

December 1998

Panel 9 Adaptive IT Infrastructure: The Platform for Global Integration

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Recommended Citation

Duncan, Nancy; Sherrod, Matthew; and Weill, Peter, "Panel 9 Adaptive IT Infrastructure: The Platform for Global Integration" (1998). *ICIS 1998 Proceedings*. 58.
<http://aisel.aisnet.org/icis1998/58>

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PANEL 9

ADAPTIVE IT INFRASTRUCTURE: THE PLATFORM FOR GLOBAL INTEGRATION

Chair: Nancy Duncan, Kent State University, U.S.A.

Panelists: Matthew Sherrod, ARCO Alaska Inc., U.S.A.
Peter Weill, University of Melbourne, Australia

Information technology infrastructure is the physical platform that enables firms to share information resources electronically. It supports the people, processes, and data needed to conduct projects, create partnerships, and reach new markets independent of geographic or organizational boundaries. The demands for such information sharing are not limited to textual data: geographically dispersed team members may require the ability to share graphics generation, viewing and alteration capabilities, real-time audio, and even video. A firm's ability to meet rapidly changing needs to share information—in increasingly complex and expensive ways—depends on infrastructure characteristics. How IT infrastructure may be cultivated to support unanticipated requirements is the subject of much speculation among IT managers.

One view of IT infrastructure cultivation takes the approach of deliberate, strategic resource planning and management. In this view, IT must be part of the ongoing, firm-wide strategy, management, and planning processes. Various forms of process transformation, such as business process redesign, electronic commerce, internationalization of business processes, and knowledge management, may require different infrastructure capabilities. If the capabilities are not in place at the time they are needed, the transformation may stall, or worse—fail. Hence, infrastructure planning must be integrated with the earliest strategic business-transformation planning.

Another, much practiced approach to infrastructure management can be described as “keeping-up” with business plans and requirements. Cost constraints and uncertainty in the environment severely impair a firm's ability to plan and build a “strategic infrastructure.” Without specific business objectives, the firm cannot justify investment in advanced technology-based capabilities. Development of additional flexibility (or capability capacity) in the IT platform is simply perceived as an unaffordable luxury. The “keeping-up” view of infrastructure planning is essentially a contingency approach. Infrastructure technology is developed partially in response to unanticipated but crucial new requirements, but also with a very knowledgeable eye to the direction of technological growth and business requirements in the industry.

A third approach to infrastructure management may be described as organic. In industries in which growth and dependence on information technology are both extremely high (as is the case in the computer industry), some argue that planning a platform to support continuous innovation is nearly impossible.

Technology resources, technical capabilities, tremendous resource planning, and management skills are all critical to infrastructure characteristics, their capabilities, and, ultimately the organization's capabilities. IT infrastructure characteristics will likely be reflective of organizational characteristics, and their capabilities will likewise be interrelated. The panel will present and discuss the most current issues and challenges relating to the development of the infrastructure platforms that support virtual integration and their relation to different organizational characteristics.

Panels

Peter Weill will discuss the barriers to linking infrastructure capability to strategic context, first conceptually and then drawing on new work in pc/lan infrastructures.

Matt Sherrod and Nancy Duncan will discuss the problems, practices, and continuing challenges of firms with high demands on infrastructure flexibility or responsiveness in environments of great uncertainty. In such cases, infrastructure development somewhat resembles building a bicycle while riding it. Matt will discuss the challenges of meeting unanticipated infrastructure demands under rigorous time constraints such as those experienced when Arco Alaska discovered a new, 350 million-barrel oil site. In this industry, cost minimization competes with time pressures as telecommunications professionals race to build a support system for internationally dispersed project teams. The flexibility of the new Internet and public frame relay platform AAI designed for the new oil field development project was tested and proven shortly after it was established. The degree of integration and access to these team technologies on this project alone saved AAI between \$500,000 and \$1 million.

Nancy will present a look at infrastructure development in the rapid-change environment of the computer industry. At Silicon Graphics Inc. (SGI), the spontaneous eruption of thousands and tens of thousands of intranet sites has evolved into an infrastructure whose value is inestimable. But one indicator of its value is found in a single altered process. With the infrastructure capabilities developed by and for the intranet, SGI saved \$7.5 of the budgeted \$8 million for a single product launching event in 1997. Many of these intranet sites are the creations of individual employees who developed and added them to the system on their own initiative, and often to serve only their individual work purposes. Although this autonomy results in certain inefficiencies, it has also enabled SGI to cultivate an infrastructure that is readily integrated with the development of new processes or the transformation of old ones. The freedom SGI employees have to transform processes unilaterally to reduce or obliterate inefficiencies may be the most efficient way to derive a flexible infrastructure: evolution and survival of the fittest.

After initial presentations, the panel members will be asked to comment on two key issues in infrastructure planning and management. First, to what extent can infrastructure growth be managed by design? Can it be designed to “grow” or evolve naturally along with changes in business functions or activities with minimal intervention from IT management? Second, what is the role of vendors in the development and management of IT infrastructure? What are the potential risks and advantages of depending on vendors for infrastructure services, and what are their relative weights?

Nancy Bogucki Duncan is Assistant Professor of MIS in the Administrative Sciences Department, College of Business, at Kent State University. Her work on IT infrastructure has appeared in the *Journal of Management Information Systems*. Other research interests include strategic IT resource management and outsourcing.

Matthew Sherrod is Manager of Prudhoe Bay and GPMA Systems at Arco Alaska Inc. He is responsible for managing application delivery and support for the largest oil field in North America. He has previously managed a \$10 million annual budget implementing enterprise-wide ATM services for 4,000 clients and 14 external partners.

Peter Weill is Foundation Professor of Management (Information Systems) and Director of the Centre for Management of Information Technology at the Melbourne Business School, University of Melbourne, Australia. His research and consulting activities center around the role and value of IT in organizations. He recently won a grant from IBM to study the role and value of IT infrastructure investments.