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Using Technology for Dispensing Information

Ray Hoag
Western Michigan University

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USING TECHNOLOGY FOR DISPENSING INFORMATION

Ray Hoag, Ed.D.
Western Michigan University, 1993

Technology that enhances communication through the use of digitized media abounds. Yet, there is a perception that education does not use technology's full potential to communicate with its audience. This dissertation demonstrates that a technological solution can communicate relevant educational information. Extensive documentation provides a high level departure point for subsequent technology-enhanced communication projects.

The planning team for the Applied Technology Center in Grand Rapids, Michigan, wanted an application to express the center's name-implied mission. This opportunity was fulfilled by the development of a point-of-information kiosk application, the dissertation's focal point. Methodology included using project management software to identify and track milestones and tasks; a concentrated effort to communicate with all participants as a way of garnering support, encouraging team play, and jointly resolving problems; integrating training and personnel resource needs into the academic curricula; and focusing on continuous formative evaluation and information annealing to offset inappropriate ego involvement.

The point-of-information kiosk application was developed and has operated virtually 24 hours a day, 7 days a week since start-up. Considerable time and
financial resources were expended to accomplish the application. The tribulations of working with leading edge technology were experienced. Accomplishing the application truly was a team effort with the contribution of graphical screen images by community college seminar students being a highlight. Because technology, information, experiences and thinking are constantly changing, a systems approach to a point-of-information application should be incorporated. The process of information annealing extends beyond getting the application operable.

The reader is encouraged to use technology that integrates media to communicate educational information. Educators should give consideration to providing businesslike, learning environments where students and staff work side-by-side to create technology-enhanced communication products. A network of touch screen, information kiosks that use digitized media should be explored as should the development of a standardized user interface to facilitate ease of use from application to application. Well-developed technology-enhanced communications have a role in world improvement. The educational community should be a leader in this endeavor.
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Using technology for dispensing information

Hoag, Ray, Ed.D.
Western Michigan University, 1993
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I would like to express deep appreciation to the many people who offered encouragement and who were involved in the development of the information kiosk. Certainly to be recognized are Grand Rapids Community College President Richard Calkins and Associate Dean Paul Prins of the Ferris State University College of Technology without whose support this dissertation would not have been possible. Multimedia endeavors, such as the information kiosk, are necessarily team endeavors. These team players merit heart felt recognition:

Eli Atlas: Script Writing
Chuck Bonning: Coordination, Design and Graphics
Don Boyer: Technology Scripts
Judy Chandler (University of Georgia): Script Editing
Gerald Dawkins: Applied Technology Scripts
Katie DeBeaubien (Student): Authoring
Karen Ford (Student): Graphics
Bob Garlough: Hospitality Education Scripts
David Kubik: Technical Support
Klas Kwant: Videography
Bruce Lockwood: Videography (Lead Editor)
Ken Losey (Student): Authoring
Employment priorities extended the time required to write and reflect upon the content of this dissertation. I sincerely appreciate that my advisors, Dr. Jim Burns, Dr. Pat Jenlink, and Dr. Uldis Smidchens (Chairperson) persevered and supported me during this extended period.

Many hours that likely would have been spent with family and on home improvement were sacrificed so that the information kiosk could be accomplished. Time is not frozen while a person accomplishes a dissertation. In my case both my father, Raymond J. Hoag Sr., and my sister, Florence A. Hoag, went to meet their Master. Each of my two children married, doubling the blessings that accompany sons and daughters. More recently I became a grandfather. I appreciate the sacrifices
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made by my family and especially my wife (Debbie) during this undertaking. I appreciate that they are still an integral part of my life.

Ray Hoag
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CHAPTER I

HISTORICAL MOMENT OF ORIGIN

Introduction

The dissertation purpose is to demonstrate that relevant educational information can be communicated to consumers through an interactive technology solution that integrates media. Technology solutions hold the promise of delivering a consistent message at the convenience of the consumer. A future developer of a technology based communication system is the intended primary audience. The development of a point-of-information application, the information kiosk in the Applied Technology Center in Grand Rapids, Michigan, forms the basis around which the dissertation activities are centered. The recorded processes, experiences, reflections, and conclusions are shared with the goal of enhancing the base of information, ideas, and insights for future technology-facilitated communication applications.

Opportunity

An abundance of technology exists that can enhance education and the communication of information. Sculley (1988) reported on existing innovative technology that accomplished educational objectives. Yet many educational organizations either do not employ or deploy personnel with the expertise to adapt
technology to educational applications. Bruder (1989) pointed to education department faculty who do not use computers and a lack of priority for computers in the preservice curriculum as reasons why educators and especially teachers do not use technology. Bogue (1985) suggested a friendly automatic clerk to cost effectively provide services to college students 24 hours a day. The opportunity awaits educators to design and develop technology-enhanced applications that effectively disseminate information.

Grand Rapids Community College and Ferris State University cooperatively planned and built a new facility, the Applied Technology Center, located in downtown Grand Rapids. Besides recent high school graduates and continuing education students, the anticipation was and is that many area professionals as well as local, state, national, and international visitors will use the facility. Staff from both institutions identified information to be communicated to building visitors. The president of Grand Rapids Community College commissioned the information kiosk project. The author, because of background and interest, was given the opportunity to lead the technology-facilitated, point-of-information project. The Applied Technology Center planning group, representing staff from both Ferris State University and Grand Rapids Community College, provided developmental support and formative evaluation as did community people at important project junctures.

The information kiosk was to be developed with the future in mind. Things learned and expertise developed through this project, such as video production, computer animation, and media integration skills, should be applied to future
technology-enhanced communication projects. Video images created for the
information kiosk can be incorporated into follow-up products. The project design
should allow for convenient updating of information.

Professional Contacts

To determine the appropriateness of a technological solution to the information
dissemination needs surrounding education in general and the use of the Applied
Technology Center in particular, these professionals were contacted:

1. Ted Bailey, President, Typecasters, LTD., Grand Rapids, Michigan, an
   animator and designer of several information dissemination applications in the West
   Michigan area.

2. John Bajema, Office Automation Specialist, Steelcase, Inc., Grand Rapids,
   Michigan, designer of interactive video presentations of office furnishing systems.

3. Dick Haight, President, Clemson Interactive Video Institute, Clemson,
   South Carolina, designer and implementor of interactive video applications for Disney
   World.

4. Amy Hooton, Manager of Technology Assurance, Westinghouse Furniture
   Systems, Grand Rapids, Michigan, designer and implementor of several interactive
   video and video conferencing activities.

5. Joe Walsh, President, Video Union Inc., Grand Rapids, Michigan, graphics
   and interactive video designer in West Michigan.
Each of these individuals confirmed that communicating information such as that associated with the Applied Technology Center was both technologically possible and desirable. Most encouraged the use of off-the-shelf hardware and software as opposed to working with leading edge resources.

Technology Availability

Discussions with these vendors confirmed that technology and software was available to support the dissemination of information in a multimedia format. Many others could have been contacted with similar results:

1. AIM Technology (Icon Author authoring system).
2. Apple Computer (HyperCard and color Macintosh computing system).
3. Intel (Digital Video Interactive (DVI) technology—compression and decompression techniques to store and process video information).
4. International Business Machines (IBM) (InfoWindow interactive video display system, motion display adapter card, partner with Intel on DVI technology).
5. Quest, Inc. (Quest authoring system).

Videotape and videodisc (a medium of information storage using thin circular plates upon which video, audio, and data signals may be encoded for playback) are being used increasingly for training purposes in business and government. Schaaf (1988) reported that over 80% of firms with 50 or more employees used videotape for instruction. The average corporate library has almost 160 videocassettes. Videodisc and interactive video is growing as well with use in 15% of responding firms.
At the May 1990 Nebraska Videodisc Symposium, the development and implementation of the point-of-information application for the Smithsonian Institute was featured. Dockterman, Tillotson, and Flagg reported on a museum application which has many characteristics of a point-of-information application. Summers (1990a) provided details on an information kiosk developed by the Indiana State University School of Technology. These applications indicated the technological feasibility as well as a human receptivity to well designed applications. Each of these applications employed videodisc technology which features quality video, but video that is not quickly modified.

Summary

The advent of the Applied Technology Center and the focus of making it an exemplary example of the application of technology provided two opportunities. The first was the development of a unique information dissemination application, the information kiosk, in an educational setting. The second was to document and record experiences that could have a bearing on future technology-enhanced communication projects. Administrators and community members supported the development. Identified multimedia experts concurred that the application is feasible and has merit. Technology does exist to accomplish the project. Knowledgeable people (Bogue, 1985; Bruder, 1989; and Sculley, 1988; among others) have called for educators to make effective use of technology to communicate information.
The concluding mandate to develop a technology-facilitated, point-of-information application calls for an extensive review of literature, video materials, computer software, and other media, as well as more extensive discussions with resource people. Audience characteristics, media techniques, design methods, evaluation processes, project management, costs, and future trends are among the topics needing to be studied and assimilated. Chapter II, Review of Existing Resources, reports on the garnering of information and insights for developing the information kiosk.
CHAPTER II

REVIEW OF EXISTING RESOURCES

Overview

In accord with the dissertation purpose of demonstrating that relevant educational information can be communicated to consumers through an interactive technology solution that integrates media, a review of existing resources is accomplished. A system for continuously reviewing and assimilating the progress made in information technology is critically important to the developer of point-of-information applications. The experiences of others need to be analyzed and learned from to form a high level departure point. Multimedia and project management techniques to be incorporated, pitfalls to be avoided, audience characteristics, available technology, video techniques, and other relative information needs to be assimilated to form a firm foundation for decision making.

Information Kiosk Function

The first step in planning an information kiosk is to determine whether one is really needed. Faulkner (1992) quoted Beverly Chandler, marketing specialist for IBM's multimedia division as saying "Develop a business case for the kiosk with some careful analysis" (p. 34). The first question to be answered is what the kiosk
will do for the organization. For comparison purposes the analysis should include figures for both the current picture and the pilot program. These can later be compared to post-project information.

The function of the kiosk needs to be clearly defined. The function will help dictate the amount and type of information to be included as well as the peripheral technology to be installed for accessing the kiosk.

Audience Characteristics

Any incorporated scenes need to represent gender and ethnically equitable environments. This is important both for current and future workplace inhabitants. Several Applied Technology Center investors supplied video materials about their organizations and products/services. The Batts Corporate Marketing video presentation exemplifies visuals showing employees in non-traditional and gender equitable roles. Scenes and narration will need to be evaluated for both gender and ethnic equity. At the same time, client satisfaction with the end product must be achieved.

"The audience profile will dictate how developers design a kiosk" (Faulkner, 1992, p. 34). The audience for a higher education information kiosk is composed very generally of adults. Most will range in age from 17 to 60. Exceptions will occur such as later elementary, middle, and high school students attending a computer camp. Some will be professionals already working in high technology environments. Others will be from the shop floor experiencing their first instance of automating a process.
Most will have a high school education but some will not. The reading level of text and narration will necessarily have to be kept at the 7th to 10th grade level for most materials to effectively disseminate information. However, some narration can effectively communicate and, in fact, teach because of simultaneously associated video and graphic support materials.

Summers (1990b), in discussing the use of expert systems with an interactive video learning application, discussed anxiety. "Anxiety is the fearful, uneasy, apprehensive demeanor on the part of the learner" (p. 5). Users of a point-of-information device could also experience anxiety, perhaps because of it being a first experience with technology, concern over peer reactions, etc. Much is said about applications being user friendly. The ideal is that the acquisition of information through an information kiosk be a natural, intuitive process. Technology should accommodate and enhance the acquisition of information. Unnatural steps, included only to accommodate the technology, should be eliminated. Faulkner (1992) wrote that users do not make a connection that a computer is involved in the most successful public access information kiosks.

Many systems incorporate a "help" facility. This is a common feature of application software. The ideal would be well designed applications that do not require help. If a person must resort to help, is the application design appropriate? On the other hand, humans are complex individuals, each with different backgrounds and competencies. Can an application design account for a broad spectrum of users?
Accommodations for individuals with special physical characteristics needs to be addressed. The acquisition of skills involving the use of technology is seen as a way to broaden the world of many "handicappers." Jim Brooks, member of the Community Council for Academic Computing at Grand Rapids Community College, is wheel chair constrained and cannot speak. Using his right foot, the only limb he can control, Jim uses a joystick to operate an on-board computing system to compose messages and have them verbalized by a voice synthesizer. Accommodating Jim's use of an information kiosk would be a challenge and would require special interfaces. C. Dorsey Ruley, a financial strategist for Illinois Bell, demonstrated voice control of a computing system at the Ameritech Superschool demonstration. Since each individual generates a unique computerized voice print, voice "training" and a very simple vocabulary would seem to be needed for operation. A rather simplistic accommodation is placing the screen at a lower level but tilted up, for example, to give accessibility to both walking adults and those in wheelchairs. Research needs to be continuous relative to technological devices that will make information access possible and intuitive for all populations.

Effective Educational Organizations

DeBloois (1988) reported on studies involving interactive videodisc technology. Several reported significant gains on posttest scores and reduced learning periods for mastery. One does wonder, however, if the amount of time spent in preparing a videodisc application was equally put into presenting material in
traditional ways if corresponding learning gains would be achieved. Nevertheless, these studies and other factors have sparked the interest in creating animated video applications to facilitate the dissemination of information electronically.

Public education and the private sector need to develop new alliances and approaches to solve learning problems and to exploit the use of technology in education. Private enterprise and public education can be competitors or cooperators. DeBloois (1988) put it this way:

Computer software and toy companies, plus Sesame Street, The Electric Company, and Mathnet on television all demonstrate the ability and the will to develop technology-based private learning centers. How will the public elementary school compete with a private corporation that can guarantee a child's performance in reading, writing, and arithmetic in half the time at half the costs? (p. 106)

Watkins (1989) noted that schools and universities have been unable to create the close partnerships that are necessary to bring about significant change. Several projects are doing little, even important things, but are not part of the institutional fabric. Watkins quoted Ann Liebermann, executive director of the Puget Sound Educational Consortium at the University of Washington, as saying: "If we don't institutionalize collaborations and make them part of the real fabric, not an extra, then they will be like any other project we've lived through" (p. A15). Collaborations give schools and universities an incredible opportunity to come together. One problem is that school and university cultures are radically different. Educators in one find it difficult to understand the needs of educators in the other.
Houlihan (1988) posited that performance in a school is built on the foundation of relationships that result in improved self-concept and attitudes. Do relationships between student and teacher, between student and technology, and between teacher and technology produce improved attitudes toward school and learning activities?

Multimedia Techniques and Design Considerations

Though many educational institutions and individuals still have a strong bias towards lectures and textbooks, the world is very much a multimedia environment. D'Ignazio (1990) reported that a student's daily existence involves a sea of electronic media. And then the student enters school where the sea dries up and is replaced by a trickle of numbers and words either spoken by the teacher or slowly scanned from a book. Motion video, slides, beeps, animated sequences, graphics, body movements, synthesized audio as well as text are used daily in communications.

Users can interact with a computer application in many ways such as a keyboard, a trackball, or a light pen. According to Faulkner (1992), touchscreens are almost always your best bet. They are easy to program, unobtrusive, and can be set up to display keyboards and keypads.

With the advent of the computer and the marriage with communication technologies, new terms are evolving. "The most common meaning of hypertext is a database that has active cross-references and allows the reader to 'jump' to other parts of the database as desired" (Shneiderman & Kearsley, 1989, p. 3). Larson (1990) defined hypertext as "rapid access to and comprehension of relevant
information independent of the user's knowledge or computer skills" (p. 3). Hypermedia "goes beyond the concept of text" (Stevens & Stevens, 1989, p. 6). The information (text, graphics, sound, animation sequences, video) in a hypermedia database is "linked together using a hypermedia software application program, and it can be accessed in associative, nonlinear ways" (Barron & Baumbach, 1990, p. 1).

The accommodation of nonlinear processing of information under the user's control is important. A person might read a novel from cover to cover. But a textbook or manual is most often accessed through the table of contents, indexes, and cross references. Buttons, touch points on the screen that cause programmed actions to take place, are used to facilitate the user's movement from information resource to information resource in the hypermedia database.

The advantages of hypermedia include the ease of creating and tracing references, support for structuring and modularizing information, and the ability to keep many threads of inquiry active at once (Heller, 1990). Problems, however, do exist with hypermedia. As Heller further pointed out, users of hypermedia applications can become disoriented--they lose track of where they are or they become confused in getting to another part of the system. Some users in some systems become disoriented because they cannot determine the extent or the size of the system. If a system is overly rich in information, the user can be put into cognitive overload. A further problem is maintaining the user's commitment to the hypermedia system.
Questions of how technology can be used to facilitate the user's access of information need to be addressed by the designer. Heller (1990) suggested that these tools need to be analyzed:

1. Buttons that can be clicked which can take a person from one information node to another. Buttons give the user control of the system but can be limiting because of a narrow, single thread through the informational hyperspace.

2. Maps or indexes which give a broader view of the topology of the hyperspace. Maps give the user control to go from node to node or concept area to concept area.

3. Guided tours which give the user an understanding of the hyperspace. Though this technique offers the user least control of the system, disorientation and cognitive overload can be diminished while commitment to the system is increased.

The designer should not get overzealous in the number of choices offered to the user. Ezzo (1990) suggested no more than seven on a screen. Faulkner (1992) quoted Greg Galle, a designer of user interfaces for Aaron Marcus and Associates as saying "Avoid the cockpit effect of lots of buttons" (p. 36). Faulkner also quoted J. Sandom, a partner in a kiosk-development and multimedia marketing company, as saying "Our rule is no more than five choices on a menu" (p. 36).

Heller (1990) also posed this question: "How can we structure the system so that the user will continue to use it to discover the consequences of following a certain path, where it will lead, what types of information it will disclose, and how much information there will be when the system has been searched" (p. 437)? She
pointed out that research on the effectiveness of summary pictures suggests that the
designer must find the best graphical representations for nodes of information.

At the 1990 Nebraska Videodisc Symposium several awards were given for
outstanding interactive multimedia achievements. Techniques and ideas included:

1. Four picture windows were formed on the screen. Video of a person was
shown in each window one at a time. Each stopped with a close-up shot of the person.
The end result was four close-up pictures of individuals. A technique such as this
could be used in directory applications.

2. Building levels were shown. (The building levels for the Applied
Technology Center could be shown with button spots identified to get "tour"
information. An animated arrow could direct users from where they are to where they
would like to go within the building.)

3. One scene showed a revolving drum on the screen. One can envision the
photographs of the individuals in a department revolving around the drum. Users
could touch the person's picture as it comes by to obtain the person's office hours and
location, for example.

4. Color needs to be used judiciously. For example, red may depict
warnings or stopping places. Green may be the right choice.

5. Pop-up, pull-down, and pull-up screens are capabilities of multimedia
software. To capture a person's telephone number for follow-up on an educational
program inquiry, a telephone could pop-up and the person could "dial-in" their
telephone number. A similar concept could be used for acquiring a person's name. When a person chooses to see a video clip, a movie house could pop-up.

6. Animation sequences were used to show the earth changing over time. Often animation is used to show processes that are difficult or impractical to show using other media. Animation sequences could be used to show how air circulates in a building or how a person gets from one location to another.

7. Often a person has to choose to quit an activity. One icon that was used for this purpose was a door with an "exit" sign on it. Another icon used was the octagonal stop sign. Successful completion was shown by waving checkered flags.

8. In one application a list of glossary terms was given. The user touches a word in the list and a definition pops onto the screen. A listing of job titles could appear on a screen. When a job title is touched, a script describing an appropriate training program or course could be shown.

9. In the Smithsonian application, a person could choose from half-a-dozen language choices. Are there language populations besides English to be serviced in the area to be serviced by the point-of-information application? Captions were put at the bottom of the screen to enhance the communication with hearing impaired people. Different narrators were used to give variety and to equally represent gender.

10. In one application touch points overlapped. This was necessary to accommodate a busy map. Overlapping touch points was better than small non-overlapping points, in the author's opinion, because it is better for something to happen when a person touches the screen than for nothing to happen.
11. In a museum application, students who did not respond after 10 seconds were given a message asking them to make a response. A similar technique could be used with information kiosk users. The messages could be captions or be verbalized.

12. The applications shown emphasized much interactivity. Thirty seconds is a very long time. When picking out video segments, the key is picking the intriguing footage to hold audience interest. The "hot" information should be put up front.

13. Several applications, when showing video segments, used the forward, fast forward, reverse, fast reverse and stop symbol set found on many video recorders. A similar technique could be used for showing video on an information kiosk.

14. Menus should be used sparingly, especially when one is trying to capture the users time and interest. As one unidentified conference participant put it, "menus are like commercials, a time to take a break." They ask the user the question, "Do you want to stay or go on."

One video technique to capture audience interest is to have pictures (stills) float across the screen. The Batts Corporate Marketing video used this technique in their opening but instead of stills, each picture window was itself a portion of video. In addition, important words and a coat hanger, symbolic of the Batts product line, floated across the screen. Other techniques that arose from viewing different videos were (a) newspapers twirling onto the screen and expressing a major headline, (b) putting a spotlight on key words, (c) information being presented using a four screen video wall effect, (d) having a digital clock show the time as it runs out, (e) showing
a pool table with the initial ball break representing the subdivisions of some informational item, and (f) having a unique sound occur each time a new item in a series is displayed.

Walsh (1990) advised against becoming too "cutsie" in an information kiosk application. Based on his years in the video production business, he recommended a straightforward, "get the job done" approach. Transitional routines and graphic designs to enhance the application can be added later. Yet, a compelling application is desirable early on to promote future use and development.

Another design consideration centers around the use of printers. Faulkner (1992) suggested that one not use printers unless it is a requirement. Because of the printer's mechanical nature, it will require more attention than other system components. Printer durability is a key characteristic in an information kiosk application. Arrangements will have to be made to have paper and ink supplies checked regularly.

Formative Evaluation

The processes that a developer uses in accomplished a point-of-information kiosk application are important. One process of particular importance is formative evaluation. Cronbach (1963) made the observation: "Evaluation used to improve the course while it is still fluid contributes more to the improvement of education than evaluation used to appraise a product already on the market" (p. 675). Hofmeister, Engelmann and Carnine (1987) added this:
In the formative stage, investments in "polishing" the product are minimal. Field testing is restricted to the intense observation of small samples of the target population to determine reasons for product malfunction. Consultant critiques and other similar evaluation practices occur as early as possible, before there is a major fiscal and ego investment in the preliminary product characteristics and content. (pp. 3-4)

In designing an educational product using technology, one is concerned with keeping the focus on the user and application objectives as opposed to the technology. Levin and Meister (1983) pointed out the misplaced obsession with the hardware and neglect of the software. Importance is to be placed on working with content experts along with video, graphic, and animation practitioners to insure a product in tune to the user and to the user's environment.

Dockterman et al., at the 1990 Nebraska Videodisc Symposium, described formative evaluation activities undertaken to maximize a museum application's appeal to young people. The "escorted trial technique" was used to walk parents and kids through proposed computer screens to replicate multimedia interactions. Using screen designs on paper, the user touched the choice point. That screen design was then removed and the next appropriate screen design was placed in front of the person. Design errors were uncovered before a costly investment in authoring, programming, and graphics design was undertaken. Faulkner (1992) reported that user-interface designer Greg Galle advises to at least try the kiosk system on friends and preferably in the environment where it will be located.
In nature, the annealing process organizes many molecules into a minimum energy state with improved properties such as metal strength, plastics durability, and gem beauty. Larson (1990) described information annealing:

This same process of encouraging high interactions among loosely related pieces of information can also produce highly efficient self-organizing systems of knowledge. The benefits are that with minimum effort all users can quickly find and understand whatever they want. This is called "information annealing." (p. 1)

Information annealing can be done by initially organizing information; putting it into a hypertext system; allowing users to interact with the information; capturing user input about the system's content, access procedures, frustrations, etc.; and appropriately modifying the system until the information settles down to a state where any user can quickly acquire the information they need.

Project Management

In 1987, Hoag, Walsh, Burke, Merizon and VandenBosch developed and reported on an interactive videodisc application (Video Job Center) to serve as an adjunct to the job placement function at Grand Rapids Community College. Developing an effective, interactive video application is not a trivial task. As Faulkner (1992) put it, "Easy-to-use kiosks ... are anything but simple to produce. Kiosks are complex little multimedia universes that require not only authoring capability, but also marketing smarts, cost controls, and long-term planning" (p. 34). A team involving individuals with skills in content, video, computer programming, instructional design, and project administration are required.
Epstein (1990) created a production team of students from several disciplines who functioned under his guidance to accomplish the creation of animated graphic sequences. Recognizing that he did not have all the necessary skills or time, he made a list of the capabilities needed to accomplish the animations: create effective images (art students), visualize movement (art and TV-film students), add background sounds and music (students interested in electronic music), and computer programming (computer science students). Multimedia projects are team projects.

The logistics of updating information are often overlooked (Faulkner, 1992). Planning and budgeting for updates, media development, and media distribution are essential project components.

Halcomb (1986) identified a five-step plan to project management: (1) deciding on the overall objective; (2) brainstorming end items necessary for the objective; (3) identifying and relating milestones; (4) describing, displaying, and logically interconnecting tasks; and (5) estimating task times and costs. These steps are integrated with word processing and MacProject software to facilitate the conceptualization, description, and management of the project.

Closely tied to project management is the area of costs. Every task, every resource has a cost associated with it. The developer needs to learn to accurately estimate costs. And the developer who can constrain costs and still accomplish objectives is well served.
Cost Considerations

Costs generally vary directly with time, that is the more time required to complete a project, the more the project will cost. Epstein (1990), in discussing the creation of graphic animation sequences, noted that some concepts can be conveyed as well with two dimension graphics as with three dimension graphics. Three dimensional graphics are more difficult to create and take more computing resources. As a second example, one notes that normal motion video runs at 30 frames per second. However, cartoons are often held for 2 frames which still results in smooth-enough motion. The cartoon is developed with a 50% reduction in the number of frames needed. Through a judicious use of resources to accomplish project objectives, less development time is involved which can equate to less cost.

For cost reasons, Faulkner (1992) advised not to use video unless you must. Video requires deep pockets, not only for equipment, but also for production expenses. Hardware to support video adds $2,000 to $3,000 to equipment costs. Five to 10 thousand dollars can easily be spent for comparatively small segments of video.

The training period needed to bring new people up to the point where they can be effective is a critical cost consideration. Costs are higher if a person is being paid during an extended training period and project objectives are not being accomplished. And what are the costs for the trainer? Is travel time involved? For example, Intel's Authology: Multimedia authoring package is purported to be easy to use and understand. However, training costs $1,500 per person for a 3-day session offered
only in Princeton, New Jersey. Intel's training for the Lumena graphics package is $1,200 per person. Where appropriate, local training resources should be considered because of less lost work time and accommodating training for a larger number of staff.

Technology Trends

Impacting costs, design considerations, and most other areas of a point-of-information application are the seemingly unrelentless changes in technology, media and associated procedures. The developer needs to assess the many advancements being made in the computer controlled, multimedia field. The 1990s could become known as the multimedia decade. "Multimedia will change the world in the 1990s as personal computing did in the 1980s" (Sculley, cited in Shao, Brandt, Gross & Verity, 1989, p. 153). In the March 1990 issue of The Videodisc Monitor ("IBM Announces"), a motion video adapter card is described that digitizes incoming analog video and audio signals. Though the unit lacks compression of motion video and an interface to an IBM touchscreen, it does allow for changing the size and location of pictures and motion video, superimposing graphics over video, viewing several different video images simultaneously, and manipulating sound input from two stereo sources.

New and innovative uses of multimedia continue to be developed daily. One system pumps multimedia messages into drivers as they pump their gas ("Trivision Brings Video," 1990). One unexpected benefit has customers being distracted and
pumping more gas. Proximity sensors lower the audio when no car is present and ambient noise detectors adjust the volume for optimum performance. Fewer people drive away without paying because they feel they are being watched.

A large multimedia exhibit recently opened at the Smithsonian Institute to allow visitors to actively explore the social impact of information technology during the past 150 years ("Smithsonian Receives," 1990). A bar-coded brochure allows visitors to register themselves and record experiences at key points. A census simulation uses the bar-coded brochure to facilitate the capturing of visitor's statistics such as age, sex, and home. Activities of the visitor are stored on the systems computer network and are available to the visitor in printed form at the end of the exhibit.

Industry is using multimedia in a variety of ways to promote their products and image. Sinnett (1990) reported that half of the automobile exhibits at the North American International Auto Show used video as either a component or as the centerpiece of attraction. The Oldsmobile entry used an eye-catching, six-screen by five-screen video wall. Thirty different cars could be shown simultaneously or one gigantic scene with 30 different segments. Models controlled one display using switches that they stepped on to activate video. Jeep used an arcade style simulation to allow visitors to experience the car they were viewing. Many companies have taken strides with multimedia technology to maintain or gain a competitive advantage.

Many advancements have recently been made with Intel's Digital Video Interactive (DVI) technology. As Andring and Zimmerman (1990) reported, current
capability now allows developers to create interactive video software with full-screen, full-motion video, multiple-track audio, high-resolution still video images and dynamic graphics on a single, integrated personal computer platform. Faulkner (1992) reported that even though DVI has less quality than laserdiscs, it's more dependable and easier to manipulate. Though still expensive, the cost of the DVI development platform has fallen significantly from time of announcement.

In March of 1989 Intel and IBM agreed to work jointly on some DVI projects. This can provide a more stable development and increase the number of platforms for the technology to use. A technology center is being developed that supports application development, among other objectives. Since the agreement, the board set to use the DVI technology has been simplified from seven boards to no more than two. Recently released computing systems now have DVI playback capabilities built into the system board.

Two companies are delivering software products to work with DVI technology. CEIT Systems Inc. has announced an authoring package that facilitates nontechnical people in developing applications. Previously, all applications were developed using the C programming language. Time Arts announced a version of their Lumena professional-level paint program to enable designers to create sophisticated color graphics for DVI applications. However, Shao et al. (1989) reported that the software needed to create DVI presentations will take some time to develop.

Oltz (1990) reported on the advantages and disadvantages of DVI. Advantages are:
1. Since digital motion video, even though decompression is necessary, is in a digital format, it is easily merged with graphics generated by the computer.

2. DVI is delivered on a medium (such as a CD-ROM) that is regularly and naturally used for the storage of computer data.

3. Applications can be more easily prototyped since edit level motion video can be used.

4. Small changes can be made easily.

5. The delivery medium is cheaper per unit than analog videodisc.

6. For teleconferencing, a live digital video transmission requires less bandwidth.

Disadvantages include:

1. Expensive decoding circuitry is needed to play back a digital motion video application.

2. Massive amounts of data storage is necessary.

3. The choices of authoring packages are limited.

4. There is not a large experience base in what can be done with DVI.

Shao et al. (1989) added that DVI images move less smoothly than standard video.

The amount of disk storage to digitally record one second of video is massive. Any image is divided into picture elements called pixels. The more pixels, the higher the resolution and image quality. The resolution for a computer graphic frame is 512 by 400. Therefore, there are 204,800 pixels per frame. Three bytes (computer storage...
units) are needed per pixel to contain the red, green and blue color information. Thus, 614,400 (204,800 times 3) bytes per frame are required. Full motion video is accomplished by showing 30 frames per second. Thus 18,432,000 (614,400 times 30) bytes are required to show 1 second of motion video.

This massive amount of information needs to be stored on a large magnetic or optical storage device such as a CD-ROM. A standard rate to transfer information between a computer and a storage device is 150,000 bytes per second. Therefore, the video must be compressed by a factor of 122.88 to 1 (18,432,000 divided by 150,000). Oltz (1990) reported that the video must be compressed by a factor of 100 to 1. "There are some economizing measures for transmitting . . . which are not included here" (p. 6).

Oltz (1990) identified a combination of techniques that are used to compress the digital representation of video:

1. One half the resolution in each direction can be used for full motion video. Therefore, a resolution of 256 times 240 would mean 61,440 pixels per frame. Using 3 bytes for red, green, and blue colors would require 184,320 bytes per frame. For 1 second of video (multiply by 30 frames per second) 5,529,600 bytes are required. Dividing by the transfer rate of 150,000 bytes per second, a compression factor of 36.864 to 1 is still required. Oltz reported a factor of 25 to 1 being required.

2. Another color coding scheme can be used. One byte is required for the brightness of each pixel (61,440). Only every fourth pixel in both directions would require a two byte code for color. An additional 7680 bytes are required. Totally
then, 69,120 bytes are required to express one frame. Multiplying by 30 frames per second gives 2,073,600 bytes required for 1 second of video. Dividing by the transfer rate of 150,000 bytes per second, a compression factor of 13.824 to 1 is still required.

3. Once the initial frame of video is recorded, only the information that changes from one frame to the next must be recorded. Further compression can be accomplished. However, the amount of compression achieved varies depending on the nature of the video.

4. Data resulting from the entire process involving the above techniques is treated as mere numbers and is bit or byte compressed.

Andring and Zimmerman (1990) reported on activities to develop an international standard for video compression. Having a standard will help to promote the growth of multimedia applications. Intel has pledged to support the new standard while being compatible with their existing DVI compression algorithm.

Other recent DVI advancements reported by Andring and Zimmerman (1990) include a breakthrough in the ability to compress video footage in real time, at 30 frames per second, on a personal computer platform and to transmit the digital signals of compressed video over a token-ring computer network. The real time compression should speed the application development process and alleviate the need for some costly production level compression. The networking can lead to computerized video mail systems or video clips about company products being available at any personal computer on the network. An Intel representative at the Infocomm International 1990
conference (R. L. Miller, 1990) observed that DVI technology transforms the personal computer into a personal companion.

Benefits

Epstein (1990) reported on a method involving students from multiple disciplines as an approach to instructional improvement through technology. This is described as a win-win situation. Students work on graphic animation projects (learning units for faculty members) and receive credits for independent study. Students have flexibility in scheduling their work and learn skills that are in demand in today's marketplace. Approximately 2 weeks are required to learn the software packages and procedures before any usable output is produced. The students supply the project with skills and the time-on-task needed to accomplish objectives. Modules are created that both instructors and students feel enhance the learning process.

Faulkner (1992) stated that an organization can deliver a consistent message to the public through the use of an information kiosk. Kiosks can provide accurate, up-to-date information presented in an authoritative, yet nonthreatening manner.

Bogue (1985) has suggested a friendly automatic clerk to cost effectively provide services to college students 24 hours a day. With advances being made in multimedia and networking technology, this "automatic clerk" does not need to be restricted to a campus setting. Networked kiosk units, supplying educational program information, could be located in high traffic, community areas such as shopping malls. With technological advancements that facilitate interactive communications involving
graphics and video, one can also imagine accessing educational information using a personal computer from home. Future potential uses of multimedia technology to communicate educational information are great.

Summary

Communication processes, computers, peripheral technology, media integration techniques, design aspects, audience characteristics, process strategies—the world of the developer of technology-enhanced communication products is continuously changing. The review of existing resources provides the status at a point in time and is applied, together with past experiences, to the project at hand. At the same time, the developer continues to review and assess the field, integrating new results as appropriate. This ever growing foundation provides the basis for methodologies to be employed as well as project design and implementation activities.
CHAPTER III

METHODOLOGY AND RATIONALE

Introduction

In order that the reader might more closely identify with the author, the methodologies and rationale used to develop the technology-enhanced, point of information application that communicates educational information to consumers is shared. These methodologies and rationale were key in the project design and implementation phases of the information kiosk project for the Applied Technology Center.

Identified Methodologies and Rationale

The first task was to confirm the desire to have an information kiosk. As the President of Grand Rapids Community College had expressed interest and ideas for the kiosk previously, he certainly would be consulted. With his approval, the thinking was that others would be supportive and cooperative.

Quality communications was determined to be a major strategy in the project. Communications should be professional to well represent the project and enlist or maintain project support. If problems occur, people should be informed early on so that they are not surprised, and can use their position or expertise to help resolve the
problem. Most communications should be in writing with verbal annotations to effectively use face-to-face communication time, confirm project status, and to record project events for future reference. Communications should be done using computer software (word processing, graphical drawing, project management charts, etc.) to facilitate creation and editing and because this was what one would expect with a computerized information kiosk project. Video segments and computer system interaction should be used if appropriate and as available.

Primarily because the project was not only to produce a product but was to be a learning experience for others as well as the author, a concentrated effort should take place to document all aspects of the project. Copies would be archived of virtually every project communication and transaction. Where feasible, copies would be kept in a magnetic format in addition to paper. Archive categories would include project management, technical research, and application design communications as well as authoring segments and other categories as they evolved. Archived documents would be organized into three ring notebooks for ease of access and updating.

The author had previously used a project management software package in a graduate course to identify the tasks and resources required to organize and run a conference involving 5000 people. Because of this experience and the appropriateness of project management software for the information kiosk project, the intention was to use the MacProject package. This package and the accompanying thinking required should help to identify major milestones, show the project's critical path and
deadlines, provide a convenient way to keep on top of project activities, and be an impressive, professional way to communicate project information.

Both from previous experience and the review of existing resources, it was known that the development of the information kiosk had to be a team endeavor. No one person would have all the talents needed to accomplish a computerized, interactive, multimedia project. And even if one person had a majority of these talents, the time constraints would make it impossible to accomplish in a timely manner.

Personnel resources for the project would be scarce. Professional outside resources would be very limited. Leadership skills and previous positive experiences and relationships with those involved would have to be utilized to enlist people to help, feel a part of the team, and want to make a contribution. The project was entered with an openness to take or elicit support from whatever source possible. The author had made it a practice to be active in community computer groups. Various professionals in the community would be called upon to enlist their thoughts, ideas and support in order to help with this educational project.

The experiences of others, as described in the review of existing resources, to involve students in a win-win situation of supplying skills needed for a multimedia project in return for experience was a strategy to be explored. Having been advised that designing and creating computer graphics was time consuming, effort would be made to enlist student and staff support for this component. As Chairperson of the Computer Applications Division, the author was in the position to create project
seminars for students. The advantages of the project seminar would have to be sold to students, who would have to see the value for their career objectives, and to staff, who would direct work on a pro-rated pay schedule dependent on the number of students involved.

A strategy would be to take advantage of integration possibilities within the Computer Applications Division. For example, some outside funding was available for training activities that resulted in curricula improvement. If training for curricula improvement would also provide skills needed for the information kiosk project, this approach would be explored.

Major project decisions should be shared decisions. These decisions would include the computer platform, software and some services to use. Effort would be made to solicit and scrutinize information that would result in fairly presenting the advantages and negatives of opposing views and alternative choices. Where possible and appropriate, key decision makers would be given a preview of information in order to garner their opinions and suggestions.

Formative evaluation and not wanting to allow a major ego investment to build up were very much on the author's mind as the project was embarked upon. Major design and technology uses would be checked out with community professionals before making a final decision. Input on the user interface to the system would be solicited from those not involved with the project. Responses to questions would be sought. What do you expect to happen? What is not understood? What are you thinking? At the idea, the sketch, the graphic image, and the computer controlled
interactive stages, input from a typical user would be solicited and changes incorporated to anneal the system towards achieving a smooth person-to-machine dialog.

Summary

The preceding discussion provides the mindset of the author as the project design and project implementation phases were entered. The project would be a team activity, leadership skills would be required to enlist support for project tasks, the author would be open to input from community professionals and would solicit their input, major decisions such as equipment and software would be shared decisions, any errors in communication would be on the side of doing too much, project activities would be well documented, project training and skill resource needs would be integrated into curricula programs if appropriate, and the techniques of formative evaluation and information annealing would be emphasized in order to avoid an inappropriate ego investment in the project.
CHAPTER IV

PROJECT DESIGN

Purpose

The overall purpose was to dispense, using computer controlled multimedia technology and in a compelling manner, useful information. Concurrent purposes were to (a) develop a useful information kiosk for the Applied Technology Center in Grand Rapids, Michigan; and (b) record and reflect upon project activities with a focus on enhancing the development of future technology-enhanced communication projects.

Outcome Objectives

Outcome objectives in reference to the Applied Technology Center were to: (a) communicate information on educational programs to potential student clients and capture name and telephone information for follow-up; (b) recognize investors by providing complimentary video segments and one page flyers on demand; (c) facilitate the finding of room locations; (d) provide a system for recording, updating and displaying activities; (e) communicate information on building features to visitors and clients; (f) disseminate professional organization information to potential members;
and (g) develop a system, given that the information environment is dynamic, that accommodates updating of text, numeric, graphic, and video data in real time.

The communications representing project activities should be available in a suitable publication form (notebook, binder, etc.).

Process Objectives

The process objectives in reference to the Applied Technology Center were to:
(a) develop the information kiosk using a continuous, formative evaluation approach;
(b) develop the information kiosk using available, but leading edge, technology; (c) develop the project with available talent and resources, given that the human resources that can be devoted to the project are limited; and (d) allow for capturing usage statistics to assess high usage areas and other factors that might effect later design changes or information deployment.

As much documentation as is practical should be created on the projects activities and recorded electronically so that these information items will be available for retrieval and reflection at appropriate project junctures.

Work Plan

To accomplish objectives, a task plan was developed encompassing over 136 tasks (see Appendix A, Project Management Chart, and Appendix B, Project Management Communications). The task plan was created using project management software (MacProject). For each task an earliest start date, duration days, latest finish
date, and responsible person were noted. The task plan formed the basis of project activities and direction. The plan was not ironclad but allowed for updating and revision as steps were accomplished and new information acquired. The project plan served as a communication tool for those involved in implementing and overseeing the project.

The plan was divided into seven major task areas: (1) investors, (2) building features, (3) educational programs, (4) professional organizations, (5) activities, (6) directory, and (7) technical aspects. An overview of each task area follows including intended resources and communications. Documentation that accrued is supplied as appendices.

Investors

Over 150 community and national companies and individuals invested in the Applied Technology Center. In recognition for their investment, each major investor (gold—over $50,000) would have a 30 second video segment available through the information kiosk. Mid-range investors (silver—from $20,000 to $49,999) would have a shorter segment, and investors (bronze) in the $10,000 to $19,999 would have information displayed. There were 20 to 25 investors in each of these categories.

Because of the numbers of investors and the time consuming tasks associated with producing quality video, the project's critical path flowed through the investor area. Investor recognitions were a priority item with the project's supporters, especially with the President of Grand Rapids Community College.
Major tasks involved with investors were determining the investment categories, identifying company contact people, soliciting script information, writing and rewriting scripts, securing script approval, identifying video resources needed, shooting video, arranging for slides and video already shot (in the can), editing the video, and gaining approval of the resulting video segment. With approximately 50 investors requiring video segments, there were 50 subprojects occurring in an overlapping fashion.

An early project decision was to have all video done by the Grand Rapids Community College Media Services Department. This was deemed important so that the video components have a consistent look. The Media Services Department is a production facility as opposed to an instructional division. Several videos produced by the Media Services staff have won state and national awards.

Specific resources needed to accomplish the investors phase of the project were competent people to do script writing, narration, project management, graphics design, authoring, and videography. Because this project is to be accomplished cost effectively within the educational arena, currently employed personnel should be used whenever possible. This may result in some difficult situations when jobs are restructured and normal work activities must also be accomplished. A significant amount of coordination activity was anticipated to solicit information, make contacts with appropriate company personnel, and oversee the videography aspects.
Building Features

Because the Applied Technology Center was a unique, joint venture of two higher education institutions, the project acquired a high interest level from state, national, and international groups. Many visitors were anticipated. At the same time investors have provided furnishings and other equipment for the facility. Several vendors have provided products at significant discount. These factors led to the desire to include an electronic tour as part of the information kiosk. Building features of interest would be available for the user to choose. Appropriate vendor products would be shown and flyers printed on demand.

The building features would be broken into subareas such as lighting; heating, ventilation, and air conditioning; special areas such as the atrium and computer integrated manufacturing cell; flooring; wall coverings; general statistics such as dining and parking capacities; communication systems; and audiovisual equipment. One vision was to have a floor plan for each level with icons identifying where a mini-electronic tour would be available.

Major tasks associated with building features were identification, script writing, script approval, identifying video shots to be associated with scripts, shooting video, editing video, and gaining approval of video segments. Because many building features were dependent upon construction, this phase would be consummated during final construction. Resources were needed to accomplish script writing, videography, authoring, and project management.
Educational Programs

Many technology programs would be housed in the Applied Technology Center. Ferris State University programs, primarily from the School of Technology, included Automotive and Heavy Equipment Management; Plastics Engineering Technology; Energy Management; Secondary Teacher Education; Facility Management; Electrical and Electronics Engineering Technology; Product Design Engineering Technology; Manufacturing Engineering Technology; Construction Management; and Computer Information Systems Management. Grand Rapids Community College associate degree and certificate programs from the School of Occupational Education included Air Conditioning, Refrigeration and Heating; Architectural Drafting; Automated Manufacturing Technology; Automotive Technology; Computer Electronics; Electronics Technology; Industrial Technology and Tooling; Mechanical Drafting; Plastics Manufacturing; Quality Science; Welding Technology; Culinary Arts; Food and Beverage Management; Data Processing; Computer Applications Technology; and Applied Telecommunications. Workshops and special training sessions would be provided by Grand Rapids Community College's Applied Technology and Training staff.

Major tasks included script writing, script approval, narration, arranging video shots, video shooting, video editing, video segment approval, and authoring. Resource people would be needed to coordinate Ferris State University and Grand Rapids Community College activities (acquiring written materials for scripts, scheduling of
video shoots with student participants, participating in editing sessions, reviewing video segments, etc.).

Professional Organizations

Over 20 professional organizations indicated a desire to have office space in the Applied Technology Center. The Center's staff would provide telephone, publicity, newsletter and meeting facilitation services. For many, the Applied Technology Center would be an ideal place to meet.

Tasks associated with professional organizations included identifying information, database design, possibly photographing officers, capturing logos, designing graphics, capturing original information, and providing for information maintenance. Resource people would be needed to accomplish project management, database design, data entry, photography, graphics design, script writing, and authoring.

Activities

Besides traditional semester based classes, many workshop, professional organization meetings, vendor product announcements, and other miscellaneous activities would take place in the Applied Technology Center. These activities could be scheduled for a block of weeks or be one time only activities. Activities might be known well ahead or be scheduled for the next week. A system needed to be
developed that would allow for the maintenance and communication of center activities.

Tasks associated with activities included identification of those to be included, determining information to be included in a database, designing the database, identifying the office responsible for maintaining the database, entering information into the database, finding the person with the expertise to design and write the database component, designing and implementing the interface between the database and the authoring package, and designing how the information can best be presented through the information kiosk. Resources required were institution coordinators, a database designer, appropriate software, graphics design, and data entry.

Directory

The anticipation was that visitors and users of the Applied Technology Center would want to locate rooms, departments, and people. Rooms and departments would be comparatively static information but personnel could change often. Photographs of building residents would be displayed on the screen. Floor layouts would show a person where they are and where they want to go. An animation sequence would route the person to the desired location.

A procedure for capturing, maintaining, and displaying information on building residents needed to be developed. The information to be maintained on people, departments, and room locations needed to be identified. A database needed to be developed, one that would accommodate image as well as text information. The
interface between the authoring system and the database needed to be developed. The
staff who would maintain the database would have to be determined. Institution
 coordinators would be involved. Other resource people would be needed to
accomplish database and graphics design, photography, and data entry.

Technical Aspects

The specific computing system platform to accommodate the information kiosk
application needed to be researched, configured, approved internally, ordered,
delivered, tested, and then used. This would be a key task. Other decisions such as
software selection, free standing kiosk design, in wall kiosk openings, and training
depended upon this decision. Though many promoted the Apple Macintosh
computing system for use in a multimedia environment, an early decision made by
Applied Technology Center staff was to use an IBM personal computer or compatible
primarily to facilitate interfacing with existing databases and to take advantage of
skills already possessed by staff. As there would be more than one kiosk location
(three planned initially), research must occur on how these systems would be linked.
One should not maintain data in multiple locations.

Another major technical task was the design of the overall application and
especially the design of the user interface to the system. The user interface would be
represented by the menus, instructions, and other graphical displays that the user
would see on the screen. This task should to be done well to insure ease of use and
acceptability of the application.
The author was the primary person responsible for both the equipment selection process and the application design. The Applied Technology Center building committee was the critical body to be dealt with in equipment selection and acquisition as well as with the application design. Community resources would be dealt with to facilitate and enhance the application design.

Following Houlihan's (1988) and Steinberg's (1984) suggestions, a key focus would be the characteristics of client users. Any product must use accessible technology and be concerned for the technology readiness of client users. Storyboards and scripts would be developed. Criswell (1989) encouraged as much intelligence (learning systems that are responsive to the learner's style of learning and past accomplishments) as possible.

Resources

Personnel resources for the information kiosk project were limited. The author was given some released time (from division chair and teaching assignments) to coordinate and develop the project. The amount of released time would be negotiated at the beginning of each semester and would relate to the project's progress. A Ferris State University School of Technology person was to be given some released time to work primarily on Ferris aspects of the project.

Information needed to write scripts in support of educational programs of divisions that will occupy the Applied Technology Center would be obtained from staff of those divisions. There should not be a problem in acquiring this information.
because providing it would be in their best interest. Artistic, writing, graphics, authoring and musical skills needed to accomplish the project were to be acquired "as best one can." Though the author could do most of these tasks, time limitations would constrain the accomplishment of the voluminous work load. The anticipation was that students, either getting credit for taking practicum or independent study or being paid student assistant wages, would provide some personnel resources to the project. This should be a win-win situation with the students receiving valuable training and experience on leading edge developments and with the project receiving valuable expertise and time-on-task. Faculty of the divisions from which expertise is needed would be contacted to recommend appropriate students.

Some faculty might want to get involved in the project from an interest standpoint. New technology and software packages to use along with marrying computer, video and communications technology could spark some interest and support. The opportunity to learn some new skills could provide the motivation.

Community members would be involved at least to periodically review the projects progress. This could be tied into the activities of the Community Council for Academic Computing. Several computer professionals have expressed their willingness to support the Applied Technology Center in this manner.

Integrating the information kiosk project activities with academic department activities was a strategy to be exercised. Funds can be acquired for training to improve instructional staff. The same training could facilitate project objectives.
Communications

Keeping Applied Technology Center staff informed of the project's progress was considered essential. This must be accomplished to maintain support for the project. Communications would be in written and visual form supplemented by verbal explanations. One periodic component would be an update on project expenses. The biweekly building committee meetings would be the primary forum for providing staff an update on the project's progress. The building committee would serve a formative evaluation role as well. Periodically, a summary report of the project's progress would be formulated and shared with the advisory Community Council for Academic Computing.

Documentation

To facilitate project duplication by others and to learn from this project for future multimedia activities, an archive of project communications would be created. These documents would provide a base for reflective thinking and future directions. Project planning documents, progress reports, scripts written, storyboards, program listings, budgets, and other relevant documentation would be accrued. Several of these documents would be selected and included as appendices.
Summary

The project design foretells of an enormous number of tasks and volume of work. A key design issue was the use of project management software to identify the major task areas of investors, building features, educational programs, professional organizations, activities, directory, and technical aspects. The project's critical path included the tasks associated with creating video recognition segments for investors. Several tasks would involve information acquisition, script writing, video shooting, and video editing. The Applied Technology Center building committee served as the body for major decision making and some formative evaluation. Personnel resources devoted to the project would be scarce requiring project leadership skills and project tasks being integrated with current work loads. Students would be integrated through curricula activities. A concerted effort would be made to well communicate project happenings and document the project as a base for future multimedia activities. The project design provides the foundation for the implementation activities described in the next chapter.
CHAPTER V

IMPLEMENTATION

Introduction

The topics presented represent the major project tasks and activity areas that were accomplished to develop the point-of-information kiosk application which communicates educational information in the Applied Technology Center. Topics are generally presented in hierarchical order though some topics overlap. Some topics are summative and span several tasks. Some tasks are clearly separate while many are tightly coupled with references to common activities.

Project Team Roles and Members

To accomplish an integrated multimedia project, the expertise from several different areas is a requirement. Rarely would one person have the expertise to accomplish a multimedia project. The totality of required functions are accomplished by a team (see Appendix C, Project Team Design).

Administration

Administrative tasks included commissioning the project, authorizing resources, providing parameters for equipment selection, reviewing progress, providing formative
direction, establishing time lines, and approving design and product accomplishments.

The President of Grand Rapids Community College, Richard Calkins; the Associate Dean of Ferris State University's School of Technology, Paul Prins; and Grand Rapids Community College's Economic Development Officer, C. J. Shroll, in his role of overseeing the construction of the Applied Technology Center, provided the project's administrative function.

**Ferris Coordination**

The Information Kiosk project was housed at Grand Rapids Community College yet Ferris State University is a partner. Several tasks needed to be accomplished to incorporate Ferris information. These tasks included identifying contact people, soliciting script information, having script information approved by the Ferris public relations officer (Patricia Coyle), scheduling video shoots, and lining up instructor and student talent. Chuck Bonning, a Ferris State University associate professor in automotive management, was provided released time over three terms to accomplish these tasks.

**Grand Rapids Community College Information Gathering**

Information needed to be collected, organized, and approved for the Grand Rapids Community College programs and services to be included in the Information Kiosk. Dr. Don Boyer, Chairperson of the Technology Division, Mr. Robert Garlough, Chairperson of the Hospitality Education Division, Mr. Gerald Dawkins,
an Economic Development Officer, and the author, in his role as Chairperson of the 
Computer Applications Division, provided the information for their respective 
divisions' programs. Lead people in academic advisement, admissions, financial aid, 
and placement provided services information.

Media Services

The Grand Rapids Community College Media Services Department provided 
video shooting, video editing, audio, and narration services. Bruce Lockwood 
provided the overall media services direction and did the bulk of the video editing. 
Mark Vogel, Jim Schafer, and Klaas Kwant accomplished most of the video shooting. 
Lowell Siebel, a professional voice, was employed to narrate scripts.

Technical Support

Running the digital video interactive (DVI) technology and the Authology: 
Multimedia authoring package under the disk operating system turned out to be a 
monumental effort. Installing new versions of the DVI technology and the authoring 
system, working with programs to expand memory, getting the correct mix of 
equipment, enhancing the DOS environment to work with large capacity, small 
computer system interface (SCSI) devices, installing touch screen drivers, and doing 
trial and error operations to find optimum configurations were some of the time 
consuming technical support tasks. The primary technical support person was David 
Kubik, the lead technical support person for academic computing installations at
Grand Rapids Community College. Bob McDonald, a technical support person from CEIT Corporation, provided by telephone and facsimile transmissions support for the Authology: Multimedia authoring package. Joe Walsh, a system integrator from Datalus in Okemos, Michigan, provided support in putting the correct mix of equipment together. Kevin O'Connel, from Intel's Princeton operation, provided technical input on the environment and procedures necessary to utilize DVI technology.

Authoring

Authoring involves the use of a computer software package to translate the application design into reality on an appropriately equipped computer platform. Some components of the authoring process involved writing procedures which is much like computer programming. The dissertation author used the Authology: Multimedia authoring package to accomplish this function. As part of a learning activity in a project seminar experience, students Brian Patrie, Katie DeBeaubien, and Ken Losey did assigned authoring segments.

Computer Graphics

A time consuming, labor intensive, and essential task is the creating of images using one or more graphics computer software packages. One or more images made up the panels that composed the screens of the information kiosk application. Chuck Bonning, Ferris State University, did many of the initial graphics. Bill Zoellmer, an
adjunct instructor for Grand Rapids Community College, worked with students in a
graphics project seminar class. Some students worked on the graphics as part of their
student work assignment. Students who contributed significantly to the application's
vast set of graphic images were: Kevin Boyd, Karen Ford, John Hafke, Chuck
Nivison, Michael Morton, Matt Schrado, and Rhonda Terpstra.

Script Writing

Before video segments were created, a script was written for each investor,
educational program, and building feature incorporated into the information kiosk
application. A script is the set of words that (a) the narrator will record, (b) forms the
basis for what video is shot, and (c) around which the video editing takes place. The
author was the primary script writer. The first script was written in conjunction with
Phylis Reyers, who had script writing experience. Ferris State University scripts were
originated by Patricia Coyle and then edited by the author. The Grand Rapids
Community College Applied Technology and Training Department scripts were
originated by Elly Atlas. Most of the major investor scripts were faxed to Dr. Judy
Chandler, University of Georgia, who volunteered her time and English composition
skills to critique the scripts.

Project Coordination

The author was the project coordinator. Project coordination involves a
knowledge of all aspects of the project, creating time lines, communicating with
project sponsors, developing standards for graphic designs and file naming, creating and following a project management chart, equipment detailing and ordering, budgeting, and several other tasks.

**Application Design**

Application design tasks involved finding a suitable metaphor, designing menus, and plotting information flow as well as the design of each screen. Much of the design process is cyclic, that is, a design is created, a mock up is evaluated, and then revisions or other tacks taken. The author and Chuck Bonning were the principal designers. Student Karen Ford assisted early on in the design process.

**Technical Research**

A time consuming project task was researching the different equipment and software options and selecting those to be utilized. The author was the primary technical research person.

**Kiosk Construction**

A kiosk was required to house the computer system and facilitate a user’s interaction with the information. As the kiosk was to be in a focal location, an attractive looking kiosk that fit into the immediate environment was also important. Bob Haight from the Grand Rapids Public School's cabinet making shop was the primary person responsible for constructing the kiosk. He was supported by fellow
workers and Rod Gale, Supervisor of Grand Rapids Public School's cabinet making operation.

User Interface

A book metaphor (see Appendix D, Application Design Communications) was chosen as the user interface to the Information Kiosk. Other metaphors that were considered included a building with a choice of doors, a hallway with a choice of rooms and a television screen with a choice of programs. The primary audience is loosely described as adults between the ages of 17 and 60. The assumption is made that each of these adults has had at least some exposure to a book and would be familiar with the operation (turning pages, using tabs and bookmarks) and layout (chapters, table of contents, and figures) of a book. A book is traditionally related to educational institutions and seemed a fitting metaphor for Ferris State University and Grand Rapids Community College.

Colleges and universities are known for their catalogs. The college catalog provides information on resources and procedures in addition to describing courses and programs available. Technology students are familiar with manuals that accompany machines, electronics, and computer software. A first time visitor looks for the information desk. As a result of this thinking, the book was entitled "Information Manual" and the kiosk carries the title "Information Center."

A book, a familiar "technology," assists a person in transitioning to a newer technology featuring a computer-controlled information system using a touch screen.
interface. A design goal was to have a system that is intuitively easy to use—a major "help" component is not needed. The requirement for a sophisticated help facility indicates that the system's use is not intuitive. Each screen contains a brief instruction such as "Touch a selection." If a person does not respond after 15-20 seconds, an audio message such as "Please touch a selection on the screen," politely calls for a response. At the initial table of contents the textual message states, "Touch a chapter" or "Touch a tab."

Using the book's tabs, a user jumps from section to section. Using shaded areas on the book's pages, the user makes choices and jumps to the appropriate place in the chapter. Touching the bookmark labeled "Contents," the user is able to immediately jump to the table of contents. With the book laid open, touching the identified lower left page corner turns a page back. Touching the lower right corner turns a page forward (a right to left screen wipe). Using page turning, a person is able to sequentially page through the book.

Collectively, the tabs, bookmarks, shaded areas and page turns are hot spots or buttons. Touching a button causes an action—the displaying of information or the switching to another section. Using the system's buttons facilitates the user's access of information. The collection of buttons gives the system a hypertext orientation, allowing the user to access information based upon their individual needs and thinking pattern.

At specified points, the user is provided the opportunity to receive a flyer. When implemented, the flyer is to be printed and immediately dispensed through a
slot in the information kiosk enclosure. This on-demand flyer capability is intended to reduce the need for hallway bulletin boards and maintain the building's "technology" appearance.

Equipment Configuration, Integration, and Support

An initial consideration was the platform upon which to build the information kiosk. Apple's Macintosh computing system was known for its graphics capability. IBM, through the CIM in Higher Education project, was a partner in the Applied Technology Center. Videodisc capability was available with each. IBM or IBM compatible platforms were the predominant platforms at both Grand Rapids Community College and Ferris State University. Data bases that were needed to be integrated would be operating on IBM platforms. The decision was made to use an IBM or compatible platform.

The next decision was whether to store the video information on a videodisc or to use the new and emerging digital video interactive (DVI) technology. Videodisc was a more mature and known technology. However, changes to the video information would require pressing a new videodisc whereas DVI video, though not as high quality, can be changed locally simply by reloading the video. DVI, though expensive, is projected to be a future technology that may replace analog video and allow for more convenient integration since all media would be in a digital format. The market place currently has a high interest in DVI and its potential. The decision
was made to invest in DVI technology. Several technical research communications (see Appendix E) took place leading to the decision to use DVI technology.

Because the DVI technology was new among technologies associated with the computer, acquiring the system from the owner of the DVI technology, namely Intel, Inc., was determined to be the course of action. If all components came from Intel, there would be only one vendor to deal with in problem resolving. The Intel company wanted acquisition to go through their established dealerships. Pioneer Standard is the designated Intel dealer for Grand Rapids. The system was configured by the Pioneer Standard group who consulted with Intel.

The DVI development platform consists of an Intel computer system with an 80386 processor running at 25 megahertz. Four megabytes of internal RAM memory is available. The 386MAX program was invoked to use the extended memory which is the three megabytes above the standard one megabyte that the design of the Disk Operation System (DOS, version 4.01) accommodates. The distinguishing feature of the DVI computing system is the set of electronic boards, the hardware components of the DVI technology, that allow for the capture and playback of video and audio files. A 40 megabyte hard disk stores the DOS system, the DVI technology routines, the authoring software, device drivers, the information kiosk application instructions, and the images used by the application. A CD-ROM drive was included in order that applications developed by others could be demonstrated on the system. A large capacity (650 megabytes) Small Computer System Interface (SCSI) storage device is on the system to hold the DVI formatted files representing the video and audio
segments of the information kiosk application. A Tatung 12-inch color monitor was included as well as an Elographics touch screen to be mounted over the Tatung display. A mouse is the system’s pointing, input device and a tape system provides for back-up of the large capacity disk drives. The hardware components of the DVI development system cost $15,755.

Besides the DOS 4.01 operating system, the DVI routines (production tools) and the Authology: Multimedia authoring package were loaded on the DVI development system. These software components totaled $5,500. Including both hardware and software, the DVI development system cost $21,255 (see Appendix F, Project Purchase Orders).

Problems were encountered in acquiring the DVI development system. The purchase order was let in May of 1990 yet the system did not arrive until October. Intel later indicated that they did not receive the order from Pioneer Standard until August whereas Intel representatives had indicated in June that a system was available. Part of the publicized value added service of Pioneer Standard was to integrate the system components, load the software, and verify the system’s operation. This task never was completed. The system was finally shipped in an as-is state. David Kubik, in consultation with Intel, Pioneer Standard, and CEIT representatives completed the system setup and software installation on site in Grand Rapids. The stated reason for several of the delays was "this is the first DVI system and we're learning."
System integration problem areas included the tape back-up unit and CD-ROM device not working together. Resolution included acquiring the correct cabling, then having to have the CD-ROM device operating to run the total system, and finally a complete incompatibility between the two devices with a resulting resolution that only the tape drive is available on the system. Improper cabling was supplied with the monitor resulting in lost time. The touch screen was not installed on the development system. Since development could be accomplished using the mouse device, a touch screen was only installed on the delivery system. Later action resulted in the completion of the touch screen installation on the development system. Considerable technical support time was invested in trial and error activities working with the extended memory software and device drivers to develop a stable environment for the authoring of the information kiosk application.

The DVI delivery system, sometimes referred to as the target system and the system that is installed within the kiosk enclosure, was purchased from Datalus, Inc., an Okemos, Michigan, firm. The delivery system components match the development system except that functions not needed are excluded. The delivery system does not include the DVI capture capability, only the playback capability. A Dale computing system, which incorporates the Intel 80386 processor and also operates at 25 megahertz, was substituted for the Intel computing system. Only one monitor is needed in the delivery system. A comparatively large nineteen inch Sony monitor was incorporated to facilitate viewer interaction. Cost of the delivery system was $12,529
(see Appendix F, Project Purchase Orders), including the DOS and DVI software, and was delivered and operational within a month of the purchase order being written.

Two IBM PC compatible workstations were acquired to support the freezing and capturing of video frames and the creation of graphic images. One platform consists of a Packard Bell 80286 computing system with two megabytes of memory, a mouse, one VGA monitor, a color RGB monitor, a Targa 24 graphics card, two 5.25 inch diskette drives, one 80 megabyte hard drive, and keyboard. This system was loaded with the Lumena Paint software. This system was first rented and later purchased. The value of the system was $9,235.

The second graphics IBM PC compatible platform consisted of a Dale 80386 computing, an 80 megabyte hard drive, one 5.25 inch diskette drive, one 3.5 inch diskette drive, keyboard, mouse, a targa 24 graphics card, a Vid I/O box, a VGA capable monitor, and an RGB color monitor. The Dale computing system was first used as part of a demonstration arrangement with Grand Rapids Community College. Later the system was purchased. A video cassette recorder (VCR) was connected to the system as well as a video camera through the Vid I/O box. This facilitated the capture of video frames and the cut and paste operations used to include company logos and other images in screen designs. The Targa TIPS and RIO graphic packages were utilized on this system. The value of this graphics workstation was $9,230.

The two graphic workstations were configured at a cost to the College of $12,000. This was possible because the College supplied some of the monitors, used equipment was purchased, and vendors provided discounts beyond the normal
educational discount. The graphic workstation components, with the exception of the Dale computing system, were purchased through Datalus, Inc (see Appendix F, Project Purchase Orders).

Technical support from vendors was varied. The technical support from Pioneer Standard was very poor. Their lack of support put the project behind schedule. Fortunately, the building itself was seven or eight months behind schedule as well. The Intel representatives were perceived as being very busy and not having great patience working with a new client. Through facsimile transmissions and some telephone calls, support was obtained that helped in loading and converting images, video and audio files, and setting up the system environment. However, no Intel technical support representative was ever on-site at Grand Rapids Community College. Datalus, Inc. representatives were interested in the DVI project and were on-site several times. They provided technical support as well as ideas for ways to develop the project and handle graphic image creation. The primary contact with CEIT, located in California, was Bob McDonald. Often the telephone was used calling between the hours of 6:00 to 9:00 p.m. in the eastern time zone. Several facsimile transmissions (see Appendix G, Technical Support Communications) included listings of the CONFIG.SYS (see Appendix H) and AUTOEXEC.BAT (see Appendix I) files as the environment to run Authology: Multimedia with the DVI routines was rectified. There were bugs in the Authology: Multimedia software, some of which were uncovered at Grand Rapids Community College. At one time the development platform was sent by UPS to CEIT for their analysis. Even though more bugs with
the Authology: Multimedia authoring package were uncovered than one would have liked, the CEIT people did a commendable job of providing technical support.

The primary technical support resource person was David Kubik. Mr. Kubik is employed by Grand Rapids Community College to service microcomputer workstations and maintain local area networks in the Computer Applications Division as well as assist with technical support in other academic divisions. The demands made on Mr. Kubik's time were enormous. Yet, he allocated quality day and evening time to the information kiosk project as his expertise was needed. Tasks that he assisted with included doing low and high level formats of the SCSI hard disk drives, partitioning the disk drives for maximum operational performance, using the Brooklyn Bridge software to transport large data streams from the development system to the delivery system, working with vendors to determine the proper termination of the SCSI lines, and doing considerable experimentation with the 386MAX memory manager package to determine the proper memory environment for the Authology: Multimedia and DVI software tools to operate under the DOS 4.01 operating system. Some device drivers would behave well in high memory while others would not. As many drivers and software routines as possible needed to be put into high memory to allow Authology: Multimedia the maximum amount of low memory (over 600K of low memory was needed by Authology: Multimedia). Many things were learned about the DOS environment while working with the DVI technology. Mr. Kubik's acquired skills should benefit the project as enhancements and updates are made in the future.
Training

Five different types of training were used with the information kiosk project. These were (1) design, (2) authoring, (3) graphics, (4) on-the-job, and (5) project seminar.

For design training the author attended the Nebraska Videodisc Symposium in May 1990. The symposium is known for being a leader in innovative applications of interactive computing systems using videodisc. Three days of sessions were attended with applications exhibited, author's describing their applications and design considerations, and with applications vying for Nebbies representing the best designed applications. The acquaintance of Dr. Judy Chandler of the University of Georgia was made at this conference. Dr. Chandler later assisted the project by doing critiques of many of the major investor scripts. Since the information kiosk project needed skills associated with present and future courses in the Computer Applications Division curricula, half of the funding for attending this symposium came through a state of Michigan Fast Track training grant (see Appendix J, Fast Track Grant Proposals, and Appendix K, Fast Track Grant Reports). Total funding for this training activity was $985.

Because the Computer Applications Division of Grand Rapids Community College was interested in developing a computer controlled multimedia course, a second Fast Track training grant (see Appendices J and K) enabled the author to attend the Authology: Multimedia training put on by both Intel and CEIT in Princeton,
New Jersey, in May 1990. Because the DVI technology was new as well as the Authology: Multimedia authoring package, the course registration fee was $1,500. The total expenditure for the author's involvement in this training activity was $2,395. Chuck Bonning, the information kiosk's Ferris coordinator, also attended an Authology: Multimedia training session in Princeton, New Jersey, in July 1990 with comparable expenses.

Because of the desire to integrate computer graphics courses into the curricula of the Computer Applications Division, a third Fast Track training grant (see Appendices J and K) was implemented in July and August 1990. This training in the Lumena graphics package was arranged locally through Mr. Joe Walsh, then President of Digital Images. The Lumena graphics package was recommended by Intel to use with the DVI technology. Four Computer Applications Division faculty people attended this training activity. Chuck Bonning and three Grand Rapids Community College students also participated. After the first overview training session, Mr. Walsh worked with groups of two and three people in hands-on sessions. During this training session the determination was made that the RIO and TIPS graphic packages would also work when creating graphic images for screen designs. Prior to this training session, the thinking was that the graphic images would be created on the DVI development platform. Because of this training session, the determination was made that an intensive effort was going to be required in graphics and that additional graphic platforms would be required to support the project.
Many skills and information items were acquired in on-the-job training. The Authology: Multimedia manuals, the graphic packages' instruction manuals, and the 386MAX manual were examined several times to accomplish the project's objectives. Many related publications were read. Many calls were made to CEIT and other vendors to acquire the information needed to accomplish the project. Much trial and error had to be accomplished to get to the proper operational environment, the best graphics, etc.

As part of the Computer Applications Division curricula, several sections of a project seminar (see Appendix L) were instituted. The seminar's allowed Grand Rapids Community College students to study graphics or authoring and to participate in a multimedia development activity. The students enjoyed this activity and felt accomplishment when their graphics became part of a screen or their program segment became part of the authored application. Mr. Bill Zoellmer, an adjunct instructor with art and design background, worked with the graphic students. The author worked with the authoring students using the Authology: Multimedia package. The students learned to resolve problems by reading manuals, to experiment, to teach and help each other, and to work together. A communication system was established allowing students to leave notes of what they had done or run into for others. A schedule was developed so that they worked together or separate as needed and so that projects were accomplished, work time not lost, and resources utilized. A weekly staff meeting allowed further communication and a chance to review the status of the developing kiosk. Often students outside the class were brought in for reaction to
graphical screen designs and program interaction conventions (see Appendix M, Human Subjects Communications and Forms).

Information Acquisition and Script Writing

Administrators and the Applied Technology Center Steering Committee, as the group setting direction for the information kiosk project, decided that each major investor, each educational program and selected services, and each building feature would be represented by a video segment. Video segments were created for 22 "gold" investors ($50,000 or more), 22 "silver" investors ($20,000 to $49,999), 16 Ferris State University services and educational programs, 34 Grand Rapids Community College services and educational programs, and 35 building features. A total of 129 video segments were created.

The goal was to constrain all video segments to 30 seconds or less. In actuality the length of the video segments ranges from 15 to 35 seconds. The target length for a "gold" investor was 30 seconds while the "silver" investor target was 20 seconds. Translated into narration, each segment contains 2 to 4 sentences. Each investor segment contains a reference to the Applied Technology Center.

A goal was to identify a contact person who would be responsible for supplying script information, getting the script approved for narration, coordinating video shoots, and gaining approval of the culminating video segment. For the educational programs, the contact person was the division chairperson or the lead person in a service office. For the investors a list of contact people was acquired.
from the development office. Starting with this person, letters were written and telephone contacts made until the responsible person in the investor organization was identified. Often the person identified was in the public relations department but the contacts ranged from presidents to secretaries. The building features turned out to be a group project with the building architect, building director, and construction supervisor involved.

Foremost Insurance Company volunteered to prototype the process for creating video segments (see Appendix N, Script Writing Communications). They provided initial information in the form of flyers and other miscellaneous documents. Two draft scripts were written by a Grand Rapids Community College communications person (Phylis Reyers). The resulting script was a combination of the two with a focus on the application of telecommunications technology to accomplish the business mission. The Foremost people supplied some slides and setup the video shooting. Releases, which granted permission to use footage of the person in the resulting video segment, were obtained from each person who was video taped. The Foremost video segment was shown at an early meeting of Applied Technology Center investors as an example of the video segments to be created.

Although one or two investors supplied a draft script, most supplied organizational or product flyers, annual reports, or copy from another media project. Considerable time was spent reading these materials and selecting a key area of focus. Each draft investor script contains a reference phrase to the Applied Technology Center and it became a chore to create unique phrases for each script.
The plan had been to have the Grand Rapids Community College communications person write and edit the scripts for the video segments. However, this person took another job. A replacement was not immediately hired. To keep the project moving, the author took over script writing. Dr. Judy Chandler, an associate from the University of Georgia with script writing background, provided significant assistance in editing scripts, especially those representing investors (see Appendix N).

An estimated 3 to 6 hours were put into the creation of each script. This included letters and calls soliciting information, reviewing submitted information, writing the script, faxing the script to editors and contact people, and making script changes. Some scripts were written while training activities away from Grand Rapids Community College were attended. The use of a laptop computer facilitated script work while "on the road."

The Ferris State University scripts were originated by department chairs and then edited by their public relations officer (Patricia Coyle). Some final editing was done by the author to maintain consistency from script to script. All Grand Rapids Community College scripts were edited by the author after division chairs and office leaders provided initial draft information.

A challenge with the building feature scripts was first identifying which features should be covered. Most of the initial information came from the project architect (Tom Mathison, WBDC Inc.). Later Elly Atlas, who was writing information about the Applied Technology Center for opening ceremonies, provided
information. These information segments had to be edited into meaningful scripts representing the building features.

All scripts were word processed to facilitate changes. Initial scripts were done using WordPerfect on an IBM compatible platform. Later scripts were done on the Macintosh platform using Microsoft Works. In all cases, the scripts contained two columns. The column on the left included the text, double spaced to facilitate narration. The column on the right contained notes suggesting scenes to be shot in support of the narration. After approval of the script by the contact person, copies were made for the narrator and for the video editing staff. As project coordinator, the author kept each script in a notebook and added annotations indicating the status of the script (narrated, video shot, video acquired, editing needed, video segment approved, etc. with dates).

Even in the relatively short span of this project, information changes. Foremost Insurance Company moved to a new location. Grand Rapids Junior College became Grand Rapids Community College. The corresponding scripts and associated video segments have already been changed. Selected scripts are provided in Appendix 0.

Development Process

The overriding process of the information kiosk development was the use of information annealing (Larson, 1990). Starting with a model of screen designs drawn on paper through the actual interaction with the system, the question was always
whether or not the system effectively provides the information. If not, the process
was revised (annealed), working toward a system that easily communicates the desired
information.

An overriding principle was to guard against ego involvement in the system
(Hofmeister et al., 1987). The ego should not become so tightly coupled to the
system that changes and enhancements were not considered. This principle was
verbally relayed and repeated with all participants. All were encouraged to give their
opinions and to express their ideas.

With the assistance of some rudimentary computer graphics output on paper,
screens were depicted (see Appendix D). Most screen designs included an open book
showing two facing pages. These paper screen designs were used to show all unique
book content areas. Arranged in a notebook, they were often revised and reordered.
Using the escorted trial technique (Dockterman et al., 1990), a variety of people were
asked to touch "buttons" on the paper. Staff played the role of the computer program
simulating the person's navigation through the information system by showing the next
screen, in paper form, that the person would encounter.

A three credit project seminar (see Appendix L) was organized to provide a
win–win situation. Students received training on a live project while providing
needed staff resources. Approximately 90% of the graphics used in the kiosk were
created by students either while participating in the project seminar or afterwards
while working as student employees. Kevin Boyd, Karen Ford, John Hafke, Michael
Morton, Chuck Nivison, Matt Schrado, and Rhonda Terpstra made significant
contributions to the information kiosk's graphic resources. Other project seminar students participated in the seminar's authoring component. Approximately 20% of the authoring was accomplished by students Brian Patrie, Ken Losey and Katie DeBeaubien. Schedules were developed to have students work together for training purposes and later rearranged so that no one was waiting for a computer to accomplish their project work. The learning curve for students new to the graphic packages was approximately three weeks before productive tasks could be performed. Though each student was constrained by class schedules and other outside activities, students put time in on the project above the hours suggested for a three credit course.

Bill Zoellmer, an adjunct instructor at Grand Rapids Community College with an interest in the graphics area, provided leadership to the graphic students while the author provided direction to the authoring students. Seminar leaders were paid on a prorated basis depending on the number of students enrolled (approximately $160 per student).

Information annealing was a constant process throughout the development process. At a weekly seminar "staff" meeting, students and college staff not associated with the project were drafted to react to screen images and navigation controls. After first being provided with some basic information on the project and being informed about the recording of comments (see Appendix M), these project "outsiders" were asked to verbalize their thinking with seminar participants taking notes. These information annealing activities resulted in the inclusion of page turns, an animation to facilitate use, making the book tabs larger, and giving each page a
number so that turning pages forwards and backwards could be accommodated, among others.

A set of standards, primarily involving the graphical images, evolved from the project. Colors were researched to determine permissible color combinations. Each section of the information kiosk's electronic book had a consistent background color. This color was carried through to the book's tabs to facilitate recognizing a section by its color.

Created images were stored on diskette drives as files. Because of the great amount of information to record a screen image (983,826 bytes), only one image could be stored on a single diskette. The personal computer's disk operating system allows file names of only 8 characters with a 3 character extension. A coding scheme was developed for file names that identified the book section to which the image belonged as well as unique identification within the section. Images were stored in both 3.5 inch and 5.25 inch diskette formats to facilitate using the graphical workstations' and DVI development system's diskette drive capabilities and to provide backup. A print of each image was created and stored with the diskette in its envelope to facilitate finding images. The information annealing process often called for changes to the images. Logos were added to buttons as they became available which again called for changing the graphical images. Over 100 different images make up the information kiosk's graphical resources (see Appendix P, Multimedia Resources).
The maximum number of button choices per screen (two book pages), outside of the book's navigational tabs, bookmarks, and page turns was standardized at eight choices. More choices than eight gave the screen a crowded, busy look.

Because a number of students were working on the project much like part time employees, a set of file folders was organized in the project area, one folder for each person. Each person was expected to check their folder for communications. This facilitated the communications between students, seminar leaders, and the project coordinator.

The authoring package facilitated a top down development approach. The application was always in a working state and a user could navigate through the information system. If a route was chosen that was not completed, the user would see a "coming soon" screen with a message to "touch the screen" to continue. Therefore, the system was always in a demonstrable state. The system was demonstrated at a West Michigan APICS conference, at building planning committee meetings, at the Michigan Association for Computer Users in Learning, at a session of the graduate class "Introductory Microcomputer Concepts for Teachers," at the Community Council for Academic Computing, and at other small group sessions. This was part of the information annealing process.

Videography

Videography includes using a video camera to capture or "shoot" video at 30 frames per second, the capturing of audio as done by a narrator, the selection and
editing of recorded video scenes to match the narration, the creation of graphics to be incorporated within a video segment, as well as the post editing functions of adding music and making copies (dubs) of a master video tape. The Grand Rapids Community College's Media Services Department had won several awards for previous video programs. An early decision was to have them do all of the videography work so that the same high quality would appear throughout the presentation of information.

After scripts had been written for the video segments and a determination made of the types of shots needed to support the script, contacts were made with site personnel to schedule video shooting (see Appendix Q, Videography Communications). The initial video shooting was done at area locations in support of the investors. Many of the investor video shots included technology applications, scenes which were also used to support the educational program scripts. These video shootings also added to the video library of the Media Services Department for use in other subsequent video creations. At least three trips were made to the Ferris campus to shoot video in support of their programs and services. The contact person at each location was communicated with ahead of time to identify the types of shots needed and to have volunteers, with consideration given to gender and ethnic characteristics, lined up to participate in the video shooting. No paid talent was used in the video shooting. At only one location was it necessary to obtain releases to use the video of personnel. Each video shooting session included at least two project people. Besides handling the video camera, tasks included setting up lights, making
sure areas shot were not cluttered, changing batteries, suggesting appropriate scenes, and helping with the white balancing for the camera. Weather conditions constrained or altered some video shooting.

In some cases companies supplied video or were solicited for appropriate video footage. This was especially true for investors who were national companies. Even with a supplied video tape, some video shooting was done to give the video representation a local flavor. Since video quality is lost the farther removed one is from the original video, some effort was extended in tracking down master tapes or dubs of master tapes. Many companies had a half inch format of a product or company promotion video but a three quarter inch master had to be found, usually from the contracting production house.

After a script was written and approved, two tasks could then take place simultaneously. One was to shoot or acquire video footage. The other was to narrate the script and put the narration on one audio track of a blank video cassette. Scripts were accumulated until a significant number, usually 10 or 12, were ready for narration. These were provided to the narrator a few days in advance of the narration appointment so the narrator could become familiar with the message and practice verbalizing the script. The narrator, Mr. Lowell Siebel, was a paid talent who has become known as the voice of Grand Rapids Community College. Consideration was given to having some scripts done by a female voice. However, the overriding consideration was maintaining the voice of Grand Rapids Community College. With
the number of scripts involved and because the video segments centered around the
script, an important task was to mark each script with the narration date.

Once the narration track was in place and the support video acquired, editing
could take place. The art-like editing process involves reviewing the video available
to support the script, choosing the video segments to be included, determining the
transitions to take place from one video segment to another, inserting an
organizational logo, overlaying graphics and text as appropriate, and finally adding
appropriate music on the other audio track. If a particular script suggested a video
scene not available on the acquired video, a scene would be found in the existing
Media Services video library or, in some cases, a camera person was sent to get the
shot. The demands on the video editing suite were many and time had to be
scheduled well in advance. Mr. Bruce Lockwood, an accomplished professional, did
the bulk of the editing work. The most productive editing scenario involved a person
representing the content working with the video editor.

A 20- to 30-second script would generally take 2 hours of editing time to
accomplish and include 6 to 12 scene changes. The simplest editing would include
adding a scene from a video source to the master tape, cutting from one scene to the
next. Another variation would add a new scene but dissolve from one scene to the
next. More involved video editing would involve adding a scene with two video or
graphic sources active. An example would be a segment with a video scene appearing
in a graphic window and then transitioning to encompass the whole screen. A
variety of techniques were included to keep each video segment fresh and different in style of presentation as well as content.

The master tape was created in a beta format. Video shot by the Media Services Department was also in the beta format. However, the equipment resources included video decks that would handle any three-quarter inch format commonly found in video production houses. In one or two instances, scenes from a half inch VHS format had to be used due to availability. These were kept to the very minimum because of the noticeably lesser quality of the video. Tricks, such as not showing the video full screen, made the low quality less visible.

Once a video segment was created on a beta format master tape, post editing services primarily involved making copies. Individual copies were made of each investor's video segment and sent to the investor for approval. In all but one case the video segment was approved as created with the one tape having a minor re-edit. Copies (dubs) of all the Ferris educational programs and services were made and shared with Ferris staff as well as presented to the Ferris Board of Control. Similarly, the Grand Rapids Community College video segments were copied and approved. Copies of all the video segments were made for use by the project's graphics group. Using a Vid/IO electronic board, each video segment was reviewed and one scene from the segment chosen to be the button icon representing the segment. One of the graphic images portrayed a board room with the video showing on a large screen. People were cut out of four different video segments and placed together viewing the large screen in the graphic image.
During the course of the project the college changed its name from Grand Rapids Junior College to Grand Rapids Community College. Each of the video segments representing Grand Rapids Community College had to be renarrated and reedited to include the new name and logo. Fortunately, the use of the digital video interactive technology allows the new segments to replace the old segments in their digital form on a magnetic hard disk as opposed to pressing a new videodisc at a cost of $1000 or more.

Authoring

Authoring is the process of translating a presentation design into reality using computer software instructions. The video, image and text resources are arranged, clustered, animated, etc. and then presented on the screen according to the procedures input into the computing system by a person (author) using the capabilities of a software package designed to facilitate the authoring process. The software package is referred to as an authoring package, authoring software, or an authoring system.

At the time that the information kiosk project needed to be into authoring, only two choices were available: (1) write the entire application in the C programming language or (2) use the one authoring package, Authology: Multimedia, that had been created at that date to work with digital video interactive technology. Because of not wanting to deal with the perceived complexities and learning curve of the C programming language and to take advantage of the facilitation features built into the
authoring package, the decision was made to use the Authology: Multimedia package from CEIT Corporation in Santa Jose, California.

Training in the Authology: Multimedia package was accomplished in three ways: (1) formal classroom instruction, (2) on-the-job, and (3) telephone and facsimile communications with CEIT Corporation support staff. A State of Michigan Fast Track training grant was written to acquire the financial support for the formal classroom instruction at Intel Corporation's digital video interactive technology center in Princeton, New Jersey.

Authology: Multimedia is organized around five major "windows." These windows are (1) panel, (2) procedure, (3) author variable, (4) objective, and (5) question. The objective and question windows are used to facilitate computer-based training applications and were not utilized in the information kiosk. To create an application, a person prepares screens and then instructs, using the authoring package, the computing system to present the screens in a specified sequence. The sequence possibilities are determined by the program though the particular order that the screens are seen is determined by the user.

Screens are composed of one or more panels and the Authology: Multimedia package uses the panel window and editing capabilities to facilitate panel creation. Panels are composed of objects laid over a background color. A small set of transtioning capabilities are available to present the panel onto the screen. Common panel objects are graphics such as lines, circles, boxes, and polygons; buttons; images; animations; and video segments. In the information kiosk application each screen is
two pages of a book laid open. Each of these screens is numbered much like pages in a book. The application's instructions use the screen numbers to determine whether a person is going forwards or backwards in the book. If, for example, a person is going forward in the book, a panel containing a book image is transitioned onto the screen using a right to left wipe to simulate paging forward. This panel contains only one object, the book image layed over a black background. To complete the screen presentation, a second panel is overlaid. The second panel has a transparent background so that the image of the previous panel shows through. The second panel contains a set of button objects, each followed by a graphical object, usually a rectangle, that lines up with an area of the image of the first panel. A user uses the image of the first panel as the reference in touching the screen to make a selection. However, the button decision making capability is embedded in the objects of the second, transparent panel overlaid on the image.

Besides panels, a resource that the author needs to accomplish the application's objectives is a set of variables. Setting up this set of variables is a function of the author variable window. A variable is a place in computer memory that can take on different values. For example, a variable was established to record whether the next page was greater (value "F") or smaller (value "B") than the previous page. If the value was "F," the instructions would show a panel with transitional wipe from right to left. If the value was "B," the instructions presented a panel with transitional wipe from left to right.
The instructions that communicate to the computing system which panels are to be presented, what order the panels are to be presented, and what decisions are to be made when a user touches the screen are accomplished using the procedure window and associated editing capabilities. A small set of instructions is available. The author puts a set of instructions together to accomplish a function. The instructions work together much like the instructions in the Beginners All-purpose Symbolic Instruction Code (BASIC) programming language. Instructions are normally executed in sequence unless an instruction is encountered that branches. The author chooses the instruction's keyword from a menu and then, through a dialog box, is prompted to supply the information (text string, number of repetitions, panel identifications, author variables, etc.) that the instruction needs to perform its function.

The procedures for presenting some screens were similar from section to section of the information kiosk's book format. An effective way of creating a new section was to electronically copy an old section and paste it into the new section. Then one would go through and replace panel names, branching points, and other section specific items with those appropriate for the new section.

The information kiosk application used the authoring software to incorporate timing functions. Since one would not know when a user would leave the system and whether another would be present to begin use immediately, provision was made to allow the system to go back to the opening attract mode. If no response is made within 20 seconds, an audio reminder is made and the decision choice is repeated.
If no decision choice is made within another 20 seconds, the system goes back to the attract mode. At this point anyone can touch the screen and begin a new session.

Other features incorporated are checking the computer's clock and automatically shutting the system down. Whenever the system is back at the attract mode and the computer's clock shows that the time is 10:30 p.m. or later, the system shuts down. Button identifications remained constant through the application. Choosing educational programs and services is always button 74, for example. Choosing page forward is always button 92, backwards button 90. Button 80 takes one to the table of contents, button 99 returns the user to the application's beginning screen. The whole page is defined as a button and all other buttons overlaid so that when a person touches a nondecision choice button, a "wrong answer" audio response is given.

A pattern developed for processing screens that show two layed open book pages. The direction was determined from comparing screen numbers. The open book page was transitioned onto the screen. The standard buttons (tabs, bookmark, start over, and page turns) were checked to see if they had been touched and a check was made for whether 20 seconds had elapsed. If these conditions had not occurred, then the specific processing to accommodate the decision choices on that page were processed (showing a specific educational program, for example). Often this was accomplished with a "case" instruction and the user was routed to the appropriate module or subroutine to accomplish the chosen function.

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The panel, author variable, and procedure components are backed up by copying to a diskette drive. Each image is stored on a separate diskette. The image and video resources as well as the authoring system instructions reside on both the developmental system as well as the delivery system providing a form of backup. The video segments on video tapes provide backup of the video resources.

During the 9 month intensive application development period involving the Authology: Multimedia package, three different versions of the authoring package were used. Version 1.02 did not include touch screen capability nor any facilitation for calling non-Authology: Multimedia procedures. Version 1.10 was the first attempt to provide the touch and external procedures capability. However, this version did not work properly and was soon replaced by version 1.11. Version 1.11 included support for touchscreen applications and calling external functions. External functions were needed in the information kiosk application to access data bases (activities and staff), create data bases (client inquiries about education programs and services, the paths that users took through the information kiosk system), informative flyers (educational programs and services, investors, and professional organizations), and to include a more realistic page turning routine.

The information kiosk application was quickly found to be a large application and, due to computer memory constraints, needed to be divided into modules. As a result eight modules were defined and given three character module names. The main module (INF) is the calling module, the top module in the hierarchy. The called modules are the six information areas of activities (ACT), building features (BLD),
directory (DIR), educational programs and services (EDU), investors (INV), and professional organizations (ORG) as well as a module, not defined initially of credits (CRD). The "listings" of the INF and EDU modules are included in Appendix R.

Considerable time was spent reading about and understanding the parameters necessary to specify the environment in which the authoring package using the DVI technology needed to operate. The system operated under the Disk Operating System (DOS), version 4.01. Since DOS does not include memory management capability for memory beyond one megabyte, the 386MAX memory management software was used to manage the memory necessary to operate the Authology: Multimedia authoring system. Hours, adding up to days and weeks, were spent in working with the system configuration files (AUTOEXEC.BAT and CONFIG.SYS, copies attached in Appendices H and I) tailoring them to allow the operating system, the digital video interactive technology, the low memory requirements of the authoring package, the location of device drivers in memory, and three hard disk drives to function as one integrated system.

In many respects the information kiosk project was a test project for the Authology: Multimedia package. At one point the authoring packages routines to link modules did not function properly and had to be patched. The touch screen interface has an irregular error such that the application hangs with the sound indicating touch on for 20 seconds before a person can touch the screen again and gain control. At one point the software was causing enough problems that the system unit with the application stored on the hard disk drives was sent to CEIT using an air express
service to have their staff work directly on problem determination. The touch screen and external routine applications were scheduled to be available in January but were not available until June. These and other non-CEIT problems with the computer operating system environment made the project a very challenging experience. Fortunately, the CEIT staff was open to communications and resolved many of the problems.

Digital Video Interactive (DVI) Technology

Digital video interactive is a technology that provides for the compression and decompression of large files of digital information representing video segments. Without compression, the amount of information to represent video at the rate of 30 frames per second would overwhelm today's computing systems. Having the capability to store the video on a magnetic hard disk drive as a digital information file provides for changing the video segments without enduring waits and costs for an external organization to put video information into an analog, optical disk format. All data (text, images, animations, audio, and video) in a digital format provides flexibility to electronically integrate information.

From the hardware viewpoint, the DVI technology is seen as a set of electronic cards (boards) that fit into slots on the computer's system board. An IBM personal computer or compatible with an 80386 processing chip operating at a minimum 25 megahertz speed is required. The project's first board set included seven boards with some of those being daughter boards (a smaller board attached to a larger board and
not requiring one of the slots on the computer's system board). This first seven board set was replaced with a two board set with improved compression capabilities. One board is known as the delivery board and the other as the development or capture board. The delivery board is required to execute an application where the video has already been captured and put into a compressed, digital format on a hard disk. The capture board is needed to load analog video and audio sources and convert and compress them to digital files on a magnetic hard disk drive.

Images associated with the DVI technology are stored in the audio visual support services (AVSS) format. Images created by the graphics programs Lumena, TIPS, and RIO are stored on diskette in a "targa" format (tga or t32) which requires close to one megabyte of storage space. The targa format images must be converted to work within the DVI technology system. When these images are converted to a compressed 16 format (c16), they can be reduced to nearly an eighth of their original size. The compressed 16 format is used to show images where no video will be associated as an object. When video will be included as an object the targa files are put into a compressed 9 format (c9). A compressed 9 format results in three storage files totaling less than 100,000 storage positions. Generally, the more information recorded for an image file the clearer, sharper will be the image. At the same time, however, the more information stored, the longer it takes to load and display the image. When the targa images were converted to either compressed 16 or compressed 9 format, the image was reduced in size from 512 by 480 to a size of 472 by 460.
This was done so that the tabs on the open book were not tight to the edge of the screen and the user would be able to touch the tab.

For example, to convert the targa file, JCTEC12E.TGA which takes up 983,826 storage positions on a magnetic disk storage media, into a compressed 16 format file on a magnetic disk storage media, these procedures and commands are used:

1. Using the DOS copy command, the targa file is copied from a diskette media to a hard disk media to take advantage of the hard disk's faster access speed.

   COPY A:JCTEC12E.TGA C:\IMAGES\NEW\JCTEC12E.TGA

2. From the C:\IMAGES\NEW directory, the DVI conversion command is issued to convert the targa image into a compressed 16 AVSS format image.

   VIMCVT -S472,460 JCTEC12E T32 C16 C:\IMAGES\JCTEC12E

3. The resulting file is labeled JCTEC12E.C16 and happens to take 126,687 storage positions. The image represented by the JCTEC12E.C16 file is now available to the authoring system for use. If one wants to see the image before accessing it through the authoring system, a DVI display command can be used.

   VSHOW C:\IMAGES\JCTEC12E C16

The steps are the same for converting a targa format image to a compressed 9 format image. For example, to convert the targa image TRNVD14E.TGA that has 983,826 storage positions and is loaded onto the hard disk, these differences and instructions would be noted in steps 2 and 3 above:
2. A different file name and target compression code is supplied. Options (-F and -P1,1) are supplied to control the degree of quantization in the compression routine and the degree of color filtering.

```
VIMCVT -S472,460 -F -P1,1 TRNVD14E T32 C9 C:\IMAGES\TRNVD14E
```

3. Three files result identified as TRNVD14E.CMU, TRNVD14E.CMV, and TRNVD14E.CMY, and happen to take 2,272, 2,288, and 65,592 storage positions respectively. The image represented by these three files can be displayed by using a DVI display command.

```
VSHOW C:\IMAGES\TRNVD14E C9
```

Using the audio and video capture capability of the DVI development board, narration, video segments stored on video tape, and/or direct video from a camera can be fed into the development system. The result is a compressed, digital representation of the audio and video components. This process is also referred to as real time video (RTV) capture as opposed to production level video (PLV). In PLV the video is put onto a video tape in a specified format, sent to a DVI processing center, and there, using a powerful main frame computing system, is converted into a compressed, digital representation. Because of the greater processing power of the large computing system, a better compressed, digital representation is provided than can be accomplished with an 80386 personal computing system. However, this service costs $200 a minute. Forty video segments (the approximate number of investor segments) of 30 seconds each would be 20 minutes of video resulting in an expenditure of $4,000. Considering the number of building feature and educational programs and
services video segments, an expenditure of $12,000 for this service could easily be conceived. If a video segment needed to be changed, it would have to be redone and this would add further to the cost. For these reasons, the decision was made to stick with real time video. Though real time video does not reach the quality standard of production level video, the quality is sufficient. Some have referred to it as having only slightly less quality than VHS.

Another decision that improved the appearance of the real time video was to show all videos in a quarter screen format. This also allowed for a graphical image to provide a context within which the video was shown. One context was a group of people viewing the video at a meeting. Another was seeing the video in one quadrant of a four screen video wall.

The procedures and instructions for converting the video segments to a compressed, digital file were preceded by the establishment of one holding space on the magnetic hard disk. Each segment was converted into this holding space and then moved from the holding space to its final destination on the hard disk resources. Because the compressed video files are still relatively large files on a personal computing system, and because the algorithm for presenting the video files needed the full resources of the hard disk drive to accomplish showing the video at the standard 30 frames per second, the DVI routines use time saving low level routines to access the disk drives. This forces the images and other system resources to be stored on a separate disk drive. In the information kiosk application, the Authology: Multimedia software, the information kiosk application, the DVI software, and the graphical
images, among other things are stored on the primary 40 megabyte hard disk of the computing system. The 650 megabyte small computer system interface (SCSI) hard disk drives stored only the compressed, digital representations of the video and/or audio segments.

The procedures and instructions for loading and converting a video segment using the hard disk holding area concept follow. The example's instructions will suppose that the video segment representing Old Kent Bank is being loaded and converted:

1. The DVI instruction for real time video requires knowing the number of frames of video to be loaded. The number of frames specified should be equal to or greater than the number of frames in the video to insure that the whole video is loaded. However, the number of frames should not be much more than what is actually needed since additional storage space is then occupied by black video. The first step, therefore, was to determine the length of the video segment in seconds and then convert those seconds to frames, knowing that a video is played at 30 frames per second. For example, if the Old Kent Video were 29.6 seconds long, then the number of frames is 30 times 29.6 or 888 frames. To allow for not starting the capture process and the video player at the exact same time, 900 frames might be used in the real time video capture instruction.

2. The real time video capture command is entered. Once the command is entered, a menu of choices is presented. One choice is "C" for capturing both video and audio. This is the choice that would be used for the Old Kent Bank video. The
"C" would be chosen at the same time the video player was activated at the beginning of the video segment. The compressed, digital representation of the Old Kent Bank video will go into the holding area known as MASTER in the D:\VIDEOS\ directory.

VRTV -F900 D:\VIDEOS\MASTER

3. A special DVI software instruction is provided to take the compressed, digital file from the MASTER holding area and store it in its final destination. In this example, the compressed, digital representation of the Old Kent Bank video will be stored in \VIDEOS directory of the E: drive with the file name of INGDOLDK.AVS.

VAVCOPY -D D:\VIDEOS\MASTER E:\VIDEOS\INGDOLDK

4. The file INGDOLDK.AVS takes up 7,621,028 storage positions. If the file is stored in contiguous segments, the file will play smoothly. However, if the file is not in contiguous segments, a control file is necessary to assist the computing system to quickly locate all segments making up the file. The VAVPREP file is used to create the control file labeled INGDOLDK.AVZ which is a small file of 20 storage positions.

VAVPREP E:\VIDEOS\INGDOLDK

5. The compressed, digital representation of the Old Kent Bank video is now in a state where it can be accessed by the Authology: Multimedia software using the appropriate DVI commands. An appropriate Authology: Multimedia screen resolution is chosen to make the video show in a quarter screen size. If a person wishes to view the video in full screen size using the DVI commands before going to Authology; Multimedia, the VPLAY command is used.

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The DVI technology does place some constraints on an application. The real
time video is not the quality video that one sees in the editing studio on the analog
editing devices. The image formats lose some of their definition when put into
compressed formats. A compensating strategy for showing real time video to enhance
the video quality is to restrict the video size to quarter screen. The Authology:
Multimedia package had not mastered the DVI commands to accommodate scaling of
a video object—only cropping was available. When a video object is put on the
screen, the screen resolution must be 256 by 240. Screen images that are 512 by 480
are much crisper with more definition of objects.

The compressed, digital video files are large files (note the 7 megabyte plus
file for the Old Kent Bank video of 29.6 seconds). Large files take up a lot of disk
space (referred to as disk geography). Large files take a long time to back up onto
a magnetic tape. The video segments for the information kiosk project reside on both
the development system and the delivery system. Thus, one system is a backup for
the other. As a further backup, one could go back to the original video tape segment
and reload the video. The video segments were loaded onto the development system
using the capture board capability. The Brooklyn Bridge program was used to move
the image and video files from the development system to the delivery system. An
optimization program was run to optimize (make contiguous) the files on both the
development and delivery systems to insure that the video segments could be shown
without any breakup.
The development system is an Intel 80386 computing system while the delivery system is a Dale system using the Intel 80386 chip set. In spite of the system similarities, the environments needed to be configured differently. The delivery system had only the DVI delivery board. The development system is a two monitor system whereas the delivery system is a one monitor system. The delivery system has only 3.5 inch diskette drives whereas the diskette drive on the development system is a 5.25 inch diskette drive.

Considerable research was done to accommodate video playing from the second SCSI drive on either the development or the delivery system. The problem seemed to stem from the design of a personal computing system not expecting to have to accommodate more than two physical hard drives on one system. Working with the memory manager became a guessing game to try to find the commands that would provide the best environment to support the information kiosk application. Getting information from either the memory manager or the SCSI driver vendor was not easily accomplished. A monitor that worked with the seven board set did not work with the two board set. These problems were eventually solved or work around solutions found.

Kiosk Construction

Three kiosk locations were designed into the Applied Technology Center (see Appendix B, Project Management Communications). However, only the atrium area was a free standing location. The other two locations are indentations in a wall (see
Appendix S, Information Kiosk Diagrams and Pictures). The project focused on creating one information kiosk for the free standing location. After one was operational, the additional locations would be implemented, hopefully, using networking capabilities.

The atrium area physically is a round space with round pipes and a large round air return enclosure which is painted blue. With the impact of the space and surroundings, the decision was made to have a round, blue kiosk. Another design characteristic of focus was accessibility to handicappers, primarily those constrained to wheel chairs. The height of the screen should allow wheel chair access as well as comfortable access by a person on foot.

Other construction characteristics included easy access for maintenance and service. For this reason, the computer system unit and printer were provided shelves that could roll in and out. Because computing systems operate best when temperatures stay within the 60 to 75 degree fahrenheit range, and because lights would be used to light an included sign, and because the lights and computing system would generate heat within a confined enclosure, provision was made for air movement and cooling. Fans and strategically placed screened openings were installed to circulate air through the kiosk. The screened openings were supported by a grill work for security reasons. Locks were installed for security reasons. Speakers were needed to hear the audio components of the information kiosk presentations.

The architectural firm, WBDC Inc., which was working with Ferris State University and Grand Rapids Community College in the design of the Applied
Technology Center, included the information kiosk in the building's signage activities. When the kiosk construction was put out for bids, the lowest bid came in above $16,000. This was determined to be too costly. The carpenter shop of Grand Rapids Public Schools, which provides service to Grand Rapids Community College, had a person, Bob Haight, who had previous experience in building displays for exhibitors at business conferences. The decision was made to have the Grand Rapids Public Schools' carpenter shop build the display. Bob Haight took great pride in the project and produced a well crafted product. Pictures of the kiosk under construction are included in appendix S.

At times the computer system equipment components had to be taken to the carpenter shop and left for a day or two for fitting and design purposes. This sometimes caused an inconvenience when only one DVI capable system was available. But this was important to insure clearances for equipment, that cables would reach, that the monitor fit snugly, etc.

Audio problems were encountered with the kiosk when the computing system was placed in its enclosure. When a person touches a spot on the screen, the system responds with a sound indicative of touching an area that has a function or a different sound for a nonfunctional area. These sounds could be heard clearly when working with the computing system on a desk. However, when the system was enclosed, the sounds did not carry through to the user. The speaker system used in development was more powerful than the speakers built into the kiosk. As a result, the audio portion of the video segments could not be heard. The problem resolution was the
installation of an amplifier system to boost the sound level. The computing system's audio unit was routed through the amplifier as well so that the sounds distinguishing functional and non-functional areas were audible.

A problem developed with the kiosk's air movement fans. These fans have become rather noisy after continuous use. The higher the velocity, the higher the disturbing noise level. This problem will be resolved with new fans. The kiosk is a well constructed, sturdy structure. The host computing system is well protected. Photographs of the completed kiosk are included in Appendix S.

Project Management

The Applied Technology Center building committee was the primary forum to provide input, hear reports, and make major decisions relative to the information kiosk project. This committee was chaired by C. J. Shroll, Grand Rapids Community College's Economic Development Officer, in his role of overseeing the construction of the Applied Technology Center. Others who regularly sat on the committee were Paul Prins, the Associate Dean of Ferris State University's School of Technology; Bill Thomas, a Ferris State University program development officer; Hart Swanson, construction manager; Bill DeBruyn, building and sites planner for Grand Rapids Public Schools; Tom Mathison, project coordinator from the WBDC architectural firm; Rob Gutek, Grand Rapids Community College's coordinator of ATC building investors; Bob Partridge, Chief Financial Officer for Grand Rapids Community College; as well as the Division Chairs of the three Grand Rapids Community College
occupational education programs to be located in the facility, namely Dr. Don Boyer, Technology; Bob Garlough, Hospitality Education; and the author, Computer Applications. The President of Grand Rapids Community College, Richard Calkins, as well as the Dean of the Ferris State University College of Technology, Dr. Joel Galloway, were frequent meeting attenders.

The building committee dealt with all aspects of the project—construction progress, fund raising status, equipment priorities and expenditures, changes in work orders, curriculum support, and the information kiosk project. An item of interest was to monitor the interactions between Ferris State University and Grand Rapids Community College representatives as the two institutions learned to work together.

One of the initial project tasks was to develop a project management chart (see Appendix A). The management chart identified in an ordered manner all major project tasks. Some tasks were easily recognized while other tasks were fuzzy and needed further definition. The project management chart provided direction, identified priority tasks, established due dates, and showed resources (people) needed. The MacProject software on a Macintosh computing system was used to create the project management chart. The chart was used as a status document with completed tasks checked. The chart was referred to often in the early stages and less often as the project progressed. Due to technology and software problems, delays in the building schedule were welcomed to accommodate problem resolution. To be legible, the project management chart was large, extending across several 8.5 by 11 inch sheets.
of paper. However, the document's size and detail impeded communication when copies were needed.

**Informative communication was a planned project strategy to prevent surprises** and to maintain project support for equipment acquisitions, personnel needs, information acquisition, empathy for problems encountered, and the like. The information kiosk project was a regular agenda item at the biweekly building update meetings. Status reports were provided at each of the meetings. Written reports (see Appendix T) were provided during the early developmental stages with shorter, sometimes verbal reports provided during the final stages. Video segments and graphics were included as they were completed. Several visits were made to the Ferris State University campus to communicate the project's purpose and to solicit information. An open house on the information kiosk was an activity of the Academic Computing Center at Big Rapids. Communications on the information kiosk project were also presented to the Grand Rapids Community College Board of Trustees, the Ferris State University Board of Control, vendors involved, and the Grand Rapids Community College advisory group, the Community Council for Academic Computing.

**Financial aspects of the project primarily centered upon equipment and software acquisitions and on media services.** Appendix B includes an early financial analysis of the project. Ferris provided Chuck Bonning and Grand Rapids Community College provided the author with released time allocated to the information kiosk project.
Several problems, some involved in learning about new technology but some due to errors in software and incompatible equipment, occurred. During one 3-week stretch, phone communication with Bob McDonald of CEIT Corporation in California was a nightly activity. When problems involved more than one vendor or simply to involve as team members all vendors in the information kiosk project, a communication identifying all encountered problems was created. Help questions were directed at specific vendors for each problem identified. However, the same communication was sent to all vendors. Thus, each vendor knew that other vendors were involved and what support they were being called upon to provide.

The time demands of coordinating the information kiosk project as well as doing authoring and script writing were considerable. At the same time the author had division chair and some teaching responsibilities. Time management and techniques for extending one's self became important. The author bargained for and was provided released time and a person to function as an assistant division chair. A calendar strategy was to allocate Mondays, Wednesdays, and Fridays for the information kiosk project while reserving Tuesdays and Thursdays for teaching and division chair duties. The author's secretary was instructed to hold schedule exceptions to a minimum. Hours were expanded to include Monday through Thursday evenings. Most weekends included periods devoted to the project.

Other people were included in the project in win-win situations. Bill Zoellmer provided graphics instruction, support and encouragement to students who enrolled in a project seminar course while receiving compensation for leading the seminar.
Enrolled seminar students learned one or more of the three professional graphic packages (Lumena, RIO, and TIPS) used in the project while producing needed graphic images for the project. Some practicum students learned about authoring while doing some editing of routines or incorporating a new image. Students who had learned the graphic packages were later employed as graphic assistants. Ferris State University released Chuck Bonning from automotive teaching duties for all or parts of three terms. His participation not only broadened his background but facilitated the acquisition of Ferris information, enhanced the application's design, and launched the creating of graphic images.

Another strategy was to locate the information kiosk development center away from the Computer Applications Division office area. A space in the library was arranged. This was a space where faculty and staff interruptions were minimized and a place where the telephone did not ring (with a long extension cord, a telephone was accommodated when it was necessary to try different commands on the developmental computing system while communicating with a remote vendor technical support person).

System Unveiling

The Applied Technology Center dedication and open house, the deadline for having the information kiosk operational, was Monday, Tuesday, and Wednesday, June 17-19, 1991. The schedule for getting the kiosk to the Center as well as
acquiring the fixes to the authoring package and finalizing investor video segments was extremely tight.

On Wednesday, June 5, prior to the open house, President Richard Calkins, Dean Paul Prins, Building Director C. J. Shroll, and Division Chairs Don Boyer and Bob Garlough reviewed the information kiosk application. The decision was made to unveil the information kiosk if the touch screen fix was accomplished, if the fix to call one module from another was accomplished, and if specified investor videos were completed. For those investors whose video segments would not be completed, a statement that their video segment was "in process" was to be included.

The kiosk was delivered to the Applied Technology Center the Thursday before the open house. The kiosk was mounted on a dolly so that it could be moved out-of-sight if the system malfunctioned. Most of the day Saturday was spent trying different environment parameters with the memory manager so that the system would run properly. Late Saturday afternoon, the delivery system was taken to the Center and placed in the kiosk. At this point the discovery was made that the sound was not loud enough. The kiosk enclosure muffled the sound. On Sunday, using the authoring package, the parameters for each sound segment were increased to the maximum and an amplifier was installed to enhance the sound as well as the beep from the computer system's internal speaker. A timer was installed to automatically turn the power to the system on and off at designated times.

On Monday, after the dedication, the information kiosk was put into operation. The system was operational throughout the open house. One "bug" still remained,
however. The system periodically hangs up for 20 seconds when touched. The hang 
up goes away if a person touches the screen after the "twenty seconds, time is up" 
audio reminder. Other than this "touch bug," the system has run from 7:30 a.m. to 
10:30 p.m. virtually every day since.

The completion of the information kiosk project and the passage of time 
allowed for both observation of use and reflective thinking concerning purpose, 
objectives, processes, and future possibilities. In the concluding chapter, what was 
learned from this undertaking is reported.
CHAPTER VI

WHAT HAS BEEN LEARNED

This chapter's format is a set of anticipated questions with responses.

Questions

Can an Information Kiosk Provide Needed Information?

Yes. At the University of Michigan Hospital, clients are provided location directions through a kiosk without any human assistance. A steady stream of clients use this single purpose, "Wayfinder" kiosk (see Appendix U). The information kiosk in the Applied Technology Center is not yet an example of this. The key to this question is the word "needed." From a client of the Applied Technology Center's viewpoint, the information needed (at least initially upon entering the building) is the location of the activity to which the client is going. This information should be available with a minimum of interaction, perhaps even no interaction. Activities (meetings, seminars, workshops, credit classes, banquets, etc.) could be displayed on monitors much like airline flights in an airport or on a rolling marquee like stock market figures in a brokerage firm. Associated with the electronic display of activities would be a physical signage system that adequately provides directions and identification of rooms.
Since the Authology: Multimedia package only recently provided for external access of a database (for example, a database of activities), and since no database was developed for the activities taking place in the Applied Technology Center, this potential capability was only demonstrated with formatting information at the system's unveiling. In the information kiosk's annealing process, one would consider eliminating the book cover and having the book open at the table of contents so that activities would be immediately accessible. In light of the above "airport" and "marquee" models, one wonders if a solution not involving the interactive information kiosk is appropriate.

**Does the Applied Technology Center's Information Kiosk Try to Do Too Much?**

Perhaps yes. The system needs to go through additional annealing to see how users react to the mix of information that the system now contains before a definitive answer can be given. The purpose of the cover is to attract people to the kiosk. At the same time it adds an additional step to accessing information through the system. The cover should be removed, activity information made available, and user reaction recorded before the answer to this question is made definitive.

The information that the system is designed to distribute can be classified. One binary classification is (1) needed (activities and locations) and (2) promotional (building features, educational programs, investors, and professional organizations). The promotional information might be packaged in an information kiosk that is located at an area high school, a shopping mall, or the cafeteria of a local business.
The promotional materials might be packaged in a presentation system to be called upon in a variety of sequences depending on the presenter's preferences or the audience's needs and questions. On the other hand, establishing a common device for campus information needs may be an important habit to develop.

Another binary classification is information that is building oriented or information that has a broader scope. Building features, investors, directions, and meetings are oriented to the Applied Technology Center. Educational programs and professional organizations have a broader audience. This local versus global classification is also very much in the eyes of the client. Applied Technology Center building features may well be important to one who is considering preparing for a career and who has never entered the Applied Technology Center.

**In the Information Kiosk Project, What Worked?**

Involving students in creating the graphical images needed in the information kiosk was a highlight. Students were excited about learning the graphic packages and seeing the results of their efforts and learned skills be a part of the information kiosk. Students were able, by working together and with some instruction, to be productive with one of the project's three graphic packages within three to four weeks. The project mode of instruction works.

To a somewhat lesser extent, the project mode of instruction where the focus was working with the authoring language also worked. Perhaps because the authoring was more involved or because the direct results of one's efforts were not as readily...
visible, authoring students were not quite as excited. They did, however, contribute
to the project's success.

The strategy of well informing appropriate staff of the projects progress, needs,
accomplishments, etc. garnered support for allocating resources to the project and
empathy for most of the technical problems encountered.

Faxing scripts and other information items to investors and vendors became
an often used communication means. Faxing scripts to Dr. Judy Chandler at the
University of Georgia certainly showed that geographic distance was not an obstacle.
Faxing has carried over as a means of communication for other nonproject activities.

Having the videography work done by the Grand Rapids Community College
Media Services group was a correct decision. Quality work was produced. Their
expertise facilitated the accomplishment of the video resources that were included in
the information kiosk.

Using the MacProject software to create a diagrammatic and ordered
representation of the project's tasks was very helpful. This task chart was essential
not only for plotting out the project's course of actions but also for communicating
with those involved with the project and gaining appreciation for the complexities and
scope of the project.

The relationship with Ferris relative to the information kiosk project was
excellent. This was best seen in the support Associate Dean Paul Prins and the person
chosen to work as the Ferris Coordinator, Chuck Bonning, provided the project.
Chuck Bonning spent a considerable amount of time on the project. His enthusiasm,
sense of inquiry, and team play were outstanding. Involving Ferris early through visits and meetings on their campus and insuring that Ferris personnel were included in the project's communication stream were considered positive factors in establishing the appropriate relationship.

Once the environment for the computing system is setup properly, the information kiosk, as an Authology: Multimedia application using digital video interactive technology, works. The system has run almost continuously 7 days a week since June 17, 1991.

In the Information Kiosk Project, What Did Not Work?

The support from the local Intel dealer, Pioneer Standard, only included sales help. Their strategy of remote technical support from Detroit and Cleveland did not work. Remote technical support can work—witness the technical support relationship with CEIT Corporation in California. However, Pioneer Standard did not seem committed. If they did not have technical support people who could put a digital video interactive system together, they should have worked with Intel to get the job done.

Better training could have been provided on the digital video interactive technology working with the disk operating system. Many of the project technology problems centered around the digital video interactive technology working with the disk operation system and the 386MAX memory management package.
Unfortunately, the operating system environment remained cloudy right up to the system's unveiling.

Leading an academic division (especially one that is having to move from one facility to another), teaching, and coordinating an information kiosk in the same time period is too demanding for one person. Leading an academic division is a full time job. Teaching is a full time job. And developing an information kiosk using digital video interactive technology in a constrained time period is a full time job.

The Authology: Multimedia authoring package was not developed to the extent needed by the information kiosk project. The malfunctions of the software were worked out with the CEIT technical support staff. But not having the ability to call a subroutine that would print a document or access a file or database eliminated the opportunity of including this functionality within the information kiosk in the time period needed. More extensive array and string processing routines would have enhanced the information kiosk project.

If the Information Kiosk Project Was Started Today, What Would Be Done Differently?

There would be more emphasis on systems thinking in the project. A point-of-information application should be thought of as a dynamic point-of-information system as well as a final product that performs a specified function. This systems approach, which incorporates feedback loops, is conceptualized in the diagrams presented in Appendix V. Even though formative evaluation techniques were utilized throughout
the project in developing the user interface, the graphic images, and the presentation of information, the focus was too singularly oriented to a final product that would perform a function. That things change and can be improved needs to be accommodated in the design, operation and continuous evaluation of the system. From the information source standpoint, new or revised educational programs may come into play, investors may cease to exist or change facilities, building rooms are remodeled which changes building features, and professional organizations come and go based on changing times and interests. From the technology standpoint, a faster processor could enhance operation. A back lit, liquid crystal display screen could be less sensitive to heat, eliminate phosphorous display burn, and facilitate a smaller kiosk enclosure. Greater printer speed and resolution could allow timely printing of graphical flyers with enhanced information value. A study of captured user inquiries and usage patterns could pinpoint program materials and user interface aspects needing improvement. An information kiosk is not created and forgotten. Its value is enhanced by periodic, systematic attention.

More research would go into the dealer from whom the digital video interactive system was purchased. Paying a higher price for the equipment and having proper technical support and training would likely be worth it.

The authoring packages for digital video interactive technology have not yet matured. The C programming language would be learned and used to author the information kiosk application. There are more people knowledgeable in the C programming language than are knowledgeable in a given authoring package. An
authoring package is created to facilitate the authoring process. While doing this, however, some capabilities are compromised or not allowed. From a functionality view, an authoring system is a subset of a programming language. The C programming language would be used to insure a capable environment for developing the information kiosk.

The human resources to develop the database of activities, as identified on the project's task chart, were either not present or not allocated to the project. More definitive arrangements should be made with project resource providers prior to the project's development period.

Should the Macintosh Platform Have Been Used to Create the Information Kiosk?

Yes and no. A more complete application (printing of information and accessing databases, for example) could have been developed because of using off-the-shelf software (Macromind Director, Filemaker, etc.). However, with the Macintosh platform either a videodisc or a CD-ROM optical disk would have had to be mastered. Likely this disk would not have been pressed until near the project's unveiling. This could have impeded the project's completion. The video information on the disk would have had to be redone because of changes (Grand Rapids Junior College to Grand Rapids Community College, for example). Disk mastering would add to the project's cost. Though there were troubles in working with the environment that supports the digital video interactive technology, this technology is still a future
direction because of the ability to integrate all digital media resources. The project's participants would have lost the opportunity to work with this coming technology.

What Benefits Accrued From the Information Kiosk Project?

An experience base was gained by the Ferris coordinator (Chuck Bonning), the project seminar leader (Bill Zoellmer), the lead technical support person (David Kubik), and the author. This experience base includes digital video interactive technology, the operating system environment, script writing, computer graphics, videographic techniques and procedures, and multimedia project management.

A working information kiosk was produced for the Applied Technology Center. A systems process was developed for future technology-enhanced communication products.

What Are Future Benefits That Could Derive From the Information Kiosk Project?

The information kiosk project solidified the worth of integrated media in the author's mind. The author is now in a position to promote media integration from a solid knowledge base. Some fruits have already developed. A staff development course for 21 faculty and staff at Grand Rapids Community College is under way with a primary focus on awareness of media integration technology to enhance learning processes. The author is involved in a needs assessment for a communicative technologies (media integration) curriculum which is being accomplished in concert with Ferris State University. Two new courses dealing with the communication of
information using multimedia software have been developed for the Computer Applications Division at Grand Rapids Community College with two others nearing full development. A Learning Technology Team dealing with the challenge of developing a strategic plan for the use of learning technology throughout Grand Rapids Community College has been formed and is actively pursuing its task. Efforts are underway to cooperate and collaborate with national and local businesses in the establishment of a multimedia training center that could also double as a faculty development center.

The project participants, especially the author, have gained a knowledge base in the systems approach to developing an information kiosk and in the use of digital video interactive technology to distribute information with a computing system. Additional ways need to be found to profit from this knowledge and expand upon it. One possibility is the development of an academic curriculum. Another is the offering of seminars based on the knowledge gained through the project's experiences.

A portable information kiosk could be developed that accesses only the educational programs, services and building features contained within the information kiosk project. This portable information kiosk could be placed in the mall, hallways, or counseling areas of local high schools as a way to provide information about Ferris State University and Grand Rapids Community College programs. The same kiosk could be placed in the cafeteria areas of local businesses and at local shopping malls.

A CD-ROM or CD-I marketing product about the programs available through the Applied Technology Center, Grand Rapids Community College, and/or Ferris State
University could be developed. These multimedia marketing products could be used by faculty and staff making presentations at local schools, career fairs, companies, etc. High school and business community people, in support roles, could use the products without involving Ferris State University or Grand Rapids Community College staff other than to acquire the product.

The investor video segments, which are very well done, could be incorporated into a video wall presentation located in the atrium area of the Applied Technology Center. This would maximize the recognition that the investors in the Applied Technology Center rightfully deserve.

The project mode of instruction could become more prevalent at Grand Rapids Community College. Much learning takes place when faculty and students work side-by-side to accomplish a project. The faculty person becomes more a learning facilitator. Students gain knowledge and experience, faculty are gainfully employed, and the institution acquires useful information products.

A communicative technologies curriculum could be developed with a multidiscipline flavor. In the first phase of the program, Computer Applications Division faculty would facilitate students acquiring skills in the use of media integration software. At the same time students would be acquiring writing, graphic design, leadership, and problem solving skills. In the project phase of the curriculum, Computer Applications Division faculty would function as project coordinators, media software experts, and instructional designers to accomplish needed communication, information, or learning products. Faculty from other divisions or community people
would serve as content specialists or clients. Students would apply learned skills and acquire new skills as they worked in meaningful, team roles creating graphic images, authoring modules, doing product research, configuring systems, writing storyboards, narrating scripts, capturing video, converting files, scanning documents, and the like. Learning would take place, experience gained, and products produced. An effective, productive, and meaningful learning environment would be in operation.

How Can the Applied Technology Center's Information Kiosk Be Enhanced?

Assuming that the project will continue to use the Authology: Multimedia authoring system, the C language routines to print text files needs to be developed and made to work with the authoring system. The one page fliers describing educational programs, professional organizations, and investors needs to be developed. Perhaps these writing assignments could be accomplished through a project seminar course in the Language Arts Division.

Assuming that the disk operating system is configured correctly to support the Authology: Multimedia application using the digital video interactive technology, and assuming that the education module (the biggest module) is taking too much memory and that the lack of memory is causing the developmental version of the information kiosk to malfunction often, split the education module into two modules, one representing Ferris State University and the other Grand Rapids Community College. This would lessen the amount of memory that the application needs at any one time.
Complete the building features video segments and load them into the system along with the revised Grand Rapids Community College segments and any investors completed after the system's unveiling. Edit the affected panels to insure that starting and ending points of video objects are accurate. Transfer this updated application to the delivery system and verify that it runs properly.

Contact CEIT Corporation for new enhancements to the Authology: Multimedia authoring system. Determine if CEIT has another product to enhance or replace Authology: Multimedia. Determine if the present version is still the most current version. Determine if the Authology: Multimedia software now runs under either the Windows operating environment, under the OS/2 operating system, and/or under the newest release of the Disk Operating System. Determine if Authology: Multimedia runs under the newly released version of the 386MAX memory management program.

Develop a database for capturing name and telephone numbers by educational program. Develop a database for capturing path points through the information kiosk system for later analysis. Write the C language routines to update these databases and incorporate their use in the Authology: Multimedia information kiosk application.

Research options for data flow through a digital video interactive system. Explore networking options so that only one database of video, image, audio and text information has to be maintained. Determine if fiber optic cabling will be necessary and if the network can be compatible to the existing Novell networks in place in the Applied Technology Center.
Exclude activities and directions from the information kiosk application and provide for this information in other formats. This will involve image changes to remove references to these functions.

A version of the information kiosk could cycle through the investors. About every tenth one, randomly chosen, would be accompanied by audio. A person could interrupt at any time to select a specific investor. When selected, the audio would be included.

**What Are Present Concerns With the Information Kiosk Project?**

A person needs to have incorporated into their job description, with appropriate time allocated, the task of improving the information kiosk and related projects (alternate form of communicating activities, directions, portable kiosk for outreach, networking, kiosk locations, annealing information, etc.). The involvement of students working in a project mode should be retained. Staff who can carry over from year to year, not just students, should be involved in the graphic images component of the project.

**Can Education Deploy Resources to Effectively Implement Technology?**

Maybe. The answer leans to a yes if effective, trustful communication and actuating processes are in place with all involved in assessing, prioritizing, implementing, using, and evaluating technology. Technology is changing, Priorities
change. Personnel change. Thinking changes. The communication process needs to account for these dynamics. Systems thinking needs to be in place.

The information kiosk project provides examples that may stimulate further discussion of this question. One example is student involvement. Students participated in the information kiosk project through a "project seminar" course. Though "project seminar" is the official designation, a more accurate description would be "project workshop" because the students produced things. The goal was to create the information kiosk. An objective was to create graphic images that were needed. Students were partners in the project. In some cases, staff and students were sitting in the learning chairs side-by-side. Students did learn. They proved that by acquiring the skills to produce the images--images that are more than connecting lines with randomly chosen colors but rather are images that depict realism--shadows, dimensionality, coordinating colors, etc. The students produced the images that were a needed component. As part of the project team, the students helped to produce the information kiosk project which was perceived by all as a needed information technology product. The students learned, the staff facilitated, and the information product was produced.

Vendors want to see their product successfully used. Institution resources can be extended or added to by collaborating with vendors. This was seen in the information kiosk project as vendor representatives and project staff collaborated to solve hardware and software problems as well as to produce a well designed product.
Education could employ a person to be in close connection with representatives of the technology community. This extends the institution's technology knowledge base, likely beyond what any given person could provide to the institution. In the development of the information kiosk, people knowledgeable in the multimedia computing field were contacted. Not only did this extend the staff's capabilities, but now these contacts are being routed back into technology awareness training for the institution.

Summary

The 1990s is the decade of multimedia. Digital video interactive technology or its improved offspring as well as other compression and decompression systems will be a major part of the multimedia emphasis. The information kiosk, though a complex undertaking, was developed (see Appendix W) and does work. The kiosk is a dynamic point-of-information system—information and design need to be further annealed. The project is an example of teamwork—of people from different expertise areas working together to accomplish a project—to produce a product. Student learning can be integrated and student participation is beneficial to students and to the project's purpose. Institutions and organizations will deploy technology, in the form of information kiosks but also in the form of many other technology based products, to effectively disseminate information.
Appendix A

Project Management Charts
Key
Project Management Chart
(Dispensing Information Using Technology)

Information Kiosk: Applied Technology Center
Appendix B

Project Management Communications
To: ATC Planning Committee
From: Ray Hoag
Subject: ATC Information Kiosk—Equipment Comments

Jargon Translator

DVI - Digital Video Interactive (a technology system for storing audio, text, graphics, video, and animations in digital format within the computing system)

IVD - Interactive Videodisc

PLV - Production Level Video (highest quality, off-line video compression process)

RTV - Real-time Video (software for compressing video images in real time—lesser quality than PLV)

RTX - Real-time Executive (DVI technology system software)

Authoring System - A high level programming system that facilitates application development by content personnel with some inclination for computer use.

Impact of DVI

With all media data in a digital format, information can be more easily manipulated and changed than when data is stored on a variety of media devices. Keeping information current and costs minimized are facilitated.

Future

Having all information within a digital format within a computing system will be a major emphasis during the early 1990s.

Costs

The greater initial expense of equipment is offset by the lesser later costs of keeping information current.

Who?

Chuck Bonning (Ferris), Ray Hoag (JC) and other to-be-identified staff will use the development system.
| **Duration** | Intensive activity will take place with the development system from now through December 1990. Less intensive activity will take place with the development system thereafter but activity will happen regularly because information will constantly change. |
| **Location** | The development system should finally reside in the ATC (open computer lab, computer room, office, ???). Prior to the ATC opening the system should reside at a place convenient for staff doing authoring. |
| **When?** | The system needs to be acquired immediately. The lead time to deliver the system is 4-6 weeks. Accomplishment of delivering at least a partial system (investors and programs) is jeopardized if the system is not acquired immediately. Application design and training are contingent upon the equipment decision. |
| **Alternatives** | IBM has been requested to provide a solution. At this point they have not responded with anything concrete. Contacts have been made with Stu Bell (Multimedia Marketing Representative for Michigan), Bob Aspromonte (Multimedia Representative in Atlanta) and Chuck Morris (Local Representative Coordinating ATC Activities). IBM InfoWindows could be used but we would lose the benefits of updating information. Apple Macintosh systems could be used (several Community Council for Academic Computing representatives endorse this solution). |
| **Training** | Training is required on the DVI system operation, the authoring package, and the Lumena graphics package. Training on the Lumena package can be obtained locally. Much training will be accomplished on the job once... |
the system is acquired.

Printing
Some additional analysis needs to be done here. A laser printer is desirable for quality output. The concern is the time to print flyers on demand. A color capability would be ideal.

Copies:
Chuck Bonning
Bruce Lockwood

Attachment:
Equipment Configuration Spreadsheet
<table>
<thead>
<tr>
<th>Date</th>
<th>Task</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/13/89</td>
<td>Meet with Tom Mathison—determine locations, dimensions, specification needs. Specific configurations and locations must be specified by July 28, 1989. Stairway and elevator shaft is a sculpture in atrium. Two locations for interactive multimedia are now in plans. Each location is embedded in a wall.</td>
</tr>
<tr>
<td>6/14/89</td>
<td>Meet with Boyer, Partridge, Garlough and Prins to obtain input on content and location. Current information about educational programs (not just those in the ATC), room schedules, staff schedules, meeting times and locations, etc. are needed. Virtually any information available through a college catalog should be available through an information kiosk. Use of an information kiosk should be integrated into the building's plan (directories should not also be up on the wall). On-line current information is a big job but an important one.</td>
</tr>
<tr>
<td>6/15/89</td>
<td>Meet with Tina and Bruce Lockwood to determine project involvement, confirm video resources, etc. Media services wants to be involved. They have been invited to attend future building update meetings. Meeting was scheduled with Craig Stutzky to view video taken of building. A follow up meeting was scheduled involving Mark Vogel, Bruce Lockwood, Tina Lockwood and Rob Gutek to determine more specific video program goals.</td>
</tr>
<tr>
<td>6/19/89</td>
<td>Meet with Ferris interactive multimedia staff to obtain input and assess capabilities and future directions. Ray Hoag met with Paul Prins and Kitty Manley. Ferris wants to be involved and be an active participant in the creation of the interactive multimedia project. Incorporating an educational component into the interactive multimedia project is important. The Ferris interactive multimedia center was visited. Authoring languages were discussed. Three to four faculty interactive multimedia projects are funded annually. A follow-up meeting was scheduled to discuss the project with further with Ferris media and interactive video representatives.</td>
</tr>
<tr>
<td>6/21/89</td>
<td>Meet with Greg Kubik of Fluke to ascertain their involvement interest in the project.</td>
</tr>
</tbody>
</table>
Fluke touch screen interactive video products do not accommodate sophisticated graphics or captured video. The unit does accommodate lines, boxes and bar graphs. The Fluke unit could be used for a touch panel control device for the video wall. Greg Kubik sounded positive about including their touch panel device as part of an investment in the building.

6/21/89 Meet with Craig Stutzky to view video currently available of the ATC.

Video has been taken from the parking ramp and other off site locations. Craig would like to be able to take video on site. Outside video needs to be shot on sunny days.

6/26/89 Meet with Burke Technology representatives on Pioneer Video Wall and interactive multimedia information stations.

Ray Hoag met with Dave Lockwood and Tom Tilton from Burke Technologies. Cost information of the Pioneer video wall components was provided. Their process of contacting Pioneer is lengthy. Burke would be happy to meet with JC staff along with Pioneer representatives in an investment presentation meeting. Burke by themselves might invest time and expertise in the ATC and the interactive multimedia project.

6/29/89 Meet with media services to delineate processes, technology and costs.

Meeting participants were Mark Vogel, Tina Lockwood, Bruce Lockwood, Rob Gutek and Ray Hoag. Hart Swanson will be contacted to facilitate Craig Stutskey getting on site video shots. Guidelines need to be developed to communicate with investors on what video shots are needed, by when, etc. Investors should be involved in creating the guidelines. Rob Gutek will provide a list of promises made to investors such as being able to print out their sales representative's name as part of the interactive multimedia presentation. Video wall is the ideal way to show off the investors and the building's features. Video should be accomplished by one shop to maintain consistency. JC media services (a production video shop) would like to accomplish the video for the interactive multimedia project. Bruce Lockwood provided information on the Ultrawall, another video wall possibility.

7/5/89 Meet with Ferris media and interactive video representatives to determine their project involvement.

Meeting participants were Dale Hobart, Paul Prins and Kitty Manley from Ferris along with Ray Hoag. Meeting purpose was to get Dale's input (computer technology profession) and to determine Ferris and JC roles in the project. Dale Hobart
ATC Interactive Multimedia Activities and Milestones

will be visiting Epcott and will bring back information. The kiosks that provide current academic information should be a high priority. Incorporating an educational component into the project was reaffirmed. A potential role for Ferris would be to do the initial design of the interactive multimedia program. Securing additional InfoWindow systems to support the project is a good possibility. Developing a cooperative Guided Learning Center featuring interactive multimedia learning units was discussed.

7/13/89 Meet with selected area presentation technology specialists for consultation and involvement.

Shared ideas with Joe Walsh, President of Video Union. Liked video wall concept.

7/14/89 Meet with Pioneer representatives to discuss video wall.

Could not arrange meeting with Pioneer representatives on July 14, 1989. Information packet was provided to Pioneer representative (John Hartigan, Vice President for Marketing). Follow-up needs to be accomplished.

7/20/89 Meet with selected investors to acquire information on how investors want to be presented.

Representatives from Ernst & Whinney, Foremost, GR Press, Meijer, Michigan Bell, Steelcase and Terryberry were invited to meeting to develop video guidelines. Input was provided by Paul Brazda, Ernst & Whinney; Dick Wettergreen, Foremost; and Ron Babitz, Meijer. Bruce Lockwood and Ray Hoag were JC representatives. Results were:

1. Project is worthwhile publicity and improved community relations for investors.
2. A prototype should be done.
3. One audience that investors want to reach is JC student body.
4. In preparation for securing script information from investors, a questionnaire type document should be created. This data profile would include corporate philosophy, date established, exact quotes desired in a script, scope of business, what industry investor represents, business objectives and strategies, growth potential, and what technologies are utilized.
5. Investors could provide annual reports, marketing brochures, and other appropriate documents for script writing.
6. One person should be employed to write scripts as opposed to each investor writing their own script.
7. Each investor would approve their script.
ATC Interactive Multimedia Activities and Milestones

8. Wettergreen, Babitz and Brazda agree to provide further input on the development of the data profile.
9. A scenario developed at the meeting for presenting investor information involves having information available on all Greater Grand Rapids organizations. This information could be presented interactively in graphic and text format. Investors would be starred indicating that a video segment is available for that organization. Additional video segments could be added for future investors.
10. There was general agreement that 10 scenes per investor would be appropriate.
11. There was general agreement that JC should produce the video materials to accomplish a consistent look.
12. Provision would be made to incorporate video that investors might already have in the can. However, there was general agreement that most investors would not have appropriate video in the can.

7/24/89 Meet with Apple representatives to discuss investment of multimedia technology.

Dick Calkins, Rob Gutek, C.J. Shroll and Ray Hoag met with Tim Hardy, Higher Education Sales Representative, and Karen Sweeney, District Sales Manager. The ATC was presented and Apple's participation solicited. Several ways for Apple to participate in the building were presented including the interactive multimedia applications.

7/28/89 Complete research of video wall technology.

Ray Hoag met with Dave Smith of Advanced Media Services in Livonia. Information on the Electrosonic and Pioneer videowalls was acquired. A request for information about the Ultrawall from a New York firm has been made.

7/31/89 Communicate configuration and specifications for interactive multimedia for ATC to WBDC.

7/31/89 Discuss alternatives for accomplishing interactive multimedia project.

8/15/89 Decide on plan for accomplishing interactive multimedia project.

8/20/89 Meet with Digital Video Interactive technology representatives.

8/20/89 Meet with modeling software representatives to ascertain possibilities for modeling people movement through facilities.

Page 4

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<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
<th>In Kind</th>
<th>ATC Cost</th>
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</thead>
<tbody>
<tr>
<td>a. Personnel</td>
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<tr>
<td>JC Media Services</td>
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<tr>
<td>Narrator</td>
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<td></td>
<td>$900</td>
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<td>c. Equipment</td>
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<td></td>
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<td>d. Supplies</td>
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<td>Telephone</td>
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<td>Authoring Software-Apple</td>
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<td>Video Materials</td>
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<td>e. Contractual</td>
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<td>Authoring System Training</td>
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<tr>
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<td>f. Construction</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Kiosk</td>
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<td></td>
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<td>g. Other</td>
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<td>Consultants</td>
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<tr>
<td></td>
<td>$6,300</td>
<td>$2,000</td>
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<td>h. Totals</td>
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<td>$84,972</td>
<td>$31,941</td>
</tr>
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Interactive Multimedia Project
Narrative

a. Personnel

JC Media Services. 5 hours of on-site videography and 7 hours of editing per each of 20 investors gives 240 hours. A like numbers of hours is estimated for working on features, programs, professional societies, directory and activities. 480 hours times $75 an hour gives $36,000.

Narrator. 5 days of narration work at $400 per day gives $2000.

Writer. 40 days at $160 per day gives $5600.

Project Coordinator. 20 investors times 10 hours per investor gives 200 hours. 300 hours is estimated for features, professional societies, directory, activities and programs. 200 hours plus 300 gives 500 hours. 500 hours divided by 8 hours per day and multiplied by $205 per day gives $12,813.

Authoring Programmer. 66 days at $200 per day gives $13,200.

b. Travel.

Local travel is estimated at $300.

Other travel is estimated at $600.

c. Equipment.

Presentation Systems (Apple). 3 presentation systems with laser printers are configured. The net cost of 3 systems is $30,100 (see Presentation Systems Analysis spreadsheet).

A $3000 expenditure for a scanner is estimated.

d. Supplies.
Narrative—Interactive Multimedia Project

Telephone expenses are estimated at $500.

Authoring system software (HyperCard) is included with each Apple Macintosh computing system.

Video materials (blank tape, video footage) are estimated at $1000.

e. Contractual.

Authoring system training is estimated at $2000.

Videodisc mastering is estimated at $2000.

f. Construction.

Kiosk design and construction is estimated at $1500.

g. Other.

Consultants are estimated to be paid $3000 for services (design, animation, graphics, etc.).

Software tools (copies for both Ferris and JC sites) are estimated at $3,300 (see Presentation Software Analysis spreadsheet).
Applied Technology Center
Ferris State University/Grand Rapids Junior College

Project
Applied Technology Center (ATC) Information Kiosk

Purpose
To dispense, using computer controlled multimedia technology in a compelling manner, useful information concerning ATC features, investors, programs, activities, and inhabitants.

Time Limit
October 15, 1990

Budget
$116,913 ($84,972 in kind, $31,941 ATC)

What Will Be Accomplished:

Video, graphic, animation, sound and text segments will be created to describe building features, investors, programs and other relative information. Three kiosks will be configured to include technology to provide needed information. Software packages and programs will be used to present information in a multimedia format.
<table>
<thead>
<tr>
<th>Existing Situation</th>
<th>Desired Future Situation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building occupants have been loosely identified. Room functions have been identified.</td>
<td>Building occupants are identified. Info kiosk shows person's picture and data. System animates directions. Pictures and info are easily updated.</td>
</tr>
<tr>
<td>Activities have been loosely defined. Specific activities are unknown.</td>
<td>Building activities are available with the info kiosk. Activities are updated immediately and are described both visually and with text. Schedules of rooms are demand printed.</td>
</tr>
<tr>
<td>Building features are known. Specific features need to be chosen.</td>
<td>Specific building features are depicted with video, graphics, animation, sound and text. Selected printed info is available on request.</td>
</tr>
<tr>
<td>Investors to be featured have been loosely identified.</td>
<td>Major investors are featured with video segments, others with graphic or text. New investors are easily incorporated. Selected info is printed on demand.</td>
</tr>
<tr>
<td>Ferris and JC programs to be located in the building have been identified.</td>
<td>Video, graphics, voice and text provide compelling descriptions of programs and Institution information. Selected info is printed on demand. Name and telephone info is captured.</td>
</tr>
<tr>
<td>Many professional societies have agreed to use the services to be provided by the RTC.</td>
<td>Appropriate video, graphic, voice and text describe services provided. Info is printed on demand. Logos and officer pictures are displayed.</td>
</tr>
</tbody>
</table>

February 5, 1990
To: Bob Partridge  
From: Ray Hoag  
Subject: ATC Information Kiosk Purchases

Attached are purchase requisitions related to the Applied Technology Center’s information kiosk project.

Delivery System  Please process purchase requisition 55410 in the amount of $38,112.75 to Datalus, Inc., for three (3) delivery systems.

The application is being developed on the “development system.” People will use the application on the “delivery systems.” Three locations in the Applied Technology Center have been identified where people will interact with the “delivery systems.”

Quotes were received from Avtex (Campbell, CA), Datalus (Okemos, MI), Network Technology (Springfield, VA), and Pioneer-Standard (Intel dealer in Grand Rapids). Datalus was selected as the vendor because they have experience in DVI technology, they have an existing touch screen application working, they were able to specify a 19" - 20" monitor that is touch sensitive, they have provided on-site training and consultation, and their price is competitive. Pioneer-Standard has not performed with needed service (their local office has only sales people with desks and telephones) and was unable to specify a touch screen that will work. Network Technology has not yet specified a workable touch screen solution and their distance from us would hamper interaction and consultation. Avtex is familiar with the technology but their prices are high and they are distant from us.
Printers

Please process purchase requisition 55404 in the amount of $6,792 for four (4) Hewlett-Packard LaserJet III printers.

Printers will be used to print on demand the one page flyers about Ferris and JC educational programs, investor information, professional organizations, building features, room schedules, etc. These could be bid but we need them soon. One printer will go on the development systems and 3 will be used with the delivery systems.

Graphics

Please process purchase requisition 35130 in the amount of $6,500 to Datalus for the purchase of a graphics workstation and associated graphics software, electronic cards and peripherals.

Graphic workstations are needed to develop and revise the graphical screens and cells that are fundamental to the information kiosk project. The total cost of the equipment and software is $12,820. Our rental costs ($3,800) are being applied as an offset. A further "education" discount of $2,520 is an additional offset.
Appendix C

Project Team Diagram
Appendix D

Application Design Communications
Technology Programs

- Plastics Manufacturing
- Quality Science
- Welding Technology
Appendix E

Technical Research Communications
Digital Video Interactive Questions

How can we get more information on the interior design application of digital video interactive? This was done by Design and Decorating Incorporated, a company in New York City.

How will JC handle on-going maintenance of a DVI system? This would include hardware maintenance as well as software.

Does Joe Walsh have Lumena software? Can I get over and try this software out? How is it different from the DVI implementation of Lumena software?

Can the cost benefit of DVI which results from less editing by a professional video editor be quantified?

The advantage of digital video interactive is that video graphics and audio as well as text can all be stored in a digital format. This would cut down on the number of peripheral devices. Another advantage of digital video interactive is the effects that can be accomplished when everything is in digital. What are the other advantages of DVI technology?

What does the database for a photo file look like? How is the text information kept in association with the photo information?

How do we get photos into our system?

How do we incorporate image files into DVI?

What is the cost for creating presentation level video? What is the input requirement for presentation level video?

Edit level video goes at 10 frames per second. What exactly does that mean? How does it look to the viewer?

Is there a way to get around doing presentation level compression at an off-site location?

Grand Rapids Junior College has a media services department that does video editing. If we utilize DVI technology what will be the need for video editing services from our media services department?

If, for presentation level video, we need to have the video in a one inch format, how do we get it there? What capability does Grand Rapids Junior College have to shoot on one inch video tape?

Is it practical to get presentation level video compression done for one video segment at a time? Is there a set-up charge?
Will compression to presentation level video be possible in the future on less expensive equipment? Will it ever be possible on a PC system?

The video display processor identified in Luther's text did 12.5 million instructions per second. Has there been any improvement on this?

It sounds like we do editing on the computing system, not with media services. Media services would do all the video shooting. Are these assumptions correct?

Does the digitizer only work with a one inch facility?

What is the specific DVI configuration that will handle Grand Rapids Junior College's application?

Normally, when putting together a video segment for interactive videodisc, we start with the audio and then put video segments with the audio. How does this process work with DVI technology?

What capability for video editing does the JC media services department have? How digitally oriented is the video editing of the JC's media services?

When should something be done with media services editing? When should it be done with digital video interactive?

How will Ferris and JC work together on one developmental system?

Why should DVI technology be chosen over other technology?

Does Authology have a flowchart/design function built into it? What special effects does Authology incorporate?

Is touch screen capability built into a DVI system? Is touch screen a capability of Authology?

What image processing can be done with Authology?

What are animation capabilities of Authology?

What files/database packages can Authology work with?

What support can be expected from Ceit and Intel?

How much VRAM should be included in the development system?

Is the use of a joystick a viable option in place of touch screen?
To: Intel Representatives
   Kevin Gazzara
   Art Roehm

From: Ray Hoag

Subject: ATC Information Kiosk—DVI Questions

Configuration
The configuration needs to be reviewed. Are the right items included?

Support
Are we out here all by our lonesome? Seems like we are doing some risk taking? Seems like we are providing the impetus for several to be learning about DVI—like Pioneer. What support will Intel provide?

Invest
Is there any possibility that Intel will invest in this endeavor? Such as we buy development system and Intel provide presentation stations? Such as 2 people attending training sessions for the price of one? (This project is a joint venture between Ferris State University and Grand Rapids Junior College.) Would not a successful application with Ferris and JC lead to further business in the West Michigan area? Intel would be in good company. There are over 150 investors in this project already representing West Michigan and national firms. Of these, 25 are major investors ($50,000 or more) including Steelcase, IBM, Foremost, American Seating, Allen/Bradley, Autodesk, NC Micro Products, Old Kent Bank and Rapistan. Many of the West Michigan companies will be watching our project, and if successful, could apply the technology to their businesses.

Budget
The equipment budget for this project is
$32,000. (This was to configure 3 presentation systems and was originally costed out using IBM InfoWindow systems.) This amount will be expended just for the developmental system. Do not know how far or if administration will stretch. Help! Do we really want to do DVI? Do you want us to do DVI?

**Why?**

Please help with the rationale for accomplishing this project with DVI technology as opposed to an IBM InfoWindow-videodisc solution. Will updating information costs be less later on? Why is the time right to invest in DVI? Help!

**Printer**

We want to be able to produce flyers from our application. Is there any advice you need to provide? Can we shoot out a laser page from a kiosk? Who can we work with to configure a printer to work with a kiosk? Color costs too much? Who do you folks work with in kiosk design?

**Presentation System**


**Training**

What is the training schedule? DVI system training? Authology training? Lumena training? We have a person locally who is knowledgeable with Lumena. Can we substitute working with this individual for Lumena training? What is unique about DVI Lumena training?

**Lumena**

What is the difference between Basic Lumena and
<table>
<thead>
<tr>
<th><strong>ATC Information Kiosk—DVI Questions</strong></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>RTX Software</strong></th>
<th>What is the RTX Real Time Executive Software? Is this required on both the developmental system and the presentation systems?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Windows</strong></td>
<td>Does the DVI technology run under Windows? How does Windows fit in the picture?</td>
</tr>
<tr>
<td><strong>Quest</strong></td>
<td>Talking to Quest people, I did not get a sense that they were imminently releasing a version of Quest to work with DVI. They were somewhat discouraging. Why? Several people in our community have spoken highly of Authorware. Will this authoring package work with DVI?</td>
</tr>
<tr>
<td><strong>Delivery</strong></td>
<td>Delivery time is 4-6 weeks we are told? Is this realistic? Can delivery be improved?</td>
</tr>
<tr>
<td><strong>Porting</strong></td>
<td>How do we port animations that have been created using an Apple Macintosh computing system to the DVI development system? How do we port any animations into the DVI system? How do we port Lumena graphics that have been created off site to the DVI development system? How do materials that are on videotape get into the system?</td>
</tr>
<tr>
<td><strong>Touch Screen</strong></td>
<td>What progress has been made with touch screen and DVI? Is it available? Operational? Does Authology support touch screen now?</td>
</tr>
<tr>
<td><strong>Backup</strong></td>
<td>What backup strategies are suggested? The configured tape backup system accommodates 150MB. The disk drive accommodates 760MB. Several tapes will be required to do a complete backup. What needs to be backed up?</td>
</tr>
<tr>
<td><strong>Advancements</strong></td>
<td>What is the current status of DVI technology? Is there a faster compression scheme available</td>
</tr>
</tbody>
</table>

April 20, 1990
now? Will our system be automatically updated when enhancements become available?

Photobase

Applied Optical Media Corporation has developed Photobase. How could this resource enhance our application?
Appendix F

Project Purchase Orders
<table>
<thead>
<tr>
<th>Item Description</th>
<th>Amount</th>
<th>Our Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel AM7501212P DVI Development Platform (25 MHz 80386, 4 MB memory, 40 MB hard disk drive, 1.2 MB floppy drive, AM750 board set installed)</td>
<td>7,600.00</td>
<td></td>
</tr>
<tr>
<td>AM750-MPT Action Media 750 Production Tools</td>
<td>1,000.00</td>
<td></td>
</tr>
<tr>
<td>AM750-ALGY Anthology Multi-Media</td>
<td>4,500.00</td>
<td></td>
</tr>
<tr>
<td>AM750-T2M Lumena DVI Software</td>
<td>1,500.00</td>
<td></td>
</tr>
<tr>
<td>AM750-MPTSUP Support for Production Tools</td>
<td>200.00</td>
<td></td>
</tr>
<tr>
<td>AM750-ALGYTRM Anthology Training 851,500.00 ea.</td>
<td>3,000.00</td>
<td></td>
</tr>
<tr>
<td>Integrated and Tested Peripheral Package including:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyne WT-530 Monochrome Monitor and WT-425 Adapter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tatung CH-1495 Multi-Frequency Monitor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microsoft Mouse</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AHA-1542A Adaptec SCSI Controller &amp; ASH-1110 Adaptec SY-TOG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>XT-87605 Maxtor 760MB SCSI Hard Disk Drive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CZ150 Archive Viper 150 MB Tape Subsystem</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sytron SY-TOG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional DVI Documentation Set</td>
<td>150.00</td>
<td></td>
</tr>
<tr>
<td>Sony CDD-6111 External CD-ROM (CDD-610111P)</td>
<td>1,195.00</td>
<td></td>
</tr>
<tr>
<td>Sony SRS-100 Speaker Set</td>
<td>185.00</td>
<td></td>
</tr>
<tr>
<td>Elochoric E281-40xxIntelliTouch Touchscreen w/Controller</td>
<td>875.00</td>
<td></td>
</tr>
<tr>
<td>$76,105.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Accepting your quotation dated 5/29/90

IN ACCORDANCE WITH THE "MICHIGAN RIGHT TO KNOW LAW" ALL SHIPMENTS CONTAINING HAZARDOUS MATERIALS MUST BE ACCOMPANIED BY MATERIAL SAFETY DATA SHEETS.

Subject to terms and conditions printed on reverse side hereof.
**Purchasing Order**

**Order Number**: 1-07351

**Vendor**: Datalus, Inc.

**Attn**: Joe Walsh

**Address**: 2853 West Jolly Road

**City, State ZIP**: Okemos, MI 48864

**Date**: January 3, 1991

---

**Item Description**:
1. Digital Video Interactive Playback (Target) System for Information Kiosk in Applied Technology Center - \$12,529

**Inclusions**: Delivery Platform: mini-tower, 386dx-25c (Intel), 4mb, VGA graphics, 1.44mb 3.5" floppy, 42mb IDE HD 10-keyboard, 300 watt power supply, 2 ser., 1 par., 3 fans for ventilation

- Archive 150 mb Tape B/U with software
- Adapter SCSI Adapter with software
- Seagate Wren 702mb (internal)
- CD ROM CDU '541 (internal)
- Elographic Touch Screen (includes install to PVM2030S Sony Cube Monitor)
- Sony PVM2030B Cube Monitor (19"
- INTEL (At EOS) Action Media Delivery System DVI Board
- DOS 4.01

**Note**: Accepting your quotation dated 12/4/90

---

**Vendor Copy**

---

(For accordance with the "Michigan Right to Know" Law, all shipments containing hazardous materials must be accompanied by material safety data sheets.)

---

**Sponsor's Name**:

**Signatory**:

---

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GRAND RAPIDS PUBLIC SCHOOLS
143 BOSTWICK, N.E.
GRAND RAPIDS, MICHIGAN 49503-3299
(616) 771-2175 • FAX: (616) 771-2180

MAIL INVOICES IN DUPLICATE TO ATTN. OF ACCOUNTS PAYABLE
DO NOT ENCLOSE INVOICES WITH THE SHIPMENT!

Datakus, Inc.
Atttn: Joe Walsh
2853 West Jolley Road
Okemos, MI 48864

PURCHASE ORDER

Mail Invoices in duplicate to Attn. of Accounts Payable
Do not enclose invoices with the shipment!

Vendor No. 30770 Code 55416

Date: January 3, 1991

Item Description

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
<th>Item Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Graphics Workstation:</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Vid I/O Box 995.00</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Targa 24 3,695.00</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Targa TIPS Graphics Software 795.00</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Hercules Graphic Station Card 1,095.00</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>RIO Graphics Package 1,795.00</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>Lumenas Paint Software 2,495.00</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>VGA 286 Computing System w/2MB Memory, Mouse, Monitors, and Keyboard 1,950.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Less Rental Discount -3,800.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Less School Discount -2,520.00</td>
</tr>
</tbody>
</table>

Total: $6,500.00

CONFIRMING ORDER - DO NOT DUPLICATE - ALREADY DELIVERED TO GRJC

Accepting your quotation dated 12/26/90

IN ACCORDANCE WITH THE "MICHIGAN RIGHT TO KNOW LAW" ALL SHIPMENTS CONTAINING HAZARDOUS MATERIALS MUST BE ACCOMPANYED BY MATERIAL SAFETY DATA SHEETS.

IN ACCORDANCE WITH THE "MICHIGAN RIGHT TO KNOW LAW" ALL SHIPMENTS CONTAINING HAZARDOUS MATERIALS MUST BE ACCOMPANYED BY MATERIAL SAFETY DATA SHEETS.

NOTICE: TO INSURE PROMPT PAYMENT, ALL COMMODITIES ARE TO BE SHIPPED TO THE DESIGNATED ADDRESS BELOW:

Grand Rapids Junior College
Applied Technology Center
Atttn: Ray Hoag
151 Fountain, N.E.
Grand Rapids, MI 49503

T#r* - ...Vendor N O * coco

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Appendix G

Technical Support Communications

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FAX TRANSMITTAL

PLEASE DELIVER THIS MESSAGE TO:
Kevin Gazarra, Intel Princeton, 609-936-7600
Kevin O'Connell, Intel Princeton, 609-936-7600
Art Roehm, Intel Southfield, 313-851-8770
Joe Russel, Pioneer Grand Rapids, 616-698-1831
Bob McDonald, CEIT California, 408-986-1101

FROM: Ray Hoag (Computer Applications/Academic Computing)
143 Bostwick, N.E.
Grand Rapids, MI 49503-3295
FAX: (616) 771-3835
VOICE: (616) 771-3670

TOTAL NUMBER OF PAGES: 1 (including this page)

RE: Status of DVI System with Authology

David Kubik got our system operational so that we could capture real time video. Three times during the vrtv command use we would type in the following line, press C for capture, and the system rebooted itself:

```
vrtn -f1000 d:\vidtest
```

The following sequence of commands culminated with the destruction of all directories and pointers on the C drive hard disk except for the root directory. All volumes (d through j) were accessible on the 600 MB SCSI device:

```
vrtn -f1800 d:\video
c to capture and then q to quit
vavprep d:\video
vrtn -f1000 d:\video
C to capture and then Q to quit
vavcopy -d d:\video e:\suplace
```

At this point we went to run vavprep e:\suplace and got a bad command. Doing a directory showed us garbage. We gave the cd \ command to get back to the root. Files were on both the d: and e: drives but all directories and pointer were lost on the c: drive except for the root directory.

We thought we were ready to embark on video capturing and authoring with Authology: Multimedia. We now need to redo the system. Any suggestions?

Ray

October 29, 1990 7:43 PM
HERE IS A LIST OF OUR AUTOEXEC.BAT AND CONFIG.SYS FILES, PLEASE REVIEW, AND SEE IF I AM MISSING SOMETHING.

11/1/90
RE-LOW LEVEL FORMATTED SCSI HARD DRIVE AND SET INTERLIVE TO 1:1, HIGH LEVEL FORMATTED THE DRIVE WITH 4.01 MS DOS. PARTITIONED THE DRIVE D:-I: WITH 95 MEGS IN EACH DRIVE.

QUESTION:
DO I NEED TO HAVE THE AHA-SCSI DRIVER IN CONFIG.SYS??

PROBLEM:
WHEN RUNNING RTV'S VAVCOPY OR VPLAY THE SYSTEM LOCKS UP EVERY OTHER TIME.
WENT BY YOUR SUGGESTION, ALL PROGRAMS ARE ON C: DRIVE, WOULD CHANGE DRIVE TO D: AND RUN THE RTV, VAVCOPY, VPLAY, VPRERF COMMANDS.
WHEN DIRECTING THE VAVCOPY OR VPLAY OR VPREP TO DRIVE E: TO THE FINISHED VIDEO SEGMENT THE COMPUTER WOULD JUST LOCK UP.

ANY SUGGESTIONS.
ALSO THE VIDEO GOING INTO THE COMPUTER LOOKS TERRIBLE, AND ALSO WHEN PLAYED BACK.. WILL THE 2 BOARD TAKE CARE OF THIS PROBLEM.

THANK YOU
DAVID M. KUBIK
GRJC
(616) 771-3670
November 8, 1990

Ray Hoag
Computer Applications/Academic Computing
Grand Rapids Community College
(616) 771-3835

Dear Ray:

It seems that your having quite a time getting started. I don't know the particular details of your hardware requirements and purchases, but I can discuss the Authology: MultiMedia issues with you.

CEIT is currently in the latter end of the beta test phase of Authology: MultiMedia v1.10. The attached summary describes the new enhancements. We are expecting final certification and release by the end of November. The Elographics device driver Elodev has been determined to be incompatible with the current Authology/DVI implementation. Our plan is to write a mouse compatible driver for the Elographics screens. This external implementation will not delay the release of v1.10 and is being treated as a separate project. We will be able to estimate the completion of the touch screen project by late next week.

Trouble aligning objects
Have you tried defining a grid in the Panel Editor. A grid can make alignment of objects much easier. If your running 256x240 resolution video in a window, then you must be operating in a 512x480 panel resolution. Currently, you can only clip the video from right to left and from the bottom to the top. No scaling of the motion video is also supported.

I would recommend adjusting your window to the size of the video. If your video will be 256x240, then make your inside dimensions of the window 256x240.

Using Buttons
The button object tags the following object as the button. This allows you to create a button in any shape. The display of button objects in the Panel Editor is really unnecessary (We have debated this many times internal). I would turn off the display of button objects, and use the Panel list as a reference will you work.
In the cases when you want to have multiple buttons on top of a graphic, use transparent circles, ellipses, rectangles, etc. as the touchable object. Example panel object list:

- Image
- button
- rectangle
- button
- circle
- button
- rectangle

I don't know exactly why your system may have crashed when working with buttons. I have seen your FAX messages relating to hardware problems, but I am also aware of a v1.02 problem that has subsequently been repaired in v1.10. Try to avoid placing objects off the bottom and right edges of the screen, and simultaneously squeezing them to a vertical or horizontal width. With these actions, the system can crash.

**Startup Authology App Dir**

The Authology Application Dir variable (AuthAppDir) should reference only one directory. The files contained in this directory will be displayed when a file open is requested.

You will be happy to know that improvements to file search path management have been added to v1.10. The search paths for a project can be modified within the system (a separate ASCII file is maintained which can also be edited externally).

**Education Index**

Currently (v1.02) you cannot scale images within Authology. In v1.10, you can clip an image, and position the displayable portion of the image (panning). Scaling of an image is also supported.

If your DVI image is tighter than the source, your source resolution is probably lower than the DVI resolution.

If you have any further questions regarding Authology: MultiMedia, please contact me directly.

Sincerely,

Robert Macdonald
Some miscellaneous questions and comments. We are making progress.

The system hung-up while running Authology. These are the steps leading to the hang-up:

Chose panel (Ferris Cover)
Listed objects (image, button, rectangle, video, input 45)
Chose video objects
Chose a video
Chose preview

In Authology, why do we have to reposition and recrop the video window each time we edit a video object's parameters (like number of frames to play or choosing continuous)? This happens even when the video window has been locked.

When running a panel in Authology with these objects:

Image (book cover - takes whole screen)
Button (ID 100)
Transparent rectangle (size of whole screen)
Button (ID 10)
Transparent rectangle (overlays small portion of screen)
Video (500 frames)
Input (45 second time out)
If a person touches the screen at any place except the button ID 10 area, we want to hear a beep, have the video continue, and have the pointer be active. Now the video plays and the pointer does not become active until the video repeats.

We have recorded a message, "Please touch a spot on the screen."

Sometimes the whole phrase is heard – but sometimes the audio misses the first 2 words - "... a spot on the screen." Why?

We need the Y connector to be able to run the fan and tape drive at the same time. We have captured 500 MB of video. We need to back-up our information regularly.

Will we need to recapture video when we get the 2 board set? Will video look better (ELV) if we recapture using the 2 board set?

We need to get the touch screen and monitor problem resolved. We would like a monitor size larger than 14". A 19" or 20" monitor would be fine.

We made our own Y connector (see above). We have the tape drive unit. However, we do not have a tape controller card to interface tape drive to the system.

When we play back video captured at edit level, the video and audio do not seem to be in complete sync – the video is slightly ahead of the audio. Every once in a while the video will repeat a short segment (jump). What is the explanation? Is this because video is not quite at 30 frames per second?

RH/ts
PLEASE DELIVER THIS MESSAGE TO:
Kevin Gazarra, Intel Princeton, 609/936-7600
Kevin O'Connell, Intel Princeton, 609/936-7600
Art Roehm, Intel Southfield, 313/851-8770
Joe Russel, Pioneer Grand Rapids, 616/698-1831
Bob McDonald, CEIT California, 408/986-1101
Joe Walsh, Datalus Okemos, 517/332-5080

FROM: Ray Hoag (Computer Applications/Academic Computing)
143 Bostwick, N.E.
Grand Rapids, MI 49503-3295
FAX: (616) 771-3835
VOICE: (616) 771-3670

TOTAL NUMBER OF PAGES: 1 (including this page)

RE: The DVI Developmental System is operational and
Authology: Multimedia has been loaded. We have captured
some video segments but still have problems with the
system hanging up. There are over 50 video segments
recorded on beta cam and over 50 graphic screen images
created with Lumena-RIO-TIPS. We could use advice on how
to get these resources into the DVI system and available
for Authology use as well as a good review of formats and
resolutions as applied to our particular project.

Equipment

We understand that the 20" monitor is in town; however,
it has not shown up at JC. We need target configurations
within our budget. When do we receive the two-board set?
Our understanding is that this will eliminate the jitters
on the presentation monitor as we use it with the
Authology: Multimedia System? How do we exchange the
ellographic touch screen for the touch screen that will
work on the 20" monitor? Our system came with a tape
drive but no tape cartridges. What is the proper tape
cartridge to acquire? Is it true that when we order a
760 megabyte hard drive that we only end up with 600
megabytes of usable space?

Authology

What is the status of Authology: Multimedia relative to
the version with C hooks and to the use of the
ellographic touch screen? Will we be able to print files
through Authology using the C hook version?

Your response and support is appreciated.
May 17, 1991

Ray Hoag
Computer Applications/Academic Computing
Grand Rapids Community College
(616) 771-3835 Fax

Dear Ray:

I apologize for kidnapping your box for so long. On a positive note, it has allowed us to identify and repair several critical problems.

Errors in your system
1. C:\authmm\app\video.avs was not vavprepped correctly. If you ran this file it would crash. If an AVS file is moved, it must be re-prepped.
2. DOS PATH set wrong for 1.10 in autoexec.bat.
3. No authmm.pth file in c:\authmm\app.
4. Authmm.pth file in (can't remember which directory) was corrupted, causing images not to be found. Regenerated the file, all OK.

Symptoms identified on your system and the correction made to v1.11
1. Could not run authed or authrun from other directories. Authology incorrectly parsing a DOS path variable greater than 80 characters. Increased this to 256 characters.

Problems with GRRC apps that have work arounds
1. Make sure your config.sys specifies at least 20 buffers for best AVS performance.
2. Authology still seems to have problems with search paths containing drive references only (eg. vim =e:\f:\g\). This does not generate a fatal error, the only symptom is that when accessing the choose dialog box, the current file and the directory are not found nor pre-selected. Move your avs files on the SCSI to a sub-directory (eg. vim =e:\av;f:\av;g:\av) to resolve this problem
3. After running some of your motion video clips in the “vendor” module (autodesk for example) the mouse and system appear to hang. This condition is caused when the number of frames to play, set in the video object, exceeds the total number available in the file. You will need to define the correct number of frames to avoid this condition.
4. We improved the animation as described on the Internal Release Notes attached. Take a look at the INF.AAM "table of contents" section and the associated panels. During debug, I added 2 different panels to your list. Use the double buffered animation panel for best performance.

5. I have also noticed better graphics and "quarter screen" motion video performance in v1.11. This is related to item 10 on the attached notes.

I have adjusted your environment to some degree. You will notice both\c:\authmm1.10 and c:\authmm1.11 directories have been created. I have been running your apps located in c:\authmm1.10\app. There are batch file 212.bat and 213.bat that switch between DVI setups. I have moved your other configuration files to the sub directory CONFIGS. I have also installed several newer versions of ASPI4DOS.SYS on your system.

If you have any of these changes, please give me a call.

Sincerely,
Robert Macdonald

---

RAY,

I created "C:\authmm1.10\app\BobINV.AAM" in this module. I clipped the video windows of animation setting and AutoDesk scenes. You'll notice that the audio does not break-up as it does in your full RES video object located in INV.AAM. If you recapture your video at this lower RES, your performance should be improved.
FAX TRANSMITTAL

PLEASE DELIVER THIS MESSAGE TO:

Bob McDonald, CEIT California, 408-986-1107

FROM: Ray Hoag (Computer Applications/Academic Computing)
143 Bostwick, N.E.
Grand Rapids, MI 49503-3295
FAX: (616) 771-3835
VOICE: (616) 771-3670

TOTAL NUMBER OF PAGES: 1 (including this page)

RE: Status of DVI System with Info Center Application Using Authology

We have uncovered another problem (No. 3) to go with the updating of addresses when Authology 1.11 passes variables using the EXEC instruction during AUTHRUN (No. 1) and the loss of touch when running AUTHRUN using ELODEV (No. 2).

No. 3:

When running our application using either AUTHRUN INF or AUTHED INF, we call the EDU module. We can run videos from drives D: or E: (first SCSI). However, when we run videos from F: (F:\VIDEOS is in XXX.PTH), the system freezes. We cannot CONTROL-BREAK. We must CONTROL-ALTERNATE-DELETE to reboot the system.

When we run AUTHRUN EDU or AUTHED EDU, we can run videos from F: (second SCSI). Is there another linkage problem?

No. 2:

I ran AUTHRUN INF with both ELODEV and MOUSE drivers loaded. We lost touch after about 50 touches. However, mouse continued to work until I ran into problem No. 3 above.

Hope you're feeling better. I'm interested in how you come out with your touch trial with 1.11.

Ray

June 6, 1991 7:16 PM
FAX TRANSMITTAL

PLEASE DELIVER THIS MESSAGE TO:

Bob McDonald, CEIT California, 408-986-1107

FROM: Ray Hoag (Computer Applications/Academic Computing)
143 Bostwick, N.E.
Grand Rapids, MI 49503-3295
FAX: (616) 771-3835
VOICE: (616) 771-3670

TOTAL NUMBER OF PAGES: 1 (including this page)

RE: Problem No. 3: (Not Showing Video from EXECuted Module)

Ran AUTHED INF with TRACE on and WARNINGS window open. No messages showed in WARNINGS window. System froze—no cursor on either screen, no dump, no change to image that video was going to be played over. CONTROL-BREAK did not work. Had to warm start (CONTROL-ALTERNATE-DELETE) the system.

Ray

June 7, 1991 6:12 PM
Appendix H

"CONFIG.SYS" File
files=20
buffers=20
stacks=0,0
lastdrive=z
rem device=c:\aha1540.sys /v386
rem device=c:\scsiha.sys
device=c:\aspi4dos.sys /D /v386 /I /L /V /W
device=c:\aspidisk.sys /d
install=c:\386max\386load.com size=13584 prgreg=2 flexframe prog=c:\dos\share.exe
device=c:\386max\386max.sys pro=c:\386max\386max.pro
device=c:\v213\bin\vram.sys
shell=c:\command.com /p /e:2048
rem install=c:\dos\share.exe

files=20
buffers=20
stacks=0,0
lastdrive=z
rem device=c:\aha1540.sys /v386
rem device=c:\scsiha.sys
device=c:\aspi4dos.sys /D /v386 /I /L /V /W
device=c:\aspidisk.sys /d
rem install=c:\386max\386load.com size=13584 prgreg=2 flexframe prog=c:\dos\share.exe
rem device=c:\386max\386max.sys pro=c:\386max\386max.pro
rem device=c:\v213\bin\vram.sys
shell=c:\command.com /p /e:2048
install=c:\dos\share.exe
Appendix I

"AUTOEXEC.BAT" File
@echo off
prompt $p$g
set dsk=c
set vroot=c:\v213
rem set cdr=j
c:\v213\bin\vvid0006 /cy
c:\386max\386load size=8256 prog=c:\v213\bin\vaudam
c:\386max\386load size=32352 prgreg=2 prog=c:\mouse /h20 /v15 /p1
rem c:\386max\386load size=23360 prog=c:\dos\MsCdEx /D:CD1 /M:10 /L:%cdr% /e
SET PATH=%VROOT%;%VROOT%;\AUTHMM1.11;%DSK%;\DOS;%DSK%;\386MAX;%DSK%;\X
nen c:\386max\386load size=71184 prgreg=2 flexframe prog=C:\images\ELODEV 140,2,
@echo off
prompt $p$g
set dsk=c
set vroot=c:\v213
rem set cdr=j
set vdisks=cdms
set vroot=c:\v213
rem set cdr=j
rem c:\386max\386load size=8256 prog=c:\v213\bin\vaudam
rem c:\386max\386load size=32552 prgreg=2 prog=c:\mouse /h20 /v15 /pl
rem c:\386max\386load size=23360 prog=c:\dos\MsCdEx /D:CDI /M:10 /L:%cdr% /e
rem c:\386max\386load size=71184 prgreg=2 flexframe prog=C:\Images\ELODEV 140,2,2400
SET PATH=%VROOT%; %VROOT%\BIN; %DSK%:\AUTHMM1.11; %DSK%:\DOS; %DSK%:\386MAX; %DSK%:\X
set vdisks=cdms
set vroot=c:\v213
rem set cdr=j
rem c:\386max\386load size=8256 prog=c:\v213\bin\vaudam
rem c:\386max\386load size=32552 prgreg=2 prog=c:\mouse /h20 /v15 /pl
rem c:\386max\386load size=23360 prog=c:\dos\MsCdEx /D:CDI /M:10 /L:%cdr% /e
rem c:\386max\386load size=71184 prgreg=2 flexframe prog=C:\Images\ELODEV 140,2,2400
Appendix J

Fast Track Grant Proposals
Multimedia Design Training

PART I. PLAN OF ACTION AND EVALUATION

A. Plan of Action

The purpose of this training proposal is to acquire information leading to the development of a new Grand Rapids Junior College (JC) Computer Applications Division course, Introduction to Computer Controlled Multimedia (CO-165). Successful multimedia projects require a team approach involving individuals with technical; programming and/or authoring; application design; videography; graphic design; audio; and project management skills. Not only does the team approach need to be incorporated into the course design, but also the course facilitator needs to acquire appropriate competency in these areas. One training experience needed to proceed with the course development concerns application and graphic design.

The Curriculum Subcommittee of the Community Council for Academic Computing, the Computer Application Division's advisory group, proposed that JC initiate a computerized graphic arts curriculum. Other community and vendor representatives also point to a multimedia orientation for computing systems in the 1990s. During a full Council meeting including JC administrators, the need to focus on design skills as opposed to only manipulating the hardware and software was emphasized.

The Computer Applications Division curricula now includes at least three courses that would fit into a computerized graphics arts curriculum. These courses are Using Graphics Software (CO-120), Desktop Publishing (CO-162) and Introduction to HyperCard (CO-166). Introduction to Computer Controlled Multimedia (CO-165) will be an appropriate addition to this set of courses.

People, because of our TV society, have great expectations for video and graphics. Any presentation must be done in a compelling manner, must command attention, must be integrated into the organization, and must be in concert with user characteristics (for example, short, interactive displays as opposed to lengthy video segments). Each year the Nebraska Videodisc Symposium...
deals with design issues and presents the best interactive video designs as part of their awards program. The symposium is scheduled for May 21-24, 1990, in Lincoln, Nebraska. This training experience assures that multimedia design considerations are integrated into CO-165 course planning.

Contingent upon approval of this grant, Ray Hoag, Chairperson of the Computer Applications Division, will participate in this training session.

1. Objectives

Upon completion of the interactive multimedia design training, the participant will:

a. Complete the development of the new course, CO-165, Introduction to Computer Controlled Multimedia.

b. Be able to discuss and demonstrate, at a higher cognitive level, interactive multimedia applications.

c. Revise the course CO-120, Using Graphics Software, to include an introductory learning module on computer controlled interactive multimedia.

2. Activities

These activities are the responsibility of the course participant. Completion dates are provided in parenthesis.

a. Register the JC participant in the Nebraska Videodisc Symposium training program. The Nebraska Videodisc Symposium is held in Lincoln, Nebraska, on May 21-24, 1990. Because this time period is the break between the spring semester and the summer session, no instruction time is lost. The training session takes place only once a year and in the location specified. (The participant is registered contingent upon approval of this grant.) (May 10, 1990)
b. Prepare for training participation. Texts and information on multimedia are being reviewed daily. Ferris State University and JC are cooperating in the development of learning resources for occupation programs in the West Michigan area. One component of this work, in which the participant is involved and which helps prepare for the training, is the appropriate application of interactive multimedia. (May 21, 1990)

c. Participate in the "Nebraska Videodisc Symposium" training program. The training program is attended with the stated project objectives in mind. The symposium sessions include presentations of the best interactive designs over the past year. Sessions on hardware design aspects, alternative models of videodisc applications, and expert systems are included. The symposium also features an exhibit area with individual presentations. (May 24, 1990)

d. Prepare and present to JC faculty and community members an overview presentation of computer controlled interactive multimedia. The presentation will include demonstration and discussion sections as appropriate. This activity will be incorporated into the second week of summer school activities. (June 22, 1990)

e. Revise the course outline for CO-120, Introduction to Data Processing, to include a learning module which demonstrates computer controlled interactive multimedia. (June 15, 1990)

f. Complete the first draft of the course outline for CO-165, Introduction to Computer
Fast Track Proposal—Multimedia Design Training

Controlled Multimedia. This course outline will include description, student learning objectives, content outline, resources needed and evaluation criteria. (June 15, 1990)

g. Share the Introduction to Computer Controlled Multimedia course outline with division faculty and members of the Curriculum Subcommittee of the Community Council for Academic Computing and solicit their evaluative comments. (June 22, 1990)

h. Prepare a summative evaluation report of the project activities. (June 27, 1990)

3. Occupation Programs

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Ray Hoag is an instructor in and chairperson of JC’s Computer Applications Division. Through his leadership role, the acquired information on computer controlled interactive multimedia will impact the Computer Applications Division as well as other JC academic divisions. The knowledge gained will be valuable in working with practicum students wishing to be involved in multimedia projects. Ray Hoag will be prepared to coordinate and/or facilitate the Introduction to Computer Controlled Multimedia (CO-165) course. These program changes will occur:

a. A learning module will be incorporated into the activities of CO-120, Using Graphics Software.

May 10, 1990
b. Selected students in CO-295, Practicum, will include computer controlled interactive multimedia projects in their activities.

c. A new course, CO-165, Introduction to Computer Controlled Multimedia, will become part of the Computer Applications Division curricula.

d. Computer Applications Division faculty will be better prepared to participate in the development of a computerized graphic arts curriculum.

4. Resources to Be Acquired
   a. Support funds.

5. Existing Resources to Be Utilized
   a. Intel 386 computing system with DVI technology.
   b. Author: Multimedia authoring package with associated reference manuals.
   c. IBM InfoWindow multimedia workstations.
   d. JC contribution of 50 percent of project costs.

B. Evaluation

A summative evaluation report will be provided to the Dean of Occupational Education by June 27, 1990. Evaluation input will be solicited from members of the Curriculum Subcommittee of the Community Council for Academic Computing. Students will be impacted through a new course offering and revised course content in existing classes. These items will be included:
Fast Track Proposal—Multimedia Design Training

1. Copies of or reference to training materials.

2. Outline or minutes from faculty/community presentation.


4. Revised course outline for CO-120, Using Graphics Software.

May 10, 1990
Multimedia DVI Training

PART I. PLAN OF ACTION AND EVALUATION

A. Plan of Action

The purpose of this training proposal is to acquire information leading to the development of a new Grand Rapids Junior College (JC) Computer Applications Division course, Introduction to Computer Controlled Multimedia (CO-165). Successful multimedia projects require a team approach involving individuals with technical; programming and/or authoring; application design; videography; graphic design; audio; and project management skills. One training experience needed to proceed with the course development is authoring with digital video interactive (DVI) technology.

The Curriculum Subcommittee of the Community Council for Academic Computing, the Computer Application Division’s advisory group, has proposed that JC initiate a computerized graphic arts curriculum. The Computer Applications Division curricula now includes at least three courses that would fit into a computerized graphics arts curriculum. These courses are Using Graphics Software (CO-120), Desktop Publishing (CO-162) and Introduction to HyperCard (CO-166). Introduction to Computer Controlled Multimedia (CO-165) is an appropriate addition to this set of courses.

Computing systems of the future will be multimedia oriented. One recent advancement is the development of DVI technology by Intel Corporation to process video information. There are two major problems to overcome in processing video with a computing system. (1) A considerable number of digital bits is needed to store video information. (2) Fast processors are needed to display the video information at the rate of 30 frames per second. Using special processors on a two board set together with compression and decompression algorithms, Intel’s DVI technology provides a solution to video processing. In conjunction with Computer Enhanced Interactive Technology (CEIT) Corporation, Intel provides an Anthology: Multimedia training session on May 14-16, 1990 in Princeton, New Jersey.
Contingent upon approval of this grant, Ray Hoag, Chairperson of the Computer Applications Division, will participate in this training session.

1. Objectives

Upon completion of the interactive multimedia DVI training, the participant will:

a. Complete the development of the new course, CO-165, Introduction to Computer Controlled Multimedia.

b. Be able to discuss and demonstrate, at a higher cognitive level, interactive multimedia applications.

c. Revise the course CO-120, Using Graphics Software, to include an introductory learning module on computer controlled interactive multimedia.

2. Activities

These activities are the responsibility of the course participant. Completion dates are provided in parenthesis.

a. Register the JC participant in the Intel/Ceit Anthology: Multimedia training program offered May 14-16, 1990, in Princeton, New Jersey. Because this time period is the break between the spring semester and the summer session, no instruction time is lost. The training session only takes place in the location specified. (The participant has been preregistered is this activity.) (May 10, 1990)

b. Prepare for training participation. Several multimedia texts have already been reviewed. The DVI technology is being reviewed almost daily. One text that will be revisited is:

Ferris State University and JC are cooperating in the development of learning resources for occupation programs in the West Michigan area. One component of this work, in which the participant is involved and which helps prepare for the training, is the appropriate application of interactive multimedia.

c. Participate in the "Authology: Multimedia" training program. The training program is attended with the stated project objectives in mind. The course includes hands-on development exercises using DVI technology. Functions such as start up, animation, multiple video streams, touch screen control and hooks to C language programs are experienced. (May 16, 1990)

d. Prepare and present to JC faculty and community members an overview presentation of computer controlled interactive multimedia. The presentation will include demonstration and discussion sections as appropriate. This activity will be incorporated into the second week of summer school activities. (June 22, 1990)

e. Revise the course outline for CO-120, Introduction to Data Processing, to include a learning module which demonstrates computer controlled interactive multimedia. (June 15, 1990)

f. Complete the first draft of the course outline for CO-165, Introduction to Computer Controlled Multimedia. This course outline will include description, student learning objectives, content outline, resources needed and evaluation criteria. (June 15, 1990)
g. Share the Introduction to Computer Controlled Multimedia course outline with division faculty and members of the Curriculum Subcommittee of the Community Council for Academic Computing and solicit their evaluative comments. (June 22, 1990)

h. Prepare a summative evaluation report of the project activities. (June 27, 1990)

3. Occupation Programs

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Ray Hoag is an instructor in and chairperson of JC's Computer Applications Division. Through his leadership role, the acquired information on computer controlled interactive multimedia will impact the Computer Applications Division as well as other JC academic divisions. The knowledge gained will be valuable in working with practicum students wishing to be involved in multimedia projects. Ray Hoag will be prepared to coordinate and/or facilitate the Introduction to Computer Controlled Multimedia (CO-165) course. These program changes will occur:

a. A learning module will be incorporated into the activities of CO-120, Using Graphics Software.

b. Selected students in CO-295, Practicum, will include computer controlled interactive multimedia projects in their activities.
Fast Track Proposal--Multimedia DVI Training

c. A new course, CO-165, Introduction to Computer Controlled Multimedia, will become part of the Computer Applications Division curricula.

d. Computer Applications Division faculty will be better prepared to participate in the development of a computerized graphic arts curriculum.

4. Resources to Be Acquired
a. Support funds.

5. Existing Resources to Be Utilized
a. Intel 386 computing system with DVI technology.


c. JC contribution of 50 percent of project costs.

B. Evaluation

A summative evaluation report will be provided to the Dean of Occupational Education by June 27, 1990. Evaluation input will be solicited from members of the Curriculum Subcommittee of the Community Council for Academic Computing. Students will be impacted through a new course offering and revised course content in existing classes. These items will be included:

1. Copies of or reference to training materials.

2. Outline or minutes from faculty/community presentation.

May 10, 1990

4. Revised course outline for CO-120, Using Graphics Software.
Lumena Training (FASTLUME)

PART I. PLAN OF ACTION AND EVALUATION

A. Plan of Action

The purpose of this training proposal is to acquire information leading to the development of a new Grand Rapids Junior College (JC) Computer Applications Division course, Introduction to Computer Controlled Multimedia (CO-165). Successful multimedia projects require a team approach involving individuals with technical; programming and/or authoring; application design; videography; graphic design; audio; and project management skills. One training experience needed to continue with the course development is experience in developing professional level graphics. Lumena is such a package and a version is now available for a Digital Video Interactive (DVI) platform.

Because of television’s impact on our society, quality graphics are now the norm for the graphics component of multimedia applications. A two dimensional graphics package that can portray dimensionality, reflection, light sources, sparkling, anti-aliasing of shapes, and other quality graphic techniques is needed. Lumena is the first professional package to work with DVI technology, the current direction for multimedia development at Grand Rapids Junior College.

Joe Walsh, President of Video Union Inc., a Grand Rapids video production house, is experienced in the design and creation of professional graphics and their subsequent incorporation into video productions. Specifically, he is experienced with the Lumena graphics package and has agreed to develop and lead a Lumena training activity tailored specifically to Grand Rapids Junior College Computer Applications Division faculty needs. With support from this grant, five faculty will participate in this individualized, hands-on training activity. The cost of this tailored training activity for five faculty is less than that for one person if the training was acquired directly from Time Arts, the developer of Lumena.

1. Objectives
Upon completion of the Lumena training, the participants will:

a. Complete the development of the new course, CO-165, Introduction to Computer Controlled Multimedia.

b. Be able to discuss and demonstrate, at a high cognitive level, interactive multimedia applications.

c. Revise the course CO-120, Using Graphics Software, to include an introductory learning module that demonstrates the capabilities of a professional graphics package like Lumena.

2. Activities

Completion dates and responsible person(s) are provided in parenthesis.

a. Identify the JC participants. All full time and selected adjunct faculty will be invited to participate in an initial, three hour overview session. All will not be able to participate because of previous summer commitments. Five faculty will be selected to participate in follow-up, hands-on sessions working individually or in pairs. An additional 6 hours of training per person will be accomplished and be scheduled in 2 hour blocks at convenient times for both faculty and trainer. (July 13, 1990; Ray Hoag)

b. Schedule the training participation. Training teams (pairs) will be identified and schedules determined based on faculty and trainer constraints. (July 16, 1990; Ray Hoag)

c. Participate in the Lumena training program. The training activity is participated in with the stated project objectives in mind. The hands-on component will be accomplished by completing needed projects. Each training team will be given graphic assignments that are needed for a subsequent multimedia
Fast Track Proposal—Lumena Training

presentation involving JC. (July 31, 1990; Participants)

d. Revise the course outline for CO-120, Using Graphics Software, to include a learning module which demonstrates the capabilities of a professional level graphics package. (December 20, 1990; Ray Hoag)

e. Refine and finalize the course outline for CO-165, Introduction to Computer Controlled Multimedia. This course outline will include description, student learning objectives, content outline, resources needed and evaluation criteria. The course outline will be shared with Computer Applications Division faculty and members of the Community Council for Academic Computing to solicit their formative evaluation input. (December 20, 1990; Ray Hoag)

h. Prepare and submit to the Dean of Occupational Education a summative evaluation report of the project activities. (December 20, 1990; Ray Hoag)

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All participants are members of the Computer Applications Division. Ray Hoag is an instructor and division chairperson. Don Meinke is a full time faculty person who specializes in C and Pascal programming, operating systems, and local area networks. Bill Zoellmer, Judy Bezile, and David
Kubik are adjunct instructors who teach introductory computer applications and presentation graphic courses as well as providing services in the academic computing center. The knowledge gained will be valuable in working with division students in general and specifically with those wishing to specialize in computer graphic arts and multimedia. Each participant will be better prepared to teach about presentation graphics. Each is potentially a facilitator for the Introduction to Computer Controlled Multimedia (CO-165) course. These program changes will occur:

a. A learning module will be incorporated into the activities of CO-120, Using Graphics Software.

b. Selected students in CO-295, Practicum, will include computer controlled interactive multimedia projects in their activities.

c. A new course, CO-165, Introduction to Computer Controlled Multimedia, will become part of the Computer Applications Division curricula.

d. Computer Applications Division faculty will be better prepared to participate in the development of a computerized graphic arts curriculum.

4. Resources to Be Acquired

a. Support funds.

5. Existing Resources to Be Utilized

a. Intel 386 computing system with DVI technology.

b. Lumena professional graphics software.
c. JC contribution of 50 percent of project costs (A-2512-J122-P9-JAA).

B. Evaluation

A summative evaluation report will be provided to the Dean of Occupational Education by December 20, 1990. Evaluation input will be solicited from members of the Community Council for Academic Computing. Students will be impacted through a new course offering and revised course content in existing classes. These items will be included:

1. Copies of or reference to training materials.
2. Minutes from Computer Applications Division staff meeting.
4. Revised course outline for CO-120, Using Graphics Software.
5. Minutes from Community Council for Academic Computing meeting at which the CO-165, Introduction to Computer Controlled Multimedia, course outline was discussed.
Appendix K

Fast Track Grant Reports
MEMORANDUM

DATE:       June 23, 1990
TO:         Till Peters
FROM:       Ray Hoag
SUBJECT:    Fast Track Summative Evaluation Report
            Multimedia DVI Training

Training Session
The Authology: Multimedia training session was participated in on May 14-16, 1990, at the Intel training facilities near Princeton, New Jersey. The session was led by Debra VanHaverbeke of CEIT Systems, Inc., of San Jose, California. Attached is the copy of the trip report. The Authology: Multimedia training materials (notebook) is available in my office.

CO-165
Attached is the first draft of the course outline for CO-165, Computer Controlled Multimedia. This course outline will be distributed to division faculty and to the Curriculum Subcommittee of the Community Council for Academic Computing. The anticipation is that this course will be integrated into our proposed multimedia curriculum.

Demonstration
Our Digital Video Interactive (DVI) system is scheduled to arrive in 2 or 3 weeks. Faculty will be introduced to the system individually over the summer. A group demonstration of the Authology: Multimedia package capabilities can be accomplished during the fall 1990 semester.
Fast Track Evaluation--Multimedia DVI Training

The attached report on DVI has been distributed to provide preliminary information.

**CO-120**
Attached is the revised course outline for CO-120, Using Graphics Software (Presentation Graphics). The outline now accommodates a demonstration of the DVI system and commentary on the future direction for presentation graphics.

**Practicum**
A summer practicum student is working on a professional paint package that will interface with Authology: Multimedia.

June 30, 1990
TO: Computer Applications Division Faculty  
Academic Computing Center Staff  

FROM: Ray Hoag  

SUBJECT: Digital Video Interactive Technology (DVITECH)  

Overview  
Many advancements have recently been made with Intel's Digital Video Interactive technology. As Andring and Zimmerman (1990) report, current capability now allows developers to create interactive video software with full-screen, full-motion video, multiple-track audio, high-resolution still video images and dynamic graphics on a single, integrated personal computer platform. Though the price of the technology is expensive, the cost of the development platform has fallen to $19,500, a 22 percent price reduction from time of announcement.

In March of 1989 Intel and IBM agreed to work jointly on some DVI projects. This can provide a more stable development and increase the number of platforms for the technology to use. A technology center is being developed that supports application development, among other objectives. Since the agreement, the board set to use the DVI technology has been simplified from seven boards to two.

Two companies are delivering software products to work with DVI technology. CEIT Systems Inc. has announced an authoring package that facilitates non-technical people in developing applications. Previously, all applications were developed using the C programming language. Time Arts announced a version of
their Lumena professional-level paint program to enable designers to create sophisticated color graphics for DVI applications.

Andring and Zimmerman (1990) reported on activities to develop an international standard for video compression. Having a standard will help to promote the growth of multimedia applications. Intel has pledged to support the new standard while being compatible with their existing compression algorithm.

Other recent DVI advancements reported by Andring and Zimmerman (1990) include a breakthrough in the ability to compress video footage in real time, at 30 frames per second, on a personal computer platform and to transmit the digital signals of compressed video over a token-ring computer network. The real time compression should speed the application development process and alleviate the need for some costly production level compression. The networking can lead to computerized video mail systems or video clips about company products being available at any personal computer on the network. An Intel representative at the Infocomm International 1990 conference (Miller, 1990) observes that DVI technology transforms the personal computer into a personal companion.

**Advantages**

1. Since digital motion video, even though decompression is necessary, is in a digital format, it is easily merged with graphics generated by the computer.

2. DVI is delivered on a medium (such as a CD-ROM) that is regularly and naturally used for the storage of computer data.
3. Applications can be more easily prototyped since edit level motion video can be used.

4. Small changes can be made easily.

5. The delivery medium is cheaper per unit than analog videodisc.

6. For teleconferencing, a live digital video transmission requires less bandwidth.

**Disadvantages**

1. Expensive decoding circuitry is needed to play back a digital motion video application.

2. Massive amounts of data storage is necessary.

3. The choices of authoring packages are limited.

4. There is not a large experience base in what can be done with DVI.

**DVI Numbers**

The resolution for a computer graphic frame is 512 by 400. Therefore, there are 204,800 pixels per frame.

Three bytes are needed per pixel to contain the red, green and blue color information. Thus, 614,400 (204,800 times 3) bytes per frame are required.

Motion video is accomplished by showing 30 frames per second. Thus 18,432,000 (614,400 times 30) bytes are required to show 1 second of motion video.

A CD-ROM device can transfer bytes to a computing system at the rate of 150,000 bytes per second. Therefore, the video must be...
Digital Video Interactive Technology

compressed by a factor of 122.88 to 1 (18,432,000 divided by 150,000).

Oltz (1990) reports that the video must be compressed by a factor of 100 to 1. "There are some economizing measures for transmitting... which are not included here."

Compression

1. One half the resolution in each direction can be used for full motion video. Therefore, a resolution of 256 times 240 would mean 61,440 pixels per frame. Using 3 bytes for red, green, and blue colors would require 184,320 bytes per frame. For 1 second of video (multiply by 30 frames per second) 5,529,600 bytes are required. Dividing by the CD-ROM transfer rate of 150,000 bytes per second, a compression factor of 36.864 to 1 is still required. Oltz (1990) reports a factor of 25 to 1 being required.

2. Another color coding scheme can be used. One byte is required for the brightness of each pixel (61,440). Only every fourth pixel in both directions would require a two byte code for color. Therefore, an additional 7680 bytes are required. Therefore, 69,120 bytes are required to express one frame. Multiplying by 30 frames per second gives 2,073,600 bytes required for 1 second of video. Dividing by the CD-ROM transfer rate of 150,000 bytes per second, a compression factor of 13.824 to 1 is still required.

3. Once the initial frame of video is recorded, only the information that changes from one frame to the next must be recorded. This results in further compression. However, the amount of compression achieved varies depending on the nature of the video.
4. Data resulting from the entire process involving the above techniques is treated as mere numbers and is bit or byte compressed.

Software

There are 3 major software packages that currently involve DVI technology:

1. The C Programming Language.

2. Authology: Multimedia (AM). AM consists of five independent topics in a menu-driven format. The five application windows are procedure, question, objective, author variable, and panel. The panel editor is used to create graphics. The procedure panel states how and in what order the application will be run. The question window facilitates the processing of questions.

3. Lumena. Lumena is a professional level, 2D graphic arts package for creating dynamic color graphics. Tools include capability for drawing, painting, adding text, creating special effects, and animation.

Design

At the 1990 Nebraska Videodisc Symposium several awards were given for outstanding interactive multimedia achievements. Techniques and ideas presented included:

1. Four picture windows were formed on the screen. Video of a person was shown in each window one at a time. Each stopped with a close-up shot of the person. The end result was four close-up pictures of individuals. A technique such as this could be used in directory applications.
2. Building levels were shown. The building levels for the Applied Technology Center could be shown with button spots identified to get "tour" information. An animated arrow could direct users from where they are to where they would like to go within the building.

3. One scene showed a revolving drum on the screen. One can envision the photographs of the individuals in a department revolving around the drum. Users could touch the person's picture as it comes by to obtain the person's office hours and location, for example.

4. Color needs to be used judiciously. For example, red may depict warnings or stopping places. Green may be the right choice.

5. Pop-up, pull-down and pull-up screens are capabilities of multimedia software. To capture a person's telephone number for follow-up on an educational program inquiry, a telephone could pop-up and the person could "dial-in" their telephone number. A similar concept could be used for acquiring a person's name. When a person chooses to see a video clip, a movie house could pop-up.

6. Annimation sequences were used to show the earth changing over time. Often annimation is used to show processes that are difficult or impractical to show using other media. Annimation sequences could be used to show how air circulates in the Applied Technology Center or how a person gets from one location to another, for example.

7. Often a person has to choose to quit an activity. One icon that was used for this
Digital Video Interactive Technology

purpose was a door with an "exit" sign on it. Another icon used was the octagonal stop sign. Successful completion was shown by waving checkered flags.

8. In one application a list of glossary terms was given. The user touches a word in the list and a definition pops onto the screen. A listing of job titles could appear on the Applied Technology Center screen. When a job title is touched, a script describing an appropriate training program or course could be shown.

9. In the Smithsonian application, a person could choose from half-a-dozen language choices. Are there language populations besides English to be serviced in Greater Grand Rapids? Captions were put at the bottom of the screen to enhance the communication with hearing impaired people. Different narrators were used to give variety and to equally represent gender.

10. In one application touch points overlapped. This was necessary to accommodate a busy map. Overlapping touch points was better than small non-overlapping points, in the author's opinion, because it is better for something to happen when a person touches the screen than for nothing to happen.

11. In a museum application students who did not respond after 10 seconds, were given a message asking them to make a response. A similar technique could be used with Applied Technology Center information kiosk users. The messages could be captions or be verbalized.
12. The applications shown emphasized much interactivity. Thirty seconds is a very long time. When picking out video segments, the key is picking the intriguing footage to hold audience interest. The "hot" information should be put up front.

13. Several applications, when showing video segments, used the forward, fast forward, reverse, fast reverse and stop symbol set found on many video recorders. A similar technique could be used for showing video on the Applied Technology Center information kiosk.

14. Menus should be used sparingly, especially when one is trying to capture the users time and interest. As one person put it, "menus are like commercials, a time to take a break." They ask the user the question, "Do you want to stay or go on."
Appendix L

Project Seminar Outline
MEMORANDUM

To: Till Peters
From: Ray Hoag
Subject: Project Seminar Course

Course: CO-293, Project Seminar
Dates: August 30 to December 17, 1990
Semester: Fall 1990 (Semester 1, Academic Year 1990-91)
Description: Students function as team members to accomplish a computer controlled multimedia application. Tasks include authoring, screen design, graphics creation, animation and computer programming with students specializing in one or more areas. Manuals and resource people are consulted as needed to accomplish task objectives.

Outcomes: Given appropriate computing resources, facilitator provided direction, and a conducive learning environment, the student will be able to:

A. Identify a minimum of 5 major tasks that need to be accomplished to create a computer controlled multimedia application.

Given appropriate computing resources, facilitator provided direction, and a conducive learning environment, the student will, at a beginning level in all areas, and
Project Seminar

at a skilled level in a specific area, be able to:

B. Create graphics using a professional paint package.
C. Create animations using an animation package.
D. Create screen designs using graphic design tools.
E. Create application run time segments using the Authology: Multimedia authoring package.
F. Create C programming segments that can be called by the Authology: Multimedia authoring package.

Given facilitator provided direction and a conducive learning environment, the student will be able to:

G. Contribute to the project seminar's success by working cooperatively and collaboratively with seminar participants.

Grades
Oral assessment (Objectives A and G) (25%)
Oral assessment (Beginning level, objectives B-H) (25%)
Individual task projects (Skilled level, one of objectives B-H) (50%)

Rationale
Several students have expressed interest in learning and working with computer controlled multimedia. Community Council for Academic Computing members have encouraged learning programs that are organized in a project
format (students searching out information and resources to accomplish the project's task).

Copies: Bill Zoellmer
Bill Foster
Appendix M

Human Subjects Communications and Forms
Date: November 5, 1990
To: Ray Hoag
From: Mary Anne Bunda, Chair
Re: HSIRB Project Number: 90-10-01

This letter will serve as confirmation that your research protocol, "The Information Kiosk," has been approved under the exempt category of review by the HSIRB. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the approval application.

You must seek reapproval for any changes in this design. You must also seek reapproval if the project extends beyond the termination date.

The Board wishes you success in the pursuit of your research goals.

xc: Ulida Smidchens, Educational Leadership

Approval Termination: November 5, 1991
The Information Kiosk

Narrative

Ferris State University and Grand Rapids Junior College are developing a computerized application that communicates educational information. The application will operate initially in the Applied Technology Center being built on the Grand Rapids Junior College campus. The goal is to use computer technology coupled with graphics, audio, full motion video, and text to distribute information in a compelling, yet understandable, manner. The physical components will be packaged together in an enclosure. The enclosure, with its computer hardware, software and data base, are known as an information kiosk.

During the design phases of the information kiosk, input is being solicited from a variety of potential users of the information kiosk to ascertain that the information provided is appropriate and that a person can readily access the information. In early project stages, a person is escorted through the information using paper mock-ups of computer screens. As the project progresses, actual computer screens are used with the person making choices by interacting with the computer system.

During these interactions an observer is present who records comments about the information, the screen access sequence, the amount of time taken to deal with a screen, any problem encountered in system operation, or other items important to the successful development of the application. The potential user's name is not associated with the comments. Most sessions will conclude within a half hour period. The potential user is encouraged to review the log of observations to clarify information recorded or to delete any inappropriate information recorded. No one is required to participate in these interactions and a person may terminate their participation at any time.

Under these circumstances, are you willing to participate as a potential user of the information kiosk and allow an observer to record your comments and interaction steps?
The Information Kiosk

**Observer Directions**

A potential user of the information kiosk has agreed to have their interactions and comments recorded. Using "Information Kiosk Interaction Log" pages (see attachment), please record information germane to the successful accomplishment of the information kiosk project. Specifically, for each screen accessed, this information includes the name of the screen, the screen order, the amount of time spent making a choice, any system malfunctions, and any comments made about the information or access process. At the conclusion of the interaction session, please review the log with the potential user to clarify any comments, determine rationale for lengthy response times, to add comments, or to delete comments that the potential user does not wish to be recorded.

Only record information germane to the success of the project. This would include information such as represented by the following questions:

- What information was not presented that could have been?
- Were choices to be made unclear?
- Did the use of an icon add to or detract from making a choice?
- Did the consistent use of color facilitate making a choice?
- Were video segments too long?
- What should be included to make the information more interesting?
- What information was unnecessary?
- Etc.

Do not record any information that identifies the potential user. Each potential user must remain anonymous. Specifically, a person's name, student number or any other personal identification is not to be recorded. The project is only interested in the potential users comments and interaction sequence, and is not interested in their personal identity.

Additional log forms can be obtained from the Academic Computing Center office. Completed log forms are to be returned to the Academic Computing office, attention Ray Hoag, Information Kiosk Project Coordinator.
## Applied Technology Center
Ferris State University/Grand Rapids Junior College

### Observer Log Form

<table>
<thead>
<tr>
<th>Screen</th>
<th>Time</th>
<th>Comments and/or Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>
Information Center
Applied Technology Center
Instructions for People Completing Feedback Forms

Please read all of the following instructions.

1. On the feedback form, do not write your name or any other identifying information other than what is asked for under "Demographic Information."

2. Before you respond to the non-demographic questions, you must spend at least a half hour of total time at the Information Center covering at least two different times. There should be at least a half hour between the minimum two times spent at the Information Center. (Suggestion for minimum time: Spend 15 minutes at the Information Center, tour the Applied Technology Center for a half hour, and then spend another 15 minutes at the Information Center. However, if your schedule permits, you are welcome to spend additional time.)

3. Your thoughtful responses are appreciated. Please feel free to cross out, erase, use additional pages, etc. to insure that your feedback says what you want to say. Just insure that your responses can be read by another person.

4. You operate the Information Center by touching the screen. If, for some reason, the screen is black and the Information Center is non-operational, please come to room 212 in the Applied Technology Center to have someone check the operational status.

5. You likely will encounter one unresolved operational problem when you work with the Information Center. Periodically, the beep that sounds when you touch the screen will continue for about 20 seconds. When this happens, there is nothing that you can do except wait until the 20 seconds is up and a voice message is heard. After that you should be able to firmly touch the screen and continue operating the Information Center.

Thank you for taking your time to provide us feedback on the Information Center.
Information Center
Applied Technology Center
Feedback Form

Demographic Information:
Age: (Circle One) Under 18 18-19 20-24 25-29 30-39 40-49 50-59 Over 59
Sex: (Circle One) Male Female
Occupation: (Teacher, Bank Teller, Homemaker, Student, etc.)

Please answer these specific questions:
Is Apple Computer a gold, silver or bronze investor?
Where does the Data Processing Management Association hold their meetings?
What happens in room 240?
How many programs are described for Ferris State University’s College of Technology?

Please answer these general questions:
In your opinion, what is the purpose of the Information Center?

After using the Information Center for at least a half hour, what is your summary of the information that was communicated to you?

(over)
What actions, if any, are you planning as a result of your use of the Information Center?

What, if anything, was confusing to you about your use of the Information Center?

What, as you used the Information Center, did you like?

What, as you used the Information Center, did you not like?

What information, in your opinion, should the Information Center communicate?

What, in your opinion, would make the Information Center better?

What other comments might you have for the people who are working on the Information Center?

What was the total amount of time that you spent at the Information Center?
February 16, 1990

Mr. Dick Wetergreen
Foremost Insurance Company
P.O. Box 2450
Grand Rapids, Michigan 49501

Dear Dick:

In appreciation of Foremost's major support for the Applied Technology Center, Grand Rapids Junior College and Ferris State University, we want to feature your organization in a computer controlled, interactive multimedia application. Your involvement is needed to produce a compelling 20 to 30 second video segment that will portray your organization. This video segment is to be displayed on request at an information kiosk by people engaged in Applied Technology Center activities. Choices are made by touching a display screen.

Grand Rapids Junior College and Ferris State University staff will write the script, do the necessary video graphics production work and integrate the completed segment into the information kiosk application. Foremost's involvement includes providing script information, approving the script, accommodating the acquisition of video, and approval of the final video segment. To begin the script writing process, you are requested to provide the information detailed in the attached "Investor Information Needs" document by March 2, 1990.

For purposes of having a uniform, quality look to the video, arrangements have been made with Grand Rapids Junior College's Media Services Department to do the video work. The Media Services Department has won several awards for their productions.

An information packet on the Applied Technology Center and the Information Kiosk Project is attached. Please feel free to contact me (616 456-4430) if additional information or clarification is needed.

Sincerely,

Ray Hoag
Director, Academic Computing

sjs
Investor Information Needs

To assist the script writing process, responses to these information needs are requested:

What is your organization's philosophy?

When was your organization established? Are there other major organizational milestones that should be featured?

Are there some exact quotes that your organization desires to be in the script?

Which industry does your organization fit within? What is the scope of your business?

What are your business objectives and strategies? What is the growth potential of your business?

What technologies are utilized in your organization? How will these technologies relate to the Applied Technology Center?

Is there a particular message you wish to direct to the application's audience (professionals participating in training activities, traditional students, adult students, visitors, Grand Rapids Junior College and Ferris State University staff)?

What is the importance of the Applied Technology Center to your organization? What does your organization hope will happen as a result of your investment in this facility?

Please attach any annual reports, marketing brochures or other appropriate documents that would enhance the script writing process. Your annotations on these documents would be helpful. Attaching a suggested script would certainly be helpful.
FLYER The anticipation is that the information kiosk would print on request a one page flyer. How should this flyer look? What information should be included? Can your organization's logo be included? Etc.

VIDEO Does your organization have video or computer graphics already created that you would like included in the presentation? How can we access these items?

NARRATE The current plan is to divide narration between male and female voices. Does your organization have any suggestions for narration?

APPROVAL Who in your organization should be contacted for approvals as the script and then the video segment is created?

sjs(invstinf)
To: Don Boyer
   Bob Garlough
   Ruth Kurlandsky
   Paul Prins
   C.J. Shroll

From: Ray Hoag

Subject: ATC Information Kiosk—Program Scripts

Objective: We need to build scripts for each of the curriculum programs to be offered through the Applied Technology Center. You play the initial key role in this process. For each of your programs, these steps are necessary:

Step 1 (You): Provide responses to the items on the attached program information request form. Return to Ray Hoag (JC) or Chuck Bonning (Ferris) by March 15, 1990.

Step 2 (You): Prepare a one page, word processed, double spaced, initial draft script. Return to Ray Hoag (JC) or Chuck Bonning (Ferris) by March 15, 1990.

Step 3 (Writer): Scripts will be edited and put into an appropriate format by Phylis Reyers (JC) and Chuck Bonning/Trish Coyle (Ferris) by March 22, 1990.

Step 4 (You): Through a collaborative effort with the writer and appropriate administrators, review and finalize the program script by March 28, 1990.

Step 5 (You): Submit the finalized script to Ray Hoag (JC) or Chuck Bonning (Ferris) by March 29, 1990.
**Important Note**  As soon as you have completed a task for one program, forward that information so that the next step can be accomplished. Your programs should be forwarded to the next step as each is completed, as opposed to holding information until all your programs are completed.

**Next Steps**  Accomplishing the above steps within the identified time frame is considered important. The anticipation is that a number of video segments will involve students. Because some programs may not be fully operational during the summer, shooting of these shots should be accomplished in April 1990.

**Copies:**  ATC Planning Committee Members
Phylis Reyers
Pat Pulliam
Tina Lockwood
Bruce Lockwood

**Attachment:**  Program Information Form
Program Information Needs

Please identify the program.

Script

To assist the script writing process, responses to these information needs are requested:

Jobs
What are the major job titles that successful program participants will hold? (The anticipation is that a job title directory will be developed. Information kiosk users will be given the option of accessing program information by job title or institution program.)

Tasks
What will successful program participants learn to do as a result of their participation in this program?

Outlook
What is the future employment outlook for successful program participants? Please attach any supporting documents and/or identify appropriate references.

Quotes
Are there some exact quotes to be included in the script?

Salary
What salary range can successful program participants hope to achieve? Is salary range information appropriate to be incorporated in the script? If so, how?

Technologies
What technologies are utilized in this program?
<table>
<thead>
<tr>
<th><strong>Facilities</strong></th>
<th>What facilities are used in support of this program? What is important about these facilities?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Resources</strong></td>
<td>What equipment and software is used in the program? Is it state-of-the-art?</td>
</tr>
<tr>
<td><strong>Instruction</strong></td>
<td>What is unique and interesting about the manner in which instruction is provided in the program? Are team instruction techniques used? What staff background and competencies are important to communicate to potential program participants?</td>
</tr>
<tr>
<td><strong>Audience</strong></td>
<td>Is there a particular audience that will be attracted to the program?</td>
</tr>
<tr>
<td><strong>Convenience</strong></td>
<td>Is the training offered in the program accomplishable in a convenient format and at convenient times?</td>
</tr>
<tr>
<td><strong>Services</strong></td>
<td>What services are available to help program participants be successful?</td>
</tr>
<tr>
<td><strong>Placement</strong></td>
<td>What can be said about the placement of successful program participants? Please identify any supporting references.</td>
</tr>
<tr>
<td><strong>Importance</strong></td>
<td>In rank order, what are the 3 most important things to be communicated about this program?</td>
</tr>
</tbody>
</table>

Please attach any brochures, reports or other appropriate documents that will enhance the script writing process. Annotations on these documents are appreciated.
Program Information Needs

Flyer

The anticipation is that the information kiosk will print on request a one page flyer. Is there an appropriate graphic depicting the program that should be printed? What information should be included? What course information should be included? Which institution services should be included in a directory? Etc.

Video

Is there video or computer graphics already created that can be used in the program presentation? How can these be accessed? Are there successful program participants who can be included in the presentation? What particular video shots or graphics should be included in the program presentation?
TRIP REPORT

PERSON COMPLETING REPORT: Ray Hoag

OTHER PARTICIPANTS: Paul Prins, Assistant Dean, School of Technology
Chuck Bonning, Ferris ATC Information Kiosk Coordinator, School of Technology

DATE(S) OF ACTIVITY: March 28, 1990

LOCATION OF ACTIVITY: Ferris State University, Big Rapids, Michigan

DESCRIPTION OF ACTIVITY: Review Ferris State University script information and identify video shots to be taken.

SIGNIFICANCE OF ACTIVITY TO THE COLLEGE:

Ferris State University and Grand Rapids Junior College need to work well together and communicate often to produce compelling information to be distributed by the Information Kiosk in the Applied Technology Center.

ACTUAL AND ANTICIPATED OUTCOMES AND PRODUCTS, WITH TIMELINES:

1. Chuck Bonning will take script information from the Ferris State University programs and condense them into twenty second scripts for video narration. The scripts will focus on career activities of graduates of the Ferris State University program (April 10, 1990).

2. Chuck Bonning will review script information with Department Chairs by April 15, 1990.

3. Chuck Bonning will review script information with Trish Coyle, Public Relations person at Ferris State University, by April 20, 1990.

4. Chuck Bonning working with Ferris State University staff will identify video shots to be taken to support each Ferris State University script.

5. Bruce Lockwood and/or staff will shoot video on the Ferris State University campus (Thursday, April 26, 1990).

sjs
MEMORANDUM

TO: Bill Boras, Mark Curtis, Steve Hickel, Phil Marcotte, Dick Shaw, Ralph Shields, Bob Spiers, Scott Whitener.
FROM: Chuck Bonning
DATE: March 30, 1990

Thanks again for the help in writing the scripts for the ATC multimedia presentation. Paul Prins and I met with Ray Hoag on Wednesday, Ray is heading up this project. He has a strong background in media and will be helping us coordinate our individual program videos.

The final video of each program will be 20 seconds long—that's right, just 20 seconds. The text material you wrote will become part of the 20 second blurb; the rest will be printed out to the individual viewing the multimedia presentation.

On April 26th a filming crew from Grand Rapids Junior College will be on campus to film our programs. I am sure we will need them to return for more shooting. It will be impossible to do all the filming in one day.

Here is what I need you to do:

1. Make a list of video shots you think would represent your particular program. Ray wants us to concentrate on promoting—in the film—the career an individual will enter after graduating from your program, i.e., automotive manager may be a corporate rep, sales persons, service manager, etc. Therefore, I will concentrate on filming such scenarios.

2. Make a list of places these shots can be taken such as on campus, off campus, etc. If off campus, give me the location. We would like to confine all shooting to the Big Rapids or Grand Rapids area.

3. Send me these lists by Friday, April 6th. Send to: Chuck Bonning, A-C 103. For questions please call me at extension 2358.

Thank you.

CB: jo

cc: Ray Hoag
Paul Prins
Each script is limited to a maximum of 30 seconds. Editing must be done until the script is within this limit. Scripts of 20-30 seconds are ideal for investor recognitions and program descriptions.

Mention of the investor, program or topic name should not be overdone. Mention at the beginning and end of the script is probably appropriate.

A script of 20-30 seconds will usually accommodate three sentences.

The Applied Technology Center should be mentioned once during investor scripts.

Within a 20-30 seconds script, 8-12 scene changes can be accommodated. This will add to a compelling, interesting video piece.
DATE: May 31, 1990
TIME: 5:45 PM

PLEASE DELIVER THIS MESSAGE TO: Dr. Judith Chandler
Media Services
Georgia Center for Continuing Ed.
Fax: 404-542-5990
Voice: 404-542-1226

FROM: Ray Hoag (Computer Applications/Academic Computing)
Fax: 616-456-4830
Voice: 616-456-4430

TOTAL NUMBER OF PAGES: 5 (including this page)

RE: Judy:

Attached are draft scripts for Applied Technology Center, Information Kiosk project. These are four investor recognitions (Old Kent, Rapistan, Steelcase, and Grand Rapids Foundation).

Have some educational program scripts about ready to come your way. Appreciate what you are doing—used most of your suggestions in 3 that I have got back from you. Interested in your reaction to the GR Press script as well.

Appreciated receiving a personal note from you. You do things well.

Ray
FAX TRANSMITTAL

DATE: June 19, 1990
TIME: 11:30 AM

PLEASE DELIVER THIS MESSAGE TO: Tom Mathison
WBCD
Fax: 235-6122
Voice: 616-456-4830

FROM: Ray Hoag (Computer Applications/Academic Computing)
(Fax: 616-456-4830) (Voice: 616-456-4430)

TOTAL NUMBER OF PAGES: 5 (including this page)

RE: Tom:

Sorry that I did not give you these scripts yesterday or talk to you about them.

Here are 4 scripts that I believe that we could use footage from WBDC to support:

JC--Architectural Drafting
JC--Mechanical Drafting
Ferris--Construction Management
Ferris--Facility Management

Looks like we could use several scenes for JC--Architectural Drafting, a few for Ferris--Construction Management, and 1 or 2 for others. As much as possible, we would like representation by gender and ethnics.

Please call if you have questions.

We will plan to be at WBDC at 1:30 PM.

Ray Hoag
**Applied Technology Center**
*Ferris State University/Grand Rapids Junior College*

**Investor Information Needs**

These questions and format are provided to initiate acquisition of information. Any appropriate information may be provided. Another format may be suggested.

**Past**
When was the organization established? Are there major organizational milestones that should be featured? *(Are there archive pictures that could be used in support of major milestones?)*

**Present**
What is the scope of the organization's business? What is the present location(s)?
What is the size of the company (number of employees, sales volume, square footage, etc.)? *(Perhaps some information could be represented with charts.)* What present technologies are utilized? *(Are pictures of technologies available?)*

**Future**
Are there exact quotes that set direction for the future? *(Can a picture of person be included?)*
What are plans for expansion? What are future business objectives, goals, and strategies?
What is the growth potential of the business?

Please attach any annual reports, marketing brochures or other appropriate documents that would enhance the acquisition of information. Annotations on these documents would be helpful and could be the way to convey the above information.
Enclosed is the script for Jet Electronics and Technology as part of the Applied Technology Center, Information Kiosk project, for your approval. Please feel free to edit script and media support suggestions. Getting the script approved in a timely manner will enhance the project's success.

Once the script is approved, I would like to work with you or someone you designate to acquire video or slides to support the script. We would want to use your existing video or slides. If necessary, our photographer could take some 35mm slides. Any video should be as close to the master as possible to ensure quality. For editing of video, we will need a 3/4 inch or beta format.

Ray

March 18, 1992 5:34 PM
GRAND RAPIDS JUNIOR COLLEGE
HOSPITALITY EDUCATION DIVISION
CULINARY ARTS

A 2-Year Program Leading to an Associate Degree

Students studying Culinary Arts at Grand Rapids Junior College participate in a total of eight 8-week laboratory experiences: (1) Skill Development, (2) Bakery, (3) Food Production, (4) Table Service, (5) Pastry, (6) Banquets and Catering, (7) Advanced Food Production and (8) Advanced Table Service. Students operate a public restaurant, "The Heritage," located on the Junior College campus and a campus deli-bakery. Many evening catering functions are the responsibility of sophomore students. Several lecture courses support the laboratory experience.

Job opportunities for trained cooks and chefs are expected to be very good for graduates in the 90's. Graduates find positions in fine dining restaurants, private clubs, resorts, business and industry and with contract food management companies.

This program demands dedication and hard work. About thirty-five hours of class work per week are required in addition to study time.

This program transfers to several universities including Grand Valley State University and Ferris State University. Students interested in transferring should see the Director of Hospitality Education before selecting first semester classes.

Students are required to purchase both kitchen and dining room uniforms in addition to a knife kit and textbooks.

FOR ADDITIONAL INFORMATION: Please call 616/771-3690 or write to:

Robert Garlough, Director
Hospitality Education Division
Grand Rapids Junior College
143 Bostwick Avenue N.E.
Grand Rapids, MI 49503-3295
Appendix O

Scripts
Client: Batts (SCBA0514)  
Project: Information Kiosk

<table>
<thead>
<tr>
<th>AUDIO</th>
<th>SCENE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batts, leading the hanger industry with innovative products and a commitment to service, uses technology as the backbone of product development and manufacturing.</td>
<td>Batts logo with repeated hangers of several types.</td>
</tr>
<tr>
<td>Computer aided design systems, injection molding machines, research laboratories, machine prototyping, creative customer relations and product development teams characterize the Batts environment.</td>
<td>Quick scenes depicting each statement.</td>
</tr>
<tr>
<td>As an associate in the Applied Technology Center, Batts is enthusiastic about contributing to the well being of the West Michigan community.</td>
<td>Batts plant with sign.</td>
</tr>
</tbody>
</table>

(Time: 30 seconds)
**Client**: IBM (SCIB0627) (Chuck Morris-942-3977)
**Project**: Information Kiosk

<table>
<thead>
<tr>
<th>AUDIO</th>
<th>SCENE</th>
</tr>
</thead>
<tbody>
<tr>
<td>As a major investor in the Applied Technology Center, IBM is establishing a partnership that provides state-of-the-art education in support of business and industry.</td>
<td>Signage and/or logo. Video representing partnership—like 3 people shaking hands—one each from IBM, Ferris and JC. CBT and interactive video training scenes.</td>
</tr>
<tr>
<td>American industry must tap the enormous potential of computer-integrated manufacturing, or CIM, to remain competitive.</td>
<td>Quick scenes showing uses of CIM.</td>
</tr>
<tr>
<td>IBM's investment now assures highly-trained, educated, and skilled people for tomorrow's work force.</td>
<td>Show people using technology (several scenes). Fade into IBM logo.</td>
</tr>
<tr>
<td>CIM in higher education is both good business and good citizenship.</td>
<td>(Time: 30 seconds)</td>
</tr>
</tbody>
</table>
Applied Technology Center
Ferris State University/Grand Rapids Junior College

Twenty Second Script

Client: Bissell Inc.
Project: Information Kiosk
Contact: Vicki Coffield (Voice: 616-791-1204, Fax: 616-453-1383)

---

NARRATION

Since 1876 Bissell has stood for quality, dependability and value in millions of households around the world.

Best known as the original manufacturer of the carpet sweeper, Bissell today is an international, diversified manufacturer of homecare, healthcare, and graphic products.

Bissell looks forward to the contributions that the Applied Technology Center will make to the West Michigan community.

---

MEDIA

Bissell logo. Pull from historical footage off corporate video...Rockwell painting.

Early line drawing of product...first sweeper...world map background...fottage of the variety of products that Bissell makes.

Engineering, manufacturing footage showing people looking at processes or products...problem solving activities...close with Bissell logo.

---

March 18, 1992 5:50 PM
The Apple Macintosh, with its graphics-based user interface and intuitive operation, is designed to work the way people work.

Apple Computer makes it easier for people to use a personal computer than to not use a personal computer.

Transforming the way people think, work, learn, and communicate, Apple Computer applauds the advent of the Applied Technology Center.
The Ferris graduate program in Computer Information Systems Management enhances the skills of professionals leading to management or post-secondary education careers.

Areas of study include: data base administration, organizational management, planning and selection of resources, project management, financial planning, policy making, personal computers management, decision support systems, operations research, data communications management, and research methodology.

(Time: 28 seconds)
Client: Ferris—Econ Develop (SCFEMRPC) (Mr. Hamilton, 616-592-3774)
Project: Information Kiosk

---

The Manufacturing Resource and Productivity Center is an economic development outreach of the Ferris College of Technology.

The Center’s mission to improve the competitive edge of Michigan manufacturers is done through two programs—Technology Transfer and the Inventors Center of Michigan.

These programs provide assistance with process improvement, product development, and the evaluation and commercialization of new products. Manufacturers gain access to Ferris State University’s management and technical expertise.

(Time: 30 seconds)
Many students are undecided about a career when they begin college. JC's Career Resource Center assists students in selecting a career goal that matches their personal interests, values, and academic abilities.

When students know their career objectives, JC's Counseling and Academic Support Services Staff assists students in selecting correct courses and scheduling classes. For more information, visit Counseling and Academic Support Services located in the Student Center.

(Time: 28 seconds)
Client: JC - ATT CAD/CAM/CNC (SCJCCADM)
Project: Information Kiosk (Gerald Dawkins--616-771-3600)

**AUDIO**


Because of these quality training programs, JC is an Authorized Training Center for various software packages including AutoCAD.

JC's training helps industrial clients be productive in minimum time. A long term program, developed in conjunction with the National Tooling and Machining Association, identifies and trains advanced programmers.

(Time: 28 seconds)

**SCENE**

JC Applied Technology and Training Center logo with CAD/CAM/CNC written across. Put words on screen with abbreviation (Computer Aided Design (CAD), etc).

Show shots of people doing CAD, CAM, CNC, and multimedia animation. Shot from Autodesk showing AutoCAD signage, training or other representation.

Training shots of groups of 5 to 10 using computers. Banner over National Tooling and Machining Association meeting. Close with JC logo.

August 18, 1990
### Applied Technology Center

Ferris State University/Grand Rapids Junior College.

## Twenty Second Script

**Client:** Building Features—Heritage—First Floor  
**Project:** Information Kiosk  
**Contact:** Tom Mathison (235-6122) & Bob Gelough (771-3690)

<table>
<thead>
<tr>
<th>NARRATION</th>
<th>MEDIA</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Heritage, offering both luncheon and dinner service during the academic year, is both a fine dining, white table cloth restaurant and a laboratory operated by culinary arts students.</td>
<td>Shots of main dining area with white table clothes and table settings (no people), with student staff lined up, and with patrons being served.</td>
</tr>
<tr>
<td>The Heritage features include Willow Court, a beverage management and wine laboratory, and the Barclay room, an expandable dining space seating thirty-six people.</td>
<td>Shot of Willow Court lab and Barclay dining room. Include video of room name plates.</td>
</tr>
<tr>
<td>The main dining area accommodates sixty-four patrons while the executive room provides intimate dining for twelve.</td>
<td>Shots showing capacity of main dining room as well as shots showing executive dining room in use.</td>
</tr>
<tr>
<td>Looking across a terrace used for outdoor receptions, the Heritage provides a unique view of downtown Grand Rapids.</td>
<td>Shot of view from Heritage and gathering on the terrace.</td>
</tr>
</tbody>
</table>
Twenty Second Script

Client: Building Features—Overview—General
Project: Information Kiosk
Contact: Tom Mathison (235-6122) & C.J. Shroll (771-3600)

The Applied Technology Center, an educational facility for high technology training, is a product of the partnership between Grand Rapids Community College, Ferris State University, the State of Michigan, and businesses representing West Michigan.

The five story, poured-in-place concrete building contains 240,000 square feet of space with over 170,000 square feet dedicated to instructional activities on three levels.

Ferris bachelor and master degree technology related programs as well as Grand Rapids Community College Applied Technology and Training, Computer Applications, Hospitality Education, and Technology programs utilize the facility.

Shots of building exterior in different stages of completion. Shots of ground breaking, governor presentation, and cabinet meeting.

Shot of concrete being poured. Shots showing spaciousness. Shots of learning activities.

A collage of Ferris and Grand Rapids Community College program scenes.
Appendix P

Multimedia Resources
Applied Technology Center
Ferris State University/Grand Rapids Junior College

Information Kiosk Multimedia Resources

Video Segments (30 seconds)

Gold Investors (22)

- ABB Robotics (completed)
- American Seating (completed)
- Autodesk (completed)
- Autodie (completed)
- Batts (completed)
- Cascade Engineering (completed)
- Duo-Aire (completed)
- Foremost (completed)
- Grand Rapids Foundation (completed)
- Grand Rapids Press (completed)
- Hobart (completed)
- IBM (completed)
- Lacks Industries (completed)
- Michigan State Government (completed)
- NC Microproducts (completed)
- Old Kent (completed)
- Paragon (completed)
- Prime-Computervision (completed)
- Prince (completed)
- Rapistan (completed)
- Sebastian Foundation (completed)
- Steelcase (completed)

Ferris State University

Services (5)

- Academic Advising (completed)
- Admissions (completed)
- Financial Aid (completed)
- Overview (completed)
- Placement (completed)

College of Technology (9)

- Automotive/Heavy Equipment (completed)
- Construction Management (completed)
- Economic Development (completed)

April 6, 1991

Information Kiosk Multimedia Resources
Electrical/Electronics Engineering (completed)
Facility Management (completed)
HVACR Engineering Technology (completed)
Manufacturing Engineering (completed)
Plastics Engineering (completed)
Product Design Engineering (completed)

College of Education (1)
Secondary Teacher Education (completed)

College of Business (1)
Computer Information Systems Management (completed)

Grand Rapids Junior College

Technology Division (11)
Air Conditioning, Refrigeration and Heating (completed)
Architectural Drafting (completed)
Automated Manufacturing (completed)
Automotive Technology (completed)
Computer Electronics (completed)
Electronics Technology (completed)
Industrial Technology and Tooling (completed)
Mechanical Drafting (completed)
Plastics Manufacturing (completed)
Quality Science (completed)
Welding Technology (completed)

Services (5)
Academic Advising (completed)
Admissions (completed)
Financial Aid (completed)
Overview (completed)
Placement (completed)

Computer Applications Division (4)
Applied Telecommunications (completed)
Computer Applications Technology (completed)
Data Processing (completed)
Course Descriptions (need script)

Hospitality Education Division (2)
Culinary Arts (completed)
Food and Beverage Management (completed)

*Applied Technology and Training (12)*

Aliances (completed)
CAD/CAM/CNC (completed)
Computer Integrated Manufacturing (completed)
Leadership Training (completed)
Local Procurement Office (completed)
Manufacturing Resource Planning (completed)
Microcomputer Training (completed)
Modernization Planning (completed)
Occupational Training (completed)
SPC/Quality Control Training (completed)
Wood Products & Furniture Initiative (completed)
Workforce Project (completed)

**Building Features**

*Special Areas (7)*

Atrium (need script & video)
   (Basement windows, skylight, center piece, elevator, stair, gallery)
Social (need script & video)
Student Entrance (need script & video)
Work Room (need script & video)
Atrium Corridor (need script & video)
Training Area (need script & video)
Food Service (need script & video)
   (equipment, furnishings, draperies)

*Lighting (3)*

Sensors (need script & video)
Natural (need script & video)
Artificial (need script & video)

*HVAC (2)*

Energy (need script & video)
   (insulation, ice storage, windows into fan rooms)
Thermal (need script & video)
   (computerized monitoring, whole building is lab)

*Flooring (6)*

Cement Treatment (need script & video)
Oil Areas (need script & video)
Carpet (need script & video)
Tile (need script & video)
Static Control (need script & video)
Terrazzo (need script & video)

Wall Covering (3)
Glass (need script & video)
  (windows)
Acoustics (need script & video)
Color Scheme (need script & video)
  (paint, epoxy paint)

General (8)
Concrete (need script & video)
  (sand blasting, pouring, architecture of other buildings)
Parking (need script & video)
  (under building, 125 cars, handicap access, gate)
Statistics (need script & video)
  (how long, high, site size, concrete, capacity)
Signage (need script & video)
  (campus external & internal, materials, changeable)
Background (need script & video)
  (Blanchard, ground breaking, publicity, cabinet meetings, master plan)
Furnishings (need script & video)
  (draperies, areas)
Roofing (need script & video)
  (rubber membrane)
Handicapper Access (need script & video)
  (doors, levers)

Communications (3)
Telephone System (need script & video)
Networks (need script & video)
Cabling (need script & video)
  (cable trays, cellular floor deck, fiber optics)

Audiovisual (3)
Presentation Systems (need script & video)
Video Programming (need script & video)
Marker Boards (need script & video)
  (white boards, projection screens)

Video Segments (15-20 seconds, no shooting)
Silver Investors (22)

Allied Finishing (completed--needs approval)
American Culinary Federation (script approved--video shoot scheduled)
Amerikam (need editing)
Apple Computer (completed--needs approval)
Autobond (script approved--need visuals)
Avtec (script approved--need editing)
Bissell (completed and approved)
Carrier Michigan (need script information)
Consumers Power (need editing)
Guardsman Products (completed--needs approval)
Jet Electronics (completed--needs approval)
Mannesmann Demag (script approved--need visuals)
Master Plastic Products (completed--needs approval)
Michigan National Bank (completed--needs approval)
Middleby Company (need script approval and visuals)
NBD (need visuals and editing)
NCR (need visuals and editing)
Nicholas Plastics (need editing)
Smiths Industries (completed--needs approval)
Trane (need editing)
Welbilt Company (need visuals and editing)

Graphic Images

Activities Index
Schroll
Video Wall
Directory Index
Education Main Index (FSU & JC)
Ferris Programs Index
Ferris Technology Programs Index
JC Programs Index
JC Applied Tech & Tmg Index (1)
JC Computer Applications Index
JC Hospitality Education Index
JC Technology Programs Index (1)
JC Technology Programs Index (2)
Pop Up Projection Screen
Telephone
Keyboard
Table of Contents
Book Cover with Ferris Logo
Book Cover with JC Logo (not used)
Small JC Cover (not used)
Book Cover with JC Logo
Gold Investors Index
First Gold Cluster Index
Second Gold Cluster Index
Third Gold Cluster Index
Fourth Gold Cluster Index
Silver Investors Index
First Silver Investor Cluster
Second Silver Investor Cluster
Third Silver Investor Cluster
Fourth Silver Investor Cluster
Roll Down Projection Screen
Bronze Investor Plaque
First Page Set of Organizations
Third Page Set of Organizations
Second Page Set of Organizations
Billboard

Data Bases (3)

Professional Organizations
Activities
Directory

Animations

Classroom Directions
Office Directions
Special Area Directions

Text Presentations (Print Outs)

Gold Investors
Silver Investors
Bronze Investors
Ferris Programs
JC Programs
Building Features
Room Schedules

April 6, 1991
Information Kiosk Multimedia Resources
Building Activities

Hours of Operation

Audio Segments

General

Please touch to select.
To use the book, please touch a chapter heading or a tab.

Activities

Yesterday's activities are not available.

Building Features

Directory

Education/Training

Please enter your telephone number.
Please enter your three digit area code plus your number.
Only ten digits are allowed. Please backspace if you need to correct or touch "done" if you are finished.
Please enter at least three characters for your name.
Please abbreviate your name within twenty characters.

Investors

Organizations
Appendix Q

Videography Communications
TO: Bruce Lockwood  
FROM: Ray Hoag  
SUBJECT: ATC Information Kiosk Videography Schedule (VIDEOSCH)

**Tuesday, June 12, 1990**

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allen Bradley</td>
<td>8:30 Shoot local office-590 32nd St</td>
</tr>
<tr>
<td>Batts</td>
<td>10:00 Shoot at Batts-Zeeland</td>
</tr>
<tr>
<td>JC Auto Tech</td>
<td>Afternoon - Fast Trac - 28th St. near Patterson (Scott Mirkve) - unattended gas station - on 36 St across from Westinghouse - Car scene with car OK followed by stopped beside road with hood up and smoke coming out.</td>
</tr>
<tr>
<td>Ferris Constr</td>
<td>Riverbank condo construction - downtown Grand Rapids</td>
</tr>
</tbody>
</table>

**Monday, June 18, 1990**

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allen Bradley</td>
<td>3/4 inch video masters requested from Tim Reisterer on May 25. Need to shoot local office prior to editing. Script approved--Bruce has.</td>
</tr>
<tr>
<td>Batts</td>
<td>Script approved--Bruce has. Bruce needs to review Batts video. Acquire Batts video. Shoot at Batts prior to editing.</td>
</tr>
<tr>
<td>Cascade Engineering</td>
<td>Script approved--Bruce has.</td>
</tr>
</tbody>
</table>

**Wednesday, June 20, 1990**
<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC &amp; Ferris Tech</td>
<td>1:30PM—Shoot at WBDC in downtown GR</td>
</tr>
<tr>
<td>JC Comp Applic</td>
<td>3:00PM—Shoot at Learning Center</td>
</tr>
</tbody>
</table>

**Wednesday, June 27, 1990**

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>GR Foundation</td>
<td>8:30 AM - Shoot Riverbank Park Model at Art Museum (Jean Kolb--459-4677)</td>
</tr>
<tr>
<td>JC—Cul Arts</td>
<td>10:15 AM - Awards Table - at Heritage Restaurant.</td>
</tr>
<tr>
<td></td>
<td>11:00 AM - G Bldg - Food Show.</td>
</tr>
<tr>
<td>GR Foundation</td>
<td>1:30 PM - Shoot &quot;Paws with a Cause&quot; - on 100th Stree between Eastern and Kalamazoo (yellow building) - training dogs for the hearing impaired.</td>
</tr>
<tr>
<td></td>
<td>3:00 PM - Shoot Inner City Christian Federation housing construction sites (505 Hall SE - most active, 250 Diamond SE - may not be anyone there, 1719 Paris SE - demolition crew active, 1018 Union SE - doing final finishing).</td>
</tr>
</tbody>
</table>

**Monday, July 9, 1990**

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferris--AHM</td>
<td>Busy freeway shot--focus on bull dozer on truck and other heavy equipment. Also, straight on shot of person opening a car hood (person standing at side) so that logo can come out of car engine area.</td>
</tr>
<tr>
<td>JC—Food and Bev</td>
<td>Shots of exteriors with signage (representative of types of organizations where JC students might work). Butterworth Hospital (Health Care), Canteen Foodservice--</td>
</tr>
</tbody>
</table>
ATC Information Kiosk Project--Videography Schedule

463 44th St SE, Wyoming, (Contract Food Service), Pennisular Club--downtown GR (Club), Gibsons--1033 Lake Drive SE and Jose Babushkas--1820 44th SW (Restaurant), Herman Miller--Grandville--on 44th and Wilson(?) (Business and Industry), and St. Mary's Hospital (Institution).

JC--Applied Telcom
Shot of person operating fax machine with paper coming out (JC Bookstore). Shot of satellite dish from top of parking ramp next to condo construction site downtown.

Ferris--Constr Man
Shot of condo construction site looking down from top of parking ramp.

GR Foundation
Shot of riverbank in front of Condo site downtown with river showing. Shots should be taken from bridge and from across river at Eberhardt Center. Shot of garbage along river with river showing in background (Indian Mounds area suggested). Shot from or near Wealthy street bridge of small building with pipes that emit sewage into Grand River. Shot of constructing basin with Grand River in scene near incinerator plant near Monroe.

GR Press
Take a shot of a good looking GR Press newstand with someone taking a paper out.

Lacks Enterprises
Signage at Plastic Plate (4251 Brockton Ct. SE--near airport). Signage and exterior of Lacks Industries at 52nd Street (on north side of 52nd Street just west of M-37 (Broadmoor), across from Steelcase and Zondervan). A shot from distance that would pick up as much apparatus that is located on top of facility is wanted.
### ATC Information Kiosk Project--Videography Schedule

#### Friday, July 13, 1990

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferris Programs</td>
<td>8:30 AM - 12:00 Noon. On Ferris campus--Chuck Bonning has specific schedule.</td>
</tr>
<tr>
<td>Ferris Plastics</td>
<td>2:00 PM - At Cascade Engineering (auto part being removed from mold).</td>
</tr>
<tr>
<td>Lacks Enterprises</td>
<td>3:00 PM - Lacks Center signage and Ford Q1 award (5460 Cascade Road).</td>
</tr>
</tbody>
</table>

#### Wednesday, July 18, 1990

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>GR Press</td>
<td>11:00 AM Shoot at Grand Rapids Press - overview of editorial room - shots of signage inside and outside - shots of newspapers - shot of presses running - shot of ink - shot of rolls coming on trolleys to press line - shots of people doing quality control on newspaper registration - shots of assembly rooms where sections are inserted - shots of loading dock with GR Press trucks. (Deb Kik is contact in Vince Desmond’s office)</td>
</tr>
<tr>
<td>JC--Culinary Arts</td>
<td>3:00 PM Chocolate Show on Campus.</td>
</tr>
</tbody>
</table>

#### Wednesday, July 25, 1990

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC Computer Elect</td>
<td>8:30 AM Jet Electronics--use east drive--park in front--contact is Clark Blanchard (616-949-6600).</td>
</tr>
</tbody>
</table>
### ATC Information Kiosk Project—Videography Schedule

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GR Foundation</strong></td>
<td>10:30 AM 4H Learning Center—1331 Franklin—used to be Grand Rapids School of Bible and Music—at the corner of Benjamin and Franklin—Betty Shelby (616-774-3265).</td>
</tr>
</tbody>
</table>

**Friday, July 27, 1990**

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC Welding</td>
<td>8:30 AM GWI Engineering—on Michigan Street-east of Fuller—west of GRTCU—drive next to GRTCU to back-Bernie TeBos (459-8274).</td>
</tr>
<tr>
<td>JC Mech Draft</td>
<td>11:00 AM Capital Engineering—next to White Distributing on 36th Street—Bill Fritz (452-8972). Mechanical drafting and computer aided design shots.</td>
</tr>
<tr>
<td>IBM</td>
<td>1:30 PM IBM office in Centenial Park. Chuck Morris (942-3977) and Dan Dusnik (942-3957) are contacts. Shots of advanced computer aided design on IBM equipment. Exterior shots of IBM building and signage. Chuck is getting a videodisc with scenes to use.</td>
</tr>
</tbody>
</table>

**Monday, July 30, 1990**

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GR Foundation</strong></td>
<td>11:00 AM Mainstream Day Care Center - Easter Seals - Shots of Day Care Center Kids - 4065 Saladin SE - Off of East Paris near East Hills</td>
</tr>
</tbody>
</table>

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ATC Information Kiosk Project—Videography Schedule

Tennis. Contacts are Sheryl Jones and Jan Holder.

Michigan, State of 1:00 PM Shoot capital and other state buildings in Lansing. Some shots may be used for OKB script as well.

NC Microproducts 3:00 PM Lab Tools--Spring Arbor--127 South--I-94 west--exit 133 Dearing Road--go south past red blinker to yellow blinker--turn right (west) onto King Road--go 3/4 mile--on left hand side across from Dowling Machine--office is back off road--brown office building--7755 King Road--Rob Chenoweth (517-750-1210).

Tuesday, July 31, 1990

Client Notes

GR Press 10:00 Finish shooting old newspapers.

JC Automotive 1:30 PM JC Automotive Facility-shots of electronic equipment hooked to a computing system hooked to a car-Curt Horton-771-3665-Leonard and Ball-NW corner of facility.

GR Press 4:00 PM McCabe Marlow House-shots of people reading GR Press to illustrate theme that "We've Got You Covered"—actors are Bob and Kevin Boyd, Mike Morton, Karen Booegaard and children.

Wednesday, August 1, 1990

Client Notes
ATC Information Kiosk Project—Videography Schedule

JC Financial Aid 3:00 PM Financial Aid Office—shots of entry to Main Building—shots of exterior of Financial Aid Office—shots of students (gender and equity) working with financial aid officer—shots of financial aid counter.

Thursday, August 9, 1990

Client Notes

These shots can be accomplished anytime before we edit the script:

JC Air-Vent-Heat Interior shots of ATC with workers doing sheet metal and other air conditioning, ventilation, and heating tasks. Get shots of signage of work trucks if at site.

JC Arch Draft Shots of workers reading blueprints at ATC site.

JC Welding Shots of workers doing welding at the ATC.

JC Services Campus shots focusing on new signage.

Monday, August 13, 1990

Client Notes

Ferris—Construct Edit—Chuck Bonning

Ferris—Sec Teach Edit—Chuck Bonning

Tuesday, August 14, 1990

Client Notes
<table>
<thead>
<tr>
<th>Ferris--Electrical</th>
<th>Edit - Chuck Bonning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferris--Facility</td>
<td>Edit - Chuck Bonning</td>
</tr>
<tr>
<td>Ferris--CISM</td>
<td>Edit - Chuck Bonning</td>
</tr>
</tbody>
</table>

**Wednesday, August 15, 1990**

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferris--Plastics</td>
<td>Edit - Chuck Bonning</td>
</tr>
<tr>
<td>Ferris--Prod Des</td>
<td>Edit - Chuck Bonning</td>
</tr>
<tr>
<td>Ferris--Automotive</td>
<td>Edit - Chuck Bonning</td>
</tr>
</tbody>
</table>

**Thursday, August 16, 1990**

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferris--Admissions</td>
<td>Edit - Chuck Bonning</td>
</tr>
<tr>
<td>Ferris--Overview</td>
<td>Edit - Chuck Bonning</td>
</tr>
<tr>
<td>Ferris--Energy</td>
<td>Edit - Chuck Bonning</td>
</tr>
<tr>
<td>Ferris--Manuf Eng</td>
<td>Edit - Chuck Bonning</td>
</tr>
</tbody>
</table>

**Friday, August 17, 1990**

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferris--Fin Aid</td>
<td>Edit - Chuck Bonning</td>
</tr>
<tr>
<td>Ferris--Placement</td>
<td>Edit - Chuck Bonning</td>
</tr>
</tbody>
</table>
## ATC Information Kiosk Project—Videography Schedule

<table>
<thead>
<tr>
<th>Ferris—Acad Advis</th>
<th>Edit — Chuck Bonning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lacks Enterprises</td>
<td>Edit—Use existing footage plus</td>
</tr>
<tr>
<td>JC—HVAC</td>
<td>8:30 AM—Shoot at Trane (3353 Lousma Dr off of Roger B. Chaffee, Ed Zylstra, 616-243-5324)—shots of sales people with demonstration heating and air conditioning units—shot of signage.</td>
</tr>
</tbody>
</table>

### Monday, August 20, 1990

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>GR Foundation</td>
<td>Edit—They are supplying some slides—we shoot riverbank park, Inner City Christian Federation (buildings for homeless), Paws with a Cause, 4H Learning Center and Mainstream Day Care Center.</td>
</tr>
<tr>
<td>GR Press</td>
<td>Edit—They are supplying slides—we shoot their site and people reading Press at McCabe-Marlow.</td>
</tr>
</tbody>
</table>

### Tuesday, August 21, 1990

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Seating</td>
<td>Edit—they are supplying footage.</td>
</tr>
<tr>
<td>Steelcase</td>
<td>Edit Steelcase—they are supplying footage.</td>
</tr>
<tr>
<td>JC—Cul Arts</td>
<td>Edit — Bob Garlough (Media Services has footage—have shot food show, trophy display and chocolate works).</td>
</tr>
</tbody>
</table>
### ATC Information Kiosk Project—Videography Schedule

**JC—Food & Bev**  
Edit - Bob Garlough (Media Services has footage—have shot food show, trophy display and chocolate works).

**Wednesday, August 22, 1990**

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM</td>
<td>Edit—video from shot at IBM and from videodisc (captured onto tape).</td>
</tr>
<tr>
<td>NC Microproducts</td>
<td>Edit—they have supplied some—supplement with video shot in Spring Arbor near Jackson.</td>
</tr>
<tr>
<td>JC—Air Cond, Ref</td>
<td>Edit—Don Boyer—existing footage plus inside ATC and at Trane.</td>
</tr>
<tr>
<td>JC—Arch Draft</td>
<td>Edit—Don Boyer—existing video plus WBDC.</td>
</tr>
</tbody>
</table>

**Thursday, August 23, 1990**

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old Kent</td>
<td>Edit—video to be determined.</td>
</tr>
<tr>
<td>Rapistan</td>
<td>Edit—getting video from Wayne Glatz.</td>
</tr>
<tr>
<td>JC—Auto Manuf</td>
<td>Edit—Don Boyer—existing video plus CIM shell shoot.</td>
</tr>
<tr>
<td>JC—Auto Tech</td>
<td>Edit—Don Boyer—existing video plus Fast Trak, car smoking, and unattended gas station.</td>
</tr>
</tbody>
</table>

**Monday, August 27, 1990**

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
</table>

---

August 14, 1990
## ATC Information Kiosk Project—Videography Schedule

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC--Comp Elect</td>
<td>Edit - Don Boyer--existing video plus Jet Electronics.</td>
</tr>
<tr>
<td>JC--Elect Tech</td>
<td>Edit - Don Boyer--existing video plus White Distributing.</td>
</tr>
<tr>
<td>JC--Indust Tech</td>
<td>Edit - Don Boyer--existing video.</td>
</tr>
<tr>
<td>JC--Mech Draft</td>
<td>Edit - Don Boyer--existing video plus Capital Engineering.</td>
</tr>
</tbody>
</table>

**Tuesday, August 28, 1990**

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC--Plastics Manuf</td>
<td>Edit - Don Boyer--existing video plus from major investors.</td>
</tr>
<tr>
<td>JC--Qual Science</td>
<td>Edit - Don Boyer--existing video plus from major investors.</td>
</tr>
<tr>
<td>JC--Weld Tech</td>
<td>Edit - Don Boyer--existing video plus from GWI Engineering.</td>
</tr>
<tr>
<td>JC--Overview</td>
<td>Edit - Pat Pulliam--video to be determined.</td>
</tr>
</tbody>
</table>

**Tuesday, September 4, 1990**

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC--Admissions</td>
<td>Edit - Rich Austin--video to be determined.</td>
</tr>
<tr>
<td>JC--Financial Aid</td>
<td>Edit - Earl Mandeville--video to be determined.</td>
</tr>
</tbody>
</table>
### ATC Information Kiosk Project—Videography Schedule

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC—Comp Applic</td>
<td>Edit—video shot at Comp Applic and video from major investors.</td>
</tr>
<tr>
<td>JC—Data Proc</td>
<td>Edit—video shot at Comp Applic and video from major investors.</td>
</tr>
</tbody>
</table>

#### Wednesday, September 5, 1990

<table>
<thead>
<tr>
<th>Client</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>JC—Applied Tel</td>
<td>Edit—video shot at Comp Applic and video from major investors.</td>
</tr>
<tr>
<td>Prime-Compvision</td>
<td>Edit—video to be determined.</td>
</tr>
<tr>
<td>Prince</td>
<td>Edit—video to be determined.</td>
</tr>
<tr>
<td>Autodesk</td>
<td>Edit—video to be determined.</td>
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#### Thursday, September 6, 1990

<table>
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<tr>
<td>Autodie</td>
<td>Edit—video to be determined.</td>
</tr>
<tr>
<td>Sebastian</td>
<td>Edit—video to be determined.</td>
</tr>
<tr>
<td>JC-Placement</td>
<td>Edit—video to be determined.</td>
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<tr>
<td>JC-Academic Advise</td>
<td>Edit—video to be determined.</td>
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#### Friday, September 7, 1990

<table>
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<th>Notes</th>
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<tbody>
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<td>Editing Date.</td>
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</table>

August 14, 1990
September 25, 1990

Ray Hoag
Director, Academic Computing
Grand Rapids Junior College
143 Bostwick NE
Grand Rapids, MI 49503-3295

Dear Ray,

I would like to commend you and the team at GRJC for producing such a fine video on The Grand Rapids Foundation for the Applied Technology Center's information kiosk. The video is superb and captures the nature of The Foundation very nicely. It is possible that we will take you up on your offer to use the logo portion of the piece if we decide to make a video in the future.

Thank you for including The Grand Rapids Foundation as part of the information kiosk and for taking the time to develop such an excellent video.

Sincerely,

Marcia L. Rapp
Program Officer
Appendix R

Authology Application Modules
Application Module: inf
Author: Ray, Brian, Ken

Application Module Information

Date: Sat Nov 10 12:19:06 1990
Update: Mon Jan 27 13:26:15 1992
Description: ATC Info Kiosk--MAIN

Procedures: 11 Instructions: 106
Questions: 0 Objectives: 0
Panels: 22 Variables: 33

PROCEDURE Name  If Then Arguments

*Notes:
*-------
*Button IDs are cleared when a panel is shown that clears the screen
* (background color is not transparent).
* Remark

*Button IDs-General
*-----------------
* 70 Credits
* 71 Activities Index
* 72 Building Features Index
* 73 Directory Index
* 74 Education/Training Index
* 75 Investors Index
* 76 Professional Organizations Index
* 81 Table of Contents
* 90 Previous Page
* {91 Current Page}
* 92 Next Page
* 99 Start Over
* 999 Inactive Spot Touched
* Remark

*Panels
*------
*These panels must be in sequence because indexing is used:
* CoverFSU through CoverJC
* Remark

*Page Numbers
*----------
*7025 Credits
*7050 Table of Contents
*7100 Activities Index
*7200 Building Features Index
 100 Directory Index

Wednesday Jan 29, 1992
Application Module: inf

PROCEDURE Name If Then Arguments

100 Education Index
*7410 Ferris Services
*7415 Ferris Programs
*7420 Ferris Technology Programs
*7450 JC Services
*7455 JC Programs
*7460 JC Applied Technology and Training Programs
*7462 JC Computer Applications Division Programs
*7464 JC Hospitality Education Division Programs
*7466 JC Technology Division Programs (Part 1)
*7467 JC Technology Division Programs (Part 2)
*7500 Gold Investor Index
*7510 Gold Cluster Number 1
*7511 Gold Cluster Number 2
*7512 Gold Cluster Number 3
*7513 Gold Cluster Number 4
*7520 Silver Investor Index
*7530 Silver Cluster Number 1
*7531 Silver Cluster Number 2
*7532 Silver Cluster Number 3
*7533 Silver Cluster Number 4
*7540 Bronze Investor Index
*7600 Professional Organizations Index

Remark

Application Modules

*Main Application Module (INF)
* Cover
* Credits
* Table of Contents
* Executes Area Modules
* Activites (ACT)
* Building Features (BLD)
* Directory (DIR)
* Education & Training (EDU)
* Investors (INV)
* Professional Organizations (ORG)

Main

Remark

*Variables:

*Quiting_Time
  Time that system will shut down each day.
*Starting_Time
  Time that system will start each day.
*Cover_Flag
  Flag to control cover with Ferris or JC logo.
*  0 Show Ferris logo.
*  1 Show JC logo.
*Time-Flag
  Controls reminder message—screen not touched.
*  0 First time—present reminder
*  1 Second time—start system over

Wednesday Jan 29, 1992
Application Module: inf

PROCEDURE Name If Then Arguments

*Beginning Housekeeping
*-----------------------
*Initialize Variables plus *

Assign $MouseCrs=8
Assign Quiting_Time="22:30:00"
Assign Starting_Time="07:30:00"
Remark 0=FSU 1=GRJC
Assign Cover_Flag=0
Remark

*Future Network Operation
*-------------------------
*Call server system to download new activities, staff information, and other appropriate update information.
*
Operate Process Assign Current_Time=$TimeS
Call Operate
Current_Time<Qui Loop 1,Operate Process
Remark

*Closing Housekeeping
*----------------------
*Close Files Plus
*Send contact file names and telephone numbers to server.
*Shut system down.

Show DownScreen
Exit 0

Operate
Remark

*Attract Mode
*-----------
*Toggles covers between Ferris and JC.
*Choose attract technique.
*
Show Cover
Toggle Cover

Assign Current_Page=0
Show CoverATC FSU[Cover_Flag]
Assign Cover_Flag=!Cover_Flag
Assign $AniStat=0
Call Contents
Return 0

Contents
Remark

*Panel ID: 81
*---------
*Buttons:
*--------
*71 Activities
*72 Building Features
*73 Directory of Rooms and People
*74 Education & Training Programs (Ferris & JC)
Application Module: inf  Author: Ray, Brian, Ken

PROCEDURE Name If Then Arguments

; Investors (Gold, Silver and Bronz)
*75 Professional Organizations
*

Start Contents
Assign Page_Number=7050
Call Page Setup
Page_Turn=="F" Show Contents1F
!$Also Show Contents1B
Show Contents2

Show Contents
$InpID==99 Goto End Contents
$InpID==999 Goto Show Contents
$InpID==90 Assign $InpID=99
$InpID==92 Assign $InpID=71
$InpType==2 Goto Start Cont Case
$InpType!=1 Goto End Contents
$InpID>=171&&$In Assign $InpID=$InpID-100
Assign CaseIndex=$InpID-70
Case CaseIndex, EndContCase
Call Credits
Call Activities
Call Features
Call Directory
Call Education/Trng
Call Investors
Call Organizations

Start Cont Case $InpID>=171&&$In
Assign $InpID=$InpID-100
Assign CaseIndex=$InpID-70
Case CaseIndex, EndContCase
Call Credits
Call Activities
Call Features
Call Directory
Call Education/Trng
Call Investors
Call Organizations

EndContCase $RetVal>=71&&$Re Assign $InpID=$RetVal
$Also Goto Start Cont Case
$RetVal==81 Goto Start Contents
Return 0

End Contents

Page Setup
Remark

*Purpose:
*--------
*Set Time_Flag to zero (0).
*Replace Previous_Page with what was the Current_Page.
*Replace Current_Page with the specified Page_Number.
*Set Page_Turn to the appropriate value.
* "F" - turn page forward (wipe right to left)
* "B" - turn page backward (wipe left to right)
*
Assign Time_Flag=0
Assign Previous_Page=Current_Page
Assign Current_Page=Page_Number
Current_Page>Pre
 Assign Page_Turn="F"
!$Also Assign Page_Turn="B"
Return 0

Credits
Assign Page_Number=7025

Wednesday Jan 29, 1992

Page 4
Application Module: inf

PROCEDURE Name If

Activities

Page_Turn=="F"
!$Also

End Active

Features

Page_Turn=="F"
!$Also

End Features

Directory

Page_Turn=="F"
!$Also

End Direct

=\n
*Panel ID: 74
*-----------
*Buttons:
*-------
*100-xxx Ferris and JC Programs
*
*Panels:
*-------
*These panels must be in sequence because indexing is used:
*Ed000 XXX through Edxxx XXX
*
*Variables:
*--------
*Program_Index
*
* Index (which program is active)
* The program index will be stored in a file.
* A follow-up C language program will use a table to convert the numerical index to the actual program name. For example, index 0 will convert to Ferris Academic Advising.
*
*Program_Count
*
* Total number of programs.
* 0 through value of Program_Count
*

Assign Page_Number=7100
Call Page.Setup
Show ActiveF
Show ActiveB
Execute ACT
Return $RetVal

Assign Page_Number=7200
Call Page.Setup
Show FeatIndexF
Show FeatIndexB
Execute BLD
Return $RetVal

Assign Page_Number=7300
Call Page.Setup
Show DirectoryF
Show DirectoryB
Execute DIR
Return $RetVal

Remark

be in sequence because indexing is used:
Edxxx XXX through
Index (which program is active)
The program index will be stored in a file.
A follow-up C language program will use a table to convert the numerical index to the actual program name. For example, index 0 will convert to Ferris Academic Advising.
Total number of programs.
0 through value of Program_Count

Assign Page_Number=7400
Call Page.Setup

Wednesday Jan 29, 1992
Application Module: inf

PROCEDURE Name If Then Arguments
Page_Turn=="F" Show Education Ind1F
!$Also Show Education Ind1B
Execute EDU
Return $RetVal

End Education
Investors

*Page 7500
*-------
*Choosing button ID 75 (investors from the table of contents or
*investor tab from any page) brings user to this page.
*
*Buttons:
*-------
*100-199 Gold Investors
*200-299 Silver Investors
*
*Panels:
*-------
*These panels must be in sequence because indexing is used:
*GoldInd1 through GoldInd2
*Gold00 XXX through Gold99 XXX
*
*Variables:
*-------
*Gold_Cluster Index (which gold cluster is active)
*Gold_Count Total number of gold investors.
0 through value of Gold_Count
*Gold_Investor Index (which gold investor is active)

*Start Investors
Page_Turn=="F"
!$Also
Assign Page_Number=7500
Call Page Setup
Show Investor Ind1F
Show Investor Ind1B
Execute INV
Return $RetVal

End Gold
Organizations
Page_Turn=="F"
!$Also
Assign Page_Number=7600
Call Page Setup
Show ProfOrg1F
Show ProfOrg1B
Execute ORG
Return $RetVal

QUESTION Name Evaluation Try Points Panel

OBJECTIVE Name P% #Qs QPos OPts OPos

AUTH-VAR Name Type Value

Wednesday Jan 29, 1992
AUTH-VAR Name  Type  Value
Optioning_Time  Str  22:30:00
Starting_Time   Str  07:30:00
Current_Time    Str  18:19:34
Flyer_Message   Str
Temp_String     Str
Cover_Flag      Int  0
Time_Flag       Int  1
Page_Turn       Str  F
Current_Page   Int  7050
Previous_Page  Int  0
Page_Number     Int  7050
Gold_Cluster   Int  0
Gold_Investor  Int  0
Silver_Cluster Int  0
Silver_Count   Int  0
Silver_Investor Int  0
CaseIndex       Int  0
InpID           Int  0
Gold_Count      Int  0
Program_Count   Int  0
Program_Index   Int  0
Capture_Flag    Int  0
ShowCaseIndex   Int  0
Time_Out        Str
Phone_Message   Str
one_Number      Str
one_Count       Int  0
Alpha           Str
Name            Str
Name_Count      Int  0
Organ_Cluster  Int  0
Organ_Index     Int  0
Organ_Count     Int  0

PANEL Name  Fm,Res  Obj
CoverATC FSU  9,512x480  8
CoverATC GRCC 9,512x480  7
CoverJC little 16,512x480  5
Remind Book   16,512x480  2
Content Remind 9,512x480  4
Contents1F   16,512x480  1
Contents1B   16,512x480  1
Contents2   16,512x480  38
ActiveF   16,512x480  1
ActiveB   16,512x480  1
FeatIndxF  16,512x480  2
FeatIndxB  16,512x480  2
DirectoryF  16,512x480  2
DirectoryB  16,512x480  2
Fducation Ind1F  16,512x480  1

Wednesday Jan 29, 1992
<table>
<thead>
<tr>
<th>PANEL Name</th>
<th>Fm,Res</th>
<th>Objs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location Ind1B</td>
<td>16,512x480</td>
<td>1</td>
</tr>
<tr>
<td>Investor Ind1F</td>
<td>16,512x480</td>
<td>1</td>
</tr>
<tr>
<td>Investor Ind1B</td>
<td>16,512x480</td>
<td>1</td>
</tr>
<tr>
<td>ProfOrg1F</td>
<td>16,512x480</td>
<td>1</td>
</tr>
<tr>
<td>ProfOrg1B</td>
<td>16,512x480</td>
<td>1</td>
</tr>
<tr>
<td>Coming Soon</td>
<td>16,512x480</td>
<td>14</td>
</tr>
<tr>
<td>DownScreen</td>
<td>16,512x480</td>
<td>1</td>
</tr>
</tbody>
</table>
Application Module: EDU          Author: Ray, Brian, Ken

Application Module Information

  Date: Sat Nov 10 12:19:06 1990
  Description: Information Kiosk Presentation
  Procedures: 18   Instructions: 403
  Questions: 0     Objectives: 0
  Panels: 92       Variables: 25

PROCEDURE Name If Then Arguments

*Notes:
*-------
*Button IDs are cleared when a panel is shown that clears the screen
*   (background color is not transparent).
*   Remark

*Button IDs-General
*-------------------
*  70 Credits
*  71 Activities Index
*  72 Building Features Index
*  73 Directory Index
*  74 Education/Training Index
*  75 Investors Index
*  76 Professional Organizations Index
*  81 Table of Contents
*  90 Previous Page
*   (91 Current Page)
*  92 Next Page
*  99 Start Over
*  999 Inactive Spot Touched
*
Main

*Variables:
*--------
*Time-Flag Controls reminder message--screen not touched.
*  0 First time--present reminder
*  1 Second time--start system over
*   Remark

*Beginning Housekeeping
*----------------------
*Initialize Variables plus
*
Assign Program_Count=49

Wednesday Jan 29, 1992
Application Module: EDU

Author: Ray, Brian, Ken

PROCEDURE Name If
Then Arguments

Education/Trng
Assign Alpha="ABCDEFGHIJKLMNOPQRSTUVWXYZ"
Remark

*Panel ID: 74
*----------------
*Page 7400
*----------------
*Buttons:
*--------------
*100-xxx Ferris and JC Programs
*
*Panels:
*-----------
*These panels must be in sequence because indexing is used:
*Ed000 XXX through Edxxx XXX
 *
*Variables:
*-----------
*Program_Index
* Index (which program is active)
* The program index will be stored in a file.
* A follow-up C language program will use a
* table to convert the numerical index to the
* actual program name. For example, index 0
* will convert to Ferris Academic Advising.
* 
*Program_Count
* Total number of programs.
* 0 through value of Program_Count

Start Education
Assign Current_Page=0
Assign Page_Number=7400
Call Page Setup
Previous_Page==0 Goto Education Index
Page_Turn=="F" Show Education IndF
!$Also Show Education IndB
Show Education IndV

Education Index

$InpID==92 Assign $InpID=60
$InpID==90 Assign $InpID=73
$InpID>999 Goto End Education
$InpID==999 Goto Education Index
$InpType==2 Goto Start Educ Case
$InpType1=1 Goto End Education
Time_Flag==1 Goto End Education
Time_Flag==0 Show Reminder
Assign Time_Flag=1
Goto Education Index

Start Educ Case $InpID==60 Call Ferris Programs
$InpID==61 Call JC Programs
$InpID>100 Goto End Education
Assign Program_Index=$InpID-100
Also Call Program Show
$RetVal==1||$Ret Goto Start Education
$RetVal==74 Goto Start Education
$RetVal==60||$Ret Goto Start Educ Case

wednesday Jan 29, 1992

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Application Module: EDU

PROCEDURE Name If Then Arguments

id Education Exit $InpID
Page Setup Remark

Purpose:

--

*Set Time_Flag to zero (0).
*Replace Previous_Page with what was the Current_Page.
*Replace Current_Page with the specified Page_Number.
*Set Page_Turn to the appropriate value.
* "F" - turn page forward (wipe right to left)
* "B" - turn page backward (wipe left to right)

Assign Time_Flag=0
Assign Previous_Page=Current_Page
Assign Current_Page=Page_Number
Current_Page>Pre Assign Page_Turn="F"
 !$Also Assign Page_Turn="B"
Return 0

Ferris Programs
Start Ferris
Page_Turn="F" Assign Page_Number=7415
Call Page Setup
 !$Also Show Ferris ProIndF
Show Ferris ProIndB
Show Ferris ProIndV

Ferris Index
$InpID=90 Assign $InpID=74
$InpID=92 Assign $InpID=40
$InpID<>71&&!$Inp Goto End Ferris
$InpID=999 Goto Ferris Index
$InpType=2 Goto Start FSU Case
$InpType!=1 Goto End Ferris
Time_Flag=1 Assign $InpID=74
 !$Also Goto End Ferris
Time_Flag=0 Assign Time_Flag=1
Show Reminder
 !$Also Goto Ferris Index
Goto FSU Tech Prog

Start FSU Case
$InpID=40 Call FSU Tech Prog
$InpID=100&&!$In Assign Program_Index=$InpID-100
 !$Also Call Program Show
$RetVal>71&&!$Re Goto End Ferris
$RetVal=61 Goto End Ferris
 Goto Start Ferris
Return $InpID

End Ferris
FSU Tech Prog
StartFerrTech
Assign Page_Number=7420
Call Page Setup
 Page_Turn="F" Show Ferris TechF
 !$Also Show Ferris TechB
Show Ferris TechV

FerrTechIndex
$InpID=90 Assign $InpID=60
 !$Also Goto EndFerrisTech
$InpID=92 Assign $InpID=61

Wednesday Jan 29, 1992
Application Module: EDU  Author: Ray, Brian, Ken

PROCEDURE Name | If | Then | Arguments
---|---|---|---
| $Also | Goto | EndFerrisTech |
|$InpID>=71&&$InpID==999 | Goto | FerrTechIndex |
|$InpID==2 | Goto | FerrTechCase |
|$InpType==1 | Goto | EndFerrisTech |
| Time_Flag==1 | Goto | EndFerrisTech |
| Time_Flag==0 | Show | Reminder |

FerrTechCase | $InpID>=100&&$InpID==999 | Assign | Program_Index=$InpID-100 |
| $Also | Call | Program_Show |
| $RetVal>=71&&$RetVal==2 | Goto | EndFerrisTech |

EndFerrisTech | Return | $InpID |

JC Programs
Start JC | Assign | Page_Number=7455 |
| Call | Page_Setup |

JC Index | $InpID==90 | Assign | $InpID=74 |
| $InpID==92 | Assign | $InpID=40 |
| $Also | Goto | Start JC Case |
| $InpID>=71&&$InpID==999 | Goto | End JC |
| $InpType==2 | Goto | Start JC Case |
| $InpType==1 | Goto | End JC |
| Time_Flag==1 | Goto | End JC |
| Time_Flag==0 | Show | Reminder |
| Assign | Time_Flag=1 |
| Goto | JC Index |

Start JC Case | $InpID>=40&&$InpID==90 | Assign | CaseIndex=$InpID-40 |
| Case | CaseIndex,End JC Case |
| Call | JC AT&T1 |
| Call | JC AT&T2 |
| Call | JC CompApplic |
| Call | JC HospEd |
| Call | JC Tech1 |
| Call | JC Tech2 |

End JC Case | $InpID>=40&&$InpID==90 | Goto | Start JC Case |
| $RetVal>=71&&$RetVal==2 | Goto | End JC |

End JC | Return | $InpID |

JC AT&T1
StartJCAT&T1 | Assign | Page_Number=7460 |
| Call | Page_Setup |
| !$Also | Show | JC AT&T1F |
| Show | JC AT&T1B |

JCAT&TIndex
$InpID==90 | Assign | $InpID=61 |
| $Also | Goto | EndJCAT&T1 |

Wednesday Jan 29, 1992
PROCEDURE Name If Then Arguments

$InpID==92 Assign $InpID=41
$Also Goto EndJcAT&T1
$InpID>=71&&$Inp Goto EndJcAT&T1
$InpID==999 Goto JcAT&TIndx1
$InpType==2 Goto JcAT&TCase1
$InpType!=1 Goto EndJcAT&T1
Time_Flag==1 Goto EndJcAT&T1
Time_Flag==0 Show Reminder
Assign Time_Flag=1
Goto JcAT&TIndx1

JcAT&TCase1 $InpID>=100&&$In Call Program_Show
$Also Assign Program_Index=$InpID-100
$RetVal>=71&&$Re Goto EndJcAT&T1
Goto RestartJcAT&T1
Return $InpID

EndJcAT&T1

StartJcAT&T2
Page_Turn=="F" Assign Page_Number=7461
 Call Page_Setup
!$Also
 Show JC ATT2F
 Show JC ATT2B
 Show JC ATT2V

JcAT&TIndx2
$InpID==90 Assign $InpID=40
$Also Goto EndJcAT&T2
$InpID==92 Assign $InpID=42
$Also Goto EndJcAT&T2
$InpID>=71&&$Inp Goto JcAT&TIndx2
$InpID==999 Goto JcAT&TCase2
$InpType==2 Goto JcAT&TCase2
$InpType!=1 Goto EndJcAT&T2
Time_Flag==1 Goto EndJcAT&T2
Time_Flag==0 Show Reminder
Assign Time_Flag=1
Goto JcAT&TIndx2

JcAT&TCase2 $InpID>=100&&$In Assign Program_Index=$InpID-100
$Also Call Program_Show
$RetVal>=71&&$Re Goto EndJcAT&T2
Goto RestartJcAT&T2
Return $InpID

EndJcAT&T2

JC CompApplic
StartJCCompApp
Page_Turn=="F" Assign Page_Number=7465
Call Page_Setup
!$Also
 Show JC CompF
 Show JC CompB
 Show JC CompV

JcCompAppIndx
$InpID==90 Assign $InpID=41
$Also Goto EndJcCompApp
$InpID==92 Assign $InpID=43
$Also Goto EndJcCompApp
$InpID>=71&&$Inp Goto EndJcCompApp
$InpID==999 Goto JcCompAppIndx
$InpType==2 Goto JcCompAppCase
### Application Module: EDU

**Author:** Ray, Brian, Ken

#### PROCEDURE Name

<table>
<thead>
<tr>
<th>If</th>
<th>Then</th>
<th>Arguments</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\text{InpType}$ != 1</td>
<td>Goto $\text{EndJcCompApp}$</td>
<td></td>
</tr>
<tr>
<td>$\text{Time_Flag}$ == 1</td>
<td>Goto $\text{EndJcCompApp}$</td>
<td></td>
</tr>
<tr>
<td>$\text{Time_Flag}$ == 0</td>
<td>Show Reminder</td>
<td>$\text{Assign Time_Flag}$ = 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>$\text{Goto JcCompAppIndx}$</td>
</tr>
</tbody>
</table>

#### JcCompAppCase

- $\text{InpID}$ >= 100 & $\text{InpID}$
  - Assign Program_Index = $\text{InpID}$ - 100
  - Call Program_Show
- $\text{RetVal}$ == 71 & $\text{RetVal}$
  - Goto $\text{EndJcCompApp}$

#### EndJcCompApp

- Jc Hosp Ed
- StartJcHospEd
  - Assign Page_Number = 7
  - Call Page Setup
    - Page_Turn == "F"
      - Show JC Hosp F
      - $\text{Also}$
        - Show JC Hosp B
        - Show JC Hosp V
    - $\text{Also}$
      - Show JC Hosp Ed
      - $\text{Assign Time\_Flag}$ = 1

#### JcHospIndex

- $\text{InpID} = 90$
  - Assign $\text{InpID} = 42$
- $\text{Also}$
  - Goto $\text{EndJcHospEd}$
- $\text{InpID} = 92$
  - Assign $\text{InpID} = 44$
- $\text{Also}$
  - Goto $\text{EndJcHospEd}$
- $\text{InpID} >= 71$ & $\text{InpID}$
  - Goto $\text{EndJcHospEd}$
- $\text{InpID} = 999$
  - Goto JcHospIndx

#### JcHospCase

- $\text{InpID} >= 100$ & $\text{InpID}$
  - Assign Program_Index = $\text{InpID}$ - 100
  - Call Program_Show
- $\text{RetVal} >= 71$ & $\text{RetVal}$
  - Goto $\text{StartJcHospEd}$

#### EndJcHospEd

- JC Tech 1
  - Assign Page_Number = 7
  - Call Page Setup
    - Page_Turn == "F"
      - Show JC Tech 1F
      - $\text{Also}$
        - Show JC Tech 1B
        - Show JC Tech 1V
    - $\text{Also}$
      - Show JC Tech 1 Ed
      - $\text{Assign Time\_Flag}$ = 1

#### JcTechIndx

- $\text{InpID} = 90$
  - Assign $\text{InpID} = 43$
- $\text{Also}$
  - Goto $\text{EndJcTech1}$
- $\text{InpID} = 92$
  - Assign $\text{InpID} = 45$
- $\text{Also}$
  - Goto $\text{EndJcTech1}$
- $\text{InpID} >= 71$ & $\text{InpID}$
  - Goto $\text{EndJcTech1}$
- $\text{InpID} = 999$
  - Goto JcTechIndx
- $\text{InpType} = 2$
  - Goto JcTechCase 1
- $\text{InpType} = 1$
  - Goto $\text{EndJcTech1}$
  - $\text{Time\_Flag}$ = 1
  - Show Reminder
    - $\text{Assign Time\_Flag}$ = 1
    - Goto $\text{JcTechIndx}$

---

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Application Module: EDU  Author: Ray, Brian, Ken

PROCEDURE Name | If | Then | Arguments
--- | --- | --- | ---
cTechCase1 | $\text{InpID} \geq 100 \land \text{InpID} \geq 100$ Assign | Program Index = $\text{InpID} - 100$
 | $\text{Also}$ | Call | Program Show
 | $\text{RetVal} \geq 71 \land \text{RetVal} \geq 71$ Goto | EndJC Tech1
 | $\text{Also}$ | Goto | RestartJC Tech1
EndJC Tech1 | Goto | $\text{InpID}$
JC Tech2 | Return | $\text{InpID}$
RestartJC Tech2 | Assign | Page Number = 7476
 | Call | Page Setup
JC TechIndx2 | Page Turn = "F" | Show | JC Tech2F
 | $\text{Also}$ | Show | JC Tech2B
 | $\text{Also}$ | Show | JC Tech2V
 | $\text{InpID} = 90$ Assign | Program Index = $\text{InpID} = 44$
 | $\text{Also}$ | Goto | EndJC Tech2
 | $\text{InpID} = 92$ Assign | Program Index = $\text{InpID} = 75$
 | $\text{Also}$ | Goto | EndJC Tech2
 | $\text{InpID} \geq 71 \land \text{InpID} \geq 71$ Goto | EndJC Tech2
 | $\text{Also}$ | Goto | EndJC Tech2
 | $\text{InpID} = 999$ Goto | JC Tech2 Case 2
 | $\text{InpType} = 2$ Goto | JC Tech2 Case 2
 | $\text{InpType} \neq 1$ Goto | EndJC Tech2
 | $\text{Time_Flag} = 1$ Goto | EndJC Tech2
 | $\text{Time_Flag} = 0$ Show | Reminder
 | Assign | Time_Flag = 1
 | Goto | EndJC Tech2
JC Tech2 Case 2 | $\text{InpID} \geq 100 \land \text{InpID} \geq 100$ Assign | Program Index = $\text{InpID} - 100$
 | $\text{Also}$ | Call | Program Show
 | $\text{RetVal} \geq 71 \land \text{RetVal} \geq 71$ Goto | EndJC Tech2
 | $\text{Also}$ | Goto | RestartJC Tech2
EndJC Tech2 | Return | $\text{InpID}$
Program Show | Remark | $\text{InpID}$

*Buttons:

*1 Continue
*2 Print Flyer
*3 Enter Phone Number and Name

*Variables:

*Flyer Message | After flyer is printing, cover icon with "Printing."
*Phone Message | After phone number and name are given, say "Thank You."

* Show Program | Assign | Capture_Flag = 0
 | Assign | Time_Flag = 0
 | Assign | Flyer Message = ""
 | Assign | Phone Message = ""
 | Show | Ed000 FS Advise[Program Index]
ShowProgramSub | $\text{InpID} = 1$ Goto | End Prog Show
 | $\text{InpType} = 2$ Goto | Show Case
 | $\text{InpType} \neq 1$ Goto | End Prog Show
 | $\text{Time_Flag} = 1$ Goto | End Prog Show
 | $\text{Time_Flag} = 0$ Show | Reminder

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PROCEDURE Name If Then Arguments

Assign Time_Flag=1
Call PickProgName
Show Edimage
Goto ShowProgramSub

Assign ShowCaseIndex=$InpID-2
Case ShowCaseIndex,EndShowCase
Call Education Flyer
Call Phone and Name
Assign Time_Flag=0
Call PickProgName
Show Edimage
Goto ShowProgramSub
Return $InpID

PickProgName

*Purpose
*-------
The institution and program name is selected based on the program
chosen. These entries must be in the same order as program panels.
Program_Index is used by the case construct to select the correct
program. Prg_String is of the format INNNNNNNNNNNNNNNNNNNNNNNNN
where I for institution is either F for Ferris or J for JC and N
for program name is the specific educational program or service
area. Prg_String must be a 26 character string—1 character for
the institution and 25 characters for the program name.

Case Program_Index,EndPickName
Assign Prg_String="FAcademic Advis
Assign Prg_String="JAcademic Advis
Assign Prg_String="FAcademics
Assign Prg_String="JAdmissions
Assign Prg_String="FFinancial Aid
Assign Prg_String="JFinancial Aid
Assign Prg_String="FJob Placement
Assign Prg_String="JJob Placement
Assign Prg_String="FOverview
Assign Prg_String="JOverview
Assign Prg_String="FComputer Infor
Assign Prg_String="FEconomic Devel
Assign Prg_String="FTeacher Educat
Assign Prg_String="FAuto & Heavy E
Assign Prg_String="FConstruction M
Assign Prg_String="FHVAR Engineeri
Assign Prg_String="FElectronics En
Assign Prg_String="FProduct Design
Assign Prg_String="FFacilities Man
Assign Prg_String="FManufacturing
Assign Prg_String="FPlastics Engin
Assign Prg_String="JAir Cond, Refr
Assign Prg_String="JArchitectural
Assign Prg_String="JAutomated Manu

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PROCEDURE Name If Then Arguments

Assign Prg_String="JAutomotive Tec
Assign Prg_String="JComputer Elect
Assign Prg_String="JElectronics Tec
Assign Prg_String="JIndustrial Tec
Assign Prg_String="JCulinary Arts
Assign Prg_String="JFood-Beverage
Assign Prg_String="JApplied Teleco
Assign Prg_String="JComputer Appl.
Assign Prg_String="JData Processin
Assign Prg_String="JComputer Appli
Assign Prg_String="JMechanical Dra
Assign Prg_String="JPlastics Manuf
Assign Prg_String="JQuality Scienc
Assign Prg_String="JWelding Techno
Assign Prg_String="JAlliances
Assign Prg_String="JCAD/CAM/CNC
Assign Prg_String="JComputer Integ
Assign Prg_String="JLeadership Tra
Assign Prg_String="JLocal Procurem
Assign Prg_String="JManf. Resource
Assign Prg_String="JMicrowave Computer
Assign Prg_String="JModernization
Assign Prg_String="JOccupational T
Assign Prg_String="JSPC/Qlty. Cont
Assign Prg_String="JWood Prods. &
Assign Prg_String="JWorkforce Proj

_AssendPickName
SpaceLoopStart _MidS(Prg_String
Assign Names

EndPick
Education Flyer
Phone and Name

Capture_Flag==l
Time_Out=="Y"

EndPhoneName
Phone Number

*Buttons:
*-------

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Application Module: EDU  

PROCEDURE Name  

If  

Then  

Arguments  

-10  

digits 1 through 0  

*15  

Backspace and erase  

*20  

Done--go forward  

*  

*Variables:  

Phone Number  

A person's phone number--initialized with area code 616.  

Phone Count  

Number of characters in phone number at any moment.  

Assign Time_Out="N"  

Assign Time_Flag=0  

Assign Phone_Number="616-"  

Assign Phone_Count=4  

Show Telephone1  

Show Telephone2  

Show Phone  

$InpType==2  

Goto Phone Check  

Time_Flag==1  

Assign Time_Out="Y"  

$Also  

Goto Phone End  

$Also  

Show Remind Tel No  

Phone Check  

Phone Count==0  

Assign Phone_Number="  

$InpID==20&&Phon  

Goto Phone End  

$InpID==20&&Phon  

Show Remind Area Cd  

$Also  

Goto Show Phone  

Phone_Count>=12&  

Show Remind 10 Digit  

$Also  

Goto Show Phone  

$InpID==15  

Goto Backspace Phone  

$InpID>=1&$InpI  

Assign Phone_Number=Phone_Number+$St  

Also  

Assign Phone_Number=Phone_Number+$St  

Phone Check  

Phone Count==0  

Assign Phone_Number=Phone_Number+$St  

$Also  

Assign Phone_Count=Phone_Count+1  

$Also  

Assign Phone_Count=Phone_Count+1  

Phone_Count==3||  

Assign Phone_Number=Phone_Number+"-"  

$Also  

Assign Phone_Count=Phone_Count+1  

Backspace Phone  

Phone Count>0  

Assign Phone_Number=$LeftS(Phone Num  

Also  

Assign Phone_Number=$LeftS(Phone Num  

Phone Count==3||  

Assign Phone_Count=Phone_Count-1  

Also  

Assign Phone_Number=$LeftS(Phone Num  

Phone Count==0  

Assign Phone_Number="  

Goto Show Phone  

Phone End  

Name  

Remark  

*Buttons:  

Letters "A" through "Z"  

*27  

Character "-"  

*28  

Character "space"  

*35  

Backspace and erase  

*40  

Done--continue  

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Page 10
Application Module: EDU

PROCEDURE Name If Then Arguments

*Variables:
*----------
*Alpha  Pick character from this string using Mid function.
      "ABCDEFGHIJKLMNOPQRSTUVWXYZ- "
*Name Store a person’s name.
*Name_Count Number of characters in a person’s name at any moment.
* Must pick up at least 3 characters—maximum of 20.

Assign Time_Out="N"
Assign Time_Flag=0
Show Name1
Assign Name=" "
Assign Name_Count=0
Show Name2
Goto Name Check
Assign Time_Out="Y"
Goto Name End
Show Remind 3 Char
Assign Time_Flag=1
Goto Show Name
Show Remind 3 Char
Goto NoShowNull
Show Remind 20 Char
Goto Show Name
Goto Backspace Name
Assignment Name_Count=Name_Count+1
Goto Show Name
Assignment Name_Count=Name_Count-1
Goto Show Name
Assignment Name=" "
Goto Show Name
Return $InpID

$InpType==2
$Also
$InpID==40&Name
$Also
$InpID==40&Name
$Also
$InpID==40&Name
$Also
Name_Count>=20&
$Also
$InpID==35
$Also
$InpID>1&$InpID

Name Check

NoShowNull

Show Name

Backspace Name

Name End

QUESTION Name Evaluation Try Points Panel

OBJECTIVE Name P% #Qs QPos OPts OPos

AUTH-VAR Name Type Value

Flyer_Message Str
Temp_String Str
Time_Flag Int 0
Page_Turn Str B

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### Application Module: EDU

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<th>Value</th>
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Wednesday Jan 29, 1992
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### Application Module: EDU

**Author:** Ray, Brian, Ken

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<th>Objs</th>
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*Wednesday Jan 29, 1992*
Appendix S

Information Kiosk Diagrams and Pictures
ELEVATION/FREESTANDING KIOSK
SCALE: 1/2"
WALL INSTALLATION
SCALE: 3/4"
Appendix T

Project Update Reports
To: ATC Planning Committee Members  
From: Ray Hoag  
Subject: ATC Information Kiosk—Progress Report

| Investors       | Investor category and contact information has been supplied by Rob Gutek. Because of a previous contact this past summer, Foremost Insurance was selected as an investor to work with as a prototype. The attached letter and "Investor Information Needs" document was mailed to Dick Wetergreen. This is a model of the documentation to be sent to the top investors. Dick Wetergreen and I have talked on the phone. He said there should be no problem in supplying the information and that they would be happy to serve in the prototype role. I have a meeting scheduled with Dick Wetergreen at 8:00 AM on Monday, March 5, 1990, to capture their information and work out further details.  
Questions: Are there any comments about the letter or "Investor Information Needs" document sent to Foremost? Is the correct information being solicited? |
| Technology      | Contacts have been made with Intel representatives and John Bajema, Steelcase, about the technology aspects of the project. Intel is submitting a configuration proposal of hardware and software required to do the project using their digital video interactive (DVI) technology. The potential advantage to using this technology is the ability to maintain information whether it be in text, graphics or video format. John Bajema has |
accomplished a multimedia project for Steelcase and is willing to review project progress periodically. Planning documents on the project have been sent to Dick Haight of Clemson Interactive Video Institute. He has received the information and I need to call him and discuss our current planning with him. Dick Haight was involved in the interactive multimedia presentations at Epcot Center. The decision on the specific equipment to be used in the project needs to be made soon.

Programs

Discussion sessions were held with CJ Shroll, Bob Garlough, Ruth Kurlandsky, Don Boyer and Arnie Terpstra about program presentations. Likewise, contact was held with Paul Prins, Trish Coyle and Chuck Bonning at Ferris about the process of building program scripts. Paul Prins may want to elaborate. A cover memo and "Program Information Needs" document detail the current thinking on the program script writing process. Program scripts would be accomplished in March with video shooting done in April. Video shooting, to maintain consistency, will be done by Bruce Lockwood on both the Ferris and JC programs.

Questions: Is the right program information being solicited? Is the schedule reasonable?

Copies: Phylis Reyers
                      Bruce Lockwood

Attachment: Investor Letter
Information Kiosk Project
Update Report

Investors
- Shot video at Foremost on Wednesday morning, April 25, 1990 (Bruce Lockwood and Jim Schafer).
- Edited video and created Foremost video segment on Friday, April 27, 1990 (Bruce Lockwood).
- Video shown at capital campaign cabinet meeting of Wednesday, May 2, 1990, and well received.

Concern: Script writing is behind and we need to schedule video shoots at investor sites.

Programs
- Shot video for 5 Ferris programs on April 26, 1990 (Bruce Lockwood, Mark Vogel and Chuck Bonning).
- Shot video for 7 Ferris programs on May 1, 1990 (Bruce Lockwood, Mark Vogel and Chuck Bonning).

Concern: Scripts for JC programs and video shooting needs to be accomplished.

Schedule: A final video shooting is scheduled for Ferris on Thursday, May 8, 1990. Editing for Ferris scripts needs to be scheduled.

Technology Purchase requisition for equipment has been taken to the finance committee.

Training
- Wrote a Fast Track grant that could result in an Introduction to Computer Controlled Multimedia class at JC and would pay part of the expenses in getting Authology and design training.
- Arrangements for Authology training have been made for May 14-16 (Hoag).
- Planning on Authology for Chuck Bonning in June.

Budget Working on a revised budget.
Information Kiosk Project
Update Report

Investors

Of 19 gold investors, 1 presentation completed (Foremost), 3 scripts approved (Allen Bradley, Batts, Cascade Engineering), 8 scripts written, 1 information received (IBM), 5 information requested but not received (Autodesk, Autodie, Prime Computer, Prince Corporation, Sebastian Foundation), and 1 doing nothing with (Culinary Arts Discounts). State of Michigan needs to be added—who should the contact be? Shooting video on June 12. Editing on June 18 (Allen Bradley, Batts, Cascade Engineering).

Letters being prepared to silver and bronze investors requesting information.

Programs

26 education program scripts completed (8 Ferris Technology, 1 Ferris Computer Information System Management, 1 Ferris Secondary Education, 11 JC Technology, 2 JC Hospitality Education, 3 JC Computer Applications). Editing of these scripts should begin after investor shooting--some investor shots will be included in program scripts.

Technology

JC Board approved developmental system purchase on Tuesday, May 29. PO number has been provided to Pioneer to hasten process. Delivery is 4-6 weeks.

Training

Ray Hoag attended Authology: Multimedia and Interactive Video Design sessions. Two Fast Track grants were written and received to cover about $1200 of cost. Chuck Bonning is registered for Authology: Multimedia training session of June 11-13, 1990. A local training session for Lumena graphics package is tentatively set for Monday PM, June 25, 1990. A 1990-91 Fast Track proposal will be written in hopes of offsetting some of the cost of Lumena training.
Information Kiosk Project Update

Budget
A Fund D budget has been set up through Bob Partridge and Jan Schmidt. An informal, informational budget is in the works to help track all project costs including estimates for in-kind costs.

Personnel
Phylis Reyers is not writing scripts. Ray Hoag is writing scripts. Trish Coyle wrote Ferris scripts. Dr. Judith Chandler, University of Georgia, is critiquing scripts.

Hope to use practicum students in some graphic and authoring roles. Chuck Bonning and Ray Hoag are meeting on June 7, 1990, to map out summer work schedule. Video shooting and editing schedule has been established with media services. Some student assistants may be hired to do authoring and graphics work.

Building F's
Need to meet with Tom Mathison to start building feature scripts.

Design
Design of the user interface and menuing system will begin immediately. Plan is to use concept of an electronic college catalog.

Miscellaneous
Can we trade Intel a 30 second video recognition for $4500 worth of C programming language DVI capability?

Can we trade Holland Lithographic a 30 second video recognition segment for $5000 worth of graphics design?

We plan to wire in 3 sites initially. Any further sites will be done have system has proven itself. Wiring will be brought to those sites at that time.

Anyone who would like to review scripts is welcome. Copies can be provided.

June 4, 1990
Information Kiosk Project
Update Report

Investors
Of 19 gold investors, 1 presentation completed (Foremost), 3 presentations completed but not yet approved (Allen Bradley, Batts, Cascade Engineering), 3 scripts approved and video in process (American Seating, GR Foundation, Lacks Enterprises), 4 scripts approved (Grand Rapids Press, NC Micro Products, Rapistan, Steelcase), 2 scripts written (IBM, Old Kent), 4 information requested, not received and follow-up made (Autodesk, Autodie, Prime Computer, Prince Corporation), 1 information requested (Sebastian Foundation), and 1 doing nothing with (Culinary Arts Discounts). State of Michigan needs to be added—who should the contact be?

Letters requesting information are in the mail to silver investors. A letter needs to be composed and sent to Bronz investors. Five gold investors who have not provided information need to be contacted for second or their time.

Programs
All program scripts are completed. Ferris Energy Management program has been changed to HVACR. Video shooting for program scripts is approximately two thirds done. Chuck Bonning has logged all the video taken at Ferris. Editing of these scripts is scheduled for August. Ferris has provided admissions, financial aid, placement and overview scripts. Similar scripts need to be developed for JC.

Technology
Delivery time of developmental system is "middle of July." Some developmental system manuals have been sent. Additional printer and local area network research needs to be done.

Training
Chuck Bonning is scheduled for Authology training.
Information Kiosk Project Update

on July 23-25. Ten (Chuck Bonning, 3 student assistants, and 5 Computer Applications Division faculty) people participated in opening Lumena training session on June 25. A Fast Track grant to cover half the expense of this training was written and turned in to Till Peters on June 29. The summative evaluation reports for previous Fast Track Authology and design training were completed and turned in to Till Peters on June 29.

Personnel
Chuck Bonning is working on project through August. Karen Boogaard, summer practicum student, is working on project. A fall project seminar class is being planned to involve students and a faculty person in the project.

Building F's
Tom Mathison is outlining building feature scripts and progress will be reported.

Design
Some refinements have been made to the user interface.

Activities
A preliminary set of data items to be captured for activities and building directories has been initiated. A similar activity needs to occur for professional societies.

Miscellaneous
A video schedule for shoots and editing sessions continues to be revised. Graphic standards need to be developed. Quotes on the target systems have been requested from Pioneer (Intel).
Information Kiosk Project
Update Report (UP073090)

Investors

Gold:

Allen Bradley (Completed-Needs Revision)
American Seating (Video in Process-Editing Scheduled)
Autodesk (Video in Hand-Editing Scheduled)
Autodie (Info Not Received)
Batts (Completed and Approved)
Cascade Engineering (Completed and Approved)
Foremost (Completed and Approved)
GR Foundation (Video Done-Editing Scheduled)
GR Press (Video Done-Editing Scheduled)
IBM (Video in Process-Editing Scheduled)
Lacks (Video Done-Editing Scheduled)
Michigan Government (Script & Video in Process)
NC Microproducts (Video Done-Editing Scheduled)
NCR Food Equipment (Need Information)
Old Kent (Need Script Approval & Video)
PMI Food Equipment (Script in Process-Need Video)
Prime-Computervision (Script in Process-Need Video)
Prince (Script Written-Need Approval & Video)
Rapistan (Video in Process-Editing Scheduled)
Sebastian Foundation (Script Approved-Need Video)
Steelcase (Video Done-Editing Scheduled)

21 Total-4 Completed-9 Scheduled-6 In Process-1 No Info

Silver:

Allied Finishing (Meeting Scheduled)
Amerikam (Info Not Received)
Bissell (Info Not Received)
Carrier Michigan (Info Not Received)
Consumers Power (Info Not Received)
Guardsman (Have Info)
Jet Electronics (Have Info)
Information Kiosk Project Update

Mannesmann Demag (Info Not Received)
Master Plastics (Have Info)
Michigan National (Info Not Received-Have Contact)
NBD GR (Have Info)
Nicholas Plastics (Info Not Received)
Smiths Industries (Have Info)
Trane (Info Not Received)

14 Total-5 Have Info-9 Info Not Received

Programs
- 10 Ferris Programs (Scripts & Video Done-Editing Scheduled)
- 5 Ferris Services (Scripts & Video Done-Editing Scheduled)
- 11 JC Technology Programs (Scripts & Video Done-Editing Scheduled)
- 2 JC Hospitality Programs (Scripts & Video Done-Editing Scheduled)
- 3 JC Computer Application Programs (Scripts & Video Done-Editing Scheduled)
- 5 JC Services (1 Done-4 in Process)
- 16 JC Economic Development (In Process)
- 2 Ferris Economic Development (In Process)
- 54 Total

4 JC Division and 4 Ferris College overview scripts to be completed.

Scripts
- 21 Gold
- 54 Programs
- 75 Total

Videography
The current videography schedule goes through Friday, September 7, 1990.

Technology
Delivery date of Friday, August 20, has been set by Pioneer for delivery of developmental system.

August 13, 1990
Information Kiosk Project Update

Target system quotes in process--may want to order DVI boards soon to be on production schedule.

Target monitor for evaluation has been requested.
Additional printer and network research needs to be accomplished.

Design
User screen interface has been designed and continues to be reviewed with staff and resource people.

Training
Formal training is complete. Need development system to accomplish OJT on Lumena, Authology and DVI Tools.

Personnel
August through December:
Chuck Bonning (?)
Project Seminar
Bill Zoellmer (Computer Instructor with Art)
Students (Boogaard, Morton, Matt)
Ray Hoag (?)

Building F's
Tom Mathison is outlining building feature scripts and progress will be reported.

Kiosk
Kiosk design specifications have been communicated to Jim O'Rourke. Target monitor is needed.

Management
The project management chart continues to be monitored.

Comment
The information kiosk is a large project but has potential for distributing much information effectively.

August 13, 1990
Farris State University/Grand Rapids Junior College

Information Kiosk Project Update

Equipment
DVI development system is getting correct harddisk flown to Cleveland. According to Mark July (Pioneer--Southfield Office), system will ship Tuesday or Wednesday (9/12/90).

A computing system with Lumena graphics capability is onsite and work on creating needed graphic screens has commenced.

Once the DVI development system is onsite, the target DVI systems need to be configured and ordered.

Software
Authology manuals have arrived and are being reviewed.

Videography
Video segments on JC Technology and Hospitality Education were completed. Video segments for Steelcase, GR Foundation, NC Microproducts, Rapistan, and American Seating were completed (but need investor approval).

Scripts
Elly Atlas will write scripts for building features and do any script writing for professional organizations, directory and activity functions. Script writing for silver investors needs to be accomplished.

Kiosk
The University of Michigan Hospitals kiosk design and application was viewed. The kiosk design was reviewed with Mike Ezzo, Datalus, Okemos.

Seminar
Five seminar students and one adjunct instructor are working on creating graphic elements and C programming routines.

September 8, 1990
Applied Technology Center
Ferris State University/Grand Rapids Junior College

Information Kiosk Project Update

**Equipment**
The DVI development system is onsite; however, it is not yet operational. The target DVI systems need to be configured and ordered.

**Videography**
All Ferris, JC Technology, and JC Hospitality Education video segments are completed. Three JC credit programs, three JC services, and 12 JC Applied Technology and Training segments are in development. Video segments for Old Kent, IBM and Computervision (Prime) were completed (but need investor approval). Thirty second video segments for Autole, Paragon, Due-Aire, ABB Robotics, PMI (Hobart), Prince, Sebastian Foundation, and the State of Michigan are in development. Twenty second video segments for silver investments are in development.

**Scripts**
Tom Mathison provided Elly Atlas with information on 9 building features scripts. All silver investors have been solicited for script information.

**Seminar**
Seminar students and Chuck Bonning continue to work on graphic elements. A beginning prototype of the user interface has been developed.

**Databases**
A meeting between Mary Jo Chisholm, Jody Graves, and Ray Hoag is scheduled to further develop the activities, directory and professional organizations databases.
**Applied Technology Center**  
**Ferris State University/Grand Rapids Junior College**

**Information Kiosk Project Update**

| **Equipment** | Authoring and video capture activities have been initiated on the DVI development system. Several interactions have taken place concerning the monitor for the target systems and the touch screen interface. Pioneer delivered a 20 inch monitor but not the one they quoted for the target systems. The touch screen capability is now going to be part of the Run Time Executive. Printers need to be determined for the target systems. The version of Authology that supports C language hooks (printing will be done through this capability) is to be released any day. An analysis of storage needs is being done. |
| **Videography** | Editing is scheduled for the JC Applied Technology and Training video segments. All video segments for the 22 gold investors are completed (in the can). Approvals are needed for ABB Robotics, Autodesk, Autodie, Duo-Aire, Hobart, Old Kent, Paragon, Prince, and the Sebastian Foundation. Twenty second video segments for silver investors are in development. |
| **Features** | Initial draft scripts for the building features scripts have been written. The organization of the building features needs to be revisited. Some video shooting for the building features was completed. |
| **Seminar** | Seminar students and Chuck Bonning continue to create and refine graphic elements. Prototype of the book cover, table of contents, education index, among others, have been created. |
| **Databases** | A follow up with Mary Jo Chisholm and Jody Graves on the development of the activities, directory and professional organizations databases needs to be scheduled. |
| **Prototype** | An initial prototype of the information kiosk application has been developed. Book cover, table of contents, and investor graphics are included along with selected video segments. |

November 18, 1990  
Information Kiosk Update  

Page 1
Applied Technology Center
Ferris State University/Grand Rapids Junior College

Information Kiosk Project Update

Equipment
Purchase requisitions have been written for the DVI delivery systems (3), laser printers (4), and graphics workstation. The version of Authology that supports C language hooks (printing will be done through this capability) is to be released any day. Storage requirements will be met with both a 702 megabyte hard disk and a CD-ROM unit. Costs are less with a CD-ROM unit and mastering a CD-ROM than with the purchase of a second 702 megabyte capacity hard disk. The CD-ROM is an optical disk. The future direction of storage devices on computing systems is optical.

Videography
Editing is scheduled for the JC Applied Technology and Training video segments. Video tapes have been sent to ABB Robotics, Autodesk, Autodie, Duo-Aire, Hobart, Old Kent, Paragon, Prince, and the Sebastian Foundation to solicit approval of their video segments. Twenty second video segments for silver investors are in development--information has been received and scripts written for 7 of 21 silver investors. The organization of the building features needs to be revisited.

Seminar
Seminar students continue to create and refine graphic elements. Graphics for most of the investor and education program components are now included in the developing system. A project seminar revolving around the information kiosk project has been scheduled for the second semester.

Contacts
A follow up with Mary Jo Chisholm and Jody Graves on the development of the activities, directory and professional organizations databases needs to be scheduled. Frank Connor needs to be contacted to acquire floor layouts to be included in the application to provide clients with location directions.

Prototype
The developing information kiosk application includes much of the investor and education/training components. The interactions to capture a person's telephone and name are now included. Authology has a bug that freezes the system--the CEIT organization in California is working on a resolution.

Kiosk
Bob Partridge is scheduling a meeting involving GRPS cabinet shop personnel to assess if we can construct our own kiosk enclosures.

December 3, 1990
Information Kiosk Update
Applied Technology Center
Ferris State University/Grand Rapids Junior College

Information Kiosk Project

Background

Ferris State University and Grand Rapids Junior College are building a new facility—the Applied Technology Center. As part of this project, an unpersoned, computerized information center is to be available to building clients. Configurations to provide this capability were researched and a DVI solution decided upon. A purchase order was issued in May 1990 through Pioneer to acquire a DVI system and Authology software. After delivery to the Pioneer value added center, the system was delivered to Grand Rapids Junior College in October 1990. Chuck Bonning (Ferris) and Ray Hoag (GRJC) have worked on the design and development of the system for many months. The information is clustered into 6 categories: (1) Activities such as regularly scheduled classes, social activities and meetings and conferences, (2) Building Features, (3) Directories of faculty/staff, rooms and departments, (4) Education Programs, (5) Investors, and (6) Professional Organizations.

Status

The application has been designed with the user interface being a book. Tabs are used to get to any one of the six sections. The Authology application module presents the book cover, table of contents, and then one of the chosen 6 information areas. The Education and Investor modules are most developed. Activities, Directory and Professional Organizations are started. The Building Features resources have been worked on but only a "coming soon" panel is presented in the application module.

Hardware

Sony Cube Monitor

A new cable is being created. The original cable did not properly constrain the video image. This monitor is scheduled to be returned to JC on February 4. (Walsh, Datalus, February 1)

A modification needs to be done to the front panel switch so that the unit will remain on when housed in the kiosk. (Walsh, Datalus, February 21)
We plan to use this monitor while the Tatung monitor is having touch screen installed. Then this monitor will have to have touch screen installed. (Walsh, Datalus, February 21)

Tatung Monitor

The Elographics touch screen needs to be installed. Pioneer should be responsible for this—their value added center was to integrate components and deliver a working system. Joe Russell was contacted week of January 28 and is to respond. (Russell, Pioneer, February 15)

Two Board Set

Our original PO in May 1990 called for a two board set. We got a seven board set. Following Intel replacement procedures, we issued a PO on November 29, 1990, to acquire the two board set. Many people who have ordered DVI boards much, much after us have theirs. Where is our two board set? (Roehm-Intel, Russell-Pioneer, February 1)

What impact will the two board set have on our application? We have been told that the two board set will remove the jitters from the monitor. What impact will the two board set have on the video that was captured using the 7 board set? (Gazzara-Intel, Walsh-Datalus, Hoag, February 1)

Tape Cartridge Unit

The tape cartridge unit on our development system unit does not work. David Kubik, our technical support specialist, reports that we do not have the correct unit (per Joe Russell of Pioneer). When will this system be operable? We need this system for backup purposes and possibly to transport information to the CD ROM mastering facility. (Russell-Pioneer, Kubik, February 1)

Delivery System

The delivery system has been ordered. Datalus is integrating the system for us. The Sony monitor is already onsite but will need to be sent to Elographics so that the touch screen can be installed. (Walsh, Datalus, March 1)

Software

Authology

Bob McDonald reports that new release (version 1.10) will start to ship on February 5. We need external hooks to print flyers and access data base of information. We need touch screen capability to run our application. The new version should have no impact on what we have already accomplished and installation procedures are documented. (McDonald, Ceit, February 15)

We have split our application into eight application modules—the main module and 7 called modules. This was done because we were running out of memory when authoring the
application. Video segments would not run. Even with this strategy in place, we are still having problems with the running of video segments. Sometimes they run—sometimes they do not—the system hangs up, we must do a control-break and restart the system. We cannot have an unattended application running this way. What can we do to resolve this problem? One method is to operate the system in the runtime mode. We need to consistently do this to insure that the system runs without hanging in this mode. (McDonald, Ceit, February 1)

**C Language**

What do we need to run C language programs that Authology can call? Bob McDonald indicates that Authology Load Module technical documentation is needed. (Hoag, February 8)

**Technical Aspects**

**CD ROM**

What medium is used to transport information to the CD ROM master facility? Which CD ROM mastering facility should we use? What are the costs? When running video from a hard disk, there is a control file (AVZ extension) that is unique to the hard disk volume (must be redone when moving from hard disk to hard disk—our understanding, at least). How does this work with the CD ROM unit? (Gazzara-Intel, Walsh-Datalus, Hoag, February 8)

**Networking**

Information has been received from Protocom about a network designed for DVI systems. This would allow one hard disk system to be the host for multiple target systems. Networking would suit the information kiosk well when we move from one delivery system to multiple delivery systems. Protocom is looking for a test site for their DVI networking system. There are some activities taking place between Intel, Protocom and Ceit on networking. (Hoag, Ongoing)

**Audio Segments**

Audio segments needed throughout the application needed to be determined and recorded. (Zoellmer, Hoag, Lockwood, February 15)

**Disk Space**

The exact amount of disk space on the development system needs to be determined. This is necessary to plan how many additional video and image segments can be loaded. (Patrie, February 8)

**Seminar**

Students participating in the DVI project this semester are:
Ken Losey, Authology and C Programming
Brian Patrie, Technical Support, Authology, and C Prog.
Chuck Nivison, Computer Graphics
John Haafke, Computer Graphics

February 4, 1991 Information Kiosk Project Update Page 3
Rhonda Terpstra, Computer Graphics
Katie DeBeaubien, Authology
Bob Hubbard, Authology
Michael Morton, Computer Graphics
Bill Zoellmer is participating as the Project Seminar leader.
Bernice Whitley has made a room available to the project within the library.

A task list for Authology and graphics needs to be created. A set of boxes to facilitate distribution of written communications with seminar students needs to be created.
(Bill Zoellmer. February 6).

Authology assignments are:
- Control module (Patrie)
- Activities (Losey)
- Building Features (DeBeaubien)
- Directories (Hubbard)
- Education (Losey)
- Investors (Patrie)
- Professional Organizations (Patrie)

Michael Morton and Chuck Nivison are assisting Bill Zoellmer in training activities for Rhonda Terpstra and John Haafke. Brian Patrie and Ken Losey are assisting in training activities for Bob Hubbard and Katie DeBeaubien. Rhonda, John, Bob, and Katie should setup times with designated peers to accomplish any needed learning. (Hubbard, DeBeaubien, Terpstra, Haafke. Ongoing)

Chuck Nivison is working on graphic screens that will be used to show silver investors (video wall graphic), building features (theatre screen with audience), and professional organization details (lighted animation around border).
(Nivison. February 6)

Chuck Nivison and Brian Patrie are working to use the graphics conversion package to convert Autocad files to Targa files so that floor layout diagrams can be incorporated into the directories and building features modules. The Autocad files are being supplied by Frank Connor. (Nivison, Patrie, Connor, Hoag. February 5)

Michael Morton and Rhonda Terpstra are working to cleanup JC program and professional organizations menus (darker text, correct tab locations, page turns, etc.). (Morton, Terpstra. February 6)

Michael Morton is working on the silver investors menu (red...
ribbons with cluster of silver investor names). (Morton, February 6)

There is a bug in the activities routine to show meetings and conferences (information is taken from incorrect position of the data array). Ken Losey needs to work with this to resolve the bug. (Losey, February 8)

**Directories**

Written information on each person who will have an office in the Applied Technology Center needs to be supplied. This includes name, title, location, phone, and comment information. (Boyer, Garlough, Shroll, Prins, Hoag, February 8)

Pictures will be incorporated into system by using video camera connected to VidIO box. Pictures of staff need to be provided. (Boyer, Garlough, Shroll, Prins, Hoag, February 1)

Can Autocad diagrams be converted to Targa format to be incorporated into the kiosk system? Will Hijack convert these programs? (Nivison, Patrie, Connor, Hoag, February 1)

A routine needs to be developed to animate a person getting from point A (kiosk location) to point B in the ATC. This routine could well incorporate the use of video to show at least the destination location. (Hubbard, Hoag, February 15)

**Investors**

The video segments for the 21 gold investors are completed. Scripts and video segments for 22 silver investors are in development (approximately 4 done, 9 need to supply script information, rest are inbetween). The silver investor video segments will need to be loaded. (Hoag, Lockwood, February 21)

A letter requesting information for flyers needs to be sent to gold investors and then to silver investors. Some definition needs to be provided so that a format will be available for the investors. A one page printout through a laser printer will be provided. Perhaps one investor should be worked with on a prototype basis. (Hoag, February 21)

**Education**

The Authology program needs to incorporate the menus for the JC programs. Some of the graphic images for these panels need to be revised. (Losey, Morton, Hoag, February 8)

The information for the one page program flyers to be printed with the laser printer needs to be assimilated. This information would incorporate program overview, job outlook, courses and contact information. (Boyer, Garlough,
Prins, Shroll, Hoag, February 8) The routines to print this information need to be developed. (Losey, Patrie, Hoag, February 15) The capability to accomplish this needs to be provided through the next release of Authology (McDonald, Ceit, February 15)

The routine to capture inquiry information about educational programs needs to be developed. This involves putting the information into a small database and passing the information to the appropriate institutional office. (Losey, Hoag, February 15) The capability to accomplish this through Authology needs to be provided (McDonald, Ceit, February 15)

The remaining JC program video segments need to be loaded into the DVI system. Space is needed on the DVI system for these video segments. The CD ROM disk should be mastered so that there is space to accommodate these segments. (Hoag, Lockwood, February 8)

Activities

The routines to present regularly scheduled courses and social activities need to be authored. (Losey, Hoag, February 8) The routines for importing all activity information into the system need to be resolved. (Weller, Chisholm, Losey, Hoag, February 15) The capability to import external information into Authology needs to be available. (McDonald, Ceit, February 15)

Professional Organizations

The professional organizations menu screens need to be modified (darker text, consistent font). (Morton, Zoellmer, February 8)

The procedures for capturing organization logos and including them on the menu screen need to be developed. (Blair, Haaske, Hoag, February 15)

The screen to show organization details needs to be developed (Nivison, Zoellmer, February 8)

The information on organization purpose and meeting times needs to be captured and incorporated into the Authology application. (Blair, Hoag, Patrie, February 15)

Information to be included in the one page flyer available for each organization needs to be developed and the procedures for incorporating this information into the application developed. (Blair, Patrie, Hoag, February 21) The capability to access external files needs to be available through Authology. (McDonald, Ceit, February 15)
The script describing the services available through the ATC's Professional Organizations office needs to be finalized and video editing accomplished. (Blair, Dawkins, Hoag, Lockwood, February 8)

Building Features

The procedure for bringing AutoCad files into the Targa system needs to be developed. (Nivison, Patrie, Connor, Hoag, February 8)

The building features scripts need to be completed. (Hoag, Mathison, Shroll, February 8)

Additional footage to support the building features scripts needs to be shot (Lockwood, Hoag, February 21)

The authoring to incorporate the building features into the kiosk needs to be accomplished. (DeBeaubien, Hoag, February 28)

The one page flyers describing each of the building features needs to be written and incorporated into the application. (Shroll, Mathison, Hoag, DeBeaubien, March 15) The capability to access external files needs to be available through Authology (McDonald, Cetl, February 15)

Demonstrations

The information kiosk system, as developed, was demonstrated to Ferris faculty and staff in an open house setting hosted by the Ferris Academic Computing office on Wednesday, January 23, 1991. A similar activity at JC could expand faculty and staff thinking about the use of multimedia in administrative and learning processes. These demonstrations provide valuable feedback on the ease of use of the application.

The CIM Alliance group has requested that the information kiosk be available for demonstration at the APICS meeting of March 7, 1991. This demonstration is at Grand Valley (Allendale campus) and would support the CIM Alliance booth. (Bonning, Hoag, March 7)

On March 21 and 22, Chuck Bonning and Ray Hoag are scheduled to make a presentation on the information kiosk system at the Michigan Association for Computer Users in Learning (MACUL) in Detroit. (Bonning, Hoag, March 21)

Kiosk Construction

The delivery system monitor has been in the hands of Grand Rapids Public School staff construction the kiosk. This has resulted in knowing that the monitor's on/off switch must be modified to be on at all times. Rod Gale is taking pictures of the kiosk on an almost daily basis. He is now working on the
opening from the printer for users to receive flyers. (Gale, March 15)
To: Information Kiosk Project Participants
From: Ray Hoag
Subject: Information Kiosk Project Tasks

Project management:

Arrange for graphic artists for summer.
Arrange for project seminar for summer and fall.

Technology:

Install new version of DVI tools.
Install new version of Authology: Multimedia (1.10).

Accomplish printing of files.
Access external data bases.

Acquire second hard drive for development system.
Acquire delivery system.
Load delivery system.
Acquire 386 system to replace Dale system on loan.
Research networking.
Research Brooklyn Bridge package.
Resolve environment problem.

Activities:

Get bug out of current code.
Determine databases for access.
Work out accessing databases.

Building Features:

Determine building features to be described.
Write scripts.
Shoot video.
Edit video.
Load video segments.

March 24, 1991
Directories:

Research pictorial data bases.
Complete graphic pages.
Complete Authology procedures.

Education/Training:

Revise Grand Rapids Community College segments.
Load GRCC segments.
Add pictures to buttons.

Investors:

Rework page numbering and buttons.
Revise graphics.

Professional Organizations:

Shoot video of billboard.
Incorporate logos into graphic pages.
Shoot video for Professional Organizations office script.
Appendix U

University of Michigan "Wayfinder" Kiosk
University Hospital:
Patient Care Unit 7A:

To visit a patient on a 7A Unit use the East Elevator in University Hospital.

You are now on Floor 1 of Taubman Center.

To your right is a large overhead sign to Information, Hospital and Elevator. Go under the sign and keep going past the main entrance.

Turn left into the main hallway. You are now in University Hospital.

Go straight ahead through the double doors. Go down the hall past Admissions (on your right) and the Showcase window (on your left).

Restrooms are on your right. Turn LEFT into the East Elevator lobby.

Take the elevator up to the 7th floor. Leave the elevator and turn to your RIGHT. Go through the double doors.

Go down this hallway to the first crossing hallway.

For Patient Care Unit A, turn RIGHT and go about halfway down the hall to the overhead sign marked INFORMATION AREA A.

This is the Patient Care Center. Ask here for directions to the patient's room.

Floor Section Services

7 A Clinical Research Center

If you are not sure which Unit the patient is on, please ask at the Information Desk in Taubman Center or at the Information Desk on the other side of the Main Entrance.
Appendix V

System Diagrams
Systems Approach
Dispensing Information Using Technology

Feedback
Supplier
Inputs

Value Added Processes
Process

Output

Customers
Feedback

Mission:
The Information Kiosk System
Applied Technology Center

**Feedback**
- Supplier
- Process
- Output

**Inputs**
- Educational Program Information
- Inventory Information
- Professional Organization Information
- Building Processes Information
- Process and Staff Information

**Value Added Processes**
- Graphics Creation
- Video Capturing
- Video Editing
- Script Writing
- Script Narration
- Media Integration
- Computer Authoring
- User Interface Design
- Project Management
- Computer System Configuring
- Information Loading
- Program Loading
- Technology Research
- Kiosk Construction
- Kiosk Installation

**Outputs**
- Video Segments
- User Interface
- Graphic Displays
- Textual Displays
- Kiosk Enclosures
- Integrated Computing System

**Customers**
- Recent High School
- Graduates
- Touring Secondary School Students
- Students
- Career Changers
- Professionals
- Vendors
- Visitors
- Faculty and Staff
- Continuing Education Students

**Mission:**
Communicate to customers in a compelling manner dynamic information relative to the Applied Technology Center.
Appendix W

"Thank You" Letter
6/25/91

Ray Hoag
Chairperson, Computer Applications

Dear Ray,

No one will ever really know how many hundreds of hours you and your staff worked on the ATC Interactive Video System, myself included. But I wanted you to know I really appreciated all the work you did to make it happen!

You must have been pleased to see so many people attending the ATC Dedication Ceremonies interacting with the system you designed. Thanks again for a job well done. It's always a pleasure to work with you and your staff.

You have my permission to take the rest of the summer off! What and you want to get paid too - you can't have everything.

Warmest regards

Rob Gutek
Executive Director
Grand Rapids Community College Foundation/Alumni Relations
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Smithsonian receives $9.5 million to support exhibition. (1990, March). The Videodisc Monitor, p. 5.


Walsh, J. (1990, June 8). [Personal communication.]

