Harnassing Technology for Education and Training (Keynote)

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I would like to start this talk with a serious piece of advice: Don't ever accept the responsibility for getting Keynote Speakers for a conference such as this. You might end up doing it yourself.

Seriously speaking, of course I offered to ask any one of several distinguished attendees here to fill in. Col James said no, he wanted me! At first, after listening to his list of ideas for the speech, I thought it was just so he could tell me what to say. Then I realized that that wasn't it. It's really because, compared to those other guys, it'll be easier to zap me if this thing doesn't come off right.

Well, I really would like to think that I'm here because Colonel James recognizes the enthusiasm I have for implementing technology in education and training. Although I'm an MS-DOS man, I'm even considering taking a lead from Apple Computer. You know they have evangelists for just about everything. They even print it on their business cards! John Doe, Software Evangelist. Sally Smith, Hardware Evangelist. Talking to some of these people at Microsoft's CD-ROM conference last week, I kept thinking of their titles and wondering if I should respond with a few "Amen, Brothers!" (Or Sisters). So I am taking on a new title, "Interactive Education Evangelist." I'll get new business cards as soon as my present supply runs out.

This time I'm really serious: I am enthusiastic about the potential of applying education and training. And I'm glad to have the opportunity to address you here today, because I'm convinced there are several things that need to be said loud and clear that will maybe help us be optimally successful in using high technology to be better trainers and educators.

But first let me comment on what I see to be the significance of this meeting. This promises to be the largest TITE conference yet and we have excellent representation from several quarters of the Air Force and other branches of the Department of Defense. Meeting here in Colorado Springs is perhaps especially significant given the training problems faced by the Consolidated Space Operations Center and various other divisions of the Space Command that are located right here in this area.

The level of attendees from the civilian sector is especially impressive. For example, we have with us several nationally known figures in the videodisc industry. Seeing Stan Jarvis, Mark Heyer, and Rod Daynes chatting last evening at the reception I couldn't help kidding them that it made me feel like I was visiting the Videodisc Hall of Fame. A glance through the program reveals an exciting and diverse collection of what promise to be excellent and informative presentations and workshops. It appears that several companies will be showing some new products, a few of which of which will be shown for the first time. Sony for example is making the world premiere of their new PC-AT compatible View system. McDonnell-Douglas as will be showing PC-based delivery of AIS II. RCA will be showing Digital Video Interactive (DVI) and its capability to play 72 minutes of full-screen, full-motion video from one CD-ROM. I am sure there are others.

Incidentally, the Sony protest of the EIDS contract award has been set aside and a "Commence Work" order was issued to Matrox. Rockley Miller of the *Videodisc Monitor* said he would probably have a bulletin available here today giving us the details on the latest developments in this, the continuing saga of what is potentially the largest implementation of interactive videodisc to date. Folks, for better or for worse, a lot of effort has gone into this whole EIDS thing and no one's purposes are being served by dragging this mess out any longer. A quick look at the number of successful companies making IBM PC clones should be clue enough for the Sony's and the Aquila's that once a standard is established, other companies can turn a profit working within the guidance that such a standard provides. Given the open architecture dictated for the Matrox-proposed, PC/AT-compatible EIDS machine, anyone's requirement not met by the "base case" can have their required functions addressed by an add-on board. And if you don't think that the AT and EGA are becoming a standard, think about the VLSI-based EGA chip sets and $70 PC-AT chip sets made by companies such as Chips and Technologies. The resulting price and performance ratio will be astounding and the message to Sony, or IBM or Zenith or anybody else is let's get on with it. If we can just get the train moving, there'll be room enough for several of them to ride.

Dr. Vic Bunderson, one of the founders of WICAT told me that the only reason WICAT made the first hardware that implemented the Motorola 68000 microprocessor was that the Texas Instruments, the DEC's and the IBM's would not create the kind of hardware that WICAT knew would be needed to deliver effective computer-based training and education. That argument was a valid one. One of my colleagues at the Academy, Major Jill Crotty, can tell you about the frustration of delivering interactive videodisc instruction using a TI 99/4A and Extended Basic. Can you believe that even before that we delivered interactive video at the Academy using ¾" U-Matic videotape and 99/4As?

What's the point of all of this? Two things. First, technology is very quickly becoming a non-issue because commonly available hardware will do just about anything we can imagine needing as trainers and educators. Secondly, if we are to be successful as an industry and profession, we have to have standards. Sure, standards selected too soon or for the wrong reasons can be a problem: we have NTSC television and QWERTY keyboards, right? (A video person helping me set a demo up in France a few years ago and thinking of how wonderful PAL and SECAM are, kept reminding me that NTSC meant Never Twice the Same Color). But to avoid confusion in the marketplace, we have to have standards. Can you imagine where the record industry would be today if they had insisted on continuing the manufacturing of 16, 33 1/3, 45, and 78 RPM records and hadn't come up with the bright idea of making multi-standard turntables? You'll notice nonetheless that only two of those record formats are still with us today.

Standards can take on some interesting forms. Here's a great software truism: Any company should select its standard, company-approved, word processor, right? As soon as it does of course several offices will usually inform the selection committee as to why the standard won't work for them. Borland International says that this hassle isn't necessary. They have announced a word processor where the user interface can be anything the user wants. Does the user need Word Perfect? Anyone that does just selects it and they've got it. WordStar? Same thing. Everyone word processes to their heart's content and all files created are in one standard format, readable by all users within the company and with no conversion required.

Does the lack of hardware and software standards in our marketplace cause confusion? Stan Jarvis recently wrote that the numbers of choices for combinations of incompatible authoring systems, overlay cards, videodisc players, touch screens and other input devices from all interactive videodisc-related vendors probably exceeds the total number of interactive videodisc workstations delivered to date.

The next point I would like to make is that there is a subsuming principle that includes all types of interactive video, regardless of the type and source of any image one can display on a computer screen. The principle of which I speak is that of "interactive education and training". This high level notion is one that is hardware and software independent. It can run on any one's system and can be programmed using just about anyone's authoring software. All of the data I've seen tells me it works and in most cases where I would want to use it, it will be cost effective. Where can one get this soothing and marvelous "Balm of Gilead", you ask? "What are its characteristics?" It is motivating material, probably making effective use of color and graphics, many times using videodisc to add these elements. You'll see at least a little of it right here at TITE, in most presentations you attend and in most demonstrations you observe. The problem is that it is often obscured by the technology that is delivering it to the learner. Was it Marshall McLuhan who said, "The medium is the message?" If we assume the medium to be the technology then I disagree. If we say that the way we use technology is the medium, then we're in perfect synch.

Our challenge? To distill the essence of this higher principle of education and training, bottle it, and figure out how to include it in higher and higher concentrations in all of the lessons we create, and this in a highly productive manner. As an industry and a profession, I don't see how we can live with upfront costs that come from taking 100-300 hours to produce one hour of training. We have to increase our productivity. For example, Mark Hoyer has spoken of a videodisc production approach analogous to a word processor. He'll explain some of his ideas in a workshop this week but he's talking the automation of the whole disc design and production process. In another vein, I have heard of companies connecting courseware design expert systems to their authoring systems to allow subject matter experts to create high quality courseware without the need of a programmer or an instructional designer. Now we're talking!

What I'm saying is, let's not worry too much about the technological details of how the instruction is to be delivered, be it IVD, CD-I, DVI , CD-ROM, or any other means the research laboratories can invent. (By the way, someone said at Microsoft's CD-ROM Conference that CD technology would meet an early demise, due to the lack of free letters to form acronyms.) Let's use delivery systems (hopefully somewhat standard ones) that are available today and start doing interactive training and education. The only way to learn how to do it is to do it! So do it. Hopefully you can collect some data while you do it and then do it again, only the next time better than the first.

"Aha", you say. "I'd love to but I can't convince my organization that it works. No one wants to commit the resources to make it happen." Are you telling me there are still detractors out there at this stage of the game? I'll tell you what to do with detractors. Line 'em up at dawn and shoot ' em. Well I guess I just lost the designation of evangelist... and became a revolutionary! Actually, in our civilized world, patience and longsuffering are the only means we have to work with these infidels. Not really. A little bit of money spent on visits and demonstrations of concept can help a great deal.

I encounter some opposition to the idea of implementing CD-ROM by putting textual information in large quantities on one disc. "You'll never get rid of books," they say. People, did you know that Socrates was violently opposed to the promulgation of a writing system? He felt that once people could write they would lose the ability to use their memories. And not everyone was excited to see Gutenberg's movable type move into printing shops throughout Europe. Easily obtainable books would remove the need to remember things. The intellectual descendants of these detractors today wonder why in the world anyone would want to put 270,000 pages on one CD-ROM.

But despite opposition, we can make progress. We had the opportunity last week to demonstrate the marvels of interactive videodisc and CD-ROM to our Superintendent and to his guest, Senator Barry Goldwater. Who says you can't teach an old dog new tricks?! This grand, 79 year-old gentleman summed it all up quite eloquently, "This is exciting stuff! Damn near makes an old guy like me want to go back to school again!"

Well, speaking of CD-ROM, I'd like to close with a demonstration of a prototype created by Microsoft to illustrate the potential of this new technology. It is not a product and was to have been shown to you by Mr. Tom Lopez, Vice President of Microsoft's CD-ROM Division. There are tremendous challenges if CD-ROM is to be successful in delivering interactive education as I have discussed it this morning. Where we are beginning to get a handle on authoring for delivery via interactive videodisc, we have only begun to imagine the problems we will encounter in the world of interactive instruction via CD-ROM. When these problems are resolved, the economies of scale that CD-ROM can derive from the CD-Audio market will make this technology cheap enough to distribute interactive learning on a very wide scale.

In the meantime, however, companies such as Microsoft are beginning to announce text-oriented, real products such as Microsoft's "Bookshelf" that contains:

- The New American Heritage Dictionary
- Roget's Thesaurus II
- Bartlett's Familiar Quotations
- The 1987 World Almanac and Book of Facts
- The U.S. Zip Code Directory
- The Chicago Style Manual
- Houghton-Mifflin Good Usage Alert
- Spelling Checker and Access Software
- Business Information Sources
- Collection of Form Letters

This software is accessible from any of the major word processing packages on the market today.

SUMMARY

Technology can be harnessed to do good in education and training. As that great philosopher, Lionel Ritchie, has said, "Well my friend the time has come, to raise the roof and have some fun." Let's go out and have some fun: learning how to do a better job in education and training.