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ABSTRACT

A large public utility and a systems integration vendor have entered a contractual agreement which will cause the existing Customer Information Systems (CISs) to be moved from their current environment (mainframe-based COBOL and Assembler applications with VSAM and SEGAM files) to a new one (UNIX-based C++ applications supported by a relational database). This project will result in significant changes to the ways in which users and members of the information systems group go about their work in the future. The project plan calls for the new environment to be implemented in phases to allow for adequate training of the I.S. professionals, to provide feedback to the development process, and to ensure acceptance by the user community. Among the tools used to report project progress and maintain full communication with both the user community and the I.S. group is an electronic newsletter, an interactive multimedia report developed, in part, by the authors.

Introduction

Multimedia, loosely defined as the integration of audio, video, and graphics media, has been put to a variety of uses [Bly, et al, 1993], [Fish, et al, 1993], and [Wilson, 1993]. Its use to deliver education and training are also well known [Amthor, 1992], [Roden, 1992]. In this paper we describe the use of a multimedia, "electronic newsletter" as a communications medium.

A large public utility in the Pacific Northwest region of the United States has contracted with a systems integrator to move the utility's customer information systems from a very old and fragile environment into a more modern and more robust environment. The project itself is very large involving millions of dollars and years of work.

The conversion to the new system will affect nearly everyone in the company. Customer service representatives will be using new systems, with a new user interface. Information systems professionals will be building and maintaining applications in a new environment. Work reporting practices of meter readers, accounting professionals, and service workers will also be affected.

Within the utility company, employees are faced with great uncertainties. To keep those uncertainties from precipitating dysfunctional behaviors, such as resistance to the change, an intense program of employee education will be implemented. One of the key ingredients is a multimedia, electronic newsletter which will be used to explain the new system, discuss the business case for making the change, and make periodic (quarterly) progress reports. The newsletter will (hopefully) build excitement for the new environment among the employees. This paper describes the multimedia, electronic newsletter in some detail after first providing some discussioin of the information systems conversion project which is the foundation.

Background: The Current I. S. Environment

A customer information system for a major utility has to support the numerous activities which enable the utility to provide service to a large number of commercial and residential customers. There are systems to initiate service, terminate service, transfer service, bill, receive payment, answer inquiries, etc. Employees of the utility currently interact with these systems through the use of IBM 3270 terminals.

A collection of several hundred COBOL and Assembler programs and associated files support the large set of customer services. These programs and files were created and are maintained by I.S. professionals. As changes are made in the many dimensions of customer service or new informational needs are identified or legislated, corresponding changes must be made in the appropriate programs and files.

Changes made over the past twenty to twenty-five years have resulted in a very fragile environment within which further changes are extremely difficult. Even so-called "small changes" require inordinate amounts of work because of the many programs and files. For example, a recent change to enlarge the comment field in a customer record resulted in fourteen months of work and changes to virtually hundreds of programs.

The existing system also constrains the ability of the company to make some business processes more efficient. For example, the system which creates routes for the meter readers is so bad that routes have not been changed in over 20 years and many of the old routes no longer make sense.

In the existing system, data, process, and access are inextricably bound together. The lack of flexibility for data access, the difficulty of developing new systems, and the complex ramifications of even small changes in business processes restrict the ability of the business to respond to competitive and environmental changes. A complete overhaul of the underlying information systems technology is required to make it possible to pursue emerging business opportunities.

Background: The New Environment

The new environment will use object oriented (C++) programming in a relational (Sybase) database environment. New, graphical user interfaces (GUI) will be provided (in Motif) to improve the effectiveness of users throughout the company. The new interfaces will make it easier for users to effect the necessary data entry or inquiry in a timely and accurate fashion. The new interface will also make it easier for new users to learn the system since users will not have to memorize the many codes that use of the current system requires.

The Transition

The transition from the existing to the new system will be a period of great change. Users will be moving to a new interface for CIS and during the transition period will work with both interfaces. Information systems people will be learning new skills, maintaining existing systems, and creating new systems. Everyone will be challenged to assimilate changes to their old work habits. The newsletter will help enhance people's understanding of the complexities of the project in order to improve their abilities to assimilate the necessary changes into their work habits. It will also provide a consistent, company-wide message which will, hopefully, reduce anxiety and uncertainty about the project among employees.

One of the most difficult tasks of the transition will be the maintaining the integrity of the customer information systems data. Initially, all the data will reside in their original location - the existing files. Gradually, applications will be moved to the new environment and data will be placed under control of the Sybase database management software. During the transition, some data will have to be maintained in both environments because some applications will be in the new environment while others remain in the current environment.

Keeping the two sets of data consistent with each other will require careful planning and more than a little cleverness. Some changes made to data in the new environment will have to be made to copies of the same data stored in the existing environment, and vice versa. The specifics of this data coordination are not fully determined at this time but it is expected that these changes will be programmed by the information systems people and the project team and will not require duplicated effort on the part of customer service personnel.

Phases of the Project

The project is divided into phases. The phased implementation process offers continuous improvement over the project's entire life cycle. It will allow for the early delivery of some results and an opportunity for project direction and details to change in response to the needs of the customer.

The new system will not actually have to be completely re-invented. A information model, developed elsewhere, known as the Utility Customer Design Service (UCDS) will be used to facilitate the process and take advantage of available technologies. UCDS provides something of a "blueprint" for the system to be developed.

Of course, there is much preparation that must be done before the applications are moved at all. The project, then is divided into three major phases:

Phase 1 - Project Launch
Phase 2 - Requirements
Phase 3 - Development of Applications

The entire project, from beginning to end, will cover approximately three years. A brief description of each of the phases follows.

Phase 1: Project Launch. The purpose of the first phas is to launch the project and deliver training for informatio systems personnel. The project team will specify exact what programs are in CIS, and which are not. Wo standards and procedures will be determined, documente and distributed. (It is at this point that input from users critical. The Utility Company will hold facilitated sessio with users and information systems staff in order to defi work practices and gather user requirements.) Training the techniques of data modeling will be provided to tho involved in the mapping of data from the current system the new. Education on the UCDS data and process mod will also be accomplished during this phase.

Phase 2: Requirements. The new (UNIX) architecture f the new customer information systems will be put into pla The UCDS data model will be implemented. Details co cerning the movement of data between the existing and n systems will be worked out. Bridges over which the data w travel from the existing system to the new will be bu Mechanisms for managing the entire project, from beginnig to end, will also be put in place during this phase.

Phase 3: Development of Applications. This phase, wh is repeated for approximately six different sets of CIS deliverables, accomplishes the movement of applications from the existing environment to the new. For example, in the first cycle of this phase, the applications which enable customer service representatives to view customer information, account information, notes, old bills, meter (reading and usage) information, geographic service area designations, gas light information, and credit history will be implemented in the new environment. As one cycle is completed, the new set of applications of the next cycle are initiated. As applications become operational in the new environment, customer service representatives will switch to the new interface for those applications. The final cycle of this phase makes any further use of the existing system unnecessary.

This Research Effort

Employee satisfaction is very important to upper-level managers at the utility company. They understand that information empowers employees and that empowerment can be either good or bad, depending upon the information and the circumstances. Some employees, for example, are known to oppose the transition to the new environment. Some are concerned with the cost of the conversions, others with the general turmoil they assume will accompany it. Some believe the timing is bad while others express disbelief that the conversion will actually ever take place. Some are, of course, very comfortable with the existing system and see no reason to change.

The utility company plans a rigorous and comprehensive effort to provide information about the conversion to the affected employees, indeed everyone in the company. One of the mechanisms chosen to effect this communication is the development and use of an **electronic newsletter**. The authors will develop and deliver this newsletter.

The Electronic Newsletter

The electronic newsletter will integrate audio and video clips with computer-generated text and graphics in a multimedia, hypertext software environment to provide an interactive presentation for individual or group use by employees. The newsletter will be "issued" quarterly. Among the segments available to those interacting with the newsletter will be presentations by the Chief Executive Officer, the Chief Information Officer, Project Managers, Customer Service Representatives, Field Service Workers, and others in the company who have an interest in the conversion project.

Those viewing the newsletter will be able to follow a variety of paths through the presentations depending upon their interests and their technical understanding of the project itself. (A flowchart of paths through the newsletter is provided in Appendix B.) The newsletter utilizes a touch-sensitive television monitor to facilitate use by all employees. By choosing one path, information systems professionals will be able to follow a fairly technical path while Customer Service Representatives can choose another to follow a path more closely allied with serving the utility's customers.

A new newsletter will be created each quarter. Employees who work at corporate headquarters will be able to view the newsletter at a specially-designed kiosk to be installed in a suitable location. Employees at remote sites may be able to view the newsletter on portable equipment taken to the site.

The basic format of the newsletter will be that of a television news magazine. It will of course be an interactive (through the touch screen) news magazine so that people can choose the stories they are interested in viewing/hearing. Stories currently under development for the first newsletter are listed in Appendix A.

Computer-based jargon is always a potential problem when presentations are made to audiences whose members may not be "computing literate". The electronic newsletter will address this problem by providing jargon "hot buttons" which viewers can select to have the word or phrase explained. For example, the newsletter will contain "hot buttons" for **GUI**, **UNIX**, and **open systems**. The "hot buttons" will prevent less-technical employees from feeling intimidated by the project's jargon and, at the same time, educate them.

Another feature of the newsletter will be the use of newspaper-style headlines as the basis for enumerating the stories which are available. Users will choose from among a menu of headlines the stories in which they are interested. In addition to the headlines, there will be "sidebars" with related information about the system, for example identifying the authors as contributors to the newsletter itself.

One last feature of the newsletter is worthy of note: its ability to record the viewpoints of those viewing it. A microphone will be provided to capture "letters to the editor", the questions, comments, or suggestions of viewers. Viewer inputs may be addressed individually and common themes will be addressed in stories in future editions of the newsletter itself.

Final Note

The first newsletter is scheduled for delivery in May 1993. The authors hope to be able to provide employees' use of and initial reactions to it in their PACIS 93 presentation.

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APPENDIX A
FEATURE STORIES

CEO discusses "new beginnings."

Viewer sees a video of the Utility's CEO in his office. He describes his vision for the company, including a new, customer-focused, proactive philosophy which he believes will help the company become the best utility country in the country. A vital component of this new vision, he emphasizes, is the Customer Information System (CIS) development project which will provide a foundation for future growth. Sprinkled throughout his message, he stresses the importance of Total Quality Service (TQS). His message gives one the feeling that this is a vry important project and that upper management is behind it one-hundred percent.

Brief Overview of CIS.

If the viewer chooses this feature story, he/she is presented with a brief history of the existing information system and an explanation of why it is being replaced. Through the use of videos, graphics and text, the viewer receives specific information about CIS and how it will replace the existing system. One realizes that this new system is not a means to an end, but a foundation from which to build. This presentation reminds one of a television news brief. (The viewer can then select a screen which shows the names and phone numbers of employees directly involved in the CIS project.)

CIS Benefits.

This feature story compares the existing and new computer systems. Each CIS benefit is displayed as a separate button on the screen. For instance, one may choose to find out more about the benefit of flexibility. By touching the flexibility button, one is provided with a comparison of the degree of flexibility offered by the existing and new systems. This comparison is conveyed through the use of video, audio, graphics and text. Once the comparison is complete, the viewer is returned to the first benefits screen. At this point, the viewer may choose to learn about another benefit or return to the front page screen. The side-by-side comparisons in this segment make it obvious why an upgrade in technology is essential to the company's strategic direction.

Timeline.

The information in this segment is displayed in the form of a Gant chart. The viewer is told of training dates, projected quarters for completion of the various phases of the project, etc. The initial timeline has very little detail but as the project progresses the timeline will become more complete. The completion dates provided in the timeline are intended to convey the company's continuing commitment to the implementation of the project.

Questions and Answers.

This story features videos of members of the company's management answering the kinds of questions typical of a project of this magnitude. A narrator will read the question on the screen. The question will be answered through a combination of text and video clips of employees and managers. Example questions:

How will customers benefit from the new system?
How will the system improve productivity?
Is this system a prudent investment for the company?

OTHER FEATURES (SIDEBARS)

Letters to the Editor.

The viewer will see a screen which invites him/her to offer comments and suggestions, or ask questions about the project via a microphone. These comments and suggestions, and the answers to these questions, may appear in future editions of the newsletter in the style of an editorial page.

About This News Magazine.

One sees information describing the cooperative effort behind the production of the **CIS Update**: the Utility Company, the graphic media support company, the vendor, and the authors. One learns that the newsletter has been custom designed for employees of the Utility and that new editions are expected quarterly. A schedule screen describes other possible uses for the news magazine: at meetings of the stockholders, customer focus groups, or public utility commission conferences.

Project Heroes.

This story gives special recognition to employees who have "gone the extra mile" for the CIS Project. Viewers will see video clips of employees and learn how they have contributed to the project. This segment should make it clear that the project touches almost everyone in the company in some way.

SAMPLE SCRIPT

Narrator's comments, followed by video clips of employees in bold-faced type.

JOB #: 21295.01	WRITER: Nancy/Allison
REVISION:	DATE: 4/15/93
AUDIO	
	Enthusiasm is running high among employees involved in the planning process of the customer information system. **(P. K. ,17:58-18:16,#1-2) I think it's very important that we have input into the new computer system through the JAD sessions because only by doing the job do you know what your mistakes are and where your weaknesses are and what you'll forget to do. And through the JAD sessions, you'll know where to put the prompts, what's going to make the job easier.** **(J. P. ,10:10-10:25,#10) for once we're not getting a system that we have to adapt to. We're getting a system that is adapting to our needs.** **(M. C. ,3:52-4:03,#1-2) It's not going to be IS saying 'Here's what you get.' It's a chance for users to finally say 'This is what we want.** **(B. B. ,11:05-11:12,#1-2) to be able to be a part of it and help design it will be a real plus.** **(E. K. ,10:58-11:08,#15) I think they're really working hard at trying to see things from our perspective and trying to do what's going to make our jobs as easy as possible.**
ACTION	

APPENDIX B

Multi-Media Project