By Raymond F. von Dran

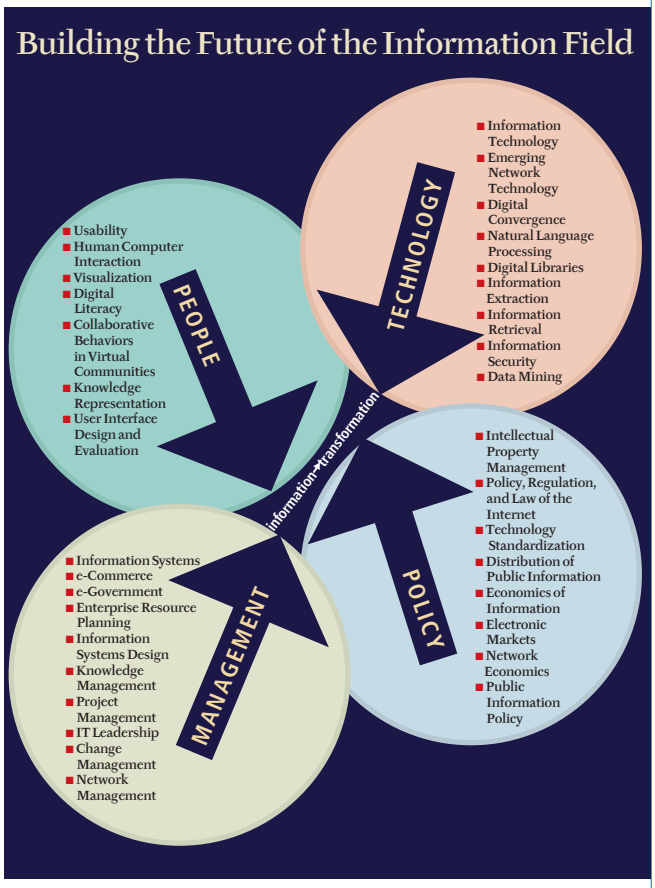
Putting the "I" in IT Education

A few years ago, I wrote a short article for *Network Computing*, a trade publication read by work-a-day information technology professionals. The article, "Putting the 'I' in IT," emphasized the perhaps obvious notion that professionals in IT need to pay more attention to the information and related processes. I argued that what business and industry really wanted, and were paying for, was getting the value of the "I" from the "T."[1] The response from readers was overwhelmingly positive. They instinctively knew that the only reason for the networks they developed and managed was the value-added proposition of the "I"—the information.

A recent *Computer World* article reinforced this need and noted the disconnect between the world of work and academia. The *Computer World* survey of 244 IT professionals found that 75 percent said that academia "isn't preparing graduates for the IT jobs of today or the next few years." Did they say this because the graduates weren't proficient in implementing complex internetworks, ERP, or Web services? No, they said this because the graduates lacked the "soft skills." The survey, plus interviews with CIOs, "indicated that the shortcomings are in the areas of business skills, troubleshooting skills, interpersonal communication, project management, and systems integration."[2] Likewise Peter Drucker, in his book *Management Challenges for the 21st Century*, pointed to the failure of graduates in information technology, computer science, and management information systems to fully understand that the value added is in the information, not the technology, and that the fruits of good information for business consist of good business decision-making.[3]

The Syracuse University School of Information Studies, now in its thirtieth year, was the first of its kind in the United States. It is the "Original Information School." Today, it is part of a growing number of information schools, or "I" schools, at leading institutions throughout the world. These schools are doing research and educating students to put information to work in a multitude of environments. They are committed to expanding human capabilities through information. Their information domain spans the individual, organizations, and society. And even though technology, policy, and management processes are very important tools, they are but means to an end. These schools realize that information professionals must additionally be grounded in the needs of people. Technology, policy, management, and people: these are the four pillars that support both the education endeavors and the research of "I" schools.

"I" schools have degree programs to enable practice in a multitude of environments. Syracuse University offers a B.S. in Information Management and Technology and M.S. programs in Information Management, Telecommunications and Network Management, and Library and Information Science. It also offers a research-based Ph.D. program. Other schools have different names for similar degrees. The University of Washington's Information School has a B.S. called Informatics, whereas Pittsburgh's is called Information Science. Michigan has an M.S. in Information with various specialties—in Library and Information Services, Human-Computer Interaction,



Archives and Records Management, and Information Economics, Management, and Policy, as well as a "tailored" option in which students create their own specialization. Some similar-sounding programs have different emphases: the Syracuse University "telecom" program is technology-rich but weighted toward the management and policy pillars; Pittsburgh's has a greater emphasis on the technology. Although each of the schools has different flavors and strengths, they are all clearly moving in the right direction: toward information!

Since education for the information field is so dynamic, it is difficult to classify. In an effort to do so, eight information school deans met in September 2003 at a symposium sponsored by the University of North Carolina. Their purpose was to describe the "information school movement." In addition to the schools already mentioned, the College of Information Science and Technology at Drexel University and the Schools of Information Studies at the University of Illinois and Florida State University participated. The deans' conclusion? Simply put: "I" schools focus on information and on people, and the field has tremendous personal, organizational, and social impact.

These and other "I" schools are members of the IT Deans Group sponsored by the Computing Research Association (http://www.cra.org/Activities/itdeans/). Some of the schools represented in this group come out of the computer science tradition but are increasingly information- and people-oriented. A noteworthy example is Georgia Tech's eleven-year-old College of Computing. According to its founding dean, the "ing" in the college's name is significant; it implies not just the technology aspect of the computer but also the importance of the computer put to work for people. The fact that this college has strong human-computer interaction, visualization, and usability components is indicative of its social and people trajectory. In addition, some of the schools in this group have simply been created anew. In 1998, Penn State University created the School of Information Science and Technology with five founding faculty. The school has grown considerably since then—its position as an "I" school is clear from one of its B.S. programs in Information Context: People, Organizations, and Society.

As noted earlier, "I" schools build their programs around the four pillars of people, technology, management, and policy. Typically they offer classes in programming, distributed computing, networking, information systems, systems analysis, information-based organizations, database management systems, information analysis, and telecommunications and information policy. Specialty courses cover areas such as security, project management, human-computer interaction, e-commerce technology, and Web design. Real-world orientation, project-based study, teamwork, and active learning are integral. A capstone course and an internship or co-op experience are almost always required. Yet more than the courses, it is the wholistic approach that "I" schools bring to information problems. In "I" schools, teaching and research in systems assurance and cybersecurity, for instance, would focus not just on the technologies but also on risk assessment, human factors in secure systems, and security policies.

Exploration is key to this emerging field. "I" schools have been increasing their sponsored-research activities, again based on the four support pillars. The common theme of funded research projects at the Information School of the University of Washington is people—their needs and how information and technology can be harnessed to meet those needs. Major projects include "Value Sensitive Design" and "Keeping Found Things Found," both funded by the National Science Foundation (NSF), and the "Information Behavior in Everyday Contexts" project, funded by the Institute for Museum and Library Services. The technology pillar is the focus of the Syracuse Center for Natural Language Processing (CNLP), which was recently awarded a grant from the Department of Homeland Security to develop a cross-language retrieval and translation system between English and Arabic. The NSF funds many CNLP studies in intelligent information retrieval and link extraction. The Center for Emerging Network Technologies at Syracuse supports a real-world laboratory and a network that simulate a production environment. The testing provides editorial content for *Network Computing* magazine, which supports the lab. Conducting research in the management-pillar area is Michigan's program in Socio-Technical Infrastructure for Electronic Transactions and its Center for Research on Electronic Work, both supported by NSF, as well as its Alliance for Community Technology, supported by the W. K. Kellogg Foundation. All provide advanced research and development and doctoral instruction. Finally, regarding the policy pillar, the Syracuse Convergence Center completed a study, sponsored by the Merkel Foundation, in the area of Internet domain name resolution, and it recently received a Ford Foundation award to explore ways in which the public can participate more effectively in shaping communication and information policy. Standards and usability studies for wireless grid technologies receive support from a number of leading corporations and the NSF.

Whatever we call these schools—information schools, information studies schools, informatics schools, information science schools—the "I" word is the operative term. Information is the key to organizational sustainability. From this perspective, content and content management is king, information retrieval is queen, and metadata analysis is the ace of spades. The integration of this domain with technology, policy, management, and people works to the benefit of the art and science of information. By taking this perspective—by putting the "I" in IT education—"I" schools can add value and serve people, expanding human capability through information.

Notes

1. Raymond von Dran, "Putting the 'I' in IT," *Network Computing*, August 6, 2001, <http://www.networkcomputing.com/1216/1216colvondran.html> (accessed January 20, 2004).
2. Thomas Hoffman, "Job Skills: Preparing Generation Z," *Computer World*, vol. 37, no. 34 (August 25, 2003): 41, <http://www.computerworld.com/careertopics/careers/story/0,10801,84295,00.html> (accessed January 20, 2004).
3. Peter F. Drucker, *Management Challenges for the 21st Century* (New York: HarperBusiness, 1999), 97.

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