Beyond convergence: the Knowledge Corporation

by Augusto Verzosa;

Issue Date: July 15, 1999

E-mail Article Print Article Send FeedBack

THERE'S a lot of hype these days about the impending convergence of voice, data, and broadcast communications. There's also the emerging convergence of the information technology and the communications industries.

The merging of these forces will shape the world, but in ways as yet unclear. While convergence will determine the new resource architecture that controls the new social order, the new power structures behind the scenes defining and directing these resources are not readily visible.

The new information-communication technology-driven order can only be as powerful as the need created and nurtured in people for its end-products. Ultimately, the two critical needs which must be satisfied in people are the desire for knowledge and the desire for entertainment. These two needs, while they may overlap frequently in terms of how they may be satisfied, are nevertheless distinct. Thus, the new world order will be dominated by two distinct types of organization: the entertainment corporation ("Encorp") and the knowledge corporation ("Knocorp"). Each will integrate all technologies at its disposal, both information and communication technologies. However, the Encorp will focus on entertainment while the Knocorp will focus on providing knowledge.

There are a million ideas running up my head about the Encorp., but we'll reserve these for another day, and focus on the Knocorp.

The Knocorp will have as its mission the provision of knowledge services to its clients, both individual and corporate. Knowledge services are distinct from and go beyond information and data services. Knowledge services are concerned with by-products that facilitate good and quick decision-making and timely action. A knowledge service will as a standard provide knowledge premised on the following parameters supplied by the user: subject; scope of the

elementary knowledge on the subject; limitations of the knowledge; a context-based linkage to other related ideas, events, and people; a discussion of varied or opposing views on the subject; statistical information on the subject; and a discussion of the current and potential value of the subject with respect to the user's original objective.

The knowledge service presents this in multimedia form at a minimum (maybe even in virtual reality format). It is available anywhere, anytime. It is on-line, real-time, and up-to-the- second. It is available both publicly (public facilities) and privately. It is available through all mass and private communication devices.

Given the breadth, depth, and sophistication involved in knowledge services, there is obviously a need for a workable architecture that will adequately provide the services. In turn, this architecture must be well-supported by working and emerging technologies.

Architecturally, knowledge services will consist of the following components: knowledge collectors (KCs); knowledge extractors (KEs); knowledge switches (KSs); knowledge processors (KPs); and knowledgebases (KBs). Knowledge collectors are elements capable of mobile worldwide search for and collection of data, information, and knowledge relevant to various classes of knowledge. Their primary mission is to search for and collect such in and from all available repositories. Knowledge extractors also collect data, information, and knowledge but are non-mobile and simply skim the pipelines of data and information highways to collect and filter such knowledge. The knowledge extracted by knowledge extractors is passed on in streams to knowledge switches for transmission to knowledgebases. Knowledge switches guide knowledge collectors to regions of cyberspace where their target knowledge can be collected and guide them back to knowledgebases on their return trip. Simultaneously, knowledge switches transmit knowledge from knowledge extractors to knowledgebases. Knowledgebases store knowledge elements and also serve as drop-off points for knowledge collected by knowledge collectors. Finally, knowledge processors further enhance and create new knowledge through "thinking" engines from knowledge elements in knowledgebases. Any newly-created knowledge is also stored in knowledgebases. The diagram on this page serves to illustrate the various components and their primary functions.

The underlying technologies needed to support the different components of knowledge services are varied. Knowledge collectors will be implemented through intelligent software agents -- small, objective-driven, adaptable, and mobile software elements or objects. These will move, search, and collect across private and public worldwide networks and from websites, data services, and computing centers globally. Knowledge extractors will be implemented through transparent and invisible software or hardware portals where knowledge can be filtered and extracted. Knowledge switches will be sophisticated application-level switches evolved from ATM (automated teller machine) switch software today. Knowledgebases will be multimedia databases with built-in "thinking" engines combining the capabilities of expert systems, constraint propagation systems, neural network engines, etc.. Finally, knowledge processors will be distributed client- server applications capable of high-volume inferencing, referencing, pattern-recognition, and possibly even quantum computing.

To support high-quality service requirements, knowledge services will leverage on a number of technologies. Presentation will be heavily-multimedia. As such, multimedia software and hardware as well as ISDN (integrated services digital network) access will be needed. High bandwidth transmission and switching as in SDH (synchronous digital heirarchy) and ATM (asynchronous transfer mode) will transmit the high volumes of multimedia knowledge network traffic. To effect the efficient flow of knowledge collection, extraction, and transmission, intelligent networks will be needed. To make the infrastructure cost-effective, access devices will have to be varied and flexible (cell phone-type terminals mixed with PCs, palmtops, laptops, and desktops) and must conform to digital standards common to all types of traffic (e.g. voice over IP, wireless ATM, etc.).

In the race to build the first knowledge corporation offering knowledge services, several social and business issues will have to be addressed. For most in privacy of knowledge who is allowed by

addressed. Foremost is privacy of knowledge -- who is allowed, by whom, and by what process the capability to collect and extract information? Second is the value of knowledge -- how much is knowledge economically valued and what are the rules? Third is knowledge discrimination -- how to prevent it. Fourth is knowledge control -- how to guarantee that knowledge services are not monopolized to the disadvantage of the individual.

The main players well-positioned to evolve to Knocorps are the telecom carriers (because of their large network infastructure and headstart with agent technology), the portals (because of their inherent switching of surfers), and the broadcast organizations (because of their content experience, reach, and trust from the masses). Who will win the race eventually will be determined by the appreciation of what knowledge and what structure of knowledge is both of value to the new generation of cybernetic man and intrudes into individual privacy to an acceptable extent.

The author is chief information officer of Jollibee Foods Corporation.

Did you like this article? You can post your comments by clicking on 'Send Feedback' below.

E-mail Article **Print Article** **Send FeedBack**

Recent Articles from the author(s)
Augusto Verzosa
>> Intelligent commerce: next-generation e-commerce
::10.16.2000
>> Electronic money: risks, threats, and promises
::10.15.1999