEAN UNION EXTENSION PROCESS

Abstract:
*It is generally considered that the greatest impact of the Internet on the business worldwide is the shift from physical to digital value chains. The Web makes it possible to develop deeper relationships with customers by linking the information systems of interacting organizations together in order to reduce or eliminate the time required to react to changing market requirements — leading to the construction of complex business-to-business **Digital Ecosystems**. The main idea is that customers can order from a Web site or independent real-time exchanges and the information will be immediately transmitted throughout their own and their suppliers' organizations. In this way, everyone knows what needs to be done to fulfill the order. The advantage is that little time is wasted in communication when a mistake appears. Companies have the ability to leverage their core competencies while providing several services to customers.*

*Nowadays, **building a community that shares business, knowledge and infrastructures** is considered being part of the future. This will dramatically affect the way enterprises are constructed and business is conducted. It is generally believed that organizations will be replaced by more, fluid, amorphous and transitory structures based on alliances, partnerships and collaboration.*

*The paper shows the implications of all the **dynamic aggregation of services and organizations** which requires a further stage in ICT technology adoption. That is why the dynamic interaction with cooperation and competition of several players is needed in order to produce systemic results in terms of innovation and economic development.*

The basic players to be considered are:

- *research and education organizations and innovation centers;*
- *small and large enterprises with their associations;*
- *local government;*
- *public administration.*

The adoption and development of adaptive technologies, allows new models of business based on the dynamic association of enterprises. The ecosystems are characterized by intelligent software components and services, knowledge transfer, interactive training frameworks and integration of business processes and e-governance models. All this characteristics define the digital business ecosystems as a whole.

***Digital business ecosystems** also act as driver for small businesses and government re-organization, in particular supporting the local governance of networked organizations and enforcing the cohesion of local communities.*

The small organizations will face major difficulties to the migration to e-business. The organizations could take advantage of this evolution only if they will develop good and solid relations with a networked organization, cooperating and sharing information and instruments.

*The paper's main goal is to present the best approaches to **building a successful and competitive Digital Ecosystem**, able to fulfill each and every customer needs worldwide. Specialists consider that true enterprise integration represents the key to ensuring that e-commerce, customer relationship management (CRM), data warehousing, enterprise resource*

planning (ERP), supply chain management and other mission critical systems are aligned for the optimum performance of a company.

The paper presents the best methods used in building a digital ecosystem.

Specialists believe that **creating digital business ecosystems** *implicates significant steps, such as:*

1) **"Digital Blueprinting"** *to map out an organization's existing infrastructure and determine a strategic direction - which is designed to stress a company's information technology (IT) infrastructure and assess its development environment, organizational structure, technology dependencies and personal architecture.*

2) **Creating a technology solution that takes advantage of business opportunities** *– which involves defining the functional requirements for the new applications and then carefully dividing it according to each company goals.*

3) **Managing and upgrading existing applications** *in order to become a cost-effective company – which implicates knowing the fact that greater benefits can be derived from applying the approach of maintenance and enhancements of the existing applications.*

4) **Maintaining high standards** *in order to be successful and competitive worldwide.*

Building a Digital Ecosystem *can help any company compete more effectively by providing the IT infrastructure that is needed to respond to change in Internet time.* **Firstly***, it is extremely important to be aware of the e-business strategy first.* **Secondly***, designing, developing and implementing solutions to leverage the power of the Internet to better communicate with customers, suppliers, and business partners is considered being extremely important.* **Thirdly***, ensuring that the digital ecosystem remains relevant in a changing business climate is believed to be of great importance as well. The advantages of this approach include the ability to be aware of the existing risks, focusing mainly on the company's development and objectives in order to create higher quality products and services able to satisfy all customers' needs.* **Fourthly***,* **maintaining high standards** *in order to be successful and competitive worldwide means that a company must be responsible, must act according to the law, must be aware of all the customers' rights and must be able to support their needs extremely fast.*