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2012

# Re-Conceptualizing the Foundation Is Course

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### Recommended Citation

Wright, Ryan; Kuykendall, Michael; and Matsukawa, Jacie S., "Re-Conceptualizing the Foundation Is Course" (2012). *2012 Proceedings*. 11.

<http://aisel.aisnet.org/siged2012/11>

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## RE-CONCEPTUALIZING THE FOUNDATION IS COURSE

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### Abstract:

This paper described the new realities regarding information systems and the current management practices of contemporary information system that impact pedagogy. A possible solution to the current gap in enrollments and disconnect with industry is introduced and explained. In sum, the authors offer a novel method for the introductory Information Systems course. This approach addresses each of the IS 2010 learning outcomes while also giving students practical hands on experience with cloud-based enterprise class software. This course has potential to increase the realism and applied nature within an introductory course. The learning outcomes and the “flipped classroom” approach is explained in detail.

**Keywords:** Introduction Information Systems course, flipped classroom, IT course, IS course, Undergraduate IS Model Curriculum, IS 2010,

### I. INTRODUCTION

Information Technology (IT) departments are shrinking in corporations and governments [White and Briggs, 2011]. Although the IT departments, in general, are hiring less, they continue to spend more on software and hardware [Plummer and Middleton, 2011]. In turn this has led to an overall increase in IT budgets [Hiner, 2012]. Information Systems (IS) education has been directly impacted by the change in corporate computing. Traditional IS education has suffered due to uncertain enrollments [Beise et al., 2009, Granger et al., 2007] and, further, an overall lack of creditability in the organization [Firth et al., 2011, Gill and Bhattacharjee, 2009]. Clearly, the IS discipline is and has been struggling to find a voice and position in the modern organization.

The new IS 2010 Undergraduate Curriculum Model has attempted to capture these new sets of skills and knowledge by offering a new approach to selection topics and courses for the undergraduate model curriculum. The basis of this change has to do with conceiving high-level capabilities, which in turn inform IS specific knowledge & skills, the foundational knowledge & skills, and the domain fundamentals (e.g., business, law and so on). This constellation of required knowledge and skills can then set a foundation for the curriculum topics delivered through courses. Figure 1 below, from IS 2010, represents this relationship.

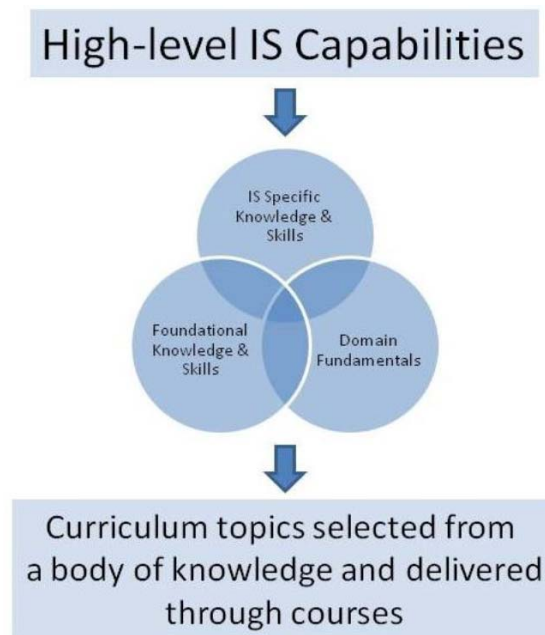


Figure 1. Overall Structure of IS 2010 from Topi et al. 2010

MIS needs to expand beyond the shrinking IT department and embed its expertise into core business units to solve any digital related opportunity. The IS 2010 Model Curriculum structure offers new ways of representing the contemporary skills needed in the business organization, outside of the IT functional unit. The role of designing, offering and implementing hybrid systems is the future of our discipline. The IS program structure based on high-level capabilities rather than topics offers a path to relevance that may have been lost (according to some scholars) [Firth et al., 2011].

This paper posits one possible avenue (e.g., flipping the classroom with cloud and virtual technologies) to address the several trends in technology by modernizing the value proposition gained through IS education. Specifically, we propose a reconceptualization of the core MIS course to address the needs of organizations and therefore repositioning our external validity for future business school graduates with this course, but also garner relevance within the host unit for the MIS course (e.g., business school).

This paper unfolds as follows. First, we will examine how IT has rapidly evolved and therefore diminished the role of the function IT unit within organizations. We do so by looking at three particular trends (i.e., cloud computing, virtualization and the “consumerization” of enterprise-class solutions) that are reshaping how organizations utilize IT. Second, we will argue that there needs to be a new method for purveying this new reality by positing research questions concerning content and delivery. Next, we will take a convenient sample of current introductory IS course offering to get an idea of how IS 2010 is being utilized. Finally, we will offer one possible solution that may garner the credibility we need within organizations and also address the learning outcomes as outlined by the core curriculum.

## II. INFORMATION TECHNOLOGY (IT) HAS EVOLVED

IT as a department is dwindling. IT is becoming more and more widespread among organizations but is materially different than it has been in the past. Instead of an increase in human capital, companies are outsourcing most IT functions to either consultants or service providers making IT less of a back office function and more of a component to an agile and flexible business strategy [Deloitte, 2012]. ITs integration with business strategy requires businessmen and woman to understand more about its role in furthering an organization’s goals. As capital expenses in

traditional IT systems are reduced and replaced with operating expenses businesses need leaders who fundamentally understand the use of technology in an organization [Deloitte, 2012].

ITs role has historically been about enterprise infrastructure— communication platforms, databases and analytics. As technology has progressed, its ease of use and accessibility in the enterprise market has as well, leading to a widespread adoption of technologies in nearly all business verticals and departments. The enterprise infrastructure was typically housed in a functional and centralized unit, where services could benefit from economies of scale.

This progression has also substantially increased enterprise user's operating experience and with this advancement has led to the adoption of more technologies throughout the organization. Therefore, IT has recently shifted from traditional enterprise infrastructure to platforms that run all operational and business processes. This transformation requires business leaders to know less about IT as a function but requires them to understand its role in operations and process management. This cross disciplinary knowledge is the future of technology in business: "The bottom line is that whoever is in charge of the acquisitions and the IT strategy, they obviously cannot just think about the technology side, they also have to think about the organizational side" [Nobel, 2010].

Today's enterprises are leveraging IT systems in a different and more efficient way. Instead of providing infrastructure for a company, these systems are being integrated into all aspects of the business. A basic example is telephone systems of the past and the present. The common IT function would provide basic telecom and networking for an enterprise. Now more advanced systems allow for total integration that allows the organization to do more with data, thus, creating a better customer experience. Computer Telephony Integration Systems (CTI), coordinate "a computer with a telephone system, and using the computer (perhaps even a desktop machine) to perform the call control functions" [Fike, 1999]. Such systems can leverage historical customer data from all aspects of the organization to make a phone call more efficient and meaningful. For instance, a customer may call in to a support line and immediately because the customer's phone number is on record, the phone operator knows which products the customer has purchased, all support requests the customer has made in the past and may even be able to look as deep as a customer's social media presence. Not only is this possible with the present technology, but is economically feasible for small and medium size businesses.

IT as a function has developed from infrastructure based technology to systems that support integrated business processes. This change is possible because of various technologies that are now available to any organization regardless of size. Cloud Computing, Virtualization, and the commoditization of enterprise systems have contributed to this change. The following gives a brief description of the drivers for the new constellation of the IT Function.

### **Cloud Computing**

Cloud computing is one of the leading technologies that has transformed the role of IT in organizations. This mode of infrastructure is concerned with outsourcing systems to an external partner. Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction [Mell and Grance, 2010]. Cloud computing has been a familiar service for the consumer market for the last decade but has only recently been an enterprise solution. Cloud computing allows organizations to only use the amount of hardware and software they need; no longer do organizations have to make costly capital investments in hardware and software systems. Rather, they can use a shared resource model to pay for only what they need. One of the main benefits is that "cloud technology can offer organizations of any size the ability to promptly test new ideas, especially in the areas of mobility, analytics and social" [White, 2012]. For instance, instead of having a dedicated IT departments run all customer relationship management software systems a company can use a cloud computing service provider to host and manage all hardware and software. Cloud computing offers organizations access to world-

class computing services based on usage. Think of a utility bill you would receive from a power company. For several reasons such as security, development, organizations may want to house some infrastructure. Physically located infrastructure is also changing substantially.

### **Virtualization**

Virtualization is another crucial technology that has transformed the traditional IT function in organizations. This mode of infrastructure can be prevalent when assessing internal systems. Virtualization or “a layer of abstraction between computer hardware systems and the software running on them... allow you, essentially, to trick your operating systems into thinking that a group of servers is a single pool of computing resources” [Waters, 2009]. Along with Cloud Computing, Virtualization allows an organization to more effectively and efficiently use computing resources. Virtualization allows a single server to be divided into multiple servers acting as separate resources running different applications on different operating systems. Virtualization has allowed organizations to effectively share resources; thus, lowering capital expenses IT hardware, software and labor. Basically, with virtualization you can offer more services with less physical infrastructure. Internal virtualization services taken together with external cloud computing can now offer organizations different types of enterprise-class systems as commodities.

### **Consumerization of Enterprise-Class Information Systems**

Consumerization of Enterprise-class systems means, “business users are making the ultimate choice in what devices, applications, and services they use to get their work done” [Microsoft, 2011]. Enterprise Systems have historically been little about the end user and the user experience and geared more toward IT decision makers within an enterprise. However, as users begin to adopt new technologies in their personal lives to improve efficiency and communication they expect the same platforms in the enterprise setting. Some organizations such as Intel have embraced this trend toward consumerization and are implementing new policies within their organization to give their employees the tools they need to be the most productive. Intel “recognizes that employees want access to information anytime, anywhere, enabling them to work in more flexible and efficient ways” [Intel, 2011]. Major trends in consumerization include: security, devices, cloud computing and communication. Enterprise users want to be able to securely access their data from any device, anywhere and be able to easily collaborate with their peers on the very same data. Typical enterprise systems simply do not accommodate such requirements. This trend of simplified enterprise systems stems directly from the fact that “Business users accustomed to clean, simple web-based consumer applications in their personal lives expect the same thing from web-based business applications” [Harris, 2011]. This trend toward “simple web-based consumer applications” has forced Enterprise software providers to not only simplify current enterprise systems but to create new ones altogether. Salesforce.com, a great example of this, has not only bet its entire business on cloud computing but has reinvented itself as the “Social Enterprise”. Their flagship social networking platform, Chatter, has set out to make collaboration in the enterprise not only more open but also more consumer oriented. For example, Salesforce.com has integrated a product called Chatter into its core product lines which is a sign that consumerization of enterprise systems is here to stay.

### **The Need to Re-Conceptualize IS**

This change in how IT infrastructure is offered and utilized within large and small businesses has major implications for the IS discipline and more specifically IS education. Further, it is becoming clear that leadership does now view the IT Function and its leadership (e.g., CIO) as a point for innovation. For example, one study reports that only 4% of business leaders identify the CIO with innovation management or strategy [Hickins, 2012]. The reliance on function specific knowledge is now eroding, and now specialized IS skills and expertise (e.g., data storage, transaction processing and so on) are being outsourced to third-party IT suppliers. These third party suppliers (e.g., Oracles and Salesforce) now offer easily accessible enterprise-class services to business practitioners. The result are solutions conceived in house using external services [Eskind, 2011].

There are two choices for the IS practitioner. Work for a third party service provider (e.g., where there will be a need for highly specialized skills) such as Salesforce or become organization focused whereby they will be able to offer digital services to the organization. This takes the position from a technical focus to a socio-technical focus where the IS discipline can add value. Solving systems problems needs to span both the enterprise utility services and the knowledge of local digital business processes and services. The role of the IS professional in this case is now more multifaceted that it exists outside the traditional centralized and functionalist paradigm. The focus needs to be how to provide digital solutions to the organization. Given these assumptions there are two research questions that need to be addressed. First, we need to see if the IS community offers the correct curriculum to train the new type of IS professional. Therefore:

**Research Question 1:** How does the introductory MIS course offerings map to the current model curriculum?

If the business community now needs a “vesatelist” managing digital services most of the time this is done through particular course offerings. Further, past IS literature has posited that the introductory IS course (e.g., IS2010.1 Foundations of Information Systems) has a large impact on student enrollments, student outcomes and the general health of the IS program [Akbulut and Looney, 2009]. Therefore we need to examine:

**Research Question 2:** What are the most meaningful ways of delivering topics to an MIS core course?

We will begin this investigation by evaluating the learning outcomes for the introductory MIS course associated with the IS 2010 Model curriculum.

### III. MIS INTRODUCTORY COURSE

As mentioned above, IS 2010 is a departure from past model curriculum guidelines as the curriculum topics and body of knowledge was derived from high-level capabilities. “The new capability set recognizes the change in the nature of the jobs IS graduates are likely to have by focusing on business analysis, organizational processes, enterprise architecture, sourcing options, and security/risk management.” [Topi et al., 2010 p. 375]. These high-level skills have been translated to the current topics which are then captured by course offerings. The first course suggested by the IS 2010 is the introductory course.

Why do we need to start the reconceptualization process with the introductory course? There are several reasons why this analysis should start by addressing the introductory course. First and foremost, past scholars have often argued that the core course directly impacts the perceived quality of IS and therefore IS enrollments [Akbulut and Looney, 2009, Firth et al., 2008]. Second, the core course is often the only IS course offered to non-IS Major general business students. Recent research has pointed out that 100% of 143 business programs surveyed in the US have an introductory MIS course in one shape or another [Bell, 2012]. This same study also found that although 90% of the programs had a perception that they were in alignment with IS 2010, in actuality only 50% of the programs are in current alignment [Bell, 2012]. Finally, there is a need to educate non-IS majors of the value of IS skill sets outside of the IT Functional unit. In other words, our introductory class must articulate the need of IS professionals to be embedded in different business units to accountants, marketers, lawyers and so on. The introductory course may be the only time the unique value proposition for IS professionals is discussed at length.

#### Current Foundations of Information Systems Course

The primary objective of information systems is to introduce students to the fundamental components of people, software, hardware, data, and communication technologies. This course is designed to demonstrate how these systems are integrated and managed throughout global organizations, business activities, and society [Topi et al., 2010]. In order to basically assess how the introductory courses are being offered, a sample of courses (e.g., 10 current IS introductory courses from AACSB accredited institutions) was constructed. The goal of this sample frame is to

provide insights into which topics are being covered by a variety of universities. The sample includes: 1) private and public institutions, 2) institutions with an explicit information systems major and those without the major, 3) a variety of when this class is offered to students (e.g., Freshmen, Sophomore, Junior or Senior year) and finally which department hosts the MIS introductory course. Table 1 below shows that we have a variety of conditions for each of the criteria.

Table 1. Selected MIS Intro Courses

University	IS Major	Department	Year
Boise State (BSU)	No	Department of Management	Jun.
Clemson University (CU)	Yes	Department of Management	Jun.
Henderson State University (HSU)	Yes	Department of Business Information Systems	Soph.
Millsaps College (MC)	No	Management	Jun.
Oregon State University (OSU)	Yes	Department of Accounting, Finance, and Information Management	Sen.
Seattle University (SU)	No	Department of Management	Jun.
University of Arizona (UA)	Yes	Department of MIS	Fres.
University of Massachusetts, Amherst (UMass)	No	Finance and Operations Management	Soph.
University of Montana (UMT)	Yes	Department of MIS	Soph.
University of Nevada, Reno (UNR)	Yes	Accounting and Information Systems	Jun.

Next, we examine which learning objectives were covered in each of the courses to determine basic alignment with IS 2010. To do so, two researchers coded each of the learning outcomes presented in the syllabus into either total coverage of the IS 2010 model learning outcome, some coverage, or no coverage. Any discrepancies in coding were reconciled and a decision was made accordingly. There were only three discrepancies.

The results indicate that there are a good deal of the learning outcomes that all institutions have some or full coverage on. These include: 1 - Understand how and why information systems are used today, 2 - Explain the technology, people, and organizational components of information systems, 6 - Know the major components of an information systems infrastructure, 10- Understand how various types of information systems provide the information needed to gain business intelligence to support the decision making for the different levels and functions of the organization, 12- Understand how organizations develop and acquire information systems and technologies.

Of course, there is also a good deal of variation between programs. This is common in academics in general, as faculty expertise, host unit competencies and other factors contribute to the makeup of the learning outcomes. Of the 14 learning outcomes there are two that are near universal. 1 – understanding how and why information are used today and 6 – knowledge of the basic components. These lend themselves very nicely to the new IT paradigm. See Table 2 below.

Table 2. Comparison to IS 2010 Learning Outcomes

Learning Objectives	B S U	C U	H S U	M C	O S U	S U	U A	U M a s s	U M T	U N R
1. Understand how and why IS are used today.	•	•	•	•	•	•	•	•	•	•
2. Explain the technology, people, and organizational components of IS.		•	○	•	○	○	•	•	•	○
3. Understand globalization and the role IS has played in this evolution.							○			•
4. Understand how businesses are using IS for competitive advantage vs. competitive necessity.	○	•		•				•	•	
5. Understand the value of IS investments as well as learn how to formulate a business case for a new information system, including estimation of both costs and benefits.				•	○	○	•			○
6. Know the major components of an IS infrastructure.		•	○	•	•	•	•	•	•	•
7. Mitigate risks as well as plan for and recover from disasters.					○		○			
8. Understand how IS are enabling new forms of commerce between individuals, organizations, and governments.	○				•		○		○	○
9. Be aware of emerging technologies that enable new forms of communication, collaboration, and partnering.		○			○		○	○	○	○
10. Understand how various types of IS provide the information needed to gain business intelligence to support the decision making for the different levels and functions of the organization.	•	○	○	○	•	○	○	○		○
11. Understand how enterprise systems foster stronger relationships with customers and suppliers and how these systems are widely used to enforce organizational structures and processes.	•	○					○	•		
12. Understand how organizations develop and acquire IS and technologies.	○	○	○	○	○	•	○	○		
13. Understand how to secure IS resources, focusing on both human and technological safeguards.	○				○					•
14. Evaluate the ethical concerns that IS raise in society and the impact of information systems on crime, terrorism, and war.	•			•			•	•	•	
<b>Key:</b> • = Total Coverage   ○ = Some Coverage   Blank Cell = No Coverage										

Finally, we wanted to see if there were any learning outcomes that appeared in the sample set that were not in IS 2010. We found several unique learning outcomes as noted by Table 3. Together, there was only one unique outcome that was common to more than one other institution. One of the limitations of our analysis is that several of the unique outcomes can be considered topics in the model outcomes. We choose to keep them separate to highlight the distinction of IS introductory courses.



Table 3. Unique Outcomes by University

Univer.	Unique Outcome
BSU	Differentiate sources & types of data within organizations & their uses within functional areas in systems & processes such as CRM and ERP.
BSU	Explain the relationship between data & information & how they are managed in organizations with data warehousing & data mining processes.
OSU	Convert between various number counting systems (decimal, binary, octal, hexadecimal, etc.) and perform simple arithmetic operations in these systems.
OSU	Understand the relationships, both historical and current, between the use of information systems and business productivity.
OSU	Provide an overview of protocols, standards and standard-setting agencies and organizations in IS
UNR & UMASS	Become conversant with numerous terms related to information systems so that you could hold a discussion with an IT professional with regard to computers, data, networks, enterprise systems, information assurance, and computer security.
HSU	Use basic microcomputer applications such as word processing, spreadsheets, databases and internet applications
UA	Algorithms and methods used in business analysis and assessments

This sample provides some evidence that there is a need in all environments to understand IS current systems and also understand the basic use and components<sup>1</sup>. Given there is a trend in IS external services, internal virtualization and the consumerization of the enterprise-class solutions there is an opportunity to position topics and delivery in the introductory IS class. This thinking is in line with the current IS needs within organizations. To explore this idea in detail will provide a possible solution whereby students are given the theory exposure of systems while being allowed to explore, experiment and research contemporary information systems that can be implemented outside the traditional IT functional unit.

### **A Possible Foundation of Information Systems Course**

In order to explore the opportunities involved with the IS 2010 model curriculum foundations course we will now propose one way to increase legitimacy of the course, while also providing clear linkages to the learning outcomes recommended by IS 2010. This includes both a rethinking of the pedagogical approach and also delivery of the introductory course. We will begin this discussion by evaluating a new approach to the delivery.

### **Flipping the Classroom**

Clearly, there are opportunities within the new curriculum to offer current state-of-the-art topics which will benefit our students and organization alike. There also are promising pedagogy trends that may lend itself to delivering a contemporary IS undergraduate curriculum. Flipping the classroom has become an increasingly popular concept for grade school and secondary education [Anonymus, 2011] and is now becoming more common in post-secondary education [Barrett, 2012]. The basic concept of flipping the classroom is replacing some of all of the passive lectures that happen inside the classroom using presentation software such as PowerPoint or

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<sup>1</sup> For a more systemic review at the course level see Bell et al. 2012.

Prezi with interactive work sessions where exercises are assigned. In sum, it is doing the lecture outside of the classroom with videos or other interactive tools and focus on application of the lectures through in class assignments, group work or other in class exercises. The exercises also can continue outside the classroom.

If we take flipping the classroom and the new trends of IT together it creates a unique opportunity to reconceptualize the introductory MIS course by offering students the practical ability to get to the research and experimentation stage with current technologies within the classroom, while teaching the theory and methods outside the classroom. Advocates, which include tech visionaries such as Bill Gates [Kaplan, 2010], say this new paradigm, enables students' misapprehensions to be changed well before they apply their skills in a testing situation. The advocates argue the result is more learning [Barrett, 2012].

Flipping the classroom can only be done in conjunction with a solid pedagogical foundation. In the case of the intro course these would be manifested in the learning outcomes. As mentioned above, Topi et al.'s IS 2010 proposes learning outcomes for this course that are based on contemporary work practices and the state-of-the-art in IS. It is possible that the enrollment problems and the perceived disconnect with industry are not artifacts of the learning outcomes, but in fact, are a product of delivery.

Other IS academics have proposed similar classroom learning concepts. For example, business process scholars offer a way to integrate field-based learning into a course. Specifically, "students in the one-semester course do a team project whereby they would define and analyze a business process. The teams usually choose a process that exists within a company where one of the team members works." [Bandara et al., 2010 p. 748]<sup>2</sup>

### **Delivery of the Introductory Course**

If we look at the opportunities involved with the current technology trends (e.g., cloud computing, virtualization, and consumerization of enterprise-systems) and also the new ways of delivering courses (e.g., flipping the classroom) there seems to be a nexus of opportunity. The following outlines one possible solution that may address some of the current shortcomings in undergraduate IS curriculums. The basic concept is simple. Provide learning exercises and reading outside classroom, where students can introduce themselves to basic concepts. Then provide a classroom experience where students are able to experiment, build, and research with these new concepts.

The learning objectives from this new course are still derived from the IS 2010, as: 1) the learning outcomes in IS 2010 have been validated by the AIS and ACM communities and, 2) these learning outcomes still map to the contemporary technologies. For example, Learning Outcome 6 states, "Know the major components of an IS infrastructure." Though the learning outcome maybe the same the context has changed in the past few years.

### **Salesforce.com**

The key to flipping the classroom is having the tools needed to facilitate the learning outcomes. There are many possible tools that could have a positive impact, while allowing instructors to flip the classroom for the introductory course. Having said that, it is our opinion that Salesforce.com offers a contemporary experience that allows for a true enterprise experience while also giving undergraduate access to the latest technology tools. Salesforce.com can be used to allow students to explore several learning outcomes. As mentioned above Salesforce.com is a very popular enterprise-system that allows any organization access to cutting edge systems. For example, a small computer shop can now run the same software as a company like Dell.

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<sup>2</sup> In the Bandara et al. figure 1 on page 748 describes the integrated classroom approach.

Salesforce.com started in the customer relationship management (CRM) marketplace, but has now extended itself as a true enterprise system. Salesforce is a leader in the cloud-based enterprise market and has consistently taken market share away from the traditional ERP vendors such as SAP. Salesforce.com is easily accessible for students and provides an environment for students to master many of the learning outcomes.

Table 4 below outlines the learning outcomes associated with the proposed course. A textbook is mapped with the Salesforce materials. Salesforce.com has provided their learning materials to supplement the exercises. The table also lists the associated reading, done outside of the course, with online lecturettes, to supplement the reading.

### **The Applied Process**

In the classroom the instructor briefly reviews the materials and then starts on the application of the material to the Salesforce environment. For example, in week 4 students are to read the chapter on the security issues and also watch a video lecturette. Students then attend the class. In the class, the instructor will review the basic of securing an information system in general terms and answer questions accordingly. The students will then be given a demonstration of how to manage and apply security in Salesforce. This includes, the log in authentication process, setting access for user, and so on. Students then in small groups are asked to start with the exercise close to the end of class. Students will then continue with the exercise out of class and then notify the instructor (or his TA) that they have completed the exercise. The instructor, or the TA, will check to see if they completed the appropriate steps. The key to this process is getting the students to understand what they are completing and not the keystrokes. A sample schedule and topic outline can be found in Appendix A.

The final project for the course includes an integrative project where students design, build, and manage an enterprise system for a fictitious organization. A requirements document is furnished to the groups, which outline the required and optional elements of the projects. The students then develop and present their solutions.

### **Possible Elements for the Introductory Course**

A technology class of any sort can be challenging to teach. Flipping the classroom and providing a place to experiment can be daunting at best. This section will outline the required elements needed to successfully flip the classroom and also provide a contemporary course based on IS 2010. Two prototype classes have been offered using this new pedagogical and delivery approach. The following are required elements based on the experiences of this instructor:

Computer – You either need a laptop policy that requires students to have a laptop or access to a lab environment to teach this course. Being that this is so experimental and focused on the application of knowledge access to the online Salesforce environment along with other online tools is necessary. In itself, this constellation may be too much for many institutions.

Courseware – The prototype class was offered via Salesforce. All assignments, exercises, lecture notes, and the course schedule were managed through Salesforce. There currently is a beta prototype App that will be made available for any courses. You can find this in the Salesforce AppExchange. Further, an instructor interested in this type of course would need to reach out to the Salesforce curriculum team for up-to-date Salesforce exercises. Of course, this course can be offered using other courseware systems (e.g., blackboard, Moodle and so on).

TA – I highly recommend a technical TA who is interested in learning Salesforce. Grading exercises and assignments can take an inordinate amount of time. One parallel would be grading Access assignments every week.

Instructor – Key to any course is a capable and confident instructor. For this course it is helpful that you be a certified Salesforce basic administrator (although this prototype instructor was not). Also, setting expectations for the students is critical. Students need to understand this course will

be different than lecture based courses and it will require a lot of experimentation and research in class.

Table 4. Learning Outcomes, Topics and Salesforce

Learning Outcome	Reading <sup>3</sup>	Salesforce	
		Topics	Exercises
1. Understand how and why IS are used today.	Ch1: Managing the Digital World	Intro. to Salesforce	Login and experience
2. Explain the technology, people, and organizational components of IS.	Ch1: Managing the Digital World	Setting Up and Managing Users	Setup admin users
3. Understand globalization and the role IS has played in this evolution.	Ch2: Fueling Globalization through IS		
4. Understand how businesses are using IS for competitive advantage vs. competitive necessity.	Ch3: Valuing IS Investments	Reports and Intelligence	Evaluate Reports and Dashboards
5. Understand the value of IS investments as well as learn how to formulate a business case for a new information system, including estimation of both costs and benefits.	Ch3: Valuing IS Investments		SaaS vs. Install vs. Build
6. Know the major components of an IS infrastructure.	Ch4: Managing the IS Infrastructure.	Enterprise solutions	Salesforce integration
7. Mitigate risks as well as plan for and recover from disasters.	Ch7: Securing IS	Online Security	Salesforce security
8. Understand how IS are enabling new forms of commerce between individuals, organizations, and governments.	Ch5: Enabling Commerce	Ecomm.	Salesforce sales process
9. Be aware of emerging technologies that enable new forms of communication, collaboration, and partnering.	Ch6: Enhancing Collaboration	Collaboration	Chatter / Salesforce ILS process
10. Understand how various types of IS provide the information needed to gain business intelligence to support the decision making for the different levels and functions of the organization.	CH8: Enhancing Business Intelligence	Reports and Intelligence	Design Reports and Dashboards
11. Understand how enterprise systems foster stronger relationships with customers and suppliers and how these systems are widely used to enforce organizational structures and processes.	CH9: Enterprise IS		Implicit
12. Understand how organizations develop and acquire IS and technologies.	CH10: Developing and Acquiring IS		Implicit
13. Understand how to secure IS resources, focusing on both human and technological safeguards.	Ch7: Securing IS	Online Security	Salesforce Security
14. Evaluate the ethical concerns that IS raise in society and the impact of information systems on crime, terrorism, and war.	CH11: Managing IS Ethics and Crime		

## Outcomes

Although this course is in its infancy, there has been positive reactions both in enrollments and response from industry. Anecdotally, enrollment in the prototype courses have been maxed. Further, many industry partners have taken great interest, even requesting several interns from students in this course due to their IS skillsets. Clearly, a systematic study of impact has to be done in order to make any conclusions on the impacts of this type of class. Further, systems need

<sup>3</sup> Valacich & Schneider 2012 was selected as a possible textbook as it aligns nicely with IS 2010

to be developed in order to scale this course so it can handle classes of any size and institutions with multiple sections.

#### IV. CONCLUSION

This paper evaluates a possible solution to the current gap in enrollments and disconnect with industry by providing a possible introductory IS course, which addresses each of the learning outcomes while also giving students practical hands on experience with cloud-based enterprise class software. In sum, learning outcomes are met through a series of in class exercises and outside readings and materials.

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## ABOUT THE AUTHORS

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**Michael Kuykendall** graduated from the University of San Francisco where he majored in Business Administration with a concentration in Economics. Upon graduation, Michael was named Valedictorian as well as being awarded the Dean's Medal of Excellence. At the age of 19, Michael joined a "boot-strapped" software startup company in San Francisco, where within a few short months, he would become the Chief Operating Officer, leading the company to record-breaking success. The software application, Kugamon Orders to Payments, is the highest rated finance and accounting application for Salesforce.com, a ranking it has held since infancy. Michael has most recently focused his efforts on the USF/Salesforce.com Pro Bono Program. The program, created with the Salesforce.com Foundation, gives students the opportunity to apply their classroom knowledge to real consulting engagements. Upon graduation, Michael will continue his role as Chief Operating Officer with future plans of attending law school.

**Jacie S. Matsukawa** is a recent graduate from the University of San Francisco. She has received her Bachelor's of Science Degree in Business in Marketing. Originally from Honolulu, Jacie currently resides in San Francisco and is working as a public relations and marketing intern at Impress Labs. Jacie's past research involved cross-examining Management Information System courses at top tiered Universities across the state. This will be Jacie's first published Information Systems paper.

**APPENDIX I. CLASS SCHEDULE AND TOPICS**

Day	Topic	Reading	Assignments
WK1	What is IS? Setup Groups	Ch1: Managing the Digital World	Module 1: Intro. To Salesforce
WK2	Globalization of IS	Ch2: Fueling Globalization through IS	World is Flat Assignment
WK3	IS for businesses	Ch3: Valuing IS Investments	Module 2: Setting up and managing users
WK4	Infrastructure	Ch4: Managing the IS Infrastructure	Module 3: Contemporary Infrastructure (non-salesforce)
WK5	Online Commerce	Ch5:Enabling Commerce	Module 4: Salesforce Sites
WK6	Collaboration	Ch6: Enhancing Collaboration	Module 5: Chatter and collaboration
WK7	Security	Ch7:Securing IS	Module 6: SF Security
WK8	Business Processes	Improving Business Processes. Harvard Business Review Pocket Mentor	Module 7: Salesforce business processes
WK9	BI	CH8:Enhancing Business Intelligence	Module 8: Reports and Dashboards
WK10	Enterprise IS	CH9: Enterprise IS	
WK11	Enterprise IS		Miniproject: Salesforce for nonprofits
WK12	Developing and Acquiring IS	CH10: Developing and Acquiring IS	
WK13	Developing and Acquiring IS		Module 9: Developing a Salesforce App
WK14	Ethics and Crime	CH11: Managing IS Ethics and Crime	
WK15	Salesforce Final Project		
WK16	Final Exam and/or presentations		