**HBS EPIC**

The April 25 meeting of the Special Interest Group for Applications Development featured Gwen Weaver of the Harvard Graduate School of Business Administration describing HBS EPIC (Educational Products Information Collection), a series of projects to provide many kinds of academic information at the desktop.

HBS EPIC, a three-part concept for making available on-line some of the School's resources as well as outside business information, has been a two-year on-going effort. When finished, it will include electronic access to information owned or produced by the Business School, such as cases, articles from the Harvard Business Review, and library information; business information from such sources as Compuserve or Dow Jones; and office productivity capabilities, such as electronic mail and information exchange features.

The project, which now includes text and graphics capabilities, is intended to provide a window to the Business School environment, and its developers hope to include multimedia capabilities as well. Fiscal sponsorship of the project, James Cash, is helping the community identify and select appropriate information to be included and to suggest automated support tools for obtaining the information.

In addition to Professor Cash, the EPIC task force consists of six Business School representatives from different areas: computer services, multimedia support, the library, and the academic support service, as well as project teams working on individual efforts. The task force, which meets every two weeks, currently has 23 individual projects in various stages of development. These include baseline

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**Medical Knowledge Navigator**

Exploring the use of knowledge and charting discovery paths through it is a formidable task for practicing physicians who need to make informed but rapid health care decisions every day. Physicians are inundated with information: in daily practice they must assimilate and analyze patient data and then determine what treatment to undertake. Their judgments must take into account knowledge of physical functions, costs, risks, benefits, and other complex data. Computer technology now offers a system to facilitate organizing, accessing, and applying all this complex knowledge to help solve medical problems.

Dr. Robert Greaves, who gave the final GIT 2001 colloquium in this year's series, is Director of the Decision Systems Group at Brigham and Women's Hospital, a group currently developing a prototype knowledge environment for incorporating a variety of knowledge resources by means of an object-oriented program design. Known as Explorer II, the desktop knowledge environment is able to access and link diverse forms of static as well as dynamic knowledge: narrative text, diagrams, and images; simulations, inference procedures, and other specialized analyses and presentations of data. Software that enables browsing and navigating through such an environment, as well as having expert system problem-solving capabilities, needs to provide a consistent interface, a uniform

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**Emperor-I: Interactive Videodisc Technology in Chinese Studies**

**PROJECT EMPEROR-I: China's Treasure Revealed Via Videodisc Technology**, recreates in electronic form marvels from the 22nd-century-old tomb of China's first Emperor, Qin Shi Huang Di. Using interactive videodisc and microcomputer technology, members of the project team isolation produced from the tomb of China's first Emperor, Qin Shi Huang Di. Using interactive videodisc and microcomputer technology, members of the project team created a selection of Chinese history, art, and culture in electronic form. The multimedia project, directed by Dr. Ching-chih Chen, Professor and Associate Dean of the School of Library and Information Science, Simmons College, and with major grants from the National Endowment for the Humanities as well as Simmons College, consists of two stages: one for gathering data and videodisc production and the other to develop applications for interactive courses.

Two 15-inch videodiscs, each containing 150,000 frames as well as audio were produced as a result of the data-gathering. To produce the discs, project members interviewed Chinese specialists about the Qin finds and recorded archival film footage from the original excavations. In addition, the discs contain all relevant illustrations published in China, supplemented by interviews with project consultants Professor Kwang-chih Chang of Harvard's Department of Anesthesiology. continued on page 2

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**Magnetic Resonance Imaging: A Marriage of Technologies for Medical Diagnoses**

Magnetic resonance imaging (MRI), a revolutionary technology for revealing body tissues with greater clarity than ever before, uses a magnetic field, radio waves, and computers to show subtle differences in tissue density and function. Compared to the two other principal diagnostic imaging methods, X-rays and CAT (computerized axial tomography) scans, MRI offers several advantages as well.

With the aid of X-rays, in use since the turn of the century as the workhorse of modern medical imaging, physicians have been able to discern gross differences in soft tissues, but the technology cannot "see" through bone or other hard objects. The introduction of nuclear magnetic resonance (NMR), now called MRI, in the early 1970s enabled more subtle differences in soft tissues to be revealed. It offered the promise of nuclear magnetic resonance (NMR), now called MRI, allowed physicians to see the exquisite discrimination between normal and pathologic tissues disclosed through the use of chemical and physical parameters unique to this technology. Not least, MRI does not require painful, invasive diagnostic procedures, nor does it deliver unwanted radiation.

Unlike X-rays, which are based on static images, MRI works with differences in density and behavior of mobile nuclei in the body. To create an image, the body is placed in a magnetic field

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From the Director

In the early 80s, the wave of new home computer game products provided an impetus for the personal computer industry. IBM used the image of the IBM personal computer was to be found everywhere, in industry as well as at the university. With Apple's $1,000 Macintosh distribution program in the fall of 1985, that machine received such popular acclaim that it became a common scholar's tool. This spring the first wave of Macintoshes purchased by freshmen will graduate.

Over the last four years not only has the typewriter been replaced by the personal computer, but many problems that used to be solved using mainframe-based time-sharing are now done at the desktop. While there will always be a supercomputer or super data server role for the mainframe or mini, information technology has undergone a major revolution in a few short years.

We predict a similar revolution will take place for next year's freshmen, who will graduate in 1994, the 50th anniversary of the Mark 1 (the first computer at Harvard). This next revolution of computer communications has already impacted other institutions and is beginning to affect Harvard. By 1994, everyone here will be able to send computer messages or files as well as log on to remote computers.

We are now beginning to envision a campus to enable this "well connected" future environment. Students graduating in 1994 will likely be able to communicate electronically with each other, with colleagues elsewhere, and with scholarly information services. Many departments will have new research tools, electronic books and information services, and more library and bibliographic information commonly accessible over the University Network.

Stephen C. Hall
Kendall School Political Simulations

What flight simulators do for aspiring pilots, the Kendall School’s Harvard Campaign Games will be able to do for managers and candidates of political campaigns. The gaming simulations will help those responsible for running such campaigns improve their skills without having to risk disastrous real-life consequences of poor decisions.

When completed, the Gamer, a project of the Strategic Computing and Telecommunications Program at the Kendall School of Government, will be a series of programs using personal computer technology to enable players to make political action choices on the basis of available information.

Jerry Meckling, Director, and Tom Fletcher, Associate Director of the program, envision the simulations as useful for teaching political managers to identify and turn particular situations to their advantage, as well as helping them to minimize potential destructive consequences.

Computer-based tools will allow the simulations to provide feedback to players like dealing with the press, producing media events, and interpreting polling or targeting information through analysis of survey and electoral data and precinct mapping. The tools will also provide data base management, predictive modeling, and media strategy design capabilities. Current plans are to develop the simulations with HyperCard and Apple technology, which will provide a transparent student interface for the lessons.

The visual dimension of interactive video technology and its accompanying audio track establishes a multi sensory relationship, as well as permitting students to determine the speed, direction and subject matter of each session. These capabilities promote direct, active participation and enthusiasm for the learning experience.

By taking advantage of the technology’s branching capabilities, the simulations will provide many possible combinations of options, allowing students to see the consequences of their political decisions. To add to the impact of the learning experience for professionals, the developers of the games plans to use excerpts from interviews with experts in politics and the media for direct, individualized feedback.

In addition to their tendency to enhance motivation, simulations offer greater likelihood that learning will be transferred than do conventional drills, tests, or tutorials. With their intensified, accelerated recreation of real-life situations, videodisc simulations are especially suitable for adult learning situations. Developers of the Harvard Campaign Gamer expect the project will prove very useful to students and would be political managers.

For more information about the simulations or the technology being used to develop them, please call Tom Fletcher at 495-3036.

Business School

projects, information that is necessary to make HBS EPIC a reality, and experimental or prototype projects, including information that gives added value to the project and is often revised on the basis of members’ input.

For example, one important baseline project, to provide on-line access to the School’s business case studies, may also facilitate distribution of paper copies of the cases. The studies, which now consist of 6-7,000 active cases, with 60-70 being added every year, are not only used by Harvard students but by many other universities and corporations as well.

The ability to send case files to the printer electronically would greatly facilitate paper production; the ability to distribute the cases over a network, once storage and licensing issues are solved, would greatly simplify transfer to other universities and would also considerably reduce the cost of making cases available.

A prototype CD-ROM disk was created last year. Another project being investigated is the use of optical storage media. As a prototype for this project, the group is planning to put the School’s building plans on disk to enable the planning office to access historical information and current updates to facilitate maintenance and changes.

The object of the task force is to create a system that is driven by the people who use it. HBS EPIC now exists in a version for personal computers and for the mainframe. The version being used with IBM PS/2 systems, includes Lotus (for producing case soft were spreadsheets), two word processing packages, Dow Jones News & Retrieval, CompuServe, the Baker Library catalog, a Prodigy demonstration (a new graphic, consumer-oriented, on-line magazine), and other software. The mainframe version, which can be used with any terminal emulation package, includes access to electronic mail, the Baker Library catalog, CompuServe, and several university libraries.

For more information about the project, please call Gwen Weaver, Director of Information Resources at the Business School, at 495-6093.