

MIAIMS INFOSPHERE



Missouri Integrated Advanced Information Management System
Health Sciences Community, University of Missouri-Columbia

Piloting to Success

MIAIMS Pilot Projects Give Their Participants Skills and Systems

Imagine this scene:

A doctor in the emergency room at University Hospitals and Clinics has a patient, a little girl who has apparently broken her leg in an accident. The doctor learns that the girl's primary healthcare provider is at Green Meadows Clinic, and that her records are there, as well. Rather than having to wait on the child's records to be delivered, however, the doctor simply logs into his computer workstation and accesses the University's healthcare record network. In seconds, he has his patient's entire medical record available to him, and can proceed with the appropriate treatment without delay.

Imagine, then, this scene:

An occupational therapy student with an interest in rural practice is serving an internship in a small, remote community. The rural hospital in the community does not have the resources to have an extensive library on site. The student, however, has been provided with a workstation and a link to a network of health sciences libraries throughout the state. She can perform literature searches on a variety of medical databases, request articles and communicate with other students and instructors back at her school.

Imagine, at last, this scene:

A veterinarian has ordered some clinical tests to be performed on a patient, a family's pet golden retriever. That evening, while working from his home, he logs into a database into which the laboratory technician entered the results of those tests. The veterinarian has immediate access to the information he needs to diagnose the dog's problem and plan the appropriate treatment program.

These are only a few of the possible services that may be available to support the University's health sciences community using the latest in computer and network technology. These sorts of programs don't simply happen, however. They must be carefully planned, tested and implemented on a smaller scale before being put into general use. That is the function of the Pilot Projects

Group, part of the MIAIMS Project within the Health Sciences Community.

For Tim Patrick, there are a number of purposes for the Pilot Projects. Dr. Patrick, one of the directors of the Pilot Projects Group as well as being an assistant professor for the Department of Information Science, said that a project is selected to become a Pilot Project based on a variety of factors. "One of the central goals of the MIAIMS Project," Dr. Patrick said, "is to develop the enterprise-wide electronic healthcare record. The Pilot Projects are, as far as possible, selected to further aspects of this overall goal, to work on pieces of it. In some cases this will produce development systems that can be translated to other contexts."

One of the most important achievements of a Pilot Project, though, according to Dr. Patrick, is that it teaches the participants how to evaluate a project to determine if it has met its goals. "Evaluation is not something that is either obvious or trivial. It's difficult," Dr. Patrick said. "I don't think anyone knows how to do it well."

Some of the most important results of working on a working system, according to Dr. Patrick, are the techniques and expertise developed by the personnel in a project that can be applied to a different context. "Every system is a throwaway," Dr. Patrick said. "The average life of systems is very short; that goes for whether you purchase the system or develop it. They don't live very long. What is important about evaluation is to look at a system, figure out what its important properties are—how it does what it does—and evaluating it means that you know it's possible now to build a system like that, with those defining properties, in another context, and it will succeed."

That is not to say, however, that the Pilot Projects are just exercises for their participants. Dr. Patrick said that a project can be "a proof of concept, looked at from one point of view. From another, it becomes a real, working production system, in this case the STAR (system for text archiving and retrieval), one part of an enterprise-wide electronic healthcare record."

Piloting to Success *continued*

Just as a production project must first go through a pilot phase, a pilot project goes through a prototype phase which tests the idea's potential for success. According to Dr. Allen Hahn, co-director of the Pilot Projects group, a project can go through three stages in its development. Dr. Hahn said that there are a number of important questions that must be asked and answered before a project can proceed. "Is it at all feasible? Can it easily become part of the whole MIAIMS effort? In other words, is its ultimate goal to improve healthcare informatics on this campus? If it is, then it's a viable candidate for a prototype project, and if the prototype project works out, it's a very viable candidate to become a pilot project."

Not every project that is initially considered, Dr. Hahn said, will end up being developed as a pilot project. "A lot of the prototype projects simply won't work out for one reason or another. If that's the case, so be it; we don't put a lot of resources into those. We put more resources into the pilot projects after they've shown they are, in fact, feasible."

Even before a project can enter the prototype stage, it must pass through a gauntlet of review and consideration. "What we would like to see [from someone submitting a project for consideration] is a two- or three-page, brief description of the potential goal, and some indication that the people proposing it first off have the experience and knowledge to move it along, or that they have the resources to get some of that knowledge, and secondly that they probably have done something to show that it's at all feasible." After discussing the project with the Pilot Projects staff, the proposal would then be presented to the MIAIMS Steering Committee and, if reasonable, approved.

The goal of this process, ultimately, is to provide the assistance and resources a member of the health sciences community needs to successfully turn an idea into a working system. "What we have never wanted the Pilot Project team to be is some kind of meddling force taking people's projects away from them," said Dr. Patrick. "Rather, we want to be a facilitator, and when possible to do so provide MIAIMS support." Dr. Patrick said that that support can take the form of both monetary and technical support.

According to Dr. Hahn, the typical life cycle for a project from prototype to production may be about eighteen to twenty-four months, but that the initial crop of pilot projects have not yet had enough time to reach that final stage. Even so, the team is currently thinking about what topics future pilot projects might cover. "At the moment, an area that we really need to look at is a whole group of modes and modalities whereby data can be entered into our data repository," Dr. Hahn said. "Does one use standard point-and-click methods on a screen? Does one use pen-based systems? Does one consider image scanners? Voice recognition? Keyboarding? There are a whole group of modalities to consider. We have a large number of different sites, so if we're going to make the input whole, then we have to accommodate all of these sites so the data can be gotten with the highest fidelity and greatest ease."

For more information about the Pilot Projects in particular and the MIAIMS Project overall, see <http://www.hsc.missouri.edu/miaims>.

Liveware

- *Allen W. Hahn, DVM, Ph.D.*
- *Timothy B. Patrick, Ph.D.*

Dr. Allen Hahn has had a distinguished career with some of the most prestigious universities in the country, a career which began here at MU when he earned his doctorate of veterinary medicine degree in 1958. From there, he went on to serve on the faculty of Auburn University in Auburn, Alabama, the University of Pennsylvania in West Philadelphia and Drexel University in Philadelphia. While at Drexel, Dr. Hahn earned a Ph.D. in biomedical engineering in 1968.

Dr. Hahn says that he has long been interested in medical records, especially veterinary medical records, and serves on the standards subcommittee of the American Veterinary Medical Association, which is attempting to set and propose standards in the medical informatics field.

Since returning to his alma mater, Dr. Hahn has been closely involved with the medical informatics training grant, serving as co-director, and also serving as one of the principal investigators of the MIAIMS grant. He said that he ranks MU's medical informatics program as one of the top in the United States. "There is such a wide variety of individuals and colleges participating, not just the School of Medicine. The entire Health Sciences Center, Veterinary Medicine, the School of Nursing, Library and Informational Sciences, Engineering, and Arts and Sciences are intimately and deeply involved. That gives us a unique role for all programs in the country."

In addition to his duties with medical informatics, Dr. Hahn serves as a professor of veterinary medicine and surgery, and as an adjunct professor of computer science.

Dr. Timothy Patrick is likewise an alumnus of MU, having earned here his Ph.D. as well as a masters and bachelors degree in philosophy and a masters in computer science. He served a term as a special trainee in medical informatics with the National Institutes of Health after being named a post-doctoral fellow with the Medical Informatics Group.

As well as serving as the assistant director of the MIAIMS Pilot Projects Group, Dr. Patrick serves as a research assistant professor in the School of Library and Informational Science. He is also the co-author of numerous papers and presentations dealing with medical informatics and library science.

MIAIMS Progress Notes

The Policy Committee met in July and heard Joyce Mitchell report on the pending reorganization of computing and information technology to create an integrated unit that spans the Health Sciences Center. The committee discussed policy issues surrounding support for research technology and establishing Windows/Intel as the standard at least for administration desk tops. This non-Macintosh standard would not be imposed on faculty using Macs other than for administrative functions.

The Steering Committee met in July. Mike Roberts of MIG described the desktop end user support team (see *IT Comes for Your Computer!* on page 4). The committee also heard reports about the evaluation of the MIAIMS projects and the External Advisory Board, which will be invited to assist with evaluation and guidance. The members of the Board are:

- W. Ed Hammond, PhD, Duke University
- Judith Ozbolt, RN, PhD, University of Virginia
- J. Robert Beck, MD, Baylor College of Medicine
- Wayne Peay, MLS, University of Utah
- Samuel Schultz, PhD, University Hospital Consortium

The Consumer Health Information Committee met in July. The Web site review task force introduced criteria by which committee members will evaluate health information web sites before submitting the URL as a link from the LifeSphere pages. The evaluation criteria will be posted on the HSC Web site: <http://www.hsc.missouri.edu> on the Consumer Information page.

The Web Team is working to publish information that will be useful for faculty and staff of the MU health sciences community. Soon to be up on the Web will be Student Services, the hospital formulary, and the NeuroMedicine information.

A Step Toward a Common Medical Language

Lack of a common medical language is the single most pervasive problem in integrating databases and processing information for an electronic health care record. When data is stored using different systems of language concepts and meanings are expressed differently.

Mark S. Tuttle, Vice President and CIO of Lexical Technology Inc., Alameda, California, visited Medical Informatics Group and oncology physicians in July to discuss a system of translating one controlled vocabulary into another controlled vocabulary. The Universal Medical Language System (UMLS) is being developed by the National Library of Medicine as a kind of thesaurus to combine information from different sources to support processing of all information for a patient's medical record.

A classic example of this way of using the Metathesaurus to combine information from multiple sources is to translate patient discharge diagnoses that are in the form of

ICD-9 codes to MeSH codes, and to use the resulting MeSH codes to search MEDLINE. The upshot of this combination is supposed to be the retrieval of literature that is relevant to the patient's discharge diagnosis. Another example is keeping a patient's problem list in such a way that terms are universally recognizable for search purposes. Some simple examples: pulmonary and lung, cardiac and heart.

Mr. Tuttle intently looked at several projects geared toward providing information relevant for electronic medical records and suggested ways to incorporate the UMLS Metathesaurus "middleware" translation function. Work will begin immediately to prepare our sources of patient information through the STAR (System Text Archive and Retrieval) project for common reporting functions. Tuttle and his group will be hired to apply what they have already spent months researching allowing us to begin with some already developed tools.

Anonymous Benefactor Targets Medical Software

The Medical Software Account has been established through the generosity of an anonymous donor. John Reid, PhD, Professor, Medical Informatics Group announced the initiation of the fund to acquire software of general medical usefulness, including educational software. Purchase of computer software of medical interest will be approved by Dr. Reid following review by selected faculty, students, and the MIG Student Computer Lab Manager. It will then be made available for use.

Anyone may make a contribution to this fund via the Advise of Gift Forms available throughout campus or a check for the Medical Software Fund may be sent directly to Health Sciences Development Office, One Hospital Drive DC 205.00, Columbia MO 65212.

Notes from the J. Otto Lottes Health Sciences Library

For more information about the following, call Health Sciences Library Information Services at 882-6141, email us at hslrefer@mizzou1.missouri.edu or access the Library's Web page at <http://www.hsc.missouri.edu/library/docs/library.html>

MERLIN in Review

As announced, MERLIN was successfully launched the last week of May. An integrated system, MERLIN (Missouri Education and Research Libraries Network) will translate into enhanced efficiency for the technical processing areas of the library. Unlike LUMIN, the previous online catalog, MERLIN affords access to the Library Catalog as well as various indexes and databases.

The databases covered reflect the range of disciplines taught on the four campuses of the University of Missouri. In addition to health sciences databases such as MEDLINE and CINAHL are general reference databases such as Dissertation Abstracts, business/law databases such as Business & Company Profile and Legal Resources Index, and science and technology databases such as Biological Abstracts and Current Contents. Keep in mind that these databases could be used to supplement a search on MEDLINE. Current Contents, for example, is generally only two to three weeks behind the current journal issues as compared with MEDLINE being 3 to 4 months behind. While you sacrifice the in depth indexing of MEDLINE, you gain currency.

Highlights of the Library Catalog on MERLIN

The table of contents of approximately 60,000 texts is searchable, making it possible to preview a book before seeking it out on the shelves. Once a record is found, it can be e-mailed to your account or printed. It is now possible to limit searches by date, language, library or type of material (eg. slide, videocassette.) Additional advantages of MERLIN are the ability to browse backwards, to retrieve more than 30 items at a time, to move from a given title to other items shelved nearby, and to jump to the exact volume needed within a large run of journal holdings.

Connecting Remotely to MERLIN

You can access MERLIN using Telnet. To do so, you need to have a Telnet application such as Win QVT/Term installed on your computer. Enter the MERLIN's address, which is merlin.missouri.edu. You may login as "library," which you must type in lowercase letters. If you need assistance, contact your network administrator. Keep in mind that to access MERLIN via Telnet you must be a University of Missouri affiliate connecting from a computer located on campus, or be connected to one of the campus SLIP servers. Assess is not available through commercial online services such as America Online.

What the Future Holds

In the next year, look for more databases to be added to those already up on MERLIN. Also, the following features are slated to be added to the MERLIN Library Catalog: the ability to order materials, place holds and see what items you have checked out; the ability to search the library holdings of St. Louis University (including their Health Sciences Library); and alternate access via a Web browser such as Netscape or Mosaic.

IT Comes for Your Computer!

A little less frightening than the Stephen King creation, but definitely in the formative stages are the information technology (IT) support plans in the health sciences community. These support teams are run by Mike Robertson for the academic units and Lois Nauert for the hospital and clinics. Robertson, the user-support and training coordinator for MIG, has unveiled the plan to improve network and desktop support resources and develop consistent standards for equipment, software and effective use. The strategy is primarily to develop a two-tiered support staff: cross-funded department support staff and network specialists from the central support staff team. A help-desk function will provide immediate and responsive support. This includes a consolidated HSC-wide help center, evaluation of appropriate help desk tools and provision of after-hours support if needed.

Training will be coordinated to create a knowledge base for the technical team. Desktop user needs will be addressed by providing training for software commonly used by staff and faculty. Offerings will be orchestrated

among the entities that provide training. The first example of this coordination is occurring in the HTML and Web page preparation sessions offered through the MIAIMS project. The hospital's new computer training center will be the location of HTML mark up courses offered by MIAIMS staff to any HSC employee responsible for creating or maintaining departmental/unit Web pages.

Nauert's group, Information Technology, provides support in the Hospitals, taking the form of Client Services (support) and running 24 hours a day, 7 days a week. Hospital Information Services staff operate Monday through Friday until five and support is turned over to University Computing Services for nights and weekends. User support staff will help set up and fix PCs. Second level technical specialists handle network problems. Training coordination and IS services coordinator roles have been established.

For more information, contact Mike Robertson at 882-0742 or Lois Nauert at 882-6630.

InfoNotes

Just finished reading the July/August issue of *Infosphere*. I read with interest the article concerning MIDAS which was good except it failed to mention that the Fulton connection, the connection to Dr. Churchill and two other radiologists homes, and the several other rural connections came about because it is part of the telemedicine project. We also need to give credit to the Office of Rural Health Policy for the funding the teleradiology links.

Weldon D. Webb
Associate Dean, External Affairs
Health Sciences Center

Do you have a comment about *Infosphere*? Please send a message to Lamar Henderson, 626 Lewis Hall, or e-mail Lamar_A._Henderson@muccmail.missouri.edu.



The Adventures of

Jack Hammer

NETWORK DETECTIVE

by Alan Arnold
(Apologies to Mickey Spilane)

The name is Hammer. Jack Hammer. I'm an eye. A network eye. Ya know, computer shamus, data dick, system detective. I'm the guy they call when the stuff hits the Casablanca and there's no one else fool enough to take the job. I make my living off of the soft underbelly of the computer industry. It's a brutal, ugly, nasty business . . . and it's all I live for.

It was about 8:00 a.m. on Tuesday the 3rd and I was on my way to my standing gig with the School of Medicine. I had just pulled up to a red light and nudged the bonehead in front of me. Even through the driving rain, I could see him givin' me a rough time through his rear window. People are always braver behind a locked car door and this guy was a real stallion. I casually flipped down my shades 'cause I wasn't in the mood to worry about his personal problems. The smell of exhaust was makin' my head throb and the radio was belting out some devil rock marathon. I would have shut the thing off in a heartbeat, that is, if there had been any knobs left on the console. Course, if I'd had any brakes I wouldn't have rear-end the punk in front of me either.

The light turned green and my new pal flipped me an obscene gesture and hit the gas. The poor chump was more worried with his parting shot to me than he was with the road up ahead and before he knew what hit him, he drove over an island and bottomed out his car. Ordinarily I would have helped him, but I was late for work. As I passed him I waved. I'm sure he wasn't holdin' a grudge.

I managed to miss the next couple of lights which was a big relief. Gearing

down and coasting up to the stop wasn't cutting it. I knew the moment that the brake lever dropped through the rusted-out floor of the car, there might be some trouble down the road. Little did I guess how prophetic those words would be. I finally made it to the parking garage and got safely planted. As I walked up the stairs to my office, I shook out a woodbine and tucked it between my lips. I fumbled for a lighter but remembered I didn't smoke. Hey, it's an image.

At 8:11 a.m., I strolled into the office. It was dank and muggy. I was mugged twice before I made it to my chair. What a rat

"I sighed and picked up a cup of coffee that I'd been trying to finish for the last four days, part of a programmer's complete nutrition. It was finally starting to get too tough to chew, so I made a mental note to get a refill."

hole. I hadn't even slipped out of my London Fog when this cute little number comes waltzing in and says, "I got a problem with my computer."

"Give my secretary the details and I'll get back to ya." I replied as I shook the moisture from my coat.

"Hey, pal," she says as she snaps her gum at me. "I hate to break it to ya, but you ain't got no secretary." She had me there. I sighed and picked up a cup of coffee that I'd been trying to finish for the last four days, part of a programmer's complete nutrition. It was finally starting to get too tough to chew, so I made a

mental note to get a refill. Maybe next time I would cut back to the 64 ounce go cup. I grabbed my tool kit and said "OK sister. Let's get a look at that box."

"Scuse me?" she said.

"Ya know," I droned on. "Box, unit, rig, CPU, station, machine, terminal, computer, PC . . ."

"All right. All right." She moaned. "I get the picture." I shook my head. Dames.

When I got to her office, I had the problem figured right off. Her equipment was running but there was nothin' but a pure raster image on the CRT. I peeked under her desk to find the monitor cable lying on the ground. She'd probably knocked it loose while working on a dictation tape. I squirmed under the table, popped the 9-pin back in to the card and this time I screwed it on. When I crawled back out she said, "Wow. That was boss!" She was obviously impressed. Her monitor was back to normal and waitin' at the system login screen. With a flash of the pearly whites, I tipped my hat, a hat I hadn't removed since I'd arrived, and replied, "No problem, Sweetheart. All in a day's work."

Unfortunately, as I made my courtly gesture, a small stream of water poured off the back of the hat brim and splashed into her surge suppressor. Needless to say, that was one surge that didn't get suppressed. "Oops" I said, grinnin' like a dope. "I'll run down another strip," and then ducked out of her office quick as the screaming started to get unbearable. Whatever happened to gratitude.

To be continued . . .

InfoTours

Medical Informatics Group

Tuesday Noon Seminars

- Sept 3 George T. Rickerson, Director, Library Systems
GL-11 *MERLIN*
- Sept 10 Mark Shelton, MIG Fellow
GL-11 *Medical Image Databases: A Resource of the WWW*
- Sept 17 Rebecca Morton, Director, Department of Medical Records
GL-11 *Medical Records*
- Sept 24 Mauricio Leon, M.D., MIG Fellow
Lewis 631 *Parallel Neural Networks for Chromosome Recognition*
- Oct 1 Laura Hardin, DVM, MIG Fellow
GL-11
- Oct 8 Zuhdi Lababidi, M.D., Professor, Child Health
GL-11 *Virtual Reality*
- Oct 15 Joe Stanley, MIG Fellow
1W-19
- Oct 22 Gary Allen, DVM, MIG Fellow
GL-11

MEDLINE, CINAHL and PSYCINFO

The OVID system makes available both DOS and Windows versions for searching journal literature in PsycINFO, MEDLINE and CINAHL. These workshops focus on the Windows version; DOS instruction is available on request. Enrollment is limited to 8 people for each workshop. Classes may be scheduled for individuals or departmental groups for dates other than those listed. All workshops will be held in HSL 126. To reserve a place in any of the classes, call 882-6141, or register on the Health Sciences Library's home page on the World Wide Web; the URL is <http://www.miaims.missouri.edu/library/docs/wsreg.html>.

MEDLINE

Sept 10 10:00 - 11:30 am Oct 2 3:30 - 5:00 pm

CINAHL (Nursing and Allied Health Database)

Sept 25 3:30 - 5:00 pm Oct 15 10:00 - 11:30 am

PsychINFO

Sept 10:00 - 11:30 am Oct 24 3:30 - 5:00 pm

HTML Classes

Watch the HTML Classes and Workshops webpage at http://www.hsc.missouri.edu/main_ndx/announce/html.html for news about the Fall 96 class schedule.



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For ADA accommodations, contact the MIAIMS office.

Infosphere is available on the World Wide Web at <http://www.hsc.missouri.edu/infosphere/docs/infosphere.html>

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