Best Practices for Increasing IS Enrollment: A Program Perspective

Hope Koch
Baylor University, hope_koch@baylor.edu

Craig Van Slyke
Saint Louis University

Rick Watson
University of Georgia

John Wells
Washington State University

Rick Wilson
Oklahoma State University

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Abstract:

This article shares best practices for increasing IS (information systems) enrollment based on the experiences of five people who have led their department's enrollment efforts over the past 3.5 years. Prior to launching these enrollment initiatives, each university's IS enrollment had reached record-breaking lows, mirroring enrollments nationwide. At the writing of this article, each university has both increased its IS enrollment and improved its program quality. These journeys have resulted in five best practices: make IS enrollment a long-term priority, partner with external stakeholders (i.e., employers, students, and other programs), incentivize students, maintain curriculum rigor, and add value. This article will help IS programs surmount the current challenges and attract, retain, and place IS majors.

Editor's Note: This article is based on a panel presentation at the Americas Conference on Information Systems, AMCIS 2009, San Francisco, California, August 2009.

Keywords: information systems, education, enrollment, retention, placement

I. INTRODUCTION

The information systems (IS) discipline faces greater challenges than at any time in its existence. At the core of these challenges is low enrollment. Many IS programs have experienced significant enrollment declines; enrollment drops of 70 percent and more are not unusual. While accurate statistics are difficult to come by, Figure 1 shows the decline in IS and computer science degrees awarded. Furthermore, there is sufficient evidence that the problem is serious and widespread [Gill and Bhattacherjee, 2009; Koch and Kayworth, 2009]. To make matters worse, just when enrollment began to turnaround at some universities, the global economy sank into a serious, prolonged recession.
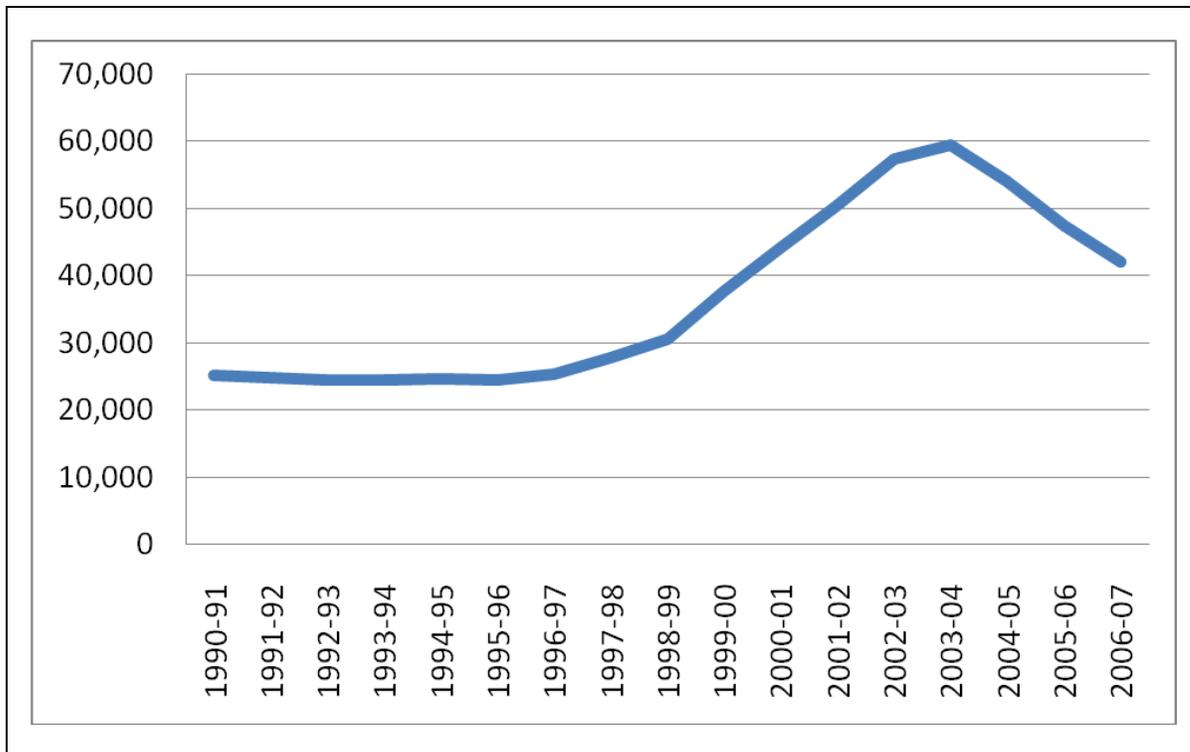

Figure 1. United States Undergraduate Degrees Awarded in IS and Computer Science [United_States, 2008-2009]

The consequences of ignoring the low enrollment problem are severe indeed. IS programs have been eliminated or disbanded, and tenured faculty have been laid off [Glass, 2007]. Two examples illustrate that these impacts are not limited to small, lesser-known programs. In 2009 Florida State University eliminated its highly-regarded IS department and folded it into management. The Florida State faculty fared better than their colleagues at the University of Central Florida, which in 2009 announced that it was eliminating its IS programs (Bachelor's, Master's, and Doctoral), shutting down the department, and terminating the contracts of all faculty, including tenured full professors [Hickley, 2009]. Both programs are highly regarded with well-known faculty [Clark, Warren, and Au, 2009]. The situation has grown from serious to critical. We must take action to improve enrollments—the very existence of the IS discipline is at stake.

II. ENROLLMENT EFFORTS

A number of universities have taken action, including Baylor University (BU), Oklahoma State University (OSU), Saint Louis University (SLU), University of Georgia (UGA), and Washington State University (WSU). At AMCIS 2009, faculty from these universities organized a panel to share and discuss successful enrollment efforts. This article expands on the information in the panel to provide a roadmap for universities seeking to increase IS enrollment. Figure 2 provides the organizing framework for this article. The figure suggests that IS programs address

enrollment by taking a long-term program perspective. This perspective moves beyond common strategies (i.e., curriculum redesign) and suggests that IS programs implement initiatives to attract, retain, and place students. This approach creates a positive cycle where successful IS majors become satisfied customers whose recommendations and positive word of mouth help the IS program recruit more students into the program. We will now discuss the strategies undertaken in each area, highlight the challenges, and describe five best practices.
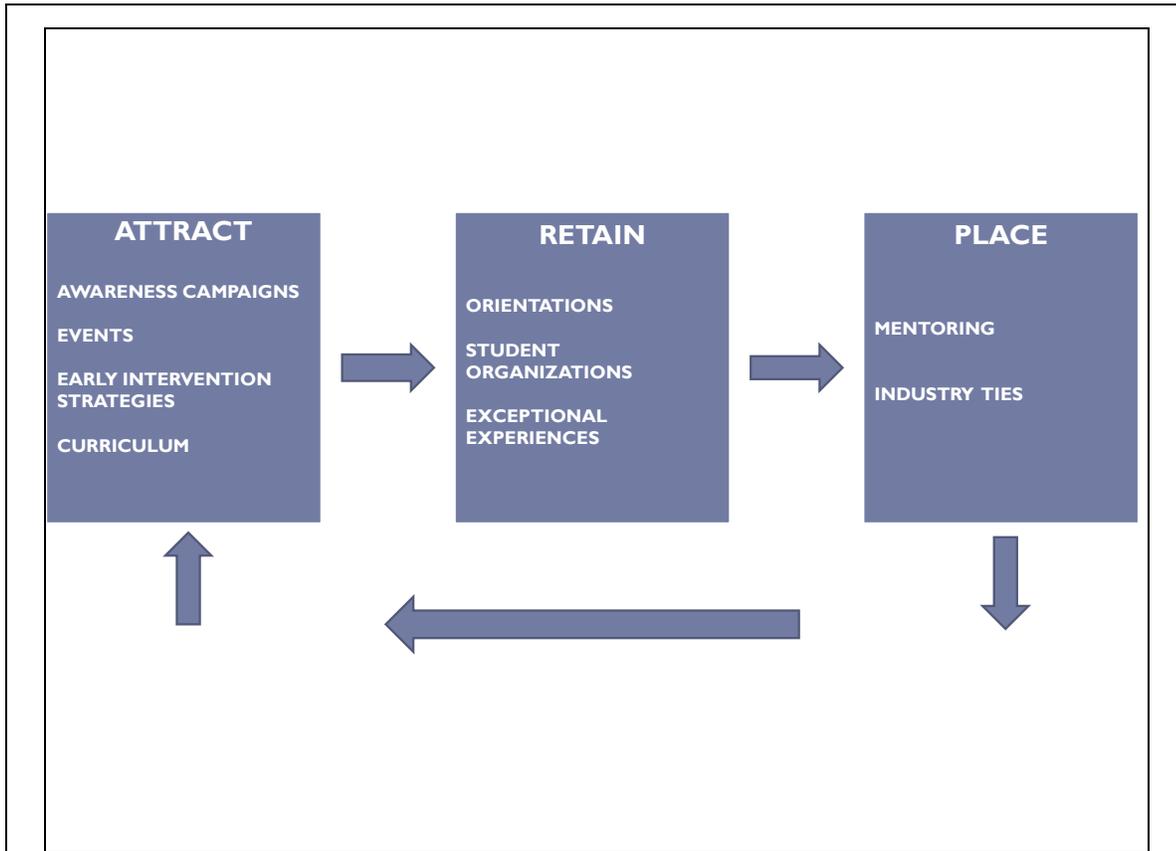
Figure 2: A Program Perspective on IS Enrollment

Attract

IS programs can attract majors by conducting awareness campaigns, hosting events, conducting early intervention strategies, and redesigning curriculum. In this section, we discuss these efforts.
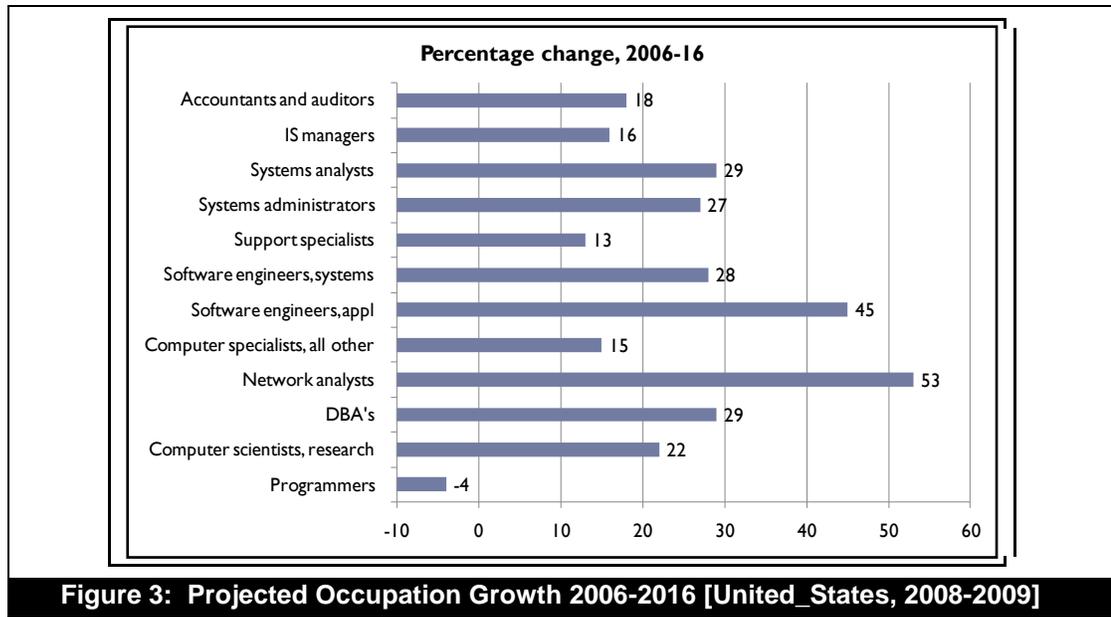
Awareness Campaigns

Targeted toward students already enrolled in the university, high school students considering the university, and advisors, awareness campaigns communicate the role of IS in the organization, debunk myths about IS, and highlight positive job prospects for IS graduates. The role of IS in the organization is communicated in bumper-sticker slogans such as IS is "about enhancing organizational performance" or "the engine that runs the business." These campaigns emphasize the transformative power of IS to create new strategies and redefine industries, explain why firms need IS, and show how entrepreneurs are using their knowledge of technology and IS to create successful new ventures. In addition, the awareness campaigns debunk common IS myths such as: IS involves sitting behind a computer all day, IS majors are nerds, IS professionals do not interact with others in the organization, companies outsource IS work, IS work is boring, and there is no upward mobility in the IS profession.

The most important message in the awareness campaigns is the positive job outlook for IS graduates. Figure 3 shows some of the fastest growing occupations between now and 2016. While accounting programs have gained much prestige, our awareness campaigns highlight that IS fields are outpacing accounting fields, thus creating better opportunities for IS majors. These awareness campaigns culminate in a central message emphasizing that employers seek IS majors for opportunities with strong upward mobility. To support these awareness campaigns, we have updated our recruiting materials, developed Facebook groups, embraced Twitter, designed IS t-shirts, and have IS spirit days where our majors and faculty wear their IS t-shirts. IS programs can execute awareness

campaigns by designing promotional posters, featuring stories about the IS program in media outlets, educating advisors about IS, and participating in university events.

Percentage change, 2006-16

Occupation	Percentage change
Accountants and auditors	18
IS managers	16
Systems analysts	29
Systems administrators	27
Support specialists	13
Software engineers, systems	28
Software engineers, appl	45
Computer specialists, all other	15
Network analysts	53
DBA's	29
Computer scientists, research	22
Programmers	-4

Figure 3: Projected Occupation Growth 2006-2016 [United_States, 2008-2009]

Both UGA and BU create promotional posters that provide potential IS majors with a front row seat to a current IS student's professional opportunities. UGA places advertisements on buses that carry about 40,000 students per day. At BU, the IS majors design promotional posters, which are placed throughout the business school. Every student enrolled in BU's business school passes these posters daily. The business school's computer labs display electronic versions of the posters, which feature recent IS graduates and current IS students who have secured jobs or internships. The students featured on promotional posters receive peer recognition, which provides an opportunity to talk about IS, and recruit peers to the major.

BU's IS majors have been featured in several news articles in outlets including the university newspaper, the business school magazine, the business school website, and the local Waco paper. These articles emphasize the shortage in IS majors worldwide and how IS majors fare in today's challenging employment environment [Coy, Scott, Gibson, Gerdes, and Hall, 2009], and the opportunities for IS majors. A May 2009 article interviewed many business school graduates and the dean. The IS majors were the only students in the article who had secured jobs upon graduation.

Since students seek advisors' input in selecting majors, advisor relationships are critical to increasing IS enrollment. SLU, BU, and UGA provide three illustrations of how to educate advisors. First, SLU's department chair takes the advisors to breakfast each term. During these breakfast meetings, the department chair thanks the advisers and educates them on the department's courses and programs. The meetings focus on helping advisors understand how to talk to students about the department's offerings. For example, when SLU added courses in enterprise systems, the chair explained what enterprise systems were, what the courses covered, and how non-IS majors could benefit from the courses. BU provides a second example. Seven IS majors enrolled in BU's IS leadership class hosted an event for all thirty university advisers to educate them on IS. Both SLU and BU have prepared the advisors short information sheets that communicate the curriculum. UGA went a step further by sending letters to all the high school counselors in the state of Georgia, asking the advisors to help them recruit students to the major.

Finally, BU increases awareness of IS by hosting a booth at the two business school majors' fairs. To combat the historic problem of low traffic to the booth, the IS program now awards a $1,000 scholarship to the most impressive pre-business students who visit the booth and plan to major in IS. Members of BU's student organization select the scholarship recipients and then mentor that person through the IS program.

Events

Hosting an event is a proven way to increase awareness of the IS field. BU, OSU, and WSU each host events to highlight the opportunities in the IS field to undergraduate students. Both the IS student organizations at BU and WSU participate in the event's planning and promotion. As a result of their involvement, IS majors take ownership of the event and the enrollment problem. Events increase awareness through a combination of education programs, networking opportunities, and purely social activities. Educational topics include new technologies and their effect on

business, the outsourcing/off-shoring phenomenon, and career breadth for a technology-educated workforce. BU and WSU host these events for business students enrolled in lower level IS courses and tie their attendance to extra credit or course credit. The following paragraphs describe four of these events.

WSU hosts the chief information officer (CIO) Summit and the Seattle Professional Development Event. The CIO Summit gives students interested in technology and business the chance to interact with some of the leading CIOs in the State of Washington. During the summit, the moderator solicits questions from the audience and students ask follow-up questions. A reception following the CIO Summit enables current and potential IS majors to interact with the CIOs on a one-to-one basis.

The Seattle Professional Development Event[1] provides WSU students an opportunity to interact with IS professionals who are currently employed by Seattle-based employers. WSU leverages the professional development event to expose younger undergraduate students (i.e., those who have yet to declare a major) to the IS discipline. The trip includes visits to two Seattle-based employers where students are presented with information about the IS profession and possible job opportunities. After these visits, the student organization hosts a pre-game event at Safeco Field (home of the Seattle Mariners) where students interact with WSU IS alumni representing more than twenty different employers.

BU hosts the IS Summit, the IS Summit Challenge, and the IS Tailgate. This IS Summit is held each spring for the 450 students enrolled in the introduction to computers class along with IS majors. The Summit provides these students a chance to learn about the opportunities in IS and to network with more than twenty IS professionals from leading employers such as ConocoPhillips and USAA. As part of the Summit, BU hosts an IS Summit challenge where the freshman students design presentations to help the companies understand how to attract students into the IS field and their company. The employers pay between $2,500 and $5,000 to participate in the Summit. This sponsorship provides each company an opportunity to speak to the students during their classes and to attend the Summit banquet. For designing the recruiting presentations, each semester more than thirty students win prizes totaling $6,000. In years past, BU has held a video game tournament as part of the Summit. The IS Tailgate is a networking event held immediately preceding BU's homecoming football game. The Tailgate includes a barbeque cookout for more than 300 IS employers, business professionals, faculty, administrators, IS majors, and pre-business students.

Early Intervention Strategies

To increase recognition of the IS major among high school students, OSU and BU have executed early intervention strategies. These strategies have proven more successful for OSU than BU, simply because many of the local high school students do attend OSU. Since Baylor is a private school, fewer students from the local area can attend the university. BU is addressing this problem by encouraging members of its student organization to make presentations at their high schools. While this may not have substantial payoffs for BU's IS program, it should help IS programs nationwide.

OSU routinely executes three high school activities. First, OSU faculty attends high school college fairs and provides giveaways like beach balls, M&M's, footballs, and engineering pencils. Second, OSU faculty team-teach innovative technologies at local high schools. Third, OSU hosts high school "IS Days." There are half-day programs with stations on password cracking, forensics, radio frequency identification, distributed network protocols, jobs, and careers.

The success of these activities has led OSU's IS department to implement a weeklong, resident summer camp called Information Systems Technology Exploration (ISyTE). At the June 2009 inaugural event, high school students from around Oklahoma attended a six-day program where they experienced college living first-hand and participated in hands-on IS activities. IS faculty and students participated in the event, as did recent alumni from the area. The program focused on fun and included field trips, cultural activities, and behind-the-scenes visits at ConocoPhillips, Chesapeake Energy, the Bricktown Ballpark in Oklahoma City, and traditional Stillwater sites including Boone Pickens Stadium and popular student establishments.

Curriculum

In addition to awareness campaigns, events and early intervention strategies, IS programs may consider following SLU's example and revising their IS curriculum. Figure 4 below shows SLU's old curriculum on the left and its revised curriculum on the right. SLU's old IS curriculum consisted of the undergraduate business common body of knowledge and six required IS courses. Although elective courses existed and were offered, there was no room in

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[1] For more information on the professional development event see http://www.cb.wsu.edu/~jwells/alumni/seattletrip.asp.

the IS curriculum to accommodate electives. Students wishing to take an elective course used free electives and took more than the required number of credit hours; most students took no IS electives.
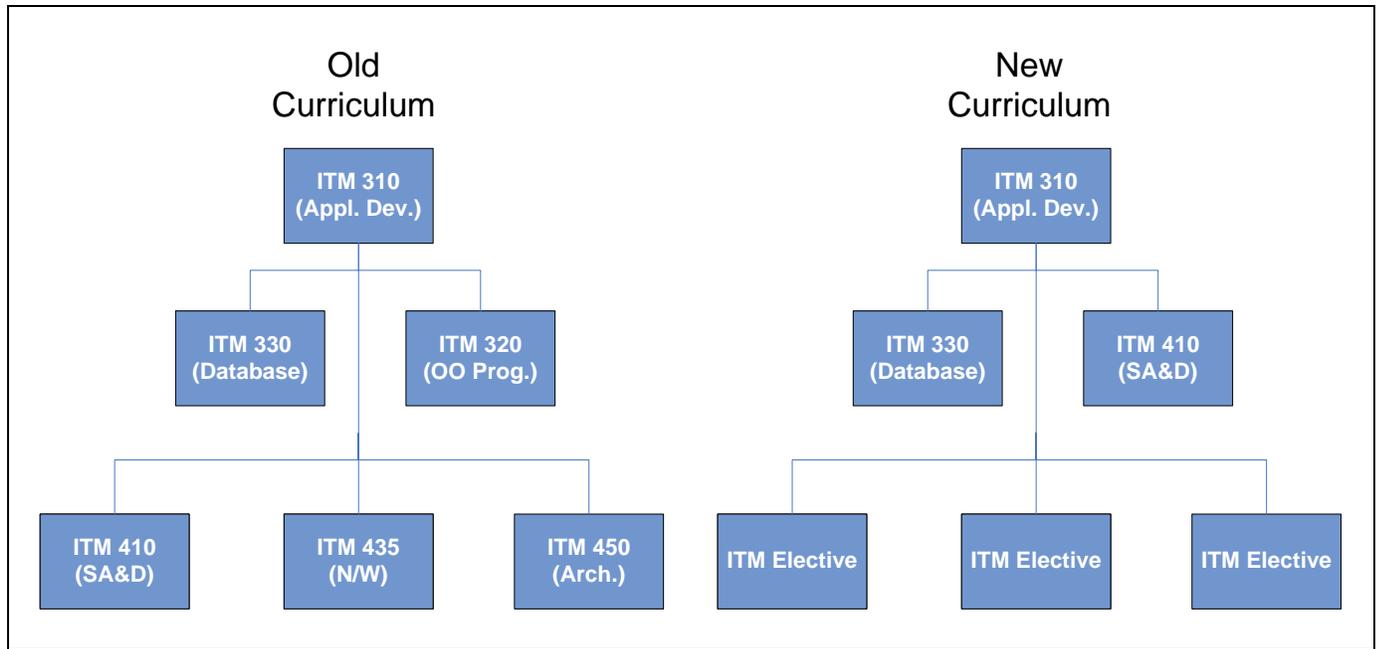

Figure 4: Saint Louis University Curriculum

To control the flow of students through the program and allow for better capacity planning, SLU instituted the rigid curriculum on the left in Figure 4 during the IS enrollment boom. Unfortunately, with far fewer IS students, capacity planning was no longer a problem. The inflexible curriculum exacerbated three enrollment problems. First, SLU often cancelled IS elective courses because their enrollment did not meet SLU's minimum enrollment threshold of ten students. As a result the IS major became less attractive to students pursuing IS as a major, second major, or minor. IS majors could not customize courses to pursue their unique interests, and the technical curriculum was unappealing to students pursuing second majors and minors.

To address these problems, SLU's IS department implemented a strategy based on three elements: flexibility, cooperation, and adding value. The cornerstone of this strategy was increasing the curriculum's flexibility. The strategy required offering courses that would interest non-majors. With six required courses and no electives, offering such courses was unworkable. As a result, SLU's IS program reduced the number of required courses. After considerable discussion among the faculty and with various stakeholders (e.g., employers), SLU adopted a more flexible curriculum with three required courses and three electives. For the flexible curriculum to meets its enrollment objectives, it was also necessary to offer courses attractive to both IS majors and non-IS majors. In the term following the new curriculum's implementation, SLU offered four elective courses: web design and development, information security management, global information management, and project management. The choice of elective courses was successful as enrollment in all of the courses exceeded SLU's minimum enrollment threshold. While the project management's enrollment was fourteen, enrollment in the other three courses exceeded twenty.

Curriculum revision and more varied course offerings enable the second part of SLU's strategy—cooperation. Given SLU's collegial culture, the IS department approached other departments seeking opportunities to collaborate on new programs. These discussions resulted in three new programs that included IS courses: a globalization of technology minor, a sports business minor, and a joint MBA area of emphasis in project management. The principle underlying these new programs and course offerings was adding value for both majors and non-majors. The basic view was that almost any business student could benefit from an IS minor, or from additional courses in IS. One major advantage that IS holds is that IS touches every aspect of business. As an extension, every business student can benefit from further knowledge of IS. The benefit of an IS minor is relatively easy to communicate to a business student. Of course, not all business students will choose to pursue an IS minor. However, even a small percentage choosing an IS minor results in significant enrollment gains. Small numbers of students from various programs add up to increased enrollments. While the curricular changes were critical to turning enrollments around, SLU had to communicate the changes and their importance to key groups such as the school's advisors.

In summary, all five universities in the study have made considerable efforts to attract IS majors. Table 1 below summarizes some strategies that IS programs can take to attract majors.

Table 1: Strategies for Attracting IS Majors
AWARENESS CAMPAIGNS • Place promotional posters in key areas • Feature IS majors in news articles • Educate advisors
EVENTS **Host events that provide pre-business students opportunities to:** • Hear presentation from IS professionals/majors • Network with IS professionals/majors • Tour businesses • Participate actively
EARLY INTERVENTION STRATEGIES • Attend high school college fairs • Speak in high schools • Host high school students on campus for programs
CURRICULUM **Develop a curriculum that is:** • Flexible: reduce the number of required course and offer more electives • Cooperative: cooperate with other degree programs to provide courses • Value adding: add value to both IS majors and non-IS majors

Retain

Realizing that current IS majors are the ones who can increase the number of incoming students by doing the one-to-one marketing, the universities in this study instituted a number of initiatives to enhance current IS majors' experiences. These initiatives focus on building a community of IS majors and reinforcing that while IS is a rigorous major, an upwardly mobile career path awaits IS majors. The retention initiatives include instituting IS orientations, cultivating active student organizations, and providing IS majors with special opportunities.

Orientations

BU, UGA, and WSU all instituted IS orientations aimed at making the new IS majors feel special, managing their expectations, and strengthening their commitment to the major. The first semester as an IS major is quite demanding, because much of the learning breaks new conceptual ground. Students have to learn a new way of problem solving and gain experience in thinking at a fine level of detail. The orientations emphasize that launching a career in IS takes a lot of energy and that the first semester is the hardest phase of the launch.

The orientations communicate information about IS careers by appealing to three fundamental human drives [Lawrence and Nohria, 2002]: *acquire* a salary of $50,000 plus and opportunities to travel, *bond* by frequently working in project teams, and *comprehend* by continually learning new skills. Orientations appeal to emotions by talking about careers in terms of *launch* (i.e., the job of the IS faculty), *fly* (i.e., the first few years of their career when they apply their skills), and *soar* (i.e., assuming a major position of responsibility such as CIO or chief executive officer).

Student Organizations

UGA, WSU, and BU attribute their enrollment success to active student organizations. Each student organization promotes the IS program at the university and in the surrounding community, organizes social interactions, and provides insight to fine tune the IS program. The student organizations enhance IS majors' experiences by arranging for guest speakers from industry, organizing club trips to employers, and sponsoring various professional development activities for current and future IS students.

Even though the student organizations give everyone interested in the IS field an opportunity to interact socially and professionally, officer selection is a rigorous and competitive process. This process involves faculty and/or former officers selecting leaders based on proven leadership skills, academic performance (i.e., GPA), faculty recommendations, and service to the IS program. To signify the merit associated with leading the student organization, the IS departments award the students with scholarships and special opportunities.

BU offers the student leaders course credit, which has three benefits. First, it gives a faculty member and students time to work on IS enrollment initiatives. Second, it attracts high performing students to the IS major. Third, the students enrolled in the class enhance their skills (i.e., project planning, public speaking, and interpersonal relations), build relationships with key stakeholders (i.e., employers, faculty, and other students), and gain an understanding of leadership and the state of affairs in the IS profession. Admitting new students to the class each spring helps Baylor's IS program keep its attraction and retention efforts fresh. The IS department treats these students as partners working with BU faculty to address the IS enrollment problem. Students take great satisfaction watching their ideas come to life and impact others. In the fall of 2009 BU created the IS career development coordinator position, which is a paid student worker position awarded to the best student in the spring IS leadership class.

Exceptional Experiences

BU, UGA, and WSU provide their IS majors exceptional experiences. BU's has instituted competitions and field trips. UGA has created an international experience and a leadership program. WSU has established an IS fellowship program.

In addition to the competitive selection criteria for the IS leadership class, BU has implemented two other competitions to encourage IS student performance. These are the IS scripting challenge and the IS servant leader awards. The scripting challenge takes place in the introduction to programming class, the first class that BU IS majors take. The scripting challenge includes $1600 in cash prizes and encourages high performance on the end of semester project. In addition, BU recognizes three to five students who do the best job serving the IS program each year. The awards, which include peer recognition and all-expense paid field trips, incent the students to lead IS events. Field trips have included meeting with ConocoPhillips IS leaders, a personal tour of Minute Maid Park by the Houston Astros' CIO, and participating in Warren Buffet's question and answer forum. This forum was held in February 2010 and is open to only 130 students worldwide.

Since the summer of 2006, UGA has offered an undergraduate elective, *Globalization and IS*, in China at the Neusoft Institute for Information (NII). Students attend class every day for three hours with an equal number of Chinese students from NII. They work with a different Chinese student each day and work in cross-cultural teams. Students also visit Beijing and Shanghai, but students spend most of their time at NII in Dalian, one of the most livable cities in China. The China trip is enjoyable, educational, and mind changing. It creates a very positive image for the IS department. While less than twenty students take the trip each year, it is a bit like the red sports car in the dealer's showroom. It raises the visibility of the IS department and participants tell their peers about the value of the IS China trip.

Beginning in fall 2008, UGA's IS department partnered with UGA's enterprise information technology services to design and manage an IS leadership program. The program tackles two problems: the university's lack of IS skills and the low demand for the IS major. UGA struggles to recruit and retain staff with the requisite skills to effectively design, implement, and maintain the systems necessary to support UGA's teaching, research, and service missions. Career Services and the IS department market the IS leadership program to IS and computer science majors. To receive the leadership certificate, participants must spend four semesters in the program with a minimum of two semesters in a specific UGA IS unit. They must complete IST 5670 (IS Leadership) and, as part of this course, undertake an assignment directed at using IS to improve the efficiency and effectiveness of UGA. The program provides an excellent opportunity for students to be paid to work on campus in their chosen career area. Depending on experience, the university pays students between $7 and $9 per hour and expects students to work fifteen to twenty hours a week. Very few other majors can offer this option. In addition to benefitting the students and the UGA units that hire them, the program has enabled UGA's IS program to build stronger links in several parts of UGA.

WSU's IS Fellows Program[2] is a prestigious, competitive on-campus internship that is sponsored by WSU's student organization, Mu Iota Sigma. The IS faculty selects the best and brightest among the undergraduate IS students to serve as IS Fellows for a semester. The Fellows then participate with faculty in hands-on, real-world IS research. The types of research projects that IS Fellows are involved in include helping to manage state-of-the-art computer

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[2] For more information on the IS Fellows program see http://www.cb.wsu.edu/~misfellows/.

servers and computing facilities, developing high-end software applications, and assisting with technology usability studies. IS Fellows work for the IS program in an unpaid internship, and gain direct, valuable, first-hand experience with exciting new technologies. Corporate employers are positive about the IS Fellows program and often request an exclusive meeting with these students during campus recruiting visits.

Place

Since all five universities' attraction and retention strategies highlight career opportunities, the universities have made job placement a priority. Currently placement efforts center on mentoring students through the job search process and nurturing industry relationships.

Mentoring

The many opportunities that IS students have to interact with faculty, businesses, and student IS leaders have created mentoring relationships, which have proven effective in job placement. While student mentoring is often informal, BU has implemented a formal student mentoring program as part of the IS leadership program. These IS student leaders find a new IS major to mentor through the job placement process. One of BU's most successful activities is "take a friend to the career fair day," which involves senior IS majors and faculty taking their mentee to the career fair and introducing them to employers. Both the mentees and the employers are appreciative.

Industry Ties

Industry ties are essential to placing students. If a university is on an employers' preferred list, the university's students have a better chance of securing a position with that employer since the employer attends career fairs, attends events, and interviews on campus. Strategies for cultivating industry ties include inviting companies to events, engaging students in company projects, and developing advisory boards. BU and WSU both host dinners that coincide with the university career fairs. Faculty invite company representatives who are actively hiring IS majors to these dinners and encourage IS faculty members to attend. Often the company representatives are former students; therefore, faculty are an effective bridge between these representatives and students. Some tips for making the dinner successful include:

- Name tags and table placards for each participant
- A twenty to thirty minute pre-dinner reception where students can actively network with company representatives
- A table distribution of at least two corporate representatives, one faculty member, and four or five students
- Students shift tables after each course (i.e., salad, main course, and dessert)

BU has developed industry ties by having its IS majors execute projects for companies. In 2008 and 2009, 400 freshman students enrolled in the introduction to computers class advised five leading corporation on how to recruit freshman-level students into the IS major. In 2009, the IS leadership team advised Wal-Mart Stores, Inc.'s IT strategy think tank on how to use social media in college recruiting. In 2010, the IS leadership team is advising USAA on how to recruit more women and minorities into the IS field. These consulting arrangements have proven invaluable in maintaining BU's status with these companies as a preferred source of interns and new hires.

Industry advisory boards are crucial to cultivating industry relationships and gaining curriculum insight. Our industry relationships have helped students secure jobs even during this time of economic decline. Employers are still recruiting on our campuses even though their recruiting numbers are down and they are reducing the number of universities where they recruit.

III. RESULTS

These attraction, retention, and placement efforts have created positive results. Enrollment in IS programs at all five of the universities has increased and mirrors the trends reported by UGA in Figure 5. At UGA, the marketing effort produced quick results with the number of entering IS majors doubling within twelve months. UGA has now stabilized enrollment with around eighty or so new IS majors each semester. At BU the number of students entering the IS major doubled within one month of BU hosting its first IS Summit in March 2007. Subsequently BU's enrollment increased by nearly three-hundred percent and has remained at this level. Approaching its goal of sixty new students entering the major each semester, BU currently has about thirty-eight new students enter the IS major each semester. Average enrollment in IS courses outside the business core has doubled at SLU. In fall 2006, the mean enrollment hit its trough of eleven students. Since then, there has been a steady term-over-term increase, culminating in a mean enrollment of twenty-five for spring 2010.

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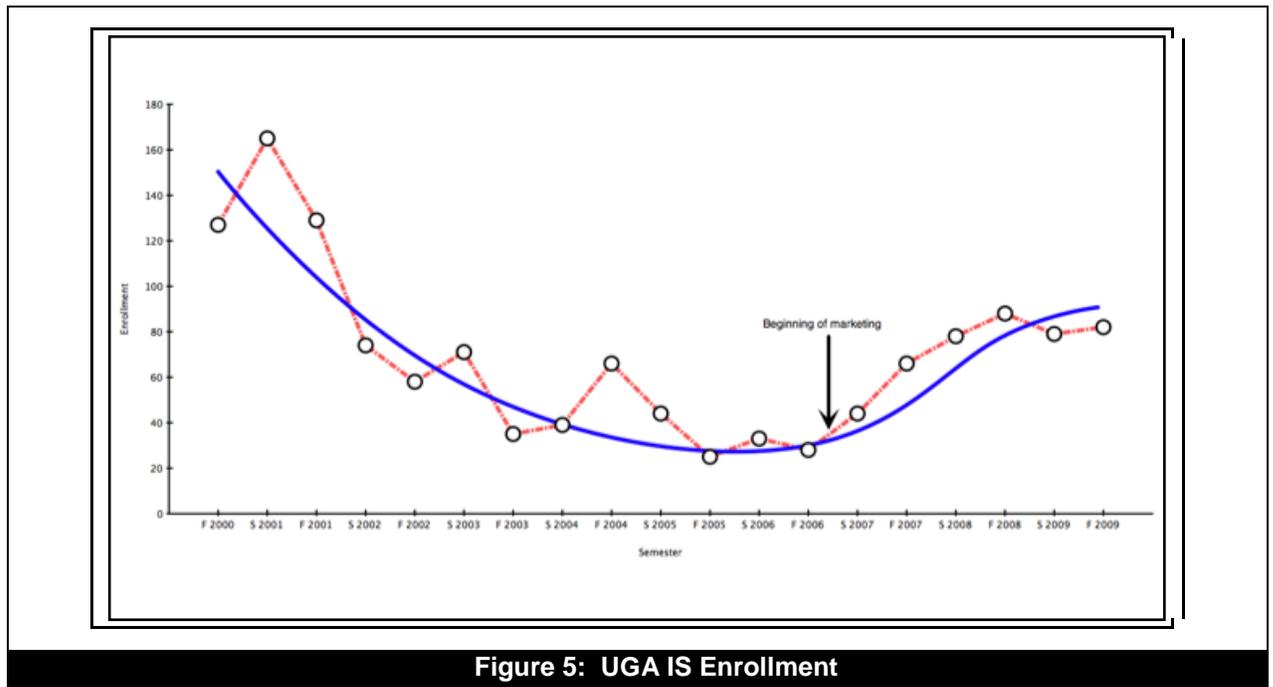
Figure 5: UGA IS Enrollment

OSU and WSU measure enrollment success by the number of IS majors. The number of IS majors at OSU hit a low in fall 2006 at 175. In fall 2009, the number of majors increased to 250, OSU's goal is 300 IS majors. Since 2007, WSU's enrollments have held steady at ninety majors and in spring 2009 IS majors accounted for 8.4 percent of all certified WSU College of Business majors.

To summarize, the actions taken by these universities brought about results; these methods are effective for attracting, retaining, and placing students. While not every method may work for every school, we hope that the breadth of approaches provides a helpful starting point for those who want to adopt or adapt the approaches presented here.

IV. DISCUSSION

While we do not expect to return to the days when the IS major was one of the largest majors on campus, there is room to grow. The IS profession faces a number of enrollment challenges. This section discusses these challenges and presents some best practices to address them.

Challenges

After actively pursuing higher IS enrollments via a number of the preceding initiatives, many challenges remain. These include job placement, the gender gap, the identity crisis, and strategic relevance to the college and dean.

Job Placement

While all five universities have made strides in job placement, additional efforts in this area are necessary. Since one of the key selling points of the IS major is job opportunities, IS programs need to increase the number of students receiving internships and the percentage of IS majors placed within ninety days of graduation. Given that the unemployment rate for recent college graduates is 10.6 percent, the highest since 1983 [Lee, 2009], job placement has become more challenging. Some actions that universities can take to improve job placement include visiting students on their internships more often, providing more career guidance to help the students perform well on their internships, and developing close employer ties so that employers will guarantee the IS program a certain number of internships each year.

Gender Gap

Job placement may increase if IS programs can address the gender gap. An increasing number of employers are under pressure to hire more women and minorities, partly as a way to obtain and maintain U.S. government contractor status. For instance, ConocoPhillips is moving toward only supporting programs and special opportunities that have a diversity requirement. Unfortunately, IS still suffers from an extreme gender gap. Table 2 shows the gender gap for IS majors at WSU, nine women vs. eighty-three men.

Table 2: WSU College of Business Enrollment-Spring 2009				
	Female	**Male**	**Total**	**% Female**
Hospitality Business Management	110	57	167	66%
Marketing	58	65	123	47%
International Business	40	54	94	43%
Accounting	70	124	194	36%
Accounting and Information Systems	2	5	7	29%
Finance	59	162	221	27%
Management and Operations	40	107	147	27%
Entrepreneurship	12	35	47	26%
Management Information Systems	9	83	92	10%
Total	400	692	1092	37%

Whether it is inherent to the discipline or simply a misunderstood stereotype, IS programs must be more aggressive in their efforts to attract women to the major. The misunderstood stereotype is very prevalent; as many female IS majors state that "the major has a perception problem." Once they see what the major has to offer, their perceptions often change quickly. Thus, the IS profession must increase its efforts to attract female IS majors. BU and WSU are making efforts to increase the number of female IS majors. As of fall 2009, 23 percent of BU's IS majors are female. BU attributes this success to having female faculty teach the introductory and major IS classes, with 60 percent of its student leaders being female, and participating in female-oriented events (i.e., BU's student organization has had a homecoming nominee for the past two years). WSU is combating this problem by having IS female alumni play a more active role in dispelling these poor perceptions and offering scholarships exclusively for female IS majors.

Identity Crisis vs. Damaged Brand

The universities' enrollment trends indicate that an identity crisis did not exist around the turn of the century. However, today it seems that students do not know what an IS professional does. This begs the questions—do we have an identity crisis (i.e., students never really understood IS, they just thought it was related to the Internet and the dot-com revolution) or do we have a damaged brand (i.e., do students finally understand IS and just do not find it interesting or attractive)? For instance, many students have negative perceptions regarding pay, career path, outsourcing, sitting behind a computer all day, and IS being for geeks. Future marketing efforts need to address both of these perspectives.

Relevance to the College and the Dean

Even though we are firmly in the midst of the information age, IS is often on top of the dean's budget cut list, with departments that seized academic autonomy during the turn of the century the most vulnerable, especially if those programs have low enrollments. IS programs can pursue several strategies to increase their relevance to the dean and the college. First, IS programs can follow SLU's strategy and find synergies with other disciplines (e.g., accounting and international business). This approach can circumvent a common problem, which is IS being so ubiquitous that other disciplines develop tracks and classes (i.e., social media, technology entrepreneurship, accounting information systems, and customer relationship management) that compete with classes that could be offered in IS programs. Second, IS programs can follow WSU's strategy and infuse more senior-level IS professionals on both the departmental advisory board and, more ideally, the college advisory board. Most likely the dean will perceive the IS major as being more relevant if college-level board members are speaking to the strategic importance of the IS profession.

Best Practices

To address these challenges, IS programs must make continuous program building efforts. The paragraphs that follow discuss five best practices for increasing IS enrollment.

Best Practice #1: Partner with External Stakeholders

Increasing IS enrollment requires partnering with a variety of external stakeholders to make them aware of the IS enrollment problem and ask for their help addressing the problem. These stakeholders include other disciplines, current IS majors, career services, and employers. By partnering with other disciplines, the IS program can increase enrollment by offering classes that are relevant to students in other disciplines such as international business and marketing. Current IS majors can share ideas for designing events that are appealing to students, help recruit students to the major and cultivate company relationships.

Career services can help the IS department develop company relationships for guest speakers and job placement. IS faculty can foster these partnerships by supporting career services' events and taking students to career fairs, two activities that create opportunities for students and help faculty meet employers. In addition, to providing guest speakers and jobs, potential employers can also help fund IS enrollment efforts. IS programs can nurture company partnerships by responding to company requests. For instance, when companies ask for help in finding an IS major to fill a position, work with them to do so. If your enrollment is low, let the employers know enrollment is a national problem and talk to them about how they can help develop IS majors. BU raised over $100,000 following this strategy.

Best Practice #2: Take a Long-Term Approach

While IS programs can implement one or all of the ideas presented in this article, sustained enrollment requires long-term commitment. Designing posters and hosting IS recruiting events may increase enrollment in the subsequent semester, but enrollment will likely wane if the department does not provide exceptional experiences and job placement for the newly-recruited IS majors. Unfortunately, often the current university incentive structure casts these enrollment efforts as service, which is a small part of faculty performance evaluations. Suggestions for taking a long-term perspective on IS enrollment include charging a faculty member with addressing the enrollment problem, and giving that person some time to work on enrollment efforts. Universities might consider following BU's model, which involves providing course credit to students and faculty tasked with addressing the enrollment problem.

Best Practice #3: Incentivize Students

This article outlines program-building initiatives that require the participation of both non-IS majors and IS majors. In fact, a key attraction strategy is hosting events to increase non-IS majors' awareness of the opportunities in the IS field. Since IS is often the least preferred major in the business school [Lee and Lee, 2006], departments will have to incentivize non-IS majors to attend IS events. We suggest using one or more of the following approaches: offering extra credit, making event attendance a course requirement, having good food, and providing prizes (e.g., video games, cash, and gift cards).

IS majors can provide key insights into designing events that appeal to freshman students. Opportunity, empowerment, and recognition are three of the best incentives that we have found for motivating student commitment. Generation Y students are high performing and like to work on projects that make a difference [Tulgan, 2009]. By making the IS leadership positions competitive and then empowering the students to develop and execute strategies for increasing IS enrollment, we provide them with personal ownership of the process. Our IS majors are our best source of marketing.

Best Practice #4: Maintain a Rigorous Curriculum; Use Social Events to Make IS Fun

We suggest maintaining a rigorous curriculum rather than going "IS lite" to attract more students. IS programs can maintain a flexible curriculum that emphasizes rigor by requiring courses that cut across different career paths and creating electives that respond to students' career goals and employer demands. Many employers want students with strong technical skills. IS programs can host social events to foster perceptions that IS is a fun major while the career development dinners can emphasize the rewards for completing a rigorous curriculum.

Best Practice #5: Add Value

IS can add value to virtually any profession. Strategies for adding value include working with employers to create a niche and working with other departments to design courses. OSU provides employers value by engaging in an ongoing strategic evaluation of its program attributes and strengths. OSU's ongoing evaluation involves gaining feedback from graduates and those who have hired OSU graduates. Because of these efforts, the National Security Agency and the Department of Homeland Security have designated OSU as one of a handful of Centers of Academic Excellence in Information Assurance Education and in Research. This process has resulted in companies pleading for more graduates "just like the last ones we hired" for many years and has allowed OSU to create a unique niche where there is no question about the value added nature of the program.

SLU provides competing programs value by creating IS courses that both serve the needs of IS majors and add value to other programs. SLU's project management and spreadsheet/database courses provide examples. Project management skills are important to almost any business professional, regardless of their functional area. The spreadsheet/database course has been very popular, particularly among accounting and finance students, and it is now a required prerequisite for accounting internships. Many of the students from these courses have gone on to take additional IS courses; several have even decided to add IS as a second major.

V. CONCLUSION

This article shares some proven best practices for increasing IS enrollment based on five universities' efforts over more than three years. As with any research effort, the best practices this article describes are limited in some respects. Although enrollments at all of the universities have increased, each university undertook a variety of initiatives to increase enrollment. Therefore, it is difficult to determine which practices are the most effective and whether they will be effective at different universities. However, this article does provide perspectives from both public and private universities from across the country.

Adding to the mounting IS enrollment literature [Akbulut-Bailey, 2009; Dick, Granger, Jacobson, and Van Slyke, 2007; Downey, McGaughey, and Roach, 2009; Granger, Dick, Jacobson, and Van Slyke, 2007; Granger, Dick, Luftman, Van Slyke, and Watson, 2007; Scott, Fuller, MacIndoe, and Joshi, 2009; Street, Wade, Bjorn-Anderson, Ives, Venable, and Zack, 2008], this article makes two unique contributions. First, it provides proven, actionable strategies to increase IS enrollment. Much of the literature provides detailed accounts on particular enrollment initiatives such as hosting events [Koch and Kayworth, 2007], hosting computer camps [Choudhury, Lopes, and Arthur, Forthcoming], and improving the introductory IS course [Firth, Lawrence, and Looney, 2008; Looney and Akbulut, 2007]. Second, this article highlights the critical role of satisfied customers (i.e., IS majors) and job placement in IS enrollment.

In conclusion, IS programs must actively improve the quality of their programs by adding value to their students, employers, and other majors. We hope that this article inspires and guides your enrollment efforts. The Association for Information Systems' wiki[3] provides another tool to share best practices on an ongoing basis.

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[3] http://enrollments.aisnet.org/MainPage.ashx.

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ABOUT THE AUTHORS

Hope Koch is an Assistant Professor in the IS program at Baylor University, where she leads the program's career development efforts. Dr. Koch has received numerous awards for her program building efforts including the 2008 ConocoPhillips Faculty Development Fellowship and the 2009 Southwestern Business Dean's Association Innovative Achievement Award. Dr. Koch's research interests align with her program building efforts and include attracting students into technical fields and the use of social networking technologies in the workplace. Dr. Koch's work has appeared in numerous academic outlets including the *Journal of Strategic Information Systems* and a best paper at the *Americas Conference on Information Systems*. In support of her belief in technical education, Dr. Koch's has chaired the Callaway Scholarship Foundation for nearly a decade. Before entering academic life, Dr. Koch worked as a CPA for the #1 company on the Fortune 500 list: Wal-Mart Stores, Inc.

Craig Van Slyke is an Associate Professor of MIS and Associate Dean for Academic Programs at the John Cook School of Business, Saint Louis University. Prior to becoming Associate Dean, he was chair of the Decision Sciences and IT Management Department. His research focuses on ICT adoption and IS education. He has co-chaired the AMCIS IS Education track for several years and is co-chair of the ICIS 2010 ICIS IS Education, Curriculum, and Teaching Cases track. He has also held leadership positions in AIS SIG:ED/IAIM and the Southern Association for Information Systems. Dr. Van Slyke has published in journals including *Decision Sciences, Communications of the ACM, Journal of the AIS, Communications of the Association for Information Systems.* He serves on the editorial board of *Information Resource Management Journal* and the *Journal of Information Systems Education*, and is founding Editor-in-Chief of the *Journal of the Southern Association for Information Systems.*

Richard Watson is the J. Rex Fuqua Distinguished Chair for Internet Strategy in the Terry College of Business, the University of Georgia. He has published in leading journals in several fields as well as writing books on data management and electronic commerce. His current research focuses primarily on Energy Informatics and IS leadership. He has given invited seminars in more than thirty countries for companies and universities. He is a visiting professor at the University of Agder, Norway, a consulting editor to John Wiley & Sons, Research Director for the Advanced Practices Council of the Society for Information Management, International Coordinator for the Addis Ababa University PhD in IS program, and co-leader of the Global Text Project. He has been President of AIS, a co-chair of ICIS, and a senior editor for *MIS Quarterly*.

John Wells is an Associate Professor in the Department of Information Systems at Washington State University. He received his B.B.A. degree in Management from the University of Oklahoma and M.S./Ph.D. degrees in Management Information Systems from Texas A&M University. He has worked as a systems engineer for Electronic Data Systems and the Oklahoma State Senate. His active research areas are eCommerce strategy and interface design. His work has appeared in such journals as *Information Systems Research*, *Journal of Management Information Systems*, *European Journal of Information Systems*, and *Information & Management* as well as in a number of international conferences.

Rick L. Wilson is the W. Paul Miller Professor of Business Administration, Professor and Head of the Management Science and Information Systems Department in the Spears School of Business at Oklahoma State University. He earned his Ph.D. from the University of Nebraska-Lincoln. Dr. Wilson has published extensively in the areas of data mining, sports and operations research, and many other areas.