Systems Design Issues in Planning and Implementation: Lessons Learned and Strategies for Management

Mahesh S. Raisinghani
University of Dallas, USA

EXECUTIVE SUMMARY

Telecommunications Company (TC) [company identity is concealed] produced a sales management application through internal and contract resources. This application, Schedule Graph (SG) System, was designed to automate the sales schedule process that had previously been a paper and pencil process. The system was designed and implemented in a matter of months to reduce cost and deliver an application that was long overdue. The project had been proposed for years, but funding issues had routinely delayed initiation. The sales development organization worked on the design and development for this application for approximately six months.

The application was released with numerous software, hardware and network problems. The effects on the customer community, the information systems department and other stakeholders were sharp and far reaching. This case study investigates the lessons learned with this application and the implications for theory and practice. It can be instrumental to information systems managers, academicians and students to learn from the success and pitfalls of other organizations related to information systems development and management.

BACKGROUND

TC is a Fortune 100 sales company in the telecommunications industry with 50 regional sales offices across the country. TC employs thousands of people with both domestic and international operations, however, the user base for the SG System is approximately 150 employees nationwide. TC wanted to automate a sales scheduling process. Previously, directory sales representatives had been scheduled in markets or canvasses by a paper and pencil process. This process was very time consuming and led to tremendous frustration among sales managers. The burdensome manual process took valuable time away from sales coaching and selling activities that produced revenue dollars. The sales calendar stems 12 months and is typically updated on a weekly basis as personnel and markets can change rapidly in their business.

SETTING THE STAGE

The sales managers had been requesting an automated solution for years in an effort to end what had rapidly become an administrative job rather than a sales job. The sales organization conducted business and processed sales online, a 'Paper-less Automated Sales System.' While the system itself was paper-less, the output as a hard copy report was paper-intensive in spite of on-line capabilities. While the automation was highly desirable and the efficiencies could not be argued, there were financial considerations and constraints that continued to push the project to the back burner for several years.

The sales organization, in a time of declining sales, realized it was time to redirect its focus back into the development of its employees in an effort to strengthen its sales position. This meant that the manual processes needed to be removed by investing in process automation. An application needed to be developed to automate the sales schedule process. Time and money were significant factors in the development of the SG System.

CASE DESCRIPTION

In-house application developers as well as contract resources were involved in the design and development of the scheduling system. Rapid Application Development (RAD) was used to produce the SG system. The systems development life cycle was significantly reduced to save time and money for a project that had been long awaited in the customer community. Many applications that are produced from the RAD framework are developed in isolation, since that contributes to its speed to market. The deliverables and outcomes of RAD are the same as for the traditional Structured Development Life Cycle (SDLC)–a systems development plan, which includes the application being developed, a description of the user and business requirements for the application, logical and physical designs for the application, and the application's construction and implementation, with a plan for its continued maintenance and support. However, the traditional SDLC is indifferent as to the specific tools and techniques used to create and modify each of the deliverables listed above; RAD puts a heavy emphasis on the use of computer-based tools to support as much of the development process as possible in order to enhance the speed of development.

In this case study, the focus is on the use of RAD instead of SDLC. However the SG System suffered from not involving other organizational business units. This is noted as a significant drawback with RAD because traditional development stages are able to have greater overall business understanding, as speed is not the primary concern (Hoffer et al., 1998). In fact, David E.Y. Sarna (Eskow, 1997), who is well known for his work with RAD, argues that network planning and monitoring are important issues that can often be overlooked when development takes place in isolation. Specifically for optimal application and system performance, server(s) must have adequate memory, processing capacity, and Redundant Array of Individual Disks (RAID) are recommended for back-up and data security.

After the SG System was released to production, significant time was spent rewriting the application, deploying upgraded hardware, integrating network technology and developing a support staff to maintain the application. Additionally, the project and development costs were significantly increased with the activities required to stabilize the system. Approximately $350,000 was spent to purchase additional hardware and maintenance, and almost $550,000 was invested in application coding changes for the system to run more efficiently. Although $900,000 was not a significant percentage of TC's overall budget, proactive systems planning could have minimized or eliminated this expense and caused less frustration for the approximately 150 SG System users nationwide. It is also important to note that the additional maintenance cost is not uncommon in applications developed using the RAD methodology due to lack of attention to internal controls (e.g., inconsistent internal