Ideas for the Future of the IS Field

GORDON B. DAVIS
University of Minnesota
PAUL GRAY
Claremont Graduate University
STUART MADNICK
Massachusetts Institute of Technology
JAY F. NUNAMAKER
The University of Arizona
RALPH SPRAGUE
The University of Hawaii
and
ANDREW WHINSTON
The University of Texas

Information systems as a field of intellectual inquiry is now approximately 50 years old. It has many achievements and extensive research to its credit and has established a large group of researchers and experts worldwide. The field has changed and changed and changed again over the last half century. The question addressed in this inaugural issue article is: Where does IS go from here? This article presents the views of six of the "fathers of the field" about its directions in the years ahead. Each coauthor presents two ideas about the future. The topics covered includes continuing support of the work of organizations, emerging technologies, new ways of communicating, expanding the ways IS performs research, expanding its vision both of what IS is and of its impact, its role as a resource, its model of the IS professional and its graduates, and its staying on top of new technologies and new areas of inquiry.

Categories and Subject Descriptors: J.1 [**Computer Applications**]: Administrative Data Processing—*Business; education; government*; J.7 [**Computer Applications**]: Computers in Other

Authors' addresses: G. B. Davis, Carlson School of Management, University of Minnesota, Minneapolis, MN 55455; email: gdavis@umn.edu; P. Gray, School of Information Systems and Technology, Claremont Graduate University, Claremont, CA 91711; email: paul.gray@cgu.edu; S. Madnick, Sloan School of Management, MIT, Cambridge, MA 02142; email smadnick@mit.edu; J. F. Nunamaker, Department of Management Information Systems, Eller College of Business, University of Arizona, Tucson, AZ 85721; email: jnunamaker@cmi.arizona.edu; R. Sprague, Department of Information Technology Management, College of Business Administration, University of Hawaii, Manoa; email: sprague@hawaii.edu; A. Whinston, McCombs School of Business, University of Texas at Austin, Austin, TX 78712; email: abw@uts.cc.texas.edu.

DOI 10.1145/1877725.1877727 http://doi.acm.org/10.1145/1877725.1877727

Systems; K.m [**Computers and Education**]: Miscellaneous; K.1 [**Computing Milieux**]: The Computer Industry; K.3.2 [**Computers and Education**]: Computer and Information Science Education

General Terms: Design, Experimentation, Management, Documentation, Performance

Additional Key Words and Phrases: Emerging technologies, health care, information systems impacts, information systems vision, innovations, model of graduate, model of professional, new technologies, professional communications, publications, research methods, systems requirements, university-wide resource

ACM Reference Format:

Davis, G. B., Gray, P., Madnick, S., Nunamaker, J. F., Sprague, R., and Whinston, A. 2010. Ideas for the future of the IS field. ACM Trans. Manag. Inform. Syst. 1, 1, Article 2 (December 2010), 15 pages. DOI 10.1145/1877725.1877727. http://doi.acm.org/10.1145/1877725.1877727

1. INTRODUCTION

At ICIS 2009 in Phoenix, Arizona, the meeting's Co-Chair, Jay Nunamaker, assembled a panel of senior IS people, asking each of them to offer two ideas for the future of the field. The panelists are the coauthors of this article.

Scientists, engineers, management experts, behavioral scientists, organizations gurus, and futurists often conjecture about the future. Rarely, if ever, has there been an analysis of the future of the IS field. The objective of this panel of "founding fathers" is to offer directions and suggestions for a robust future for our field instead of merely hoping that things turn out well. Each member of the assembled panel was asked to offer directions and suggestions for improving the future direction of the information systems discipline. Each panelist has been involved in the information systems field for over forty years. Their combined experience is over 250 years.

The panelists took advantage of their vast experience and the lessons they learned over the years to provide insights into the problems we face and to suggest potential solutions that will work in the years ahead. The panel considered the major aspects of the IS field including research, organizations, teaching, and much more.

Their ideas are presented in the same order as they spoke at the panel.

2. GORDON B. DAVIS

Idea 1: Remember that the Field Supports the Work of Organizations

We live in such a rich environment of change and interesting technologies and applications, that we sometimes lose sight of organizations as the heartland of the field. I believe that we should keep in mind the central purpose for our field and its graduates. The vital core theme of the field should be:

—identifying requirements, and
—building or acquiring,
—implementing, and
—maintaining

systems that employ information and communications technologies to support the work of organizations. These systems support a broad spectrum of organization work ranging from clerical activities to analysis to strategic planning to decision making. They support innovations and change in the ways goods and services are designed, marketed, delivered, and evaluated. Organizations require systems to function, and most of these systems depend heavily on information and communications components including technologies and databases. Our graduates are the analysts, builders, implementers, and maintainers of these systems. If we do not teach principles, methods, and technologies for these activities, our graduates will be unable to fill this vital role, and other academic fields will meet the need. Information and communication technologies are, of course, used outside of organizations, and these uses are interesting, but the organization context is most important and must not be neglected. A useful question for us is whether our graduates can analyze a problem in an organization, identify the applicability of data resources and information technology, analyze system requirements, and implement a process to employ or modify existing information systems or design and build and implement innovative new systems? We are system builders, and we should also be system innovators, thinking of new ways to improve organization systems with information technology. Our approach to system building should lead us to think broadly and to incorporate innovative thinking and ideas from many fields in our system designs. If we do well in building a body of clear, useful ideas and principles about systems in organizations (and society) and how to innovate by incorporating information technology in them, we can be an important resource in any organization and an important contributor to the academy.

Idea 2: Broaden Thinking about Emerging Technologies

One of our important tasks within organizations is to be cognizant of the effect of future technologies on the way the organization will do its work. We have been living in an era of rapidly changing information and communications technologies. We have seen innovators in the use of these technologies become complacent and lose their competitive edge. We have seen brash, expansive forecasts about the effect of new technologies that fizzled. Forecasting future technologies and identifying the winners is difficult. On the other hand, important new technologies do not happen in an instant; rather, they emerge in a process of trial and error as individuals and organizations identify uses and experiment with them. In other words, there are many clues about important emerging technologies; the difficulty is in learning how to identify the clues and interpret them relative to a situation in a specific organization. This difficult but important activity has not received sufficient attention in the IS curriculum. I believe we can do a much better job, and our graduates will thank us for it. I believe we should have lectures, problems, and cases that teach all future managers (as part of our core course) and all IS/IT graduates:

— to identify information technology developments as they emerge,
— to imagine how these technology developments might be used to enhance and/or alter the work of the organization and to estimate the potential costs and benefits,
— to estimate the time frame for practical use of new technologies, and
— to formulate trials to build and test possible applications of those technologies that appear promising.

3. PAUL GRAY

Idea 1: Develop New Ways to Communicate

"The role of a professional society is to encourage communications among its members" —John D.C. Little, Professor, MIT; past President of INFORMS

In universities, information systems presently follow the normal procedures used in social science to communicate primarily because that is the way business schools judge promotions and tenure.

As a result, we wind up publishing the history of the field rather than its future because of the rapid changes in technology and the long lead times from submission to publication. Here are some estimates for work that actually is published:

Minimal time for a publication = 21 months:
6 months to do the work
3 months to analyze, write it up, and submit
6 months to review
6 months to publish

In many cases (because of revisions and delays in the publication process), it takes 3 to 4 or more years for published papers in A/B journals.

The procedure is also inefficient. People are doing a great deal of work but much of this large body of work is wasted because A/B journals accept so few of the papers submitted.

We make little use of electronicity, that is electronic publication, a subject we know and which is our specialty. The shoemaker needs to make shoes for his children!

Some ways to speed and the process and expand the amount of published work are as follows.

Electronic Publication. We have three AIS electronic journals (JAIS, CAIS, THCI). However, only one of these (CAIS) emphasizes quick turnaround on publication. The other two only reduce the time from acceptance to publication. We need more electronic journals that focus on quick turnaround. Furthermore, because electronic journals do not have page limits, long articles can be published and more detailed information can be disseminated.

Use Wikis and Other Web 2.0 Capabilities. Even with electronic journals, as a field we are stuck in the 19th (17th?) century model of print publication. Businesses are turning to Web 2.0 to speed their communications

[McAfee 2009] but we as a profession do not. Only a few even use Wikis in teaching.[1] Yet Wikis are a way of groups of people to communicate.

Use Conference Proceedings to Announce New Work. This procedure is the primary way of announcing new work in computer science where such conference papers are treated as research contributions. The review process for leading conferences is stringent but quick. The result is that people can build on one another's work more quickly, speeding the entire research process.

Circulate working papers electronically, creating major repositories as physics does. This concept is more radical. Anyone can submit a working paper to one of the repositories. There is no review. The process is equivalent to the one used for years in all scientific fields of making working papers available upon request, typically after conference abstracts are circulated. If an abstract interested you, you could write the author(s) and ask for an advance copy. The working papers carried little or no weight in personnel reviews but improved communications in the field. The introduction of repositories (e.g., arXiv at Cornell) has changed the tempo at which research is reported.

Establish regular distributed meetings using HD Television over the Internet. As HD television quality and multiple connectivity come to the Internet, it will be possible to run meetings among groups of people with common special interest to meet at regular intervals (e.g., biweekly) from widely separated locations to discuss research and professional issues.

Create a Culture Where People Write "Letters to the Editor". The history of CAIS leads me to the conclusion that we do not have a culture of writing letters to the editor in the IS field. Of course, "Letters to the Editor" are really a pre-World Wide Web concept, geared to the slow pace of the pre-1995 world. A relatively simple step would be to add a Comments capability at the end of each electronic article AIS publishes, thereby allowing people to respond right then and there.

Can It Be Done?. Several of these ideas require changing not only the way IS communicates but also the way the new forms of publication are treated for faculty tenure and review. That's a major education effort. If we in IS collectively agree and do the necessary work, it should be doable. We are not the only field that needs to update the way we communicate.

Idea 2: Expand the Ways IS Performs Research

Almost all our work follows the classic, typical social science model of the lone researcher (aided by their advisor in the case of PhD students) taking data from subjects and applying theories taken from elsewhere. Unfortunately, we call too much of this reportage "original research".

[1]A few years ago, when I was a visiting professor at the University of California at Irvine, I asked the computing center to make Wiki software available for a class. It turned out I was the first professor ever to ask for a Wiki.

Reportage leads to vast areas of our literature being variations on themes, much like Rachmaninoff's piano piece *"Variations on a Theme of Paganini"*[2] or similar compositions by classical composers.

Yet, we have the advantage of electronicity for our research but use little of it to create research. We also have the advantage that we do design, even though the revival of the design approach is only slowly reviving right now.

Here are some examples of what can (and should) be done.

Create. We react to the marketplace; we don't invent as do the computer science people. We don't create physical or conceptual artifacts. We leave that to others such as computer science and to industry. Think of the last 20 years: where were we when data warehousing, Wikipedia, and Google, for example, came out? Group DSS is probably the only hardware/software-based system that has been created by IS, although Engelbart's Augmented Intelligence and Xerox's COLAB were there before us.

Crowdsourcing. Surowiecki's book *The Wisdom of Crowds* [Surowiecki 2004] leads you to the crowdsourcing approach. For example, 22 short papers were published in Volume 26 of CAIS that responded to a publisher who asked editors to enforce self-citation, that is references to other papers in the same journal. Crowdsourcing elicits the experience, concepts, and results obtained by many colleagues on an issue or a topic. The technique doesn't apply to everything but applies in selected cases. The downside risk that crowds can become mobs needs to be guarded against.

From a research perspective, it speeds matters. The example took roughly 4 months from idea to publication. In a 21-month publication cycle, it would require a large number of successive 21-month cycles.

Societal Impacts. Our research lives in a small, inward-looking cocoon. The alternative is to look at the big picture not just report and analyze the way a particular company or even n companies do things. Examine the implications for society of new technologies. For example, is the Apple Tablet a disruptive technology and, if it is, in what ways and why is it disruptive?

IS in Reference Disciplines. IS has adopted many disciplines as reference disciplines: economics, psychology, anthropology, telecommunications, and more. But our explorations of these disciplines are one-directional. We just take their theories and ideas and put them to use in studying IS in business. We should also be studying the implications of IS in other fields. For example:

— How does IT affect Green?
— How do hospitals and health plans with electronic health records differ from those who do not use the technology?

IS is pervasive in a lot of fields yet we never examine them in IS terms. Instead, we focus on serving them to their specifications. What I have seen

[2]One of the variations in this classical music piece wound up being the Hollywood song "*Full Moon and Empty Arms*".

thus far in our literature, such as IS for green or for hospitals, seems to have no analysis of IS's impact on other fields yet we know they will live and die by their information technology.

Analytics. The management science people have run rings around us in applying IS combined with analytics to other fields, although with mixed success. Think of the Wall Street debacle that resulted from analytics. Yet analytics, as shown by Davenport and Harris [2007], have major impacts on how businesses function. We are generally not the people with the experience and the skills (except a few who come out of mathematics or operations research) to advance the state-of-the-art of analytics. But we do know something about how IS can be mobilized. We can contribute though developing new ways to improve the IS content of analytics.

Look for Black Swans. Most of our work tends to look for expected values and variances. The normal distribution is endemic. Yet, as witnessed by the economic crisis, disruptive technologies, and many other phenomena, it is the unexpected that creates the problems that conventional research does not address. Nassim Nicholas Taleb called such phenomena black swans. The term refers to the idea that we expect all swans to be white, but when we encounter back swans (such as exist around Perth Australia) we do not know what to do because they are outside our experience. Taleb [2007] argues that using only standard statistical aggregates we miss the black swans. Focusing on unconventional outcomes (black swans) is an important area for IS investigation.

Conclusion. Yes there are practical problems for IS people doing the kinds of research we describe but it is not rocket science. We should start thinking about new methods that extend our range and reach, not just about how to explain the latest gadget or fad that comes out of Silicon valley.

4. STUART MADNICK

These two ideas are closely related, and somewhat related to the ideas of my colleagues on this panel.

Idea 1: A More Compelling Vision of IS

We need a more compelling vision of what IS is all about and its impact. As part of that, we need to be able to communicate that vision much more effectively. Perhaps because we in IS understand its importance, we forget that most others do not! Unlike doctors, lawyers, and police officers, IS professionals are rarely featured on TV (and if they ever are, it is usually not positively.) As a result, for those outside our profession who even think about IS, there are many discouraging myths. For example,

— IS is just about writing payroll programs (or whatever other boring things you can think about),
— IS careers have no future (or even present) since IS has all been outsourced to India or China or somewhere else.

It is particularly ironic that I have found that these views are much more common among students, especially MBAs, rather than among company executives. The executives often face major IS challenges and know how hard it is to find high-quality IS professionals. But, somehow, that message does not seem to filter down to most students. We need to find ways to communicate the importance and excitement of IS to the broader public. My Idea 2 presents some suggestions.

Idea 2. IS Impacts and Contributions

To disseminate the compelling vision of Idea 1, we need concrete examples of IS impacts and contributions in important areas, often in collaboration with other fields. Here are some examples that I am personally familiar with. I am sure that there are many more.

Evolution to Web 3.0 and the Emergence of Management 3.0. "Evolution towards Web 3.0 and the Emergence of Management 3.0" is the (overly long) title of a new course that I teach. Students today are generally deeply immersed in the Web and Web 2.0 activities, especially social networking, such as Facebook and Twitter. In many cases they lack the perspective of how rapidly these technologies and the social phenomena that they have created emerged and cannot appreciate why and how they may rapidly change (how many remember how fast Friendster rose ... and then largely disappeared?) Of even broader concern to our students should be the impact of IS on corporations and society at large, where they are likely to spend much of their adult life. One particular issue that I note is that technologies (including the semantic Web) can make information sharing among organizations increasingly easy. How many have heard Tim Berners-Lee ("father of the Web") chant "Open Data Now!" However, the management understanding (that I refer to as part of *Management 3.0*) to take advantage of these radical information sharing ideas is a huge culture change for those that build and live in "silos of information." The impact of this change will be dramatic to business and society.

The Next Weapon of Mass Disruption (WMD). The good news/bad news is that we are increasingly dependent upon a global information infrastructure, both for our personal relations (e.g., texting) as well as for business operations. Once upon a time, my secretary would provide me with a folder full of "snail mail" that she had opened and organized for me each day. Now days, or even weeks, go by without anything appearing in my postal mail "IN" box. When our local email system goes down, even for only a few hours, one of our primary means of communication and coordination disappears. . . and that is only one of many aspects of the global infrastructure that we rely upon (e.g., What if you couldn't Tweet?).

CyberWarfare, CyberDefense. Cyberwarfare and the importance of CyberDefense to your company and your country is the focus of a collaborative research effort among the MIT Sloan School of Management, MIT Computer Science department, MIT Political Science department, Harvard Law School,

and Harvard Kennedy School of Government. The object is to understand how international relations are affected by this global information infrastructure and to find ways of defending against the CyberWarfare, that would affect government, industry, and each of us individually. The recent intrusion at Google is just one object lesson.

The Transformation of Science. Science, like IS, is changing rapidly; and IS has, and will continue to have, a critical role in the transformation. NSF is funding a number of efforts under its DataNet Partners Initiative. Simply stated, although scientists publish their findings in journals, as they have for centuries, what happens to the data that lies behind the published results? They are sometimes deposited into local or field-specific repositories, but more likely they are left on a hard drive somewhere ... or even discarded or lost. Lacking the opportunity to build directly on that data means that many experiments must be repeated and often major interdisciplinary discoveries are delayed significantly ... or never happen. It is the goal the NSF DataNet effort to improve this situation and accelerate the advancement of scientific discovery.[3]

MIT is leading one of the finalist proposals,[4] called "DataSpace," that involves 11 organizations (academic partners from around the world plus corporate partners, such as EMC, Google, HP, and Microsoft.) Although DataSpace, much like the Web itself, is intended to be generally useful to all fields, we have identified some important complex multidisciplinary fields as initial test cases. One such field is biological oceanography which attempts to address questions about how microbial life in the ocean (the most abundant source of life on this planet) interacts with the ocean and our global climate. In complex ways the climate impacts microbial life but they, in turn, have huge impact on the climate. Massive amounts of distributed and disparate data is needed (think "world-scale").

5. JAY NUNAMAKER

Idea 1. Expand the Vision of IS: Become a Campus-Wide Research Resource on Information Systems

Today's information systems departments are mostly located inside a business school, with a few in computer science or standalone such as in a school of information. The result is that our department should attend to local needs, not those of the entire campus. Yet with information and knowledge at the heart of research and national competitiveness, we are a resource that applies campus wide. We need to find ways that MIS departments can work on issues that affect everyone on campus and be a resource for them. To do so, the MIS department should not be limited simply to the domain of the business

[3]Although scientific data is the focus for NSF, much like the Internet (which was initially funded by NSF), DataSpace is intended to help advance any activity that is data-intensive, such as financial services.

[4]Final decision of funding awards have not been made by NSF as of 1 May, 2010.

and management schools but should be able to work in an interdisciplinary framework.

Independence is not simply for the sake of independence. It means that MIS research must be broad and diverse and cover many different domains**.** It brings together two of the roles of academics: research and service**.**

We must expand our vision to embrace information systems of all organizations and teams. We should be working in the domains of medical informatics, bioinformatics, government policy, humanitarian relief, national defense, among others. Information systems researchers can and should be solving information problems in all of these domains.

Many business/management schools have a culture of isolation on campus. The IS community should strive to be more involved on the campus with colleagues in social science, physical sciences, and engineering. That means expand our focus to include all aspects of IS not just those problems concerned with business or management. One approach for involving IS faculty throughout the departments on campus is to have IS PhD students minor in areas outside of the business school. Minors could be taken in linguistics, psychology, cognitive science, neuroscience, computer science, computer engineering, systems engineering, biological sciences, among others. This approach builds rapport and respect among colleagues on campus, providing we have good students with outstanding skills.

Another approach to becoming involved with the main campus is through externally funded research grants. The main campus understands the value of acquiring and working on externally funded research grants. Research is one of the main functions of a student-centered research university. With the recent budgets cuts in all universities and the depressed state of the economy, funded research is an extremely important source of support for everyone. The IS research community today generally consists of single investigators who use either a social-science-driven or a design-driven model of research. The research problems we face are now so complex that they cannot be understood or solved from a single perspective. We should broaden our vision to create research themes that are multi-disciplinary, multi-university, and multi-investigator. We need to expand our circle of influence and start talking to funding agencies and our colleagues throughout the campus and solve real-world problems.

Idea 2. Strive to be a Reference Discipline through Research and Teaching

The IS professional life is centered on research, teaching, and service. We should move toward becoming a campus-wide resource. We must develop campus-wide curricula and become involved with projects that include faculty and students from fields far beyond the business school. We must become a reference discipline in order to survive. We know a lot about data and information: managing, organizing, storing, retrieving, and analyzing. We know a great deal about analyzing, designing, building, and operating information systems. Many disciplines are only now beginning to be immersed in data and information. We can warn them (and sometimes even save them) from making the same mistakes we made over the years. We learned from our experiences and we have over

40 years of researching data, information, and systems. We should be viewed as a reference discipline. Baskerville and Myers [2002] present an excellent argument and summary for why MIS should strive to be a reference discipline.

Our professional life also centers on teaching. Thus we should also move toward becoming a campus-wide educational resource that serves the entire campus. We must develop campus-wide curricula that apply to the many students specializing in fields far beyond those in the school to which we are currently attached.

6. RALPH SPRAGUE

My two ideas deal with attracting more students to our field. As faculty members, we tend to look to research and communication approaches as a way to improve the IS field. This approach is logical and understandable because faculty careers, including promotion and tenure, are based heavily on research and publication. This process has prevailed in a wide variety of intellectual endeavors for centuries. The underlying resource to support the process, however, is the body of students taking courses and majoring in IS. If students do not enroll in classes and register to major in IS, for whatever reason, the resource base for faculty positions, and even IS departments, is endangered. Declining undergraduate enrollments not only imply fewer job opportunities for faculty but also declining research opportunities as graduate enrollments also decrease.

It is my opinion that a major problem is misunderstanding and miscommunication on the part of the students, as they choose their career, and employers, as they hire students coming out of an academic degree program. My two related ideas suggest a way to correct these misunderstandings.

Idea 1. A Model of the IS Professional

We need a model or a representation of an IS professional that students can understand when they make their decision of what career to pursue. It's not a career as programmer/analyst with activities that are routinely outsourced to other countries. It is not creating people who teach computing at Junior Colleges. Unfortunately, the trend toward outsourcing has left students with the image of heads-down programmers whose job may soon be outsourced to China or India. They do not understand the rich mixture of technical skills, organizational understanding, creativity, and entrepreneurship that characterizes an IS professional. They do not understand the important role IS professionals play in improving the performance of organizations.

Idea 2. A Model of the IS Graduate for Employers

We also need a model of the IS graduate. This model should be one that employers can understand as they hire entry-level people with management potential. The IS student differs from a super-techie who talks to computers but not necessarily to people. The balance among technical skills, business skills, and people skills in an IS major is much different from a computer science or computer engineering student. Employers may succumb to the temptation to

use new graduates to produce code or do maintenance projects. This attitude would reinforce the negative image we want to avoid. IS majors with a strong business degree are potential managers with an understanding of how to use technology to improve organizational performance. They need a model of an IS student to measure their potential in the organization.

An example

Hawaiian Airlines built a model which can be used for both of these representations. They outsourced the data center and its management in a fairly typical way. Then the rest of the IT function was given the responsibility for IT process management. New employees are given job descriptions that are comprised of 5 core disciplines and 4 supporting skills, as shown in Table I.

The core disciplines are:

Business Analysis – Analytical, creative, and structured problem solving
Process Analysis – Development of "as-is" and "to-be" processes
Financial Analysis – Cost Benefit Analysis, benefit and cost streams
Project Management – Principles, phases, deliverables of project management
Vendor Management – Vendor selection process management

The Supporting Skills are:

Facilitation – Manage 1-on-1 and small group meetings
Presentation – Comfortably present and communicate to groups
Technical – Use industry standard productivity tools
Personal– Effective time management

Students can look at this set of disciplines and supporting skills and realize that IS is an exciting job that will lead to a career in management. Employers can measure students against these disciplines and skills to ensure they are hiring the employees they need.

7. ANDY WHINSTON

Idea 1. Become Involved in New Areas Such As Health Care IS

Information Systems (IS) continue to play a central role of supporting the operations of organizations. Research and practice are devoted to improving the design of IS to facilitate the resource management and decision making of organizations. Nevertheless, a more comprehensive view of organizational information systems goes beyond the pure logistic and technical perspectives. Being a large complex system, organization can be viewed as a multi-participant platform, in which the interests of different participants are not completely aligned in most cases. To facilitate the management of such complex systems, the system designer should not only focus on the effectiveness of the system per se, but also take into account the incentive problems, recognize the interests of various parties, analyze their strategic behaviors, and align these different interests in the most efficient way. To achieve these goals calls for an

Table I. IT Process Improvement-Boot Camp Framework

Core disciplines				
Business analysis	Process analysis	Financial analysis	Project mgmt.	Vendor mgmt.
Assess a situation via an analytical, creative, and structured problem-solving frame- work to drive the development of appropriate options and recommendations	Document the current ("as-is") state of a business process.	Perform a cost/benefit analysis via the develop-ment of a basic business case	Decompose assignments into discrete tasks, estimate the time to complete the tasks, and document everything into a communicable process	Manage a vendor selection process: –drive requirement gathering sessions to understand business needs.
Document and present options & recommen-dations in a format that effectively facilitates informed decision making	Apply basic optimization Drive the development of and document the future ("to be") state of the business process principles		Understand and communicate the principles, phases, and deliverables of the project management framework to others.	–perform an analysis of market offerings –develop and distri-bute a RFI/RFP –manage day-to-day vendor communications & coordinate vendor selection
	Document procedures supporting the business prices		Complete a standard requirements document &support traceability beyond the requirements phase	–drive towards a final vendor selection via evaluation scorecards

Supporting skills			
Facilitation	Presentation	Technical	Other
Facilitate 1-on-1 and small group meetings in order to drive activities (e.g., process documentation and requirements gathering)	Develop presentations that communicate research and analysis performed	Use MS Excel, MS Word, MS Visio, and MS PowerPoint at an intermediate level Use MS Project at a basic level	Report project status Escalate issues properly effectively
Open meetings with a clear agenda and expectation of what will be accomplished	Be comfortable presenting to small and medium sized groups	Use MS SharePoint to create & customize collaboration, functional, and project sites	Capture and distribute clear & accurate meeting notes
	Packaging & communicating the status of current initiatives with concise updates for management		Manage time effectively

integration of economic theories (e.g., game theory, auction theory, mechanism design, insurance theory) with computing and design science into the IS research. One good example is the health care delivery system.

In the health care delivery system, a hospital might care about the revenue more than the effectiveness of the treatment while its patients might be willing to trade off their recovery progress for some favorable yet unhealthy living habits. To overcome these pitfalls that could potentially hurt the performance of the entire system, in a recent research symposium on the health care delivery system, we proposed an innovative model that integrates auction mechanism, contingent contract, insurance structure, computerized health record exchange platform, and patient compliance monitoring systems based on a wireless sensor network. We suggest that such a system can effectively deal with the information asymmetry between patients and doctors, and the moral hazard issues on both sides, so as to mitigate the risk associated with the uncertain outcome [Xu et al. 2010].

Another example would be improving the design of the organic ranking mechanism in the online search advertising system. Since advertisers and consumers have their own strategic behaviors and different types of advertisers may behave completely differently, an effective advertising system design should be based on the understanding of the comprehensive competitive situation facing advertisers [Xu et al. 2009].

Idea 2. Think About New Technologies

IS is a business that invents itself out of business every 5 years or so as new information technologies move from being blue sky to commercial realities. A large fraction of IS research is spent on analyzing these technologies after they appear. Given the lead times to do the research and to have it published, we too often look at the past rather than the future. Rather, we should stay on top of emerging new technologies to identify new business plans that use these new technologies to move practice forward. It is just as important for us to study these technologies using a multidisciplinary approach. It is crucial for us to keep up with and understand new technologies as soon as they come out so we can start finding revolutionary ways to use them in the future.

Online social networking services are a great example of a new technology that deserve the attention of IS researchers. For example, Twitter rose very quickly to being a game changer in the business world [Rui et al. 2009]. Unlike Facebook which is having a very hard time monetizing the massive user base due to privacy issues, Twitter has all the potential to be a great marketing tool. By understanding that customers today are not shy about broadcasting their opinions and intentions, companies can use it to their advantage for anything from customer service, to predicting sales or even identifying product defects. Social media however, are a two-edged sword. On one side, there is an astounding amount of data out in the open for us to explore. On the other, however, so much data mixed in with a lot of noise is extremely hard to sort through and analyze. To overcome this dilemma, IS professionals must work hard to find innovative ways to improve data

collection and management, natural language processing, econometric methods, and more.

8. CONCLUSION

Each of the six scholars who contribute to this article look at the future of the IS field through a slightly different lens. Each is influenced by their particular experiences and association with the field. If you only examine the titles of their ideas, their contributions might appear routine. However, as you read the details of each of their concepts you see new and sometimes even radical ideas on how we can and should move forward.

REFERENCES

BASKERVILE, R. L. AND MYERS, M. D. 2002. Information systems as a reference discipline. *Manag. Inform. Syst. Quart. 26*.

DAVENPORT, T. AND HARRIS, J. 2009. *Competing on Analytics.* Harvard Business School Press, Boston, MA.

MCAFEE, A. 2009. *Enterprise 2.0*. Harvard Business School Press, Boston, MA.

RUI, H., WHINSTON, A. B., AND WINKLER, E. 2009. Follow the tweets. *The Wall St. J.* (Nov. 30).

SUROWIECKI, J. 2004. *The Wisdom of Crowds*. Doubleday, New York.

TALEB, N. N. 2007. *The Black Swan*. Random House, New York.

XU, L., CHEN, J., WHINSTON, A., AND YUAN, M. 2010. Information technology enabled contingent contracts and reverse auctions in health care management. In *Proceedings of the Symposium on Innovations in Health Care Delivery Systems* http://www.mccombs.utexas.edu/health-care-symposium

XU, L., CHEN, J., AND WHINSTON, A. 2009. Too organic for organic listing? Interplay between organic and sponsored listing in search advertising. http://papers.ssrn.com/sol3/ papers.cfm?abstract_id=1409450

Received June 2010; accepted July 2010