Preface

Academics, professionals, librarians, and students have an increasing need for understanding and implementing the latest information technologies. *Cases on Emerging Information Technology Research and Applications* offers a series of detailed teaching cases on real-life scenarios based on the personal experiences of the authors. Within these pages, readers will find a comprehensive source of solutions, ideas, lessons, social implications, and advances in the IT field, enabling students and professionals alike to explore potential organizational challenges in a controlled, educational environment.

The first case, “Breaking the Ice: Organizational Culture and the Implementation of a Student Management System” by Lindsay H. Stuart et al., explores the challenges of implementing an enterprise system (ES) across a university with a diverse organizational culture. This teaching case describes the process through which Southern University sought to implement the Delta student management system (SMS) and the challenges encountered due to the university’s organizational culture. The project team ran into a change resistant culture with organizational units that enjoyed autonomy in their business processes. Rather than attend to various needs by customizing the system, the project team implemented a plain version of the system. Although this approach ensured the project team was able to complete the implementation on time and within budget, it left behind many dissatisfied users and organizational members, and created resistance within the organization toward the system. Therefore, this case provides opportunities for students to discuss the impact of organizational culture and user resistance on IS implementations as well as the merits and limitations of the strategies employed by the project team to ensure the new system was implemented on time and within budget.

“Does the Introduction of RFID Technology Improve Livestock Subsidy Management? A Success Story from an Arab Country” by Kamel Rouibah et al. explains that, while the expected benefits and challenges of RFID technology have been well studied in the manufacturing and service sectors at the private organization level, little understanding exists of these two issues when exploring RFID adoption in the agricultural field and at the public organizational level. Previous tracking programs
in Kuwait have been unsuccessful in reducing illegal activities that lead to fraud and the wasting of public money in animal feed programs. To alleviate these problems, an RFID program, supported by information systems, was designed to help monitor and control feed distribution and animal tracking. Unlike previous studies, this case describes the application of RFID for the tracking and monitoring of livestock by the Kuwait Public Authority of Agriculture Affairs and Fish Resources. It reviewed the subsidy process before and after RFID adoption and found a large reduction in the actual number of animals claimed after RFID adoption, which reduced fraud and increased animal accountability.

Walter W. Austin et al. write that the next case, “Legal Truth and Consequences for a Failed ERP Implementation,” is inspired by a complaint and response filed in the U.S. court system. One of the case’s authors served as an expert witness in the case. Because the suit settled before going to trial, some of the details of the case are not part of the public record; therefore, the names of the companies involved have been changed and certain details disguised to protect the identity of the litigants. However, the essentials of the case remain faithful to the actual circumstances and provide a basis for analysis of decision points and a discussion of costs and responsibilities for the issues in the case. A leading manufacturer of building materials in the United States selected an integrated enterprise resource planning (ERP) system to install on its existing hardware infrastructure. This case describes the ERP selection, implementation and migration challenges, impaired functionality, and the business and legal issues that ensued due to the software’s incompatibility with the hardware. With the software not performing as expected, the vendor withdrawing its software support, and costs escalating, the manufacturer sought legal counsel.

Next, “A Crisis at Hafford Furniture: Cloud Computing Case Study” by Keith Levine and Bruce White presents a cloud computing technology solution that gives promise to a company devastated by a natural disaster. After a hurricane, the company recovered because of a solid disaster recovery plan, although it was financially strapped. The Vice President of Information Technology suggested using cloud computing to cut internal information technology costs. With a cloud computing solution, the IT department would go from twelve people to six. IT infrastructure (servers, hardware, programs, processing) would be done by a vendor (“the cloud”), although responsibility for information technology would be retained by the company. The case presents a background in cloud computing and cloudonomics. As the case unfolds, the authors find that proper oversight was neglected, rash decisions were made, and a crisis developed. The president took matters into his own hands, and without following proper protocols, selected a vendor that later went bankrupt and forced the company into dire circumstances.

In “GPS: A Turn by Turn Case-in-Point,” Jeff Robbins examines GPS navigation as a case-in-point of what technology, sold on the promise of what it can do for
society, is also doing to society. Conventional wisdom insists that there are better things to do than find directions from here to there without turn by turn directions. While it may be true that losing the ability to find one’s own way may be no great loss, as a tributary feeding into the river of what’s going on across the board of human skill erosion, it’s a symptom of far more serious summing going on.

The next case, “Emerging forms of Covert Surveillance Using GPS-Enabled Devices” by Roba Abbas, presents the possibility that commercial mobile tracking and monitoring solutions will become widely adopted for the practice of non-traditional covert surveillance within a community setting, resulting in community members engaging in the covert observation of family, friends, or acquaintances. This case investigates five stakeholder relationships using scenarios to demonstrate the potential socio-ethical implications that tracking and monitoring will have on society. The five stakeholder types explored in this case include: (i) husband-wife (partner-partner), (ii) parent-child, (iii) employer-employee, (iv) friend-friend, and (v) stranger-stranger. Mobile technologies like mobile camera phones, global positioning system data loggers, spatial street databases, radio-frequency identification, and other pervasive computing can be used to gather real-time, detailed evidence for or against a given position in a given context. Limited laws and ethical guidelines exist for members of the community to follow when it comes to what is permitted when using unobtrusive technologies to capture multimedia and other data (e.g., longitude and latitude waypoints) that can be electronically chronicled. In this case, the evident risks associated with such practices are presented and explored.

David Aspland, in “The Other Side of ‘Big Brother’: CCTV Surveillance and Intelligence Gathering by Private Police,” describes how a significant shift has occurred in the nature of policing over the past 30 to 40 years across jurisdictions and contexts. The paradigm of policing as a purely government function is under challenge. Policing is becoming more “pluralized” with a range of actors, both public and private. This shift has significant social implications for the general public, together with the public and private organizations that provide policing services. These implications are discussed and highlighted through the use of information technology by private police in two areas—CCTV surveillance and intelligence gathering. This case discusses this shift between public and private sectors in policing. The situation is more complex than a simple public/private divide and plays host to a range of interactions that bring many actors into contact, competition, and alliance in networks and assemblages. Most research and regulation remains focused on public policing even though, numerically, private policing is now a major provider of policing services in an increasingly fragmented, pluralized, and commodified market. This case considers the regulation of private policing as it exists in the Australian context and how it applies to the use of information technology, together with issues for human rights, especially privacy.
“Location Based Context-Aware Services in a Digital Ecosystem with location Privacy” by Peter Eklund discusses the architecture and application of privacy and trust issues in the Connected Mobility Digital Ecosystem (CMDE) for the University of Wollongong’s main campus community. The authors describe four mobile location-sensitive, context-aware applications (app(s)) that are designed for iPhones: a public transport passenger information app, a route-based private vehicle car-pooling app, an on-campus location-based social networking app, and a virtual art-gallery tour guide app. These apps are location-based and designed to augment user interactions within their physical environments. In addition, location data provided by the apps can be used to create value-added services and optimize overall system performance. The authors characterize this socio-technical system as a digital ecosystem and explain its salient features. Using the University of Wollongong’s campus and surroundings as the ecosystem’s community for the case studies, the authors present the architectures of these four applications (apps) and address issues concerning privacy, location-identity, and uniform standards developed by the Internet Engineering Task Force (IETF).

“Fire, Wind and Water: Social Networks in Natural Disasters” by Mark Freeman examines the issue of increasing adoption of Social Networking Technologies (SNTs), particularly microblogging, for emergency management practices during natural disasters. It discusses the technologies and how they are an integral part of information transfer for citizens in the geographic region affected by the natural disaster. This case presents the progression of how SNTs have been used during and in the aftermath of natural disasters in Australia between 2009 and 2011; these events are used as ‘organization’ for the paper. Accurate and timely information during natural disasters is essential in providing citizens with details about whether they should stay or leave an area. Traditionally, information was provided through television and radio broadcasts; however, these types of communications were one-way and only allowed for the push of information to citizens. SNTs are being used by the media and emergency organizations to provide information to citizens. These technologies are dynamic in their approach, allowing for knowledge sharing of all parties involved.

The evolution of e-Government services is fast. There is a limited time for adaptation to the new environment in terms of legislation, society, and economy. Maintaining reliable services and a secure IT environment is even more difficult with perpetual changes like mergers and acquisitions, supply chain activity, staff turnover, and regulatory variation. Nature of the changes has become discontinuous; however, the existing approaches and IT solutions are inadequate for highly dynamic and volatile processes. The management of these challenges requires harmonized change management and knowledge management strategy. In “Agile Knowledge-Based E-Government Supported By Sake System” by Andrea Kő et al., the selected
change management strategy and the corresponding knowledge management strategy and their IT support is analysed from the public administration point of view. SAKE project (FP6 IST-2005-027128 funded by the European Commission) approach and IT solution are detailed to demonstrate the strategic view and to solve the knowledge management and change management related problems and challenges in public administration. The current situation of economic downturn and political change forces public administration to follow the reconfiguration of existing resources strategy, which is appropriate on the short run; moreover, the combined application of personalization and codification strategy can result in long-term success.

The aim of “Road Safety 2.0: A Case of Transforming Government’s Approach to Road Safety by Engaging Citizens Through Web 2.0” by Dieter Fink is, first, to determine the extent to which web 2.0 can be the technology that would enable a strong relationship between government and its citizens to develop in managing road safety and, second, to examine the endeavours of the WA Office of Road Safety (ORS) in fostering the relationship. The case study shows that in ORS’ road safety strategy for 2008-2020, community engagement is strongly advocated for the successful development and execution of its road safety plan but the potential of web 2.0 approaches in achieving it is not recognized. This would involve the use of blogs and RSS as suitable push strategies to get road safety information to the public. Online civic engagement would harness collective intelligence (‘the wisdom of crowds’) and, by enabling the public to annotate information on wikis, layers of value could be added so that the public become co-developers of road safety strategy and policy. The case identifies three major challenges confronting the ORS to become Road Safety 2.0 ready: how to gain the publics’ attention in competition with other government agencies, how to respond internally to online citizen engagement, and how to manage governmental politics.

Many benefits from implementation of e-business solutions are related to network effects, which means that there are many interconnected parties utilizing the same or compatible technologies. The large-scale adoption of e-business practices in public sectors and in small and medium enterprises (SMEs)-prevailing economic environments will be successful if appropriate support in the form of education, adequate legislative, directions, and open source applications is provided. “Methodology and Software Components for E-Business Development and Implementation: Case of Introducing E-Invoice in Public Sector and SMEs” by Neven Vrček and Ivan Magdalenić describes the adoption of e-business in public sectors and SMEs by using an integrated open source approach called e-modules. E-module is a model which has process properties, data properties, and requirements on technology. Therefore e-module presents a holistic framework for deployment of e-business solutions and such e-module structure mandates an approach which requires reengineering of business processes and adoption of strong standardization that solves interoper-
ability issues. E-module is based on principles of service-oriented architectures with guidelines for introduction into business processes and integration with ERP systems. Such an open source approach enables the spreading of compatible software solutions across any given country, thus, increasing e-business adoption. This chapter presents a methodology for defining and building e-modules.

Next, Teta Stamati and Athanasios Karantjias explore “Inter-Sector Practices Reform for e-Government Integration Efficacy.” Electronic services have become a critical force in service oriented economies, introducing new paradigms like connected governance, ubiquitous and ambient public services, knowledge-based administration, and participatory budgeting. The success of e-Government integration requires the modernization of current governmental processes and services under three different perspectives, namely governmental business processes reengineering, legal framework reformation, and technical solution effectiveness. The study proposes a knowledge guide for approaching, analyzing, and defining government-wide architectural practices when building large scale enterprise governmental frameworks. A set of fundamental design and implementation principles are specified for increasing government organizations’ agility and ensuring that end-users perceive the quality of the provided services.

The case by Leah Olszewski and Stephen C. Wingreen covers “The FBI Sentinel Project.” In 2000, the United States Federal Bureau of Investigation (FBI) initiated its Trilogy program in order to upgrade FBI infrastructure technologies, address national security concerns, and provide agents and analysts greater investigative abilities through creation of an FBI-wide network and improved user applications. Lacking an appropriate enterprise architecture foundation, IT expertise, and management skills, the FBI cancelled further development of Trilogy Phase 3, Virtual Case File (VCF), with prime contractor SAIC after numerous delays and increasing costs. The FBI began development of Sentinel in 2006 through Lockheed Martin. Unlike in the case of Trilogy, the FBI decided to implement a service-oriented architecture (SOA) provided in part by commercial-off-the-shelf (COTS) components, clarify contracts and requirements, increase its use of metrics and oversight through the life of the project, and employ IT personnel differently in order to meet Sentinel objectives. Although Lockheed Martin was eventually released from their role in the project due to inadequate performance, the project is still moving forward on account of the use of best practices. The case highlights key events in both VCF and Sentinel development and demonstrates the FBI’s IT transformation over the past four years.

Michael J. Heymann and Heidi L. Schnackenberg investigate “Cyberbullying: A Case Study at Robert J. Mitchell Junior/Senior High School,” a small institution located in central New York. Although generally minimal behavior problems occur at the school, currently cyberbullying is on the rise. One of the students, James,
was recently a victim of cyberbullying. A picture of him was posted on a social networking site, which initiated a barrage of cruel text messages and emails. Although James didn’t tell anyone about the incident, another student complicit in some of the bullying, Sarah, confessed to him. Sarah and James then went to their teacher, Mr. Moten, to tell him about the bullying and that they thought another student was responsible for creating the social networking site and posting the picture. Without the benefit of a school or district cyberbullying policy, Mr. Moten then attempted to figure out what to do to help James and stop the harassment.

“Adoption of Computer-Based Formative Assessment in a High School Mathematics Classroom” by Zachary B. Warner follows a high school mathematics teacher who is new to the classroom and is looking to adopt computer-based formative assessment as a part of his curriculum. Working within the confines of the school environment, this requires navigating a shrinking budget, colleagues that do not share his value of technology, restricted time, student issues, and limited resources. He must examine all aspects of the available computer-based formative assessment systems and weigh the pros and cons to ensure the best academic outcomes for his students.

The next case, “Using Technology to Connect Students with Emotional Disabilities to General Education” by Alicia Roberts Frank follows a high-school special-education teacher who teaches in a program for students with emotional disturbance (ED) in a large, comprehensive high school. Many of her students cannot attend general-education classes because of anxiety or behavioral issues, but as a special educator, she does not have the subject-area expertise to provide them with the academic education they need to be prepared for life after high school. She hopes that through the use of a video connection to general-education classes her students can be exposed to the highly qualified content-area teachers while remaining in the safe environment of the ED classroom. She believes that virtual attendance in a class could help her students feel comfortable enough to make the move to the actual classroom and be included with their peers to gain academic knowledge and social skills.

Next, Julia Davis investigates “Suspicions of Cheating in an Online Class.” Dr. John Dobson is an Assistant Professor of Education Leadership at Northern New England State University (NNESU) who teaches traditional classes and online classes for his department. As the level of state financial support has decreased, online classes have become increasingly important to NNESU. They are one of the few growing revenue streams at the institution. While teaching a summer online course, Dr. Dobson comes to believe that one of his students is cheating. In this case, Dr. Dobson attempts to navigate the process of proving that the student is cheating, holding the student accountable for his/her actions, and garnering the institutional support necessary to hold the student accountable.
Finally, “Using Management Methods from the Software Development Industry to Manage Classroom-Based Research” by Edd Schneider details a classroom-based research and development project facilitated with management approaches adapted from the software industry to the classroom, specifically a combination of the methods generally known as ‘Scrum’ and ‘Agile’. Scrum Management and Agile Software Development were developed in response to the difficulties of project management in the constantly changing world of technology. The on-going project takes a classroom of students and has them design and conduct research based on software tools they develop. An emphasis of the project is conducting research that involves all class members and makes students think critically about group management.