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telecommunications electronic reviews

Volume 7, Issue 6, December 2000

Telecommunications Electronic Reviews (TER) is a publication of the Library and Information Technology Association.

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REVIEW OF: Bob McQueen, Judy McQueen. (1999). Intelligent Transportation Systems Architectures. Boston: Artech House.

By Andrew Wohrley

The McQueens have written a surprisingly lively book about a topic unknown to most of us, but one that will become of increasing importance in the future. Intelligent Transportation Systems (ITS) are ways of applying information technology solutions to transportation problems. While it sounds simple to state, this book makes clear that there are complexities inherent in the process. The complexities range from politics, urban planning, taxes, and public/private sector partnerships, to technology, standards-making, and budgeting, just to name a few. However, the McQueens are very restrained with the jargon, and go to great lengths to liven up their narrative. The best example of their livening up the text is when they create a fictional set of travelers in Malaysia (where one of the authors consulted on an ITS project) who interact with ITS in various ways. One of the characters is a taxi driver whose license is renewed on-line. Another is a traffic cop who appreciates the way ITS services help his department cope with a messy traffic accident. Yet another is a pair of newlyweds who uses ITS to help their honeymoon go smoothly.

The authors begin with advice on how different audiences could read the book, although I would advise that no one skip chapter 6, which introduces the fictional characters and how they use ITS. While readable by anyone, the book is clearly intended for the professional who needs to get quickly up to speed on the topic. However, the authors also have created a book that practically anyone who is facing a systems integration task can read and use to find something valuable. I frequently found myself nodding and thinking, "That would work if you needed to implement a new library catalog!"

The second chapter defines what goes into ITS, and is heavy on technology, hardware, and software. The authors tell the amusing story about what happened to the first traffic signal, which was installed in front of the Houses of Parliament in London in the 19th century. Unfortunately, the signal was gas-powered and when it exploded and injured a bobby, the whole concept of traffic signals received a black eye from which it was slow to recover. The authors dryly observe that it is perhaps a good idea that an ITS project not have too high a profile, lest difficulties tarnish the whole concept.

The authors make a good point that already some communications are supported by the current transportation infrastructure, such as indicators, horns, warning lights, headlights, and hand signals(!). The move to ITS only increases the communications options for both the driver and the person in charge of the transportation infrastructure, and at a higher bit rate too. The TranStar system in Houston is intermodal (transportation jargon for "uses different modes of transportation") and is run out of a central control center. The center controls the traffic lights, uses toll transponders to monitor traffic, and has a "ramp meter" to carefully and safely "meter" traffic onto highways. A similar system called Trafficmaster also operates in the United Kingdom, but in this case, the service is only available to subscribers who must install the system in their cars.

The authors call the next section "market areas" which include: Traffic Management, Emergency Management, Transportation Planning, Traveler Information, Commercial Vehicles, Transit Management, Intelligent Vehicles, Incident Management (accidents), and Payment Systems. If you think about it, any one of these areas would be challenging enough, but integrating them would be a major headache. The authors wisely stay away from recipe-like details on how to integrate systems, but instead focus on managing the ITS process. The authors give this process the name of the "ITS Future Big Picture." They prefer to use this term rather than "regional ITS architecture" in order to emphasize that this is not an exercise in system architecture. Rather, the ITS Future Big Picture is devoted to creating a framework that defines the technical, institutional/organizational, and commercial features of the future system in a way that shows how the subsystems and components will work together.

Critical to the McQueens' concept of providing ITS services is finding out what people really want. They advocate a method they call "so what" analysis, whereby a focus group is asked what it wants ITS to do. They do not want the focus group to say how it would be supplied by an ITS service, but they want the group to articulate what it wants an ITS service to offer. One thing that anyone devising an ITS service must provide is a way of incorporating what the McQueens call "legacy and sunk investment." Simply put, ITS usually must work with whatever currently exists: roads, signals, etc. Only if one is building everything completely new is legacy not a concern. However, there are almost always groups that have an interest in protecting the legacy investment; these people must be won over some way, usually by demonstrating the value of the new system.

The problem of legacy systems leads into an issue the authors call "turfism" (as in, protecting one's turf). There are three ways to break turfism, either by appealing to a common threat, common objectives, or common funding. The common threat would be to show that everyone is facing a single threat that no one

can overcome alone. The common objectives are more optimistic and seek to show how organizations can improve things by working together. Common funding requires all to agree before releasing funds, which provides a powerful incentive for parties to come to a consensus.

The book also includes a few chapters about selected Web sites on ITS. One that is particularly good is a list of links to Computer-Aided System Engineering (CASE) tools.

A particular strength of the book is that the principles of planning for a major project are so well defined that anyone not familiar with ITS can read this book and come away with principles for managing projects that could be applied to almost any field. One point reinforced both by the authors and daily in computer project management is that people should avoid "provider lock-in." The authors advise against selecting the proprietary, nonstandard solution to a problem, and instead advise selecting the standard or open solution. The authors spend some time discussing the motives corporations have for selling proprietary solutions that might not be in the best long-term interests of their clients.

One of the concluding chapters of the book discusses the necessity of involving a wider audience than just the ITS client and contractor. The authors call this "the wider audience" and they write: "Our experience from previous ITS developments indicates that ignoring this group can lead to significant problems related to resistance to the proposals and misunderstandings or misconceptions regarding the likely effects of the proposals" (p. 248). The same problems that cause controversy for conventional transportation projects, such as securing rights-of-way and condemning property, also exist for ITS projects. The authors then provide problem management strategies, such as listening, informing, debating, convincing, mitigating, and always engaging the people who bring problems or objections to ITS projects.

It is only in the 14th chapter that the authors discuss the implementation of the ITS strategy. This is because implementing changes in a project is much easier and cheaper the earlier they are made. By the time one implements a project, the cost of changes skyrockets, and the authors include a good graphic illustrating this point (p. 289). The points that the authors make about good ITS design applies equally well to the design of any other project and include:

- User-focused requirements
- Willingness and capability to revise earlier work in light of new information
- Use and incorporation of relevant standards
- Coordination between systems and agencies
- Design options explored and explained
- Clear and unambiguous definitions
- Modularity

The last point might be subtle, but it is critical to the success of the project. The authors drive home the point that if a project is modular, it can be broken down into bits that are more manageable than the whole, and allow the managers to get some quick successes that will give everyone confidence that the project as a whole will work.

The next three chapters discuss procurement and other economic issues related to ITS. While there are many ways to manage an ITS project, the McQueens make it clear that some sort of public/private relationship is unavoidable, either as contractors, or turnkey vendors who deliver a completed project over to the government.

The penultimate chapter discusses experiences that one of the authors has had as an ITS consultant. In the chapter, the author makes it clear that every ITS project is different, and the larger the project, of course, the greater the challenges.

I was a little unsure that I would like this book when I volunteered to review it because my only previous investigation of this topic was an article that I wrote evaluating ITS Web sites. I was delighted to find that the authors had a style that was very clear and easy to read, and the more I got into the book, the more I found principles that could be applied to library projects. I recommend this book for any academic library that teaches civil engineering, or any major library in a community that is implementing an ITS project.

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REVIEW OF: Eric Viardot. (1999). Introduction to Information-Based High-Tech Services. Boston: Artech House.

By Rob Withers

The exponential growth of Internet resources and Internet usage has been accompanied by an explosion of businesses which concentrate on providing services, rather than products. Viardot's book focuses specifically on information-based, high-tech services. Although most companies provide both services and products, Viardot identifies two features that distinguish businesses focusing on products from businesses that rely on providing services. Firstly, businesses that provide services focus on performance at a given time, rather than on an object. Secondly, service businesses focus on using information technology through highly skilled personnel.

Viardot spells out the steps that information-based services must take to rise to these challenges. Unlike traditional businesses, high-tech service providers offer services rather than physical products. As a result, high-tech businesses must focus not on eliminating defects in a product before it becomes available to a customer, but on swift and effective responses when problems arise in services used by customers. By doing so, high-tech service providers can build a loyal customer base. This will help the service provider both by identifying prospective solutions to problems or enhancements to current services, and by providing favorable word-of-mouth needed to attract new clients. Maintaining quality is also important. However, for high-tech services, "quality" must be redefined to mean not the elimination of errors, but the contractual commitment that establishes the levels of service and performance available to the customer. Although it is necessary to offer enough quality to attract potential customers, it is equally necessary to ensure that the services offered meet or exceed that level of quality to ensure that customers do not become disenchanted with the level of service. In addition, the customers must have a realistic view of the levels of service that can reasonably be provided.

Management of people is a critical component of high-tech services. Because high-tech service providers must be able to persuade people that they can meet expectations or quickly resolve technical problems that result in unmet expectations, it is essential that providers attract and retain people with interpersonal skills. This is particularly true of service representatives who interact with people. However, it is also desirable that those people who research and design high-tech services have such skills, so that they can anticipate and eliminate some problems before they arise, or quickly diagnose and resolve unforeseen problems as they occur.

Viardot's book is not without shortcomings. Although footnotes are provided, there are many instances in which the sources from which facts and figures were obtained are not properly identified. For example, on page 38, Intelliquest is identified as the source of figures about the number of adults using the Internet, but the absence of a footnote deprives readers of the ability to easily determine the original source of these numbers. Similar failures to completely identify sources occur six times in the following six pages of the book. In some cases, a service such as Intelliquest (p. 38) or Dataquest (p. 39) is mentioned, while in other cases, even the vaguest information about the source of the statistics does not appear in the text.

From time to time, one also yearns in vain for statistics or anecdotal examples to support sweeping statements, including the following:

- "Users in regions such as Pacific Asia and Latin America are overcoming some significant infrastructure and regulatory barriers to get on line" (p. 39).
- "In all those cases, and there may be many others, the user will quit and may decide not to complain, but will never again use such a service" (p. 55).
- "Examples can be found in many businesses from banks to insurance companies, from manufacturers to retailers, and from government to utilities" (p. 76).
- "This is why successful high-tech services vendors have their corporate executives underline the importance of people in their businesses" (p. 118).
- "Consequently, all successful high-tech services firms have managed to build their image and their fame through a strong internal culture" (p. 147).

There is also occasional awkwardness in discussing the Internet. For example, there is the discussion of Yahoo, which is described as "the leading search engine," and "the most attended site on the web" (p. 144).

Despite these shortcomings, Viardot's book is well worth reading, and despite the fact that Viardot's book focuses on businesses, both the questions that it asks and the answers that it presents are relevant to today's libraries. Libraries, like businesses, are being affected by a switch from users seeking physical items (books, photocopies of articles) to users seeking services which provide access to information (electronic texts, electronic journals, and hard-to-find information), often from outside the library building.

Viardot's book is important reading for those who assume that libraries can continue to operate as they have for the past several decades. Many librarians are unprepared to face such changes. They continue to consider any form of interaction other than librarian-to-patron in the library as unsatisfactory or inferior. As a result, they resist attempts to respond to customer interest in establishing remote user services or to make information resources available in electronic format without librarian intermediation.

Success of the library in this new environment will be measured in its ability to meet the information needs of its putative clients. Libraries that fail to meet these needs may find themselves challenged or even supplanted by commercial services or by other agencies in their own organizations. However, libraries can

continue to be relevant and important to their customers by adapting principles that Viardot indicates are already in use by other high-tech information providers: studying customer expectations and reactions, valuing employees with a combination of technical and interpersonal skills, and preparing for an environment of constant change.

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