Viewpoint ■

IAIMS: An Interview with Dick West

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Abstract Richard T. West, IAIMS (Integrated Advanced Information Management Systems) Program Officer at the National Library of Medicine for 13 years, reflects on the origin, development, effectiveness, and future of IAIMS efforts. He dwells on the changes that have taken place as the concept of IAIMS has evolved from a technology-based to an organization-based level of integration. The role of IAIMS in patient care, education, and research is discussed, along with the role of the librarian in the implementation of IAIMS programs. He sees a need for training for librarians, informaticians, and others in preparation for these efforts and for the development of academic reward systems that encourage them. He expresses a desire for those working in information technology in hospitals to gain a clearer understanding of IAIMS, because the concept fits hospitals as well as academic health science centers. He exhorts informaticians to bring to reality the futuristic fantasies of a new information world.

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Richard (Dick) T. West was the IAIMS (Integrated Advanced Information Management Systems) Program Officer at the National Library of Medicine (NLM) from 1983 until his untimely death on October 1, 1996. Dick had a passion (probably stemming from a job during his teen years at the U.S. Government Printing Office) for words, books, and information, which he viewed in its broadest sense, that is, not necessarily confined to a physical object like a book or journal or contained in a physical space such as a library. He saw the power and potential of information, and responsibility for the IAIMS grant program at NLM provided him with a perfect opportunity. IAIMS has many definitions, but primarily it is directed at breaking down barriers between the independent information systems that proliferate in health institutions. Dick was a passionate advocate for changing this landscape, so that information could be managed on an enterprise-wide basis and in an integrated fashion. Furthermore, as a librarian, he encouraged librarians to initiate IAIMS efforts and serve in key roles in IAIMS endeavors. Dick was a champion of information and loved to make others aware of its potential, which is why he was such a strong advocate of IAIMS and why his legacy will remain.

On May 4, 1995, Joan Ash conducted a three-hour oral history interview with Dick about IAIMS. This was done as part of an extensive oral history project, entitled ''Information Technology Diffusion at IAIMS Sites,'' which was funded by an NLM fellowship in applied medical informatics. Oral history is defined as ''a research technique that centers on the use and preservation of tape-recorded interviews for obtaining first-person accounts of how modern society has been shaped by causative factors of historical significance.''[1] It differs from other semistructured interview techniques in that the focus is on memories and perceptions of past events. Its many uses include life histories, institutional histories, and evaluation research, the latter being the purpose of this project.[2]

Dick West was a particularly good interviewee, for several reasons. He did not need a great deal of prodding, as he was naturally talkative about his favorite subject; he was also articulate and to the point. He had already given a good deal of thought to all the questions, and his answers reflected the depth of his knowledge and understanding. He was also forward

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thinking, and the five-year-old transcript is remarkably contemporary. It is because of this timeliness that Fran Johnson, now the IAIMS Program Officer at NLM, and Joan Ash decided to do some minor editing and gain permission from Dick's wife to submit the transcript for publication.

The following interview has been condensed and reorganized, but the words are those of Dick West.

JA: *Could you please tell me what your role is in IAIMS?*

RW: I'm the IAIMS Program Officer. When IAIMS was first developed, it was the result of a contract with the AAMC [Association of American Medical Colleges] and a contract report. I guess the study actually was conceptualized around 1979, and a contract was let about 1981. The report, the Matheson Cooper Report, came out in 1982. The NLM put out an RFP, request for proposal, for a contract and issued a number of awards, so that the very first IAIMSs actually were awarded on a contract basis. In 1983, that whole contract program became a grant program at NLM. I took that over and have been the contract officer ever since.

JA: *And you've gone on a number of site visits?*

RW: All the site visits, with one or two exceptions. In 12 years, I have done 50 to 60 sites visits, sometimes multiple visits to the same site. Either at a different stage, or sometimes for a reapplication, we would go back for a second site visit. One of the things to keep in mind is that IAIMS is a product of its time. When the activity was developed, institutions had mainframes, so lots of the notions of IAIMS reflected that. IAIMS in many ways was tied to technology, which reflected the times. Then, they had no clue what an integrated system might look like. The first stage was planning, the introduction to some population about what this technology might hold, the practical way to put in place a fantasy. The second stage was show-and-tell, to show the community what could be done, and the third stage was implementation.

Four to five years ago, we changed that, because the technology changed from mainframes to personal computers and distributed systems and the capabilities of remote information access and the like. The original concerns about people in the health sciences having no knowledge about computers were no longer valid. In fact, our reviewers no longer looked for applications from an institution that knew nothing about it; now they wanted places that knew what was going on. They began to say, it's not a phase one, but one and a half. A number of things happened. We got a new program director for extramural programs here at NLM, Milton Corn, who was closely involved with IAIMS at Georgetown, our reviewers had recommended to us that we look at it, and the IAIMS grantees actually recommended a change. So we dropped the model testing part but kept the planning, and now it's planning and goes straight to implementation.

JA: *Where do you see it going from here?*

RW: In a practical way, we're emphasizing the clinical part because it has been least developed. It has been difficult for campus people to deal with the different technologies that existed in the affiliated hospitals. For that reason, we didn't have much impact on the clinical side, and we didn't have many applications from strictly clinical sites. We now feel the time is right to encourage them. Also, what the program is about has changed philosophically, away from technology to an opportunity for an organization to deal with change and the rapid demands of information in the future. The program is now more future oriented, aimed at setting people up for change. In this model, we see development of a strong and well-positioned new component of an institution that oversees information all over the campus. It will position them well for the future.

The early belief that nobody knew the technology and that we had to demonstrate it is less of a problem now. It makes me smile once in a while to think about some of the things that were initiated that caused a lot of controversy early in the program. Early on, the idea of a learning resources center under the library was new. Many thought it was beyond the scope of the library's responsibility, but no one bats an eye at it now.

JA: *What do people spend their implementation funds on?*

RW: Now it's more on organizations and less on technology. It's the foundation, and I want to focus more on foundation later. I think IAIMS programs can focus on the next level—how do we best use technology, increase the efficiency of the institution with it. A few years ago, when we were toying with the idea of doing an evaluation of the whole IAIMS program, we were looking around and I was somewhat disappointed to see that measures of impact hadn't taken place. I couldn't say the worker had more available now, or whatever. I talked to some of our more senior IAIMS grantees about it, and we came to the realization that you couldn't get to these higher levels unless you had a certain basic capability, and that took a long time to develop. The program concept came before that capability. The program was ready, and the idea was there before that technology came. Now we can build on top of that platform, so we can really get to the issues of doing more things better in the health

sciences. The people who developed the report could foresee all this. Now we're beginning to see where people can really exploit the technology and bring to reality the futuristic fantasies of a new information world.

JA: *What do those who already have the platform do?*

RW: IAIMS is a resource development grant, but we also have research grants. Theoretically, information research should have outcomes, results, and some improvements. We've supported a lot of research efforts that never had a place to plug in. As an example, a research grant may be used to develop a useful diagnostic system—a freestanding, independent-of-anything-else little system. Most people won't go over and turn on a separate system. With IAIMS in place, we can integrate that into the intellectual workflow system, take the research and put it into the middle of effective work.

JA: *How does computer-assisted instruction fit in?*

RW: Using the term broadly, I used to use a diagram that talks about information flow in the health sciences. Research outcomes were put into the world of applied medicine, and more research was created. In the circle somewhere was education. It has not been in the loop in terms of the technology. The notion of distance learning in a practical sense is new, because of networking and the like, which can have a greater impact on education. There's a practical problem here. I've been surprised that the IAIMS program hasn't been developed for general academic programs. The Department of Education doesn't have [such a program]. There ought to be that development in the general academic community. The reason IAIMS doesn't exist there is that there is no grant program to support IAIMS activities. It occurred to some people a few years ago that maybe there hasn't been more interest in the education part because there is no grant for educational technology. That's true. Congress, to our surprise, gave us a new grant authority to do this, but we got the authority with no funds. I am convinced if a grant were there for a focused program, we could create a community of developers and make people think about issues they have sort of ignored to make computer-assisted instruction and educational applications work. For example, what little support there has been before has gone to support individual programs at individual institutions, and the impact has gone little beyond those institutions. That's just not sensible, and it's not a surprise that it hasn't had much impact. What would be the best way to support development? I think the interest is there on the part of individuals, institutions, organizations, teachers, and students, so it may be nothing more complex than announcing that here's a grant program for something there hasn't been support for before. If we had a program available, you'd see a rapid change in the educational component very soon.

JA: *That ties in with my discussions with people about reward systems. Are there academic rewards for it, in promotion and tenure guidelines, for example?*

RW: That's a very good point, and I want to get it in here somewhere. The IAIMS money, as everybody understands now, is a very small part of the IAIMS cost. It depends on how you define costs, and calculations have been as low as 5 percent and as high as 20 percent, and rarely above 20 percent. We're actually putting in very few dollars. But what everybody says is that those few dollars are critical. I tend to forget, but am reminded frequently, that a grant from the NLM or the NIH (National Institutes of Health) is coin of the realm at academic medical centers. It gives you credibility, and it gives you focus. I've had folks come to me and say, I don't want the money, if you give me a $1 grant for an IAIMS, I can say I have an IAIMS grant.

So one thing about the IAIMS grant is the principal investigator who gets the grant—and, by the way, the overall IAIMS grant is not small change; it's in the neighborhood of $3 million. Nevertheless, the simple fact that they got the grant gives them a level of credibility on the campus, so that's an astute observation. However, at the implementation phase, when some people have been involved in IAIMS for some time at some effort, and often at the expense of their teaching or other activity, during the site visit we might take the dean or vice president aside and say, wait a minute, if you're going to pull these people out of activities that normally would enable them to do things that would contribute to measures of tenure, if you take them away from that and have them do IAIMS things, which, by the way, are very valuable, you're not going to punish them because they don't have enough research, are you? We asked that, quite deliberately, of these vice presidents, and all of them said, yes, we recognize that this is a problem, and we will not punish these people and we will deal with it. I don't know that that's been fully or effectively dealt with, yet; in fact, I know it hasn't.

We were just talking about the education grants. We have the same sort of problem there, in some ways. You may have an IAIMS person developing a whole technological project of major importance to that institution, but it's not necessarily submitted to a journal or reported at a convention, but it may be worth

considerably more to that campus than a scholarly research paper. So, I think—and this has been discussed for some time by a number of people—this has to be dealt with by the folks doing the reward system, perhaps more effectively than now. It may change in part; some of these things were viewed as technology oddities, toys, things to tinker with, but one good sign is that the attitude has changed. More and more people recognize the value of it; increasingly they realize how complex and intellectually challenging it is. The environment for reward systems will change. I don't know how they're going to do an equivalency for research in the information technology world, in the sense that you can count research articles.

JA: *Some places reward service along with research?*

RW: Yes, that will increasingly be the case. Of course, until a few years ago, there really was not a well-recognized journal in the information sciences in medicine where a lot of our grantees could publish an article. They delivered papers at SCAMC [the AMIA Symposium on Computer Applications in Medical Care], but then after that, there was not a place to put them. We will see more and more reports of IAIMS stuff going to JAMIA (JOURNAL OF THE AMERICAN MEDICAL INFORMATICS ASSOCIATION) and getting into that formal network of information management reports. The irony was that most of the research supported by NLM never ended up indexed in MEDLINE. Now it is, because of JAMIA. The BMLA (*Bulletin of the Medical Library Association*) did a good job in the early part of the program, when the program was still a library-focused thing. Now some of it is a far way from librarianship, so it isn't necessarily appropriate. If the Bulletin received an article about a new subroutine or something technological, my gut feeling is that the Bulletin would reject it, but that's not necessarily true. Librarianship has so expanded, and librarians are involved in stuff a long way from traditional things, but I guess the Bulletin would say it doesn't apply to us. The MLA has to deal with its community, and if the community doesn't want to read about a new subroutine for the patient record, even though a librarian may be doing it, the article may still not get into the BMLA.

But I see the same problem in other areas, not just librarianship. If a cancer person working closely with IAIMS developed a cancer program and systems activity associated with IAIMS, I'm not at all sure the report would get published in the journal of the cancer society or whatever. There's a funny situation here, and thank goodness JAMIA came along. If I'm a librarian or cancer person interested in information, would I read JAMIA to keep up to date? I don't know. We'll see. It's a funny situation. There have been changes. I've been interested to see that JAMA (*Journal of the American Medical Association*) often has a thoughtful article on information stuff having to do with medicine, and it wasn't that long ago that you rarely saw such an article in there.

JA: *We were talking about rewards and the future of IAIMS and emphases over the years.*

RW: Let me touch on another side of that. Marjorie Wilson and Nina Matheson [project staff for the AAMC study] would be the ones to comment on that. The motivation for the original contract with AAMC was a rather simple program question on our part. We had been putting out money for a number of years to improve librarianship, research, and practice, and we felt we weren't effecting much change. We had a suspicion that we could spend our money in a better way. The question was about the future of librarianship, and the question of technology was looming on the horizon. So we hit the AAMC with the original question of what was the future of librarianship. Nina did a Delphi study, and what the AAMC came back with was that the future of librarianship was not necessarily a straight line movement, but rather a significant enlargement of focus and responsibility, to include any format. I don't think that was incorrect.

JA: *How much do you think that's happened?*

RW: I think it has, inadvertently. We are the National Library of Medicine, and librarians must be major players in the activity. In the beginning, I always said that the librarian must be involved. They'd say why. I'd say, well, the librarian is the one person on the campus most knowledgeable about the organization of knowledge and how information is best put together and provided as a service. And that's part of IAIMS. In the old days, those were the people who could most effectively plug in these emerging technologies and put them into an atmosphere of service and make it go. So we said, these are the folks to talk to. What we didn't appreciate was that there was a certain need for an understanding of the technology on the part of librarians. We inadvertently blindsided a lot of librarians because the deans and all went to the librarians and said, look, I want to do this IAIMS, tell me all about it. They didn't know how to answer. I was thinking about it this morning, about the reason. When I was in library school, we got a variety of courses that touched on the technology of information packaging. So there might have been a course about printing, or about the physical documents of journals and film. Most librarians at the time received little instruction, little or none, in electronic technologies.

And that container, knowledge about that container, is necessary. So when IAIMS started, we said, go to librarians, and they couldn't answer the questions, so they came back to us and said this program has nothing to do with me, I don't know anything about this. And I don't know that that was wrong. What you see now at most IAIMS sites is librarians who are actively involved in IAIMS; they may not be leaders, and they may not even be significant players; but there are those other people known to you and me, where the librarian is not the investigator, the librarian is the co-investigator, and is a major leader. If you look closely at what those people are doing, I'm not sure I would call it anything like traditional librarianship, whatever that means. The librarian is wearing a bigger hat. A joke that's tossed around is that if a librarian at a major academic setting is going to be involved in IAIMS, one thing they have to do is have somebody else really run the library day to day, because they aren't going to be able to do that anymore. As you well know, the titles change in many cases. What does that mean for the current world of librarianship? Well, that is a problem that NLM is interested in right now, because we're looking to have some investigation of education for librarianship, and it will be coming in soon. There's been a lot of interest expressed. We originally thought that IAIMS would be an evolutionary change for librarianship. And I sort of wish that that were true, but I tell you in all honesty, it's a new field. What is true is that there's a vacuum for the kind of people who will be significant IAIMS players. People are filling the vacuum with different backgrounds—health professionals, librarians, computer people. I think you will see educational programs that will produce the kind of person who will fill that role. I'm not at all sure they're going to come out of library schools.

JA: *What about the informatics arena? Have you seen any interest in training in informatics that has an administrative component?*

RW: Yes, that's also a good question. There's nothing wrong with bench research in informatics. People have to get out there and investigate very fundamental things. To some extent, some of the research in health science informatics was undertaken because the computer community wouldn't do it. That's changing some, as companies see that medicine is a big market. What we used to support in informatics research now has a product out; the biggest demand today is for people who can turn on and operate IAIMS programs. I get a couple of phone calls a week looking for a name of somebody to be involved in an IAIMS. Typically, they're looking for somebody coming out of a PhD program or an MD program who has experience in the community, peer credibility in the community, in the health community, but can be an informatics-applied person. And heretofore there have been few people like that. They've sort of been home grown. We now see more interest in not so much bench research but in the development of IAIMS, the development of networks. I think that will increase.

JA: *What about the administrative side—training for that?*

RW: The training programs are largely bench research programs. Most of the training, if you can call it that, for the administration of IAIMS, or applied informatics, is still learned on the job, by the seat of your pants. Or, as you know, we now have an apprenticeship program in the IAIMS operations grant where we will provide money, in the old European guild style, to actually train an apprentice. We have a fellowship program for applied informatics, as you very well know, and we are beginning to see some interest in that. It's nowhere near as much as we would like, and not enough to meet the demand. We're not getting enough interest in terms of applicants. What we do see is headhunting between institutions. If somebody wants to hire, they go out to the IAIMS institution that they admire, and recruit. That's not bad, but it causes a certain level of stress in IAIMS institutions. It is sharing. From a practical point of view as a program officer, it causes disruption in the grant activity when significant people are hired away. I am told, however, that I should be pleased about that, because it shows a certain level of success. It makes life difficult for me. I have a little problem with that.

JA: *Can we go back to the computer-based patient record?*

RW: The computer-based patient record is another one of those examples where the time is right to begin to seriously look at it. I think the issues that need to be addressed couldn't have been addressed before. The health community has sort of sat around for a while waiting for the business community to put out a patient record. And it hasn't happened. An important issue is what there was a demand for. There was a demand to be able to create a patient bill and get paid, but now there's a demand and a capability to produce patient information. Now that may involve, as someone has mentioned, a fundamental reworking of software, information programs, about patient records, because a lot of patient information systems now are business systems and not changeable enough for physicians. Nobody seems to know right now how to go about the basic development. As far as IAIMS goes, our interest in nomenclature fits in. Six months ago, we began a program to look at nomenclature, and if that goes well, it may lead to more activities in the patient record. It's a new thing for us. It's the first

time it's been done as a truly cooperative venture, between the National Library of Medicine and grantees and between grantees working with each other. We will periodically bring together the grantees, and there will be information exchange and talk about where to go from there. We hope that by this focused approach we can move more rapidly along, instead of having grantees out there doing what they want more or less independently. The outcome measures will be of two kinds. One, how well does the process work? Also, will anybody be able to discover a way to deal with these complex issues? It may be that some thoughtful, industrial person writes up brand new programs. A large part of the community would like to go out and buy a patient record system and plug it in, but ''we ain't there'' and I don't know when we will get there.

There's an environment now by way of IAIMS institutions, by way of institutions that do a fair amount of medical informatics research, there is an environment now where these issues can be looked at and tested in a real community. Many of our IAIMS sites are closely involved in this. The opportunity for doing something quickly and evaluating it is there now.

JA: *Are the IAIMS institutions, then, ready to work on these issues?*

RW: IAIMS has developed in two ways. One is the IAIMS that does planning and development, the integration of information. We can call that an applications site. They take capabilities out of research companies and put them together to serve their community. You take what's out there and plug it in in a good way and it works. Also, I've always thought we needed a group of IAIMS sites where you could have that intimate closeness between research and applications, and some have that. It may be, as you well know, even providing service on a statewide level—undertake surveys, or whatever, to find out what's needed, but also know how to implement, where thoughtful people could develop systems to do this. There will be a component of R&D at some IAIMS institutions.

JA: *What are the success factors for IAIMS? What makes a successful IAIMS?*

RW: It's not much different from what we said was necessary for getting a grant, as outlined in the very early fact sheets for the program—that is, a knowledgeable and supportive administration, at your senior level, but also the wherewithal and interest of users, you still want to find that. It wasn't so much a factor in the old days, but it is now: Does anybody have any experience with it or a good idea about what they're getting into? It was kind of funny, from the beginning of the program, the first people expressing interest were the senior management people. It was not because it had glamour, but they could foresee what was going to happen with information. They were already receiving budgets of, for the sake of this argument, $12 million for information stuff, and they didn't have a clue what that meant. And if they spent the money, they didn't know what impact it would have and, furthermore, next year they would be asked for the same budget again. So they wanted a way to figure out and deal with this. The historical background is that the AAMC was working on management training at the time IAIMS was developed. Most people hadn't been trained as administrators. A variation on this was the whole emerging technology thing, and they hadn't been trained in this. The other thing people were motivated by—experienced, seasoned people—they were intuitively aware that it was the right thing to do, it would improve the practice of medicine, the world of medicine would get better. Having that kind of support and encouragement from the beginning is a necessary requirement. I've had people come up and say to me, I want to convince my leadership that we should be doing this. And I say, that's probably the wrong way to do it. I think you need senior leadership. At the same time, there must be some awareness and enthusiasm of others—key deans, the librarian, significant individuals. That's usually the case. You find extensive development of technology often at the department level. You must have some basic technological capability within the institution and know what the hell you're talking about. Walls and people are what you need. As an overview, the people must be thoughtful about the world today and have an idea of the future. These are three success factors, plus the practical capability to keep it organized and on track—planning.

JA: *How do people know whether they've been successful or not?*

RW: There are two ways to look at that. One is success measures comparing success to someone else, a gauge developed somewhere else or comparing a variety of institutions. Well, there is no such gauge. I increasingly hear of medical students selecting a place based on its information technology capability. Someone sent me a recruitment ad for a significant department chair position, and one of the big things was that it was an IAIMS institution. There is some sense of success when you see that kind of thing go on. In the end analysis, go to your own people and ask if the world of information is better today, more effective, one-stop shopping—you go to them and they say, my job is easier now. It's been hard to do. IAIMS success used to be a simple measure: When I turned it on, did it

work? When there were no networks, etcetera, if it worked at any level, it was a step in the right direction. Now we can get to more sophisticated levels. It's easier in a department or component of an institution to have measurable factors.

In terms of evaluating IAIMS and IAIMS-like activities, it's relatively easy to do if you're doing it in a small community of people, perhaps even in a department—you could talk to people and develop measurable factors—but when you're trying to do the impact, measure the worth of an IAIMS activity, across the whole institution, with the diversity of that institution, that really becomes an experimental challenge. How do you measure that? I think we have to do that somewhat more. Also, by the way, there are different levels of measurement here. One is user satisfaction, one is operational efficiency. One thing we need to be concerned with, and one thing we should perhaps focus on more, is the efficiency of medical delivery, health care delivery, outcomes either in terms of improvement of health or a more efficient system and, frankly, economics. I was intrigued, I think it was on the right track, that Paul Clayton, in some of his evaluative activities at Columbia, has shown that the amount of time spent gathering information by certain components at the institution has decreased. He has determined that they can get information faster. And he can relate that improvement, that speed, that increased speed of getting information, to more effective day-to-day operations, and that can be related to money.

JA: *You mentioned earlier that you would be evaluating the entire IAIMS program.*

RW: Well, we want to. There are a number of problems. One is that there is some set-aside evaluation money at NIH that is available to evaluate program activities. We did try to get an initial study funded a couple of years ago, and that was not funded; we were not awarded the money internally at NIH. Another source of money is internal program money, not the grant money. For the last couple of years, we haven't had any spare program money, so that's moot. The other question: IAIMS has almost always, throughout its history, been a moving target. You think about what you might want to evaluate, and it becomes a new program, so to speak. Because things continue to change so rapidly, it makes classical grant program evaluation schemes not workable. So there's another kind of issue here, aside from whether we can fund an evaluation, and that is what the hell is evaluation?

We ought to do more summary information articles or something, if not a formal evaluation, to let people know what's going on, because people want to know. Fortunately, at NLM the IAIMS grantees are more than good about inviting people in, sharing information, making reports all the time and the like, so if people have questions, they can actually call and talk to the folks. By the way, that makes me think of something, a small aside here, the typical print-on-paper stuff still takes six to nine months. Quite frequently, what you report, because you were writing it three months prior to the time you submitted it, is a year old by the time it gets into print. Which is to say, at the IAIMS institutions, things have already changed. If you really want to know what's going on and be up to date, you either have to go to the site itself or have the people come to you. But an article, 'though helpful, isn't necessarily up-to-date stuff. So if we undertook a big evaluation, it probably would be good, but as long as the IAIMS institutions are open to having people come in and talk with them and meet with them and are actually going out and consulting, then the evaluation activities are perhaps not as critical as they might be.

JA: *You act as sort of a clearinghouse, too, for information about IAIMS here? If someone in the community is interested?*

RW: That's correct. One of the features of a program officer is to be knowledgable about their program and all their grantees and everything that's going on, and be able to give unbiased advice to interested applicants—if they want information about the program, about who's doing what, to tell them where to go. And I do that all the time. I do that every day, two to three times a day. I mean, there's a constant series of letter inquiries and e-mail inquiries and certainly a lot of telephone calls from, interestingly enough, not just the United States, but abroad. They're about what's going on and who's doing what in IAIMS. IAIMS has always had an international interest. And in the course of every three to four months, there's always somebody wandering in from somewhere—the Orient, Taiwan, Japan, every European country, the Caribbean basin, South America—who has come in to talk about the program. The interest is out there and, yes, you're right: I do the best job I can giving overviews, giving broad summaries, and, where appropriate, pointing people who are interested to people who can perhaps give them answers.

JA: *Is the number of applications for IAIMS grants up, down, or about the same?*

RW: There's a whole flock of things I can say about this. One perspective is that there are 125 medical schools, more or less, and approaching 200 medical centers, when you count in large health sciences com-

plexes that don't have a medical school. Sites with active IAIMS programs only measure about, what, 25, maybe 30. There're a lot of sites that in my categorization don't have an IAIMS. Now that's not to say that, unbeknownst to me, they don't do IAIMS things, but I think they probably don't, so there are still a lot of places that aren't doing IAIMS things—no, let me rephrase that—that don't have a formal program. We continue to hear from new folks. By the way, I might say, I occasionally hear from old folks, in terms of past grant support, who want to do something "next." They are just sort of looking for a post-IAIMS activity that we don't have yet, but I understand why they ask. I quit counting. I'm trying to think if I've heard from every medical school. I don't think I have, but I've heard from most of them. I hear from a lot of people who say they're working on it, or at least preparing to work on an application, and in some cases that working at it has been going on for two or three years. So the numbers applying have never been huge at any given time, but they've been steady. And they're new—new people, new kinds of folks coming along. And I think that will continue. It may very well change in the near future, for the reasons we were talking about earlier—mainly, that the appreciation of and familiarity with IAIMS-related things are becoming widespread. There is looming now, increasingly, the awareness that institutions are going to need to do something better with information. I mean, they're going to really, really have to do it. So numbers may actually go up, but we don't lack for applicants, and we don't have hundreds knocking down the door.

JA: *Are you getting interest from the hospitals?*

RW: We're getting lots of interest from the hospitals. What I didn't appreciate and what they didn't appreciate and what we're thinking about is that they're a different kind of community in terms of their way of dealing with information. In some ways they are like the original institutions 10 or 12 years ago. In some ways they're very different, though. Let me give you an example: In an academic medical center that wants to do IAIMS, if they look around enough they can find some people who can do IAIMS things. They may be buried down in the pathology department or down in the library, or whatever, but they'll look around and find somebody. Sometimes they can't, and they'll actually have to go out and hire somebody. If you go to a hospital, they almost never have anybody there who has any clue about IAIMS. Maybe the librarian does, maybe the computer person does. The administration may want to do it and has an interest in it, but they don't know about it. They also have a lack of expertise and lack of wherewithal, and this is kind of a critical problem; they have a lack of wherewithal for doing some of the basic things. So we say, for example, get a bunch of people together to plan. Well, that's a problem for them. The kind of people they want to get involved in planning, at least in part, are the docs who use their hospitals, but they're not employees of the hospital, so that presents a certain problem. They don't have anyone on their staff to actually run, day to day, an IAIMS activity. Furthermore, in cases heretofore, especially with technology, they're used to issuing a contract and getting a product that they can plug in, which is not IAIMS. So there's interest in the concept, and it is sensible that there is interest in the concept; its different in hospitals. We're still struggling with how to put that environment together with our program concept.

And, there's another example: IAIMS has always been a comprehensive information program. We wanted education, administration, research, and patient care applications. Obviously, in most hospitals, patient care is their principal interest, and they could care less about the other stuff. Now, an easy way to deal with that is that we could say, if you're not a comprehensive hospital, we don't want to talk to you. A lot of hospitals that can't cover all those aspects want to do IAIMS, so that presents a certain problem. And we're still trying to deal with this. On success factors again, you ought to be familiar with this world of technology and perhaps familiar with this world of IAIMS, at least in a basic sense. Well, I can tell you that the hospitals aren't familiar with that stuff at all, just like in the old days at academic centers.

JA: *This must be a problem for the reviewers?*

RW: Yes. Let me take you in a different direction. If I were a program director who wanted to spend money for IAIMS for hospitals, what would I spend it on? Should I give it to the hospital directly? Another way, which I see emerging, is an IAIMS application coming in from an academic medical center along with two or three hospitals together—a collaboration. That has a strong appeal to me. I think it's the right thing to do. It certainly solves a lot of problems for the hospital, for the kinds of things we were just talking about. The problem is that IAIMS can be a difficult thing for one institution to do, but when you try to do it across two or three or four institutions that are politically independent, it's a nightmare. From a program point of view, if I had some extra IAIMS dollars right now, I think I would initiate a program where a few well-established IAIMS institutions would take some money and create a new program to extend IAIMS to communities of hospitals. And given the technology today, Internet and all, I think it would

work very well, and I think if we had such a program, it would not only be the appropriate thing; I think it would have a very effective impact right away on the clinical sites.

JA: *And the future of IAIMS?*

RW: It is evolving that way, and while we're discussing it, we can throw another feature in there. I'm beginning to see applications, or at least interest, from an academic medical center, more than one hospital, and the local health department. This also makes sense. But there you're throwing in a local government feature, which may or may not complicate things, but it makes sense, too. There's a lot of appeal there. And that's the evolution of stuff, and I'd like to encourage it.

JA: *In a study I did, I found that people at IAIMS sites and people at non-IAIMS sites use the same kinds of words to talk about information technology. Do you think that's because the vocabulary is so shared now?*

RW: They may all use the same words, and they may all have the same concerns, but they may not be about the same activity, so to speak. If I'm doing something with information, I may have concerns about tenure and rewards, or whatever, but that's not the same thing as using those words at an IAIMS level. That's because behind those words is the IAIMS program and the IAIMS structure, and even though I use the same words about a discrete information-related activity, that's not an IAIMS. Even though I use the same words and have the same concerns, it's not an IAIMS. I think if you do information things you have similar concerns, and use the same language, but the fact that there's an IAIMS program behind those words wouldn't necessarily be seen.

JA: *Even the different types of people seemed to have the same vocabulary, which also surprised me—the library folks and the computer folks are talking the same language.*

RW: They may use the same words, but I'm not at all convinced. My own experience is that I'm very, very, thoughtful about the words I use in these different communities, because the words are the same, but they may have quite different meanings.

JA: *And do you talk to people from all the different communities? Do you ever have people from information technology come and say they want to do an IAIMS?*

RW: Yes, that's one of the interesting things. Starting two to three years ago, with the new program, we knew we wanted to hit hospitals. I began to think of who are the people there whom I might want to talk to, the folks who ran the hospital information systems. I think there's a group under the American Hospital Association, the hospital information managers, HIMSS [Healthcare Information Management Systems Society]—a huge organization of people who run information management in hospitals, patient information systems, patient records systems. I got hold of a membership list and, to my dismay, I hardly knew any of them. I actually went through their list and looked at their convention things, and I hardly knew any of them. And some of these places are huge—thousands of beds, no small change. I just haven't had time to deal with any of these people, but it was interesting last year at SCAMC. If you remember, SCAMC, or AMIA as an institution, did a program to go out and try to meet and coordinate with the community. It was actually a SCAMC panel, so that is an emerging interaction. Whether because of that or because of people beginning to hear about IAIMS, or whatever, besides that outreach from AMIA, SCAMC, me, or whatever, I'm beginning to see it happen the other way. People are beginning to come to me and say, I've heard about this, tell me about it. I find that's particularly where I have to define my words. Because words I'd use with academic medical center people are misinterpreted, or at least interpreted in a different way, by the hospital information people. The words are the same, but the way they apply them to their environment is not the same.

If you're getting together a representative group from your institution to plan an IAIMS, they get together hospital employees. All these doctors that work at the hospital, they're not hospital employees. So they come back to me with a planning group that's got the head of the hospital, the head of finance, the hospital librarian, two to three people from the computer shop, and maybe a CIO, the chief of staff, so I say, where are the docs, and we get a very strange conversation going. Part of it is my sensitivity about the community, but part of it is that they don't appreciate the scope of the program. When you talk to them about information systems and patient records, they still tend to think of that rather narrowly defined business activity for patient billing, and not the grandiose stuff we talk about in an IAIMS. So we're beginning to talk to them and they're talking to us and that's good, but it's a little bit like the British and Americans talking to one another.

There's another funny thing that we ought to talk about that's relevant here, and I haven't quite put my finger on it, but the academic community by definition is willing to experiment. They're willing to try something even at the risk of a certain loss. That's the academic spirit. Hospitals don't do that. And in today's financial climate, they especially don't do it. So

where part of the spirit of IAIMS is to try stuff out, experiment, whatever, the hospital community wants it right from day one. It's an intellectually different thing, so we're both going to have to learn and figure out how it fits.

JA: *Are you learning this from talking to people or from proposals or from site visits?*

RW: Both, all. We haven't done much site visiting. We don't usually site visit now unless a) it's a Phase 2 big operations grant or b) the institution that's applying is so unusual, you have to go there to actually see it. We don't usually go to see a Phase 1 planning grant applicant. In fact, in the history of the program, we've only visited a few. So we don't actually visit hospitals on a site visit. But I did talk to some, I have visited some, not on a formal site visit, but I have visited some. All that does is convince me about what I learned when I've been reading about this.

Let me put a different perspective on this; we probably should have talked about this from the very beginning. At a fundamental level, IAIMS is about culture change. The culture of an academic medical center is a different culture from a hospital. I'm not very familiar with that culture change yet. In some respects, IAIMS is the product of a culture, a medical center culture, in a way. So I think IAIMS as a concept fits hospitals, I think hospitals know that. There are some technological adjustments, or whatever, that need to be made here, though.

JA: *One would think, with the patient record coming along, which is very integrated, which does need an involved user base . . .*

RW: Yes, at first glance the problem is the hospitals don't look at it from an R&D point of view or a developmental point of view. They want to go out to the local store and buy a computer patient record system off the shelf, plug it in, and walk away from it. So you talk about planning and development and R&D, and whatever, and there may be somebody who has an interest in that, but on the whole, that's not their frame of reference. It's been kind of interesting. One of the things that will happen is that people will come back and inquire about the program, and somewhere in the course of that conversation, someone will say, well, is there somewhere I can go and see some stuff? And, as you know, on the back of the IAIMS information sheet there's a list of contacts, and I will tell them who's nearby. For the particular thing they want to see, I may recommend that they talk to this person or that person. Well, when hospitals call, it presents a certain problem, because there aren't any hospitals for them to look at. Nevertheless, I suggest that they go off and see an IAIMS site, and they often come back or call me back and say that place doesn't look anything like me, but it made me think of some interesting things. And they do see some similarities. So I do think it's just a matter of time and familiarity. In a sense, we're back at the very beginning of the program, dealing with hospitals, as we were with the academic medical centers, and I'm sure, at least I think, it will all come to pass with time.

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