Conceptual Development of the Web Strengths E-Business Systems Utilization Fulfillment

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1. INTRODUCTORY OBSERVATION

As more companies are moving into electronic business and are accepting new waves of the information society, they face growing business opportunities as well as an risk for making wrong business decisions due to the lack of valuable information or poor-quality information. In an attempt to extract the world intelligence hidden in vast amount of information resources, e-business companies should find relevant technology solutions to cope with these increasing information needs. While most of e-business companies have for some time recognized the requirements for quality of products and services to be competitive, they are only now becoming aware of the problems in information quality. Information quality improvement is not a desire; it is a required tool for e-business performance excellence in the information society.

The result in information development of the Web, is the Web content space where information users and intelligent agents can directly tap the latest relevant information in linked and related information resources. This would help free information users from having to search for information source by source, and from relying on directories and search engines. It will resulted in the techniques that could outfit information users with personal information portals and search/intelligent agents tailored to their particular information needs. These information appliances will be configured to learn and respond to personal details with the help of artificial intelligence techniques. Hence, the development of the Web horizon includes both the information and the functional architecture where the appropriate Web modeling technique and language is needed.

2. EMERGING BUSINESS TECHNOLOGIES FOR INCO SYSTEMS DEVELOPMENT

Digital market, information technology, cybergeneration, virtual groups/organizations is the part of the terms that describes new information society paradigm – more and more human social and business activities are correlating with information technology in some way, The key factors fostering this scenario were undoubtedly personal computers and Internet. But, ongoing process of new information technology solutions and users' demand tending to create new post-computer society without domination of PCs and computer-based Internet services. We are facing with the innovations in the use of new information appliances instead of PCs and universal communication network (uninet) instead of the computer-based Internet.

Although PCs and Internet will come invisible or disappear from the information technology scene, these technologies tend to stipulate new technology and services – the current side effect of opening Internet services to all, including computer illiterates, is the consumerization of the Internet while the computing moves to becoming entertainment centric in most services and applications. The trend is also visible with the miniaturization of applications systems existing on today's Internet based global services – it is resulted in home systems that must be tailored for the individual use suited to personal interest and demand. That is the point where today's Web solutions are not yet prepared to work out this task. The use of the Internet will be just another business routine, as the comfort level with the technology. A total interconnected e-business world force every information appliance to coordinate an exchange transaction with human guide or with an intelligent agent. With the new technology platforms, customers have gained considerable power to choose with whom, where and when they will do business. The impact of new information-communications (InCo) systems technology on e-business is enormous. Although teleworking has failed to take off anywhere near as fast as many e-business expected, coming technologies such as shared virtual environment, broadband network access, multimedia and mobile communications are changing this situations promising new wave in e-business applications. Besides that, the new concept of ambient intelligence is the information-communications system concept that impacts on e-business practices. Ambient intelligence offer the potential for major new business and industrial opportunities, but e-business companies will only benefit for this if they are prepared to be creative, innovative and intelligent. Many ambient intelligence applications require considerable cross-sector capabilities and cooperation.

3. WEB DEVELOPMENT ON THE MOVE

3.1 Web Service

The notion of the Web development toward less human interventions in existing e-business applications derives new form of the Web category – the Web service. Web service is, by definition, a software that makes interoperability of applications running on different systems – it is identified by a URI and its interfaces and bindings are defined in terms of XML based messages transported by Internet protocol. Thus, Web service is an abstract notion that encompasses TRP techniques widely used through the ebXML, and XML-RPC. It is evident for more today's e-business solutions that Web service brings some functionality of the overall business system. It is especially interesting in the situation of extremely needs for interoperability across heterogeneous platforms.

3.2 Wireless/Mobile Web

In the current state of the e-business market, it is evident that content-based applications are on the move that opens the space for new Mobile Web solutions. Mobile in this context means mobile phones, PDAs, information appliances – laptop/notebook computers are not included here since they are using standard Web access across the fixed Web content in ordinary way as the normal computer terminals. The emergence of open and widely available data networks with law-cost mobile information appliances gives the largest business opportunities for information society full implementation. These mobile applica-

tions include devices such as handheld computers, personal digital assistants, and smart (computerized) digital mobile phones. Thus, convergence of communications and mobile devices are continuing with integrated Mobile Web portals - they offer content designed for mobile appliances with solutions that help everyone, everywhere by creating a way to deliver Web content on any Web-enabled device or information appliance without requiring any changes in existing fixed Web infrastructure.

3.3 Video Web

Video provides e-business companies with the means to enhance communications while saving costs, increasing productivity and expediting decision-making. Because Video Web have become increasingly more affordable, it is not unknown for e-business to realize a payback on their Video Web investment on a months as well as on a year basis. Geographically dispersed e-business organizations use Video Web for applications such as distance learning and new services/products information, real-time collaboration among work groups, face-to-face communication with business partners and business meeting. Broadband nets make availability of Video Web solutions, where video end-points incorporate advanced audio and video techniques. It is special true in the scenario where the birth of a new generation of PC-free information appliances makes the Video Web model full applicable. New video-enabled appliances can be connected to the Internet thus becoming accessible to any Web-enabled object whether computer-based or computer-free devices.

3.4 Audio Web

Audio (especially voice) Web offers hand-off access to Web documents and content of the entire information resource. By offering speech access to Web content, there is a notion about accepting conditions – listening is sometime easier and less broaden then viewing the content. The use of voice portals is exploding with enormous opportunities for e-business companies to grow business and revenues. Voice-based Internet access uses rapidly advancing speech-recognition technology to give users anytime, anywhere access to Web-based information. And it uses the most universal form of communication and access - the human voice. Voice portal brings Internet technologies to the world of voice. With voice portal, companies can reach more customers, offer consistent, high-quality customer care and reduce the cost of customer service. Voice portal drives new revenue streams through automation and empowers companies to conduct business interactions non-stop.

3.5 Motion Web

Motion Web is an extension of the standard Video Web – it is utilizing possibility to move video source from one place to another thus making users to access multiplaced information content. There is the optical information for seeing the geometric structure of objects and events on various places and in various situations. One of the technologies that have come about as a result of the widespread usability of the information-communications systems is that of Web Cameras. Innovative and creative suppliers of Web Cameras scenes provide full-motion & live cams for web site. The Motion Web system does more than just take still pictures. Full motion video clips are looped or streamed live to give users an experience of time and space of the Web content on the move. Video can also be combined with the information in the context of received material linked to data transport system (fixed or wireless networks) connections to provide full-time live feeds and automated archiving.

3.6 Multimedia Web

Multimedia is more than one concurrent presentation on a Web site. Although still images are a different medium than text, multimedia is typically used to mean the combination of text, sound, and/or motion video. Some people might say that the addition of animated images produces multimedia, but it can arguably be distinguished from traditional motion pictures or movies both by the scale of the production and by the possibility of audience interactivity or involvement (in which

case, it is usually called *interactive multimedia*). Interactive elements can include: voice command, mouse manipulation, text entry, touch screen, video capture of the user, or live participation (in live presentations). Multimedia content presentations are possible in many contexts, including the Web. Since any Web site can be viewed as a multimedia presentation, any tool that helps develop a site in multimedia form can be classed as multimedia software. As noted, interactive capability of the Web content presented by various information media makes the notion of the Multimedia Web.

3.7 Television Web

For the mass market e-business application, Television Web is the fundamental issue since it incorporates almost all type of separate Web solutions – it comprises Video Web techniques as the base connected with the techniques used in Motion Web and Multimedia Web. The most interesting opportunity for Television Web applications is the creation of interactive content that merges video/multimedia content and the Web preferences. The most used applications are considering interactive news and information of interest by working groups as well as interactive commerce (t-commerce) applications. These applications ask for more user friendly information retrieval designed specially for ordinary users that do not want to learn techniques and utilities specific to entire information task – information should be accessible, visible and understandable by information appliance from ordinary working environments.

4. CONCEPTUAL WEB FRAMEWORK

4.1 Contextual Web

Web-based e-enterprise content comprises any informational asset that has some contextual meaning to the organization. These assets may exist in a variety of formats, have many different purposes, be accessed through many different means in numerous languages, and require different levels of security. The challenge lies in collecting, organizing, and publishing these assets to improve the value they bring to the e-business organization and its customers. Thus, Web content must have the context of e-business processes in order to achieve full information supply both to e-business users and consumers. Contextual Web empowers e-business organizations to focus on their core competency of creating and distributing high impact content to their user bases. It also uses advanced contextual targeting technology to extract the key themes on a page to deliver highly relevant and targeted information. Contextual Web makes the base for information-communications systems to provide a new class of document management services in which storage, organization and retrieval of information is based on contextual meaning made by rich and active meta-data. It enhances the access to existing Web information resources by making it more proactive, mobile and context-aware that is premise for e-business of today.

4.2 Cognitive Web

In the field of basic and applied research on psychology, cognitive, motivational, and emotional processes are related to the world in different ways. Cognitive processes concern the acquisition and representation of knowledge and have a representative relation to the world of objects and facts. Motivational processes refer to goal states of the organism and have an actional relation to the world. Emotional processes are based on the acceptance or rejection of objects and facts and have an evaluational relation to the world. Emotions, interacting with cognitive and motivational processes, are a unique component of human mental states, experiences, and behavioral expressions. Emotions may initiate, terminate, or disrupt information processing. They may result in selective information processing or they may organize recall. Web content is thus oriented toward new vision of human reasoning, too. The earlier Web content structures were defined by markup and the processing of markup by systems that support monotonic reasoning and binary (vs. probabilistic) truth-values. Such structures and technology support a wide array of intelligent agents, categorization of content, etc. However, it is evidently that they are not enabling e-business with

collaborative cognitive support. This notion is tightly connected with the cognitive structure need where new form of Web content structure is done by Cognitive Web. A Cognitive Web is content structure that supports non-monotonic reasoning, probabilistic (or pseudo-probabilistic) truth-values, and explicit support for negation. An application of such systems would be sharing mental models concerning a domain. In particular, these structures are involved in applying such models to facilitate collaborative reasoning about knowledge, uncertainty, the value that organizations attach to business goals, and plans to realize those goals.

5. CONCLUSION – WEB MATURITY WITH SEMANTIC WEB

Current demand for Web development sets up new paradigm on Information-Communications systems utilization in e-business environment – the data mining of Web content transforming the way information is collected and analyzed. It opens the new ways for e-business companies to use easier and more effective techniques to keep up with the competitive market. The principal use of Web mining, the predecessor of Semantic Web, is in strategic management and gathering competitive information in e-business companies. Another important use is in comprehensive, deep search for corporate research and development departments that need a lot of information in planning and modeling new products and services. Thus, e-business companies give the mechanism to gather information available not only on Web pages but also in data bases and that are generating temporary, that means they are not available in ordinary search engine environment. This new paradigm makes a shift in Web utilization from procedural usage to functional usage. That is, a reduction in a cognition of, and manipulation of the retrieval systems replace them with a corresponding concentration upon the essential task of knowledge discovery.

For the Semantic Web system functionality, networked Web applications must have an access to structured collection of information and specialized inference tools that they can use to conduct automated reasoning. Knowledge representation models, as the part of artificial intelligence research, are the vehicles for Semantic Web development. Separate artificial intelligence tools and applications should be linked into global system in order to serve Semantic Web functionality. Traditional knowledge representation systems are, in general, centralized systems requiring every user to share the same definition of common concepts. But central control increases the size and scope of such systems with the development of new knowledge-based applications and with new Web content. This new huge set of information opens up the new problem of system possibility to encompass unanswerable questions. In order to solve such problem in Semantic Web implementation, the design techniques include the special idiosyncratic set of rules for making inferences about information that exists in entire Web environment. Design process is based on language for the rules making Web system to reason as widely as needed for information processes that e-business needs and utilizes, giving Semantic Web system the possibility to manipulate terms much more effectively in way that is useful and meaningful to the information user.

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