

IAIMS PLANNING FOR UNIVERSITY OF MEDICINE AND DENTISTRY OF NEW JERSEY

FINAL REPORT

September 1999

This report summarizes IAIMS strategic planning activities at the University of Medicine and Dentistry of New Jersey. The original proposal was submitted in June 1995, with a follow up Progress Report in March 1996 (**Appendix 1**), prior to final review. Notice of the award was received in August and funding began September 1, 1996. A number of activities were ongoing between the time of the submission and the time of the award. An annual report of activities was submitted in July 1997 (**Appendix 2**).

The IAIMS Project has been functioning this past year with an extension received from the Grants Management office at the National Library of Medicine, without additional funds. The request for the extension was made in light of the changes in leadership at UMDNJ. The additional time was designed to provide an opportunity to familiarize the new administration with the goals of the project. Since his inauguration as the new President on April 9, 1999, Dr. Stuart D. Cook and other members of his administration have expressed the University's continued support for the IAIMS Project objectives.

The grant's objectives appear below, followed by a description of the related activities and accomplishments.

ORGANIZATION FOR PLANNING

The UMDNJ IAIMS Planning Grant Project has operated this year under the leadership of Mr. Victor A. Basile, University Librarian, as the Principal Investigator. Mr. Basile assumed the responsibility last spring, with the approval of the National Library of Medicine. The vacancy occurred with the departure from the University of the previous Principal Investigator, Dr. Paul Larson. Dr. Susan B. Mettlen, the new Vice President for Information Services and Technology (IST), became an IAIMS Project Co-Director in February, 1999. She replaced Mr. A. Jerome York, who vacated the office in August, 1998 when he resigned his position as Associate Vice President for IST here at the University. Alberto Forestier, Director, IST/Telecommunications, and Co-Chair of the IAIMS Technology Resources Planning Committee, served as Acting Associate Vice President for Information Services and Technology during the interim period. The

University Administration's decision to upgrade the position to the Vice President level is a measure of the importance that is now attached to the responsibilities of the office.

Dr. David Gibson, Dean of the School of Health Related Professions (SHRP) and Chair of the committee that drafted a proposal for establishment of a University-wide Center for Health Informatics, is the most recent addition to the IAIMS Co-Director team. The SHRP is the home of the Biomedical Informatics academic program at the University.

CONDUCT A COMPREHENSIVE INFORMATICS STRATEGIC PLANNING PROCESS

Each of the seven IAIMS Planning Committees has prepared a report of its findings, recommendations and proposed IAIMS operational projects. These reports, as well as minutes of the meetings of the committees, can be viewed at the UMDNJ IAIMS Project Web site at the following URL's:

Administrative Systems	http://mediacenter.umdj.edu/iaims/adminsys.htm
Clinical Systems	http://mediacenter.umdj.edu/iaims/clincsys.htm
Educational Resources	http://mediacenter.umdj.edu/iaims/edres.htm
Information Policy	http://mediacenter.umdj.edu/iaims/info_pol.htm
Research Support	http://mediacenter.umdj.edu/iaims/research.htm
Scholarly Resources	http://mediacenter.umdj.edu/iaims/scholres.htm
Technology Resources	http://mediacenter.umdj.edu/iaims/techres.htm

Copies of the committee reports also appear as **Appendix 3** to this document.

As part of the internal assessment process, faculty and student computer utilization surveys were conducted in order to determine technology skill and use levels by school, and to assist in the planning of student training and faculty development programs. Copies of the combined survey results are available upon request.

ENVISION AND ARTICULATE THE FUTURE OF UMDNJ AS THE "VIRTUAL UNIVERSITY OF THE HEALTH SCIENCES"

The University is involved in a number of collaborative and technologically advanced educational, research and scholarly resources ventures that are making its status as a "Virtual University of the Health Sciences" a reality.

The Virtual Academic Library Environment (VALE) Project, an undertaking funded by the Higher Education Technology Infrastructure Bond, matching institutional funds and a grant from the New Jersey State Library, provides \$1.1 million dollars to assist in the development of New Jersey's first major collaborative academic library initiative involving both public and independent colleges and universities across the state. VALE seeks to provide a seamless network of access to shared electronic academic

information resources, including bibliographic databases & abstracts, and full text serial & monographic works throughout the state of New Jersey. Information important to the health care field, as well as related areas in the general & social sciences and business, is provided. The UMDNJ-University Libraries are a key participant in the project; staff, faculty and students of the University, regardless of their academic program or geographic site, have equal access to the VALE materials.

The UMDNJ School of Health Related Professions (SHRP) has been a pioneer in the area of distance learning. It operates multiple joint degree programs in the health sciences with a wide range of colleges and universities throughout the state of New Jersey. Twelve classes in seven of these programs are conducted via interactive videoconferencing between the various campuses of the University. In the fall of 1998, the SHRP began to offer several courses primarily or exclusively via the Web, utilizing WebCT technology; it currently provides eleven courses in this format. The focus is on courses for the Bachelors of Science in Health Sciences, a degree program designed for practitioners credentialled at the associate degree level. Starting in the fall of 1999, the SHRP will begin to offer courses in its new graduate certificate in Health Systems program, completely via the Web. Complementing the 12 credit certificate program, the school will begin offering a Masters of Science degree in the year 2000. SHRP's partner in the venture is the Clinical Laboratory Management Association (CLMA), an international professional association for clinical managers. The program is designed to meet the needs CLMA has identified for graduate level programming to meet the competencies required of clinical managers in a variety of health care settings.

UMDNJ is an active participant in the establishment (January 1999) of the New Jersey Virtual University (NJVU), represented by Dr. Julie O'Sullivan Maillet of the UMDNJ-SHRP. She also co-chairs the NJVU Committee on Faculty Development. NJVU currently provides a Web-based index of information about more than 800 distance learning courses and programs at 42 New Jersey colleges and universities. As part of the NJVU initiative, New Jersey's governor has proposed \$500,000 for faculty development activities that will enhance instructional design and maximize the potential of technology to enrich the academic experience. This funding will also enable institutions to acquire the tools and expertise needed to develop and deliver interactive courses over the Internet. Individuals and employers can log on to njvu.org and discover the wide variety of distance learning opportunities available, ranging from continuing education courses to those leading to undergraduate and graduate degrees. By helping our institutions reach well beyond our state's borders, the Virtual University will put New Jersey at the forefront of distance education, including the health sciences field.

The UMDNJ-Robert Wood Johnson Medical School Center for Biomedical Imaging and the UMDNJ-New Jersey Medical School Department of Pathology and Laboratory Medicine are partnering with other institutions in the HUBS (Hospitals, Universities, Businesses and Schools) initiative to create a "Smart Region" for Delaware, Maryland,

New Jersey, and Pennsylvania. The federal government as well as industrial and academic partners have invested heavily to create a very ambitious informatics infrastructure for the region. UMDNJ will work with Johns Hopkins University, the University of Pittsburgh/Pittsburgh Supercomputer Center, the University of Pennsylvania, and Science Applications International Corporation on a collaborative telemicroscopy application, one of the HUBS hospital cornerstone projects. Using a Virtual Private Network built especially for the Next Generation Internet, the telemicroscopy team will develop an intelligent imaging archive and a regional standard for describing and sharing microscopy images. The result will be a high-bandwidth, low-latency network that enables rapid viewing, storage, and retrieval of microscopy images from remote locations. Database queries with unknown images will be made using image feature matching. The goal is to support collaborative research and education by providing hospitals, medical schools, and universities in the region access to live and virtual telemicroscopy conferences.

The University is an active partner in the Millennium Project, Inc. (a non-profit organization) with the mission of making Newark an online city, developing a model for other cities to follow. The project had its beginning in the desire of the Technology Committee of the Newark City Council to utilize new and developing technologies to improve municipal services to the residents and businesses of Newark. As a rule, central cities lag behind the national average for personal computer ownership and online access. Begun with seed money from the city, the project now has broad support from the academic and business community. The Millennium Project's fifteen member Board of Trustees represents a broad spectrum of Newark's academic institutions, including UMDNJ, as well as city government, businesses and organizations (including national and Fortune 500 technology companies).

One of the goals of the Millennium Project is to promote greater access to health care via telemedicine and multimedia communication technology. Among their strategic goals is the connection of 10,000 low income residents to the information superhighway via the Internet, providing in-home and public kiosk access to telemedicine and government information. User training will also be offered. Quality enhancement and cost reduction of medical care through earlier identification and treatment is a related goal. To that end, UMDNJ is establishing a Center for Telemedicine to design, produce and transmit health care and medical information resources to selected sites in Newark.

PREPARE THE UNIVERSITY COMMUNITY TO PARTICIPATE IN AN IAIMS ENVIRONMENT

Logistical and communications support for the IAIMS Project has been provided throughout the grant by the IAIMS Office staff, consisting of the Project Coordinator, Laura P. Barrett, M.L.S., and the Project Assistant, Michael Greene, M.B.A. Funding for Mr. Greene's position has been provided by the university-wide Academic Information

Technology Advisory Committee (AcITAC). AcITAC has recently voted to provide funding support for staff and other activities as part of an IAIMS Operational Phase Grant application process. Ms. Barrett and Mr. Greene provide logistical support for all meetings of the Planning Committees, Steering Committee and Co-Directors. Ms. Barrett has attended each of these meetings and served as recorder, preparing summaries and assuring follow-up. She has also prepared regular updates on project activities for University committees, and drafted grant reports for the funding source. She has met with the IAIMS Co-Directors and/or Principal Investigator every two to three weeks for updates and consultation on project progress.

The Project Coordinator has recently been selected as Chair of the Educational Technology Subcommittee of AcITAC. A major goal of the Subcommittee is implementation of high priority objectives identified by the IAIMS Educational Resources Planning Committee. The focus of this year's programs is faculty development; funding has been appropriated by AcITAC in this coming year's budget to sponsor a pilot faculty development distance learning/multimedia training program. Last year, the Subcommittee was responsible for securing \$150,000 in funding from AcITAC and the Foundation of UMDNJ for the support of educational technology "minigrants" for the development of innovative education programs and courseware by faculty. Implementation has been the result of a close partnership among UMDNJ's Office of Academic Affairs, the Office of Planning and Development, and the Manager of Instructional Technology, Academic Computing Services/Information Services and Technology.

Ms. Barrett and Mr. Greene have been responsible for managing listservs for the Steering Committee and the individual Planning Committees, which have been an important means of communication with members. Over the course of the IAIMS Project, they have compiled a listing of the e-mail addresses of individuals within the University who wish to receive regular updates on project activities and sponsored programs, to provide them with routine alerts. They also maintain an intranet Web site for use by those involved in IAIMS strategic planning; its URL is <http://mediacenter.umdj.edu/iaims/>. It provides access to the text of information policies, committee reports, lists of committee members, minutes of meetings, links to Web sites identified by the committees, links to other IAIMS Web sites, and references.

During the course of the IAIMS Project, 10,000 copies each of five issues of ***Connexions***, the IAIMS Project newsletter, were distributed to administrators, faculty and staff on all campuses of the University; to educational institutions and government agencies that work with UMDNJ on information technology projects; and to other IAIMS Consortium members. November 1997 saw the inauguration of a Web version of the publication, where current and previous issues can be viewed at www.umdj.edu/connxweb/.

At the request of the senior administration of the SUNY Health Sciences Center at Brooklyn, the UMDNJ IAIMS Project hosted a site visit by representatives from their

institution on July 8, 1998. Visitors included Dr. JoAnn Bradley, Vice President for Academic Affairs; Ivan Durbak, Chief Information Officer; Dr. Jack Lubowsky, Scientific & Academic Computer Center; Michael Burns, Hospital Information Systems; Barbara Virgil, Assistant Vice President for Planning; and Dr. Rick Winant, Library Director. UMDNJ participants included Victor Basile, Beth Alger, Jerry York and Laura Barrett; Karen Putterman, M.D., Associate Vice President for Academic Affairs; Julie Maillet, Ph.D., Associate Dean of Academic Affairs & Research, School of Health Related Professions; Judith S. Cohn, M.L.S., Assistant University Librarian & Director, George F. Smith Library of the Health Sciences; and Mindi Jacobson, M.P.H., Director of Special Projects, Office of Academic Affairs. The agenda included discussion of what it takes to get an IAIMS grant started and written, benefits to the institution of having an IAIMS grant, strategies that work best in supporting the strategic planning effort, and what UMDNJ envisions as its next steps.

On Wednesday, April 22, 1998, the Newark campus of UMDNJ was the site of a symposium sponsored by the UMDNJ IAIMS Project and the NN/LM (National Network of Libraries of Medicine) Middle Atlantic Region. The program was entitled "Health Care in the New Millennium: Emerging Information Technologies in Clinical Care and Research." The morning keynote address was given by Patrick Brill-Edwards, M.D. on "Evidence-Based Medicine: Snake Oil, Cure or Neither?" Dr. Brill-Edwards is Associate Professor and Director of the Internal Medicine Residency Program at McMaster University Medical Center in Hamilton, Ontario. Jean Sullivant, M.L.S., Levy Library, Mt. Sinai School of Medicine, spoke next on "Finding that Elusive Evidence: Issues, Concerns, Hints and Solutions."

The afternoon session included presentations by members of the New Jersey Medical School, Department of Medicine. Chairman Waldemar G. Johanson, M.D., spoke on "Use of a Clinical Research Database (Medlog) as an Information System;" Debbie Salas-Lopez, M.D., addressed "The Impact of a Change of Attending Physician on Resource Allocation in a Teaching Hospital;" and Monika Safford, M.D., covered "Implementing an Outpatient Medical Record at an Academic Inner City Hospital: Words of Advice." Concurrent demonstrations of clinical education courseware developed by UMDNJ faculty were held during the lunch period; several of the programs were developed with minigrant funds provided by the Educational Technology Subcommittee of AcITAC, mentioned earlier.

The meeting was attended by about 110 persons, including more than 20 participants and presenters. Evaluations of the program were positive; the faculty courseware demonstrations were particularly popular.

"The Future of IAIMS in a Managed Care Environment" was the theme of the Fourth Rosenstein Lecture in Biomedical Informatics co-sponsored by the UMDNJ IAIMS Project and the Friends of the George F. Smith Library of the Health Sciences on April 7, 1997. Dr. Roger Dahlen of NLM was on hand to make a formal presentation of the grant, and to address the audience on the NLM IAIMS program. The Rosenstein

Lecturer was Don E. Detmer, M.D., Senior Vice President of the University of Virginia. In addition to his formal presentation to over 100 faculty, administrators, staff and students, Dr. Detmer met to discuss strategic planning with the Principal Investigator, Co-Directors and Planning Committee Co-Chairs. He also addressed a luncheon attended by a large majority of the Planning Committee members.

FORMULATE ORGANIZATIONAL POLICIES WHICH FACILITATE LOCAL INNOVATION

The IAIMS Information Policy Planning Committee has completed policies in the following four areas: Information Management (incorporating previous policies on Administrative Data Management, Data Base Development, Computer Information Protection and Computer Security); Patient Confidentiality & Health Information; Rights and Responsibilities for the Use of University-Accessed Electronic Information Systems; and Educational Use of Copyrights. The draft policies went through several levels of review throughout the University, including examination by all the IAIMS Project participants, and were revised several times to reflect the feedback received. They have now been approved by the Deans and Vice Presidents of the University, and promulgated officially. The revised policy on Patient Confidentiality & Health Information proved to be both timely and useful during the University Hospital's recent JCAHO accreditation process.

The most recent version of the policies can be viewed under the heading of "Publications" of the UMDNJ IAIMS Web site: <http://mediacenter.umdnj.edu/iaims/>; they also appear as **Appendix 4** to this report.

DEVELOP A FRAMEWORK FOR A UNIVERSITY-WIDE INFORMATICS CENTER

A proposal for the establishment of a university-wide Center for Health Informatics (CHI) has been drafted by a committee chaired by Dr. David Gibson, Dean of the School of Health Related Professions, with representatives from the University Libraries, the Office of Planning and Development, and the Office of Academic Affairs. The proposal has received the endorsement of the IAIMS Steering Committee, the Academic Information Technology Advisory Committee (AcITAC), the Vice President for Information Services & Technology, the Office of Administration & Finance, the Office of Academic Affairs, and the Deans of the eight schools of UMDNJ. At their regularly scheduled meeting on September 14, 1999 the Board of Trustees of UMDNJ accepted, approved and ratified the proposal.

In addition to the technologically sophisticated resources available within the academic units at UMDNJ, there are strong indications that the Center will receive additional space in a new building to be constructed on the University's Newark campus; it is

possible that some of the construction expenses for the Center will be covered by a private donor, and funding for personnel and start-up costs will be identified and appropriated as needed in the University's next fiscal year beginning in July, 2000.

The goals for the CHI are to create a comprehensive integrated information access and management system for UMDNJ's schools and clinical facilities; to connect health professions experts at UMDNJ; and to communicate biomedical informatics related approaches and ideas both internally and externally. Achievement of these goals will entail provision of decision support, patient care systems and online clinical information resources. Information about point-of-care services should be synthesized and integrated to form a statewide health sciences education environment for clinicians, students, educators and researchers. The Center will establish a forum for those interested in the application of computing and communication technologies, including both theoretical and applied research in health informatics.

A copy of the proposal for the CHI can be viewed under "Publications" at the UMDNJ IAIMS Web site at <http://mediacenter.umdnj.edu/iaims/>; it also appears as **Appendix 5** to this report.

RELATED ACTIVITIES AND INFRASTRUCTURE DEVELOPMENTS

In 1993, the Governor of the State of New Jersey signed into legislation a \$100 million Higher Education Equipment Leasing Fund intended to provide on-going financial support for emerging technology needs in instruction, computing or research, and for changing instructional approaches in fields that did not, in the past, utilize technology extensively. UMDNJ's allocation from the ELF was \$10.8 million. A deliberate, collaborative process was formulated to distribute these funds. The process was supported by a review committee comprised of representatives from AcITAC, IST and Central Administration. The more significant investments included: 40% of the UMDnet building wiring; upgrade of all Academic Computing Services UNIX hosts; installation of the full Medline database with abstracts and indices; upgrade of workstations in public student computer labs on all campuses; and videoconferencing equipment for twelve sites.

The Governor signed the Technology Infrastructure Bond Fund Act in 1998, with similar objectives. UMDNJ's share of the funds was \$10.5 million. Once again, a highly collaborative process, facilitated by the organizational relationships established by the IAIMS Planning Project, determined the distribution of the funds. Major projects include acquisition of a new, Web-based integrated library system (Endeavor's Voyager) for all of the University Libraries; the upgrading of all the the workstations in the public access computer laboratories on each on the campuses, and in the University Libraries; upgrading of all of the UMDnet campus servers; upgrade of the network

wiring between campuses; completion of retrofitting of the wiring in older University buildings; upgrade of the videoconferencing equipment and network.

EVALUATION

Under the direction of Dr. Cecile Feldman, the IAIMS Project Evaluator, a comprehensive evaluation of the planning process has been conducted with the assistance of Dr. Pamela Matheson, Director of Institutional Research and Quality Improvement at the New Jersey Dental School, and Dr. Cynthia Baur, a research fellow in the Department of Family Medicine at RWJMS. Dr. Matheson was responsible for the data compilation and analysis of the computer literacy and utilization surveys done of the faculty and students. A more detailed survey/interview of faculty computer use patterns at the Robert Wood Johnson Medical School was conducted by Dr. Baur. Together, they designed a study which entailed analysis of the meetings, products, publications and communications of the various IAIMS Committees. This was followed up with in-depth interviews of the IAIMS Project Co-Directors, Steering Committee members and Planning Committee Co-Chairs. A written survey designed to elicit their assessment of the IAIMS planning process was distributed to all the members of the Planning Committees. The results of that survey were utilized in preparing the final evaluation report, which appears as **Appendix 6** to this report.

CONCLUSION

As the strategic planning phase of UMDNJ's IAIMS process draws to a close, the participants can look back on the accomplishments of that period, and look forward to the goals to be achieved in the operational phase. Milestones include final recommendations and reports from each of the Planning Committees; four information policies developed by the Information Policy Planning Committee; and plans underway for the creation of a Center for Health Informatics. The proposed Center will go a long way towards ensuring the success of the information technology goals identified in the IAIMS strategic planning process.

The IAIMS Strategic Planning experience has fostered an environment of communication and cooperation among the many disparate academic and administrative units of the UMDNJ community whose ability to function creatively and productively is impacted by information technology in its many forms. The planning process established relationships among departments that do not report to one another formally, most notably the University Libraries and the various divisions of the Information Services and Technology group. The relationships forged have already led to highly productive and collaborative planning for the funds that the University received from the State of New Jersey to upgrade technology infrastructure. Projects implemented include expanded and enhanced videoconferencing capabilities between

several schools of the University and selected affiliates; installation of an intra-campus high speed (ATM) network; and upgraded campus servers.

The placement of the IAIMS Office within the University Libraries has also given prominence and exposure to the Libraries among key administrative levels of the University, which has enhanced funding and growth opportunities. Alliances have been fostered for a number of projects the University Libraries has sought to promote, most notably expansion of its electronic resources, the implementation of a Web-based integrated library system and wide deployment of new servers and workstations throughout the facilities. These alliances have been particularly beneficial during a period of considerable administrative change at the University. New faces at the highest levels of the University are even more enthusiastic than their predecessors about the possibilities of IAIMS.

The IAIMS Co-Directors would like to thank the National Library of Medicine for its support of the University's IAIMS strategic planning process, and look forward to an ongoing relationship during the IAIMS operational phase.