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Executive Summary

The IS2010 model curriculum has been widely used to develop, update, and assess IS programs. However, its value may be decreasing due to its age. Also, new approaches to structuring model curricula have been introduced recently in MSIS2016. Therefore, the AIS and ACM established an Exploratory Task Force with the following charge:

(1) To recommend whether there is a need to revise and update IS2010,
(2) To make recommendations regarding the nature, reach, and underlying principles for such a revision, and
(3) To provide an initial outline of the process to create an updated model curriculum.

The task force assessed IS2010’s utility and validity based on the current trends in the IS field. The task force finds that a significant amount of time has passed since IS2010 was released and that there have been substantial changes in the IS field. One specific recurring theme is that current graduates’ technical skills do not appear to meet industry needs. The IS discipline must express its core in terms of a standard curriculum to provide a foundation upon which to develop and offer undergraduate IS programs that meet stakeholder demands. Therefore:

The Task Force recommends that ACM & AIS decide to launch a joint process that will lead to a comprehensive revision of IS2010.

It is expected that the next IS model curriculum will be IS2020. The task force recommends the following regarding the nature of IS2020 and the IS2020 development project:

- IS2020 should apply to IS programs around the globe, with different academic structures. It should provide guidance for IS majors and minors, provided on-site or online.
- IS2020 should adhere to similar guiding principles as IS2010, specifically representing a consensus from the IS community, aligning with the current master’s level model curriculum, and be guiding rather than prescribing in nature.
- An IS2020 joint task force should be formed for a three-year period.
- The IS2020 task force should have a co-chair from both AIS and ACM. It should represent all AIS regions and their ACM counterparts. It should have core members for the duration of the task force and temporary members for specific tasks and for specific durations.
- The IS2020 task force should consider developing IS2020 as a ‘hybrid model’, combining the competencies and course structures to maximize the model’s longevity and practical utility.
- To avoid lengthy revision cycles, the IS2020 task force should consider designing IS2020 as a ‘living artifact’, for example, in the form of an online version of the curriculum. A joint oversight committee could continuously update the curriculum, functioning like the senior editorial leadership of a journal. For this, a proper incentive structure would be essential.
- The IS2020 task force should engage with the IS community through surveys, interviews, paper presentations, panels, discussion forums, and other modes of communication. Interim reports and the final report should be published on the task force website and in relevant conferences and journals.
- The AIS and ACM should each reserve a budget of $15,000/year for the duration of the IS2020 development to cover logistical and material expenses.
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1. Charge of the Task Force
IS2010 (Topi, et al., 2010) is the most recent version of the Information Systems (IS) model curriculum for undergraduate degrees. When it was published in 2010, it joined a long-standing tradition of model curricula, such as ACM1973 (Couger, 1973), ACM1983 (ACM, 1983; Nunamaker, et al., 1982), DPMA’81 (DPMA, 1981), DPMA’86 (DPMA, 1986), DPMA’90 (Longenecker, & Feinstein, 1991), IS’97 (Davis, et al., 1997), IS2002 (Gorgone, et al., 2003), MSIS2000 (Gorgone, et al., 1999), and MSIS2006 (Gorgone, et al., 2006). Since its publication, the IS2010 report has been downloaded over 2000 times and has been widely used to develop, update, and assess IS programs.

IS2010 is now eight years old and, given the typical development period, the earliest new update could be reported earliest in 2020. Second, an increasing number of requests from members of the IS community and an assessment of the IS2010 curriculum itself indicates that its value is decreasing because of its age. Finally, a recent effort to revise the IS model curriculum at the graduate level (MSIS2016 – the graduate level competency model (Topi, et al., 2017)) has introduced new approaches to guide the development of education program. These approaches should at least be considered for future undergraduate model programs.

Because of these reasons, the AIS and ACM established an Exploratory Task Force (hereafter referred to as the “task force”). The charge of this task force is threefold:
(1) To recommend whether there is a need to revise and update IS2010,
(2) To make recommendations regarding the nature, reach, and underlying principles for such a revision, and
(3) To provide an initial outline of the process to create an updated model curriculum.

IS curriculum recommendations and other society-endorsed educational guidance documents have always been collaborative efforts between AIS and other organizations (during the last 10 years only with ACM). Thus, consistent with past efforts, the exploratory task force consists of two members from both organizations. Each member was actively involved in various past model curricula efforts:
• Gert-Jan de Vreede, University of South Florida, AIS
• Eija Karsten, Åbo Akademi University, Finland, AIS
• Paul Leidig, Grand Valley State University, ACM
• Jay F. Nunamaker Jr., University of Arizona, ACM

The task force met on 11 and 12 February, in Tampa, FL. In preparation for their meeting, the task force developed an initial outline of their recommendation report. During the meeting, the members finalized the outline and discussed each part in detail. The results of these discussions are described in the remainder of this recommendation report.
2. Changes in the field of Information Systems since IS2010

The field of Information Systems is dynamic in nature. More so than many other disciplines, the IS discipline is confronted with a seemingly continuous stream of technological developments, opportunities, trends, and buzzwords. This dynamic context poses a significant challenge for faculty and administrators that are tasked to educate future generations of IS professionals. Furthermore, it forms an important basis for the assessment of the utility and actuality of IS2010 and future curricula development efforts. Below, we provide a high-level outline of the current field of Information Systems in terms of the nature of the IS discipline and relevant trends in terms of technological innovations, the IS environment, IS undergraduate curricula, and the IS job market. Please note that this overview is not intended to give a complete and comprehensive overview; rather it intended to illustrate the many ways in which IS professionals and educators have seen significant changes over the past decade.

2.1 The Nature of the IS Discipline

Information systems and information technology have a long history of being a critical ingredient of organizational success or failure. Through effective use of information systems, many organizations have developed a disruptive element for competitive advantage. Indeed, businesses in many industries have been forced to change strategies, or even ceased to exist, due to the rapid pace of technological change. Information systems, encompassing information technology, people, processes and data, have become an integral ingredient at all management levels of an organization. The importance of IS to organizational success has led to a growing need for well-educated professionals in the IS field. As the IS field has evolved over the past 60 years, the basic nature of what an information systems professional does has not changed significantly. The earliest model curricula defined the three basic knowledge areas that define IS: (1) information systems technology, (2) information systems concepts and processes, and (3) organizational functions and management. The challenge for each succeeding IS curriculum model is to describe the current professional skill sets needed in each of those three areas.

Information Systems as an academic discipline has been around for over a half-century and is offered under a wide variety of names. Information Systems is the more commonly accepted and generic name used for most of them. The most common program names are Information Systems, Management Information Systems, and Computer Information Systems, along with a long list of other program names. As the wide-scale use of computers in transaction processing, enterprise resources systems, and other business support systems expanded beyond operational systems to support tactical and strategic initiatives, such as e-commerce, decision-support systems, and other analytical support systems, additional academic IS program labels also grew. The rapid growth in a wide array of information systems needs led to a diverse set of academic offerings. Such programs are offered in various administrative alignments, including but are not limited to business schools with MIS/BIS programs, Computing/Technical schools, information schools (iSchools), digital media, informatics, and schools with a design emphasis. Therefore, a model IS curriculum needs to address and allow for local variations within programs, while identifying the common core of what constitutes an IS program.
IS in organizations combine both the computing technology and human skills to capture, store, process, and communicate data and information. Thus, IS programs must include and focus on both the technology and human aspects of systems. The functional management of the IS component of an organization includes the responsibility to plan, develop or acquire, and manage the information technology. In addition, tracking and incorporating new technology into an organizational strategy and practice is a vital requirement of the IS function. IS professionals must be able to competently work with computing technology, software, and communications systems, and must also understand managing the business functions within the organization.

Multiple academic computing disciplines offer programs similar to IS, including computer science, software engineering, information technology, cybersecurity, library science, analytics, IT innovation, and data science, to name a few. Therefore, an IS model curriculum needs to identify the unique features that define all IS degrees. As described in the CC2005 Overview Report, the information systems discipline is primarily concerned with the information that computing systems provide organizations, used to achieve its goals, and the processes that an enterprise can implement using information technology. In helping to define an IS program, a model curriculum should frame the skills, competencies, and courses of the IS discipline in comparison to other computing disciplines. Regardless of the ‘flavor’ of IS a program provides, a model curriculum should provide the ability to select parts of IS2020 that supports each specific institutional need. However, all IS programs should share a 'common core' that defines them as ‘information systems’.

2.2 Trends in technological innovations
Technological innovations have been a constant factor since the inception of the IS discipline over 70 years ago. The past decade has seen many technological trends and innovations that have and are still influencing the way individuals and organizations create value. For example, 3D printing uses computer-models to create three-dimensional solid artifacts through additive manufacturing. It supports on-demand parts manufacturing and has spawned a host of services, including intermediaries that fulfill orders of independent 3D designers’ products. Agile software development has continued to become an industry standard. In particular, SCRUM has been adopted by many organizations to manage agile projects. Further, Design Thinking and Human Centered design approaches build on agile development principles to firmly ground development practices in user preferences and habits.

Automated personal assistants and other forms of AI agents such as AI robots, VR/AR, AI-enabled DSS, and ambient computing have emerged as commercially viable technologies to support some basic individual and team-based problem solving. The role of AI is expected to make dramatic advances in the coming decade, supporting a host of fields such as medical, security, manufacturing, and crisis management. Autonomous vehicles and drones are changing the way in which we transport goods and people and the way in which we collect environmental, geographical, and logistical information.
Big data and data science provide the foundation for an analytics perspective in IS, consisting of computational methods and technologies to perform quantitative and text-based semantic analyses to support evidence-based decision-making. Recent advances in distributed ledgers through blockchain technologies appear to herald the beginning of a fury of research and development on applications of cryptocurrencies and smart contracts. While cybersecurity was already a key ingredient of the IS2010 model, technological developments and incidents during the past decennium have solidified the importance of this topic for modern organizations.

Crowdsourcing is using social media and interactive web-based technologies to allow organizations to involve individuals to contribute time and effort to information processing tasks, innovation ideation, data collection, and community problem solving. Technological advances in direct-observations of an individual’s physical behavior, such as ocular metrics (e.g. eye tracking), physiological (e.g. respiration rate), kinesics (e.g. gestures), linguistic (e.g. voice recognition), and vocalics (e.g. articulation or pronunciation), have spurred a myriad of applications in gaming, security informatics, and health informatics.

The Internet of Things (IoT) connects physical devices such as appliances, instruments, and sensors with vehicles, people, animals, and other objects such that they can connect and exchange data. IoT architectures enable the development of smart homes, smart offices, and smart cities. Social media technologies have not only changed the way in which individuals connect and interact, they have also changed the way in which businesses, governments, and non-profits build their brand and relationships with their customers. Furthermore, social media have fueled the emergence of new business models in the so-called sharing economy by enabling individuals to directly market goods and services (e.g. Airbnb, Lyft).

While this overview is by no means exhaustive, it illustrates the vast array of technological developments that have matured or emerged in the field of IS during the past decennium.

2.3 Trends in the IS Ecosystem

The ecosystem in which IS function has also seen a number of new trends since the publication of IS2010. While the role of IS within organizations has remained a critical one, the environment in which IS professionals work has become even more dynamic. For example, the digitization of work and individuals provides new ways for organizations and individuals to collaborate, to co-create, and to perform business transactions. This has led to the emergence of digitalization – the creation of new or improved business models and processes with digital technologies. It has also changed the way in which individuals and teams make evidence-based decisions. This has had several key impacts. First, governments and other regulators are developing new standards on the collection and use of personal data (e.g. the EU General Data Protection Regulation). Second, the role of IS professionals in the organization has expanded from developers and analysts to data scientists, digital process designers, and digital strategists. Furthermore, the Future of Jobs report by the World Economic Forum shows that by 2020, complex problem solving, social skills, process skills, and systems skills are expected to be in much higher demand than physical abilities or content skills. This aligns with the typical skills that IS undergraduates focus on developing in their educational program.
2.4. Trends in IS Undergraduate Curricula
IS represents a constantly changing discipline. As IS undergraduate curricula have to remain aligned with the nature and needs of the IS job market, they are likely to be dynamic in nature as well. Given the many developments in terms of IS technology and the environment in which IS professionals work, it is not surprising that IS curricula have seen some changes as well over the past decade. Some of the trends related to IS undergraduate curricula include but are not limited to the increasing number of online modules of certain IS courses, the emergence of Massive Open Online Courses (MOOCs), the inclusion of (mandatory) study abroad segments to expose students to different (work) cultures, and the inclusion of experiential learning components. Furthermore, in some countries the undergraduate degree is becoming increasingly modular in terms of course topics and credits. Students can cover a significant part of their degree with transfer credits originating from advanced placements courses, courses from community colleges and polytechnics, and even industry training modules or evidence of advanced practical experience. We also see increased flexibility in curricula to cater to students that work full-time and pursue their degree as part-time students. This is evident from initiatives such as EDUglopedia (www.EDUglopedia.org), which allows universities from around the world to showcase and promote their IS program(s) (or other programs) in an open format so that students and other interested stakeholders can get a detailed understanding of the program.

2.5 Trends in the IS Job Market
A recent report from AIS on the IS Job Market, the 2017 Information Systems Job Index, shows that the demand for IS professional remains strong (Mandviwalla, et al., 2017). There appears to be a steady increase in starting salaries for IS graduates, both on the undergraduate and graduate level. While the report states a 74% job placement rate for undergraduates upon graduation, many programs across the US report 100% or near 100% placement ratios.

In addition to the strong trends in terms of initial job placement, there is a sentiment of increase job mobility in the IS market. IS professionals seem to change job at an increasing rate, which often leads to increased demands for continuous or certificate training. Another new trend in the IS market is the so-called free agent model: professionals that work independently for different employers, often in the context of start-ups or through crowdsourcing relationships.

3. Model curricula

3.1 Past efforts
The first IS model curriculum was published in the early 1970s (Ashenhurst, 1972), and the work has continued ever since both at the undergraduate and master’s levels. The Association for Computing Machinery (ACM) has sponsored the reports from the beginning. Since the Association for Information Systems (AIS) was established in the mid-1990s, the two
organizations have collaborated on the production of curriculum recommendations for the IS discipline. These amount to a total of eight efforts: IS’97, IS2002, and IS2010 at the undergraduate level; MSIS2000, MSIS2006, and MSIS2016 at the graduate level; and CC2005 (Shackelford, et al., 2006) and the ongoing CC2020 initiative integrating the disciplines (Clear, et al., 2017). At the undergraduate level, both the Association for Information Technology Professionals (AITP) (formerly DPMA) EDSIG and the International Federation for Information Processing (IFIP) have also made significant contributions to the curriculum recommendations.

Both ACM and AIS are global organizations that work to advance computing and its transformative uses. ACM’s membership includes industry professionals, academics, and students worldwide, and it works in a broad spectrum of areas in computing. AIS is the premier global society for faculty members affiliated with IS, and it serves students through a student chapter structure. The organizations complement each other’s strengths and they have been strong partners in educational initiatives since the 1990s.

Even though IS as a discipline has existed around the world since 1960s, MSIS2016 was the first curriculum guidance document in IS that has been developed with a truly global process for a global audience. Earlier reports have been used around the world, but a U.S.-based task force developed the reports with assumptions that were mostly aligned with the North American educational system.

MSIS2016 is also the first document of its kind that does not provide a predefined curriculum model (and thus, it is not called a curriculum recommendation). Instead, it focuses on articulating competencies that graduates should have attained upon completing their degree programs. The task force believes that this approach particularly suits a document that is designed to serve a broad range of degree programs around the world.

### 3.2 The value of model curricula and competency models

Model curricula and competency models have a variety of uses. For some institutions, they can provide detailed guidance and a specific foundation for a curriculum. For others, they may serve in a variety of supporting roles: they can be starting points for internal conversations, a source of ideas in situations when new perspectives are necessary, a benchmark for an internal development effort, and a structural guide. In addition to providing information to universities and their units, this document provides highly useful information regarding the nature and identity of MS degree programs in IS to several other stakeholder groups, such as prospective and current students, employers, university administrators, and policymakers.

### 3.3 Relationship to competency frameworks

Historically, most computing curriculum documents have been built around a typically hierarchical knowledge area–knowledge unit–topic (KA/KU/topic) structure that forms a body of knowledge (BoK). For example, the most recent curriculum recommendation for computer
science (CS2013) has 18 knowledge areas that contain five to 12 knowledge units each. Each knowledge unit, in turn, includes topics. For example, the Information Management knowledge area has 12 knowledge units, such as Relational Databases. This knowledge unit has 11 topics, which are familiar to those who teach IS courses in this area, such as mapping conceptual schema to relational schema, entity and referential integrity, and so on. A potential problem with the KA/KU/topic structure is, however, that it focuses mostly on cognitive aspects of learning and leaves experiential elements out. A curriculum based on a knowledge area structure conveys relatively little on what the graduates are able to do at the time of graduation. Some observers might find this perfectly acceptable because they do not view applicable skills and attitudes as a goal of university education. For others, it is a major problem because they hold a broader view of the goals of a university degree.

Prior IS model curricula have always included some type of a representation of an IS BoK, but none of the IS curricula has been structured around the BoK structure in the same way as the other computing curricula are. Instead, the IS curricula have been represented mainly through courses (both core and elective/specialized) with learning objectives and topics. This approach has been used in IS2002 (Gorgone, et al., 2002), IS2010 (Topi, et al., 2010), MSIS2000 (Gorgone, et al., 2000), and MSIS2006 (Gorgone et al., 2006). The main challenge of this approach is that it typically presents a course-specific view without providing a detailed program-level representation of expected graduate capabilities. Some of these curricula—particularly IS2010—dedicate significant attention to the specification of program-level graduate capabilities at a high level of abstraction, but even IS2010 never maps the course level with the program level to analyze or demonstrate how the courses contribute to the way in which students achieve the program-level objectives.

A third and increasingly commonly used model identifies a set of graduate competencies. Competencies include abilities to use knowledge, skills, and attitudes to perform specified tasks successfully. Using more refined language, Lockoff et al. (2010, p. 21) define competencies as follows: “Competencies represent a dynamic combination of cognitive and metacognitive skills, demonstration of knowledge and understanding, interpersonal, intellectual and practical skills, and ethical values.”

There are several widely used competency frameworks. The Skills Framework for the Information Age (SFIA Foundation, 2015) by British Computer Society is in use in Europe and in Australia. SFIA has been adopted together with Bloom’s taxonomy (Bloom, et al., 1956) by the Australian Computer Society (ACS). ACS plays a significant role in guiding master’s degrees in IS/IT in Australia. ACS accredits Australian IS/IT degrees and assesses migration skills. ACS allows universities to design their curricula with flexibility while it also has an accreditation framework to which the curriculum should be mapped. There are detailed matrices for universities’ curriculum designers to map degree and unit content. For different levels of accredited degrees, the expected outcome should also be mapped to the appropriate capability levels.
The European e-Competence Framework (e-CF; (CEN 2016a, 2016b, 2017)) has evolved together with the Bologna process of harmonizing degree structures (Bologna Working Group, 2005). The competency categories are Plan, Build, Run, Enable, and Manage. Each category has four to 12 competencies. For example, Build has six competencies: Application Development, Component Integration, Testing, Solution Deployment, Documentation Production and Systems Engineering. There are five levels of proficiency. E-CF is widely used in industry, but also by computing programs at universities.

In IS, the MSIS2016 also presents a competency model, specifying competency areas as the highest-level categorization of competencies. The areas, in turn, include competency categories, and within these categories, the actual competencies can be specified. Competency areas and competency categories are much more stable and depend less on technology than the competencies themselves. In addition, there will be much more local variation in the competencies than at the higher levels. Therefore, the specific competencies should be primarily seen as current examples.

Different professional profiles have different competency needs, and the professional profiles that a program desires its graduates to be able to achieve determine the level at which a program should enable its graduates to attain each of the competency categories. MSIS2016 specifies four different levels of competency category attainment: Awareness, Novice, Supporting (role), and Independent (contributor). It is not possible to develop human competencies beyond the novice level only based on abstract knowledge without a close association with a context. Developing situational awareness requires learning through experience. Gaining the highest levels of skill achievement requires highly involved engagement in a variety of situations relevant to the skill of interest. Finally, MSIS2016 recognizes that prerequisite competencies (that is, included in a bachelor’s degree) are included in three areas: 1) Data, Information, and Content Management, 2) IT Infrastructure, and 3) Systems Development and Deployment.

4. Assessment of IS2010 (Gap Analysis)

There have been a significant number of studies since the publication of IS2010 that report a lack of adherence to the model curriculum’s core recommendations. A reoccurring theme is that industry is looking for stronger technical skills than current graduates appear to possess. While this may not be directly associated with the model, any such recommendation should be reflective of industry needs. Specifically, skills expectations demand programming abilities from graduates of computing related programs. While most IS programs require some programming, and many IS programs have multiple courses in programming, the latest model does not list this as a required component. Therefore, this task force recommends a model curriculum articulating an adequate depth of coverage to ensure technical competence. Also, another characteristic of IS2010 is the inclusion of room in the model for industry tracks relative to local needs, yet very few programs offer such tracks with specifically designed courses.
Rapid technology changes have ushered in new IS fields and specialties, and the IS discipline continues to evolve. This report recommends development of a model that responds to constant monitoring of the technology environment. This could be achieved through monitoring of public information, such as U.S. Bureau of Labor Statistics employment projections, a periodic formal survey or analysis of job advertisements to define skills relevant to the IS graduate, or some other method of industry feedback. In addition, societal and regulatory changes also suggest the need for updates to curriculum recommendations for the knowledge of rules and regulations affecting IS. Therefore, to provide an updated and relevant recommendation, a more complete and formal review of the gap between the IS2010 recommendation and current industry demands and existing academic programs is recommended.

5. Recommendation

5.1 Recommendation statement

_The ACM/AIS Exploratory Task Force recommends that ACM & AIS decide to launch a joint process that will lead to a comprehensive revision of IS2010._

This recommendation is based on a number of observations. First, a significant amount of time has elapsed since the development of IS2010. Most of the work on IS2010 was completed around 2008, so the model curriculum is now a decade old. Consequently, the current model curriculum is grounded in a perspective of industry standards and requirements for IS graduates that is likely outdated. Second, this consideration strengthened by the considerable amount of change in the field, in terms of information technology and the IS environment (see Section 2). Finally, it is imperative that IS, as a discipline, must express its essential core in terms of a standard curriculum so that universities around the world have a foundation upon which to develop and offer up-to-date undergraduate IS programs. This is even more important given the current and expected strong demand for IS professionals.

A thoughtful and comprehensively revised model curriculum is expected to make a number of significant contributions:

- It will provide guidance to updating efforts in departments and schools that are currently offering an undergraduate IS degree.
- It will provide guidance to departments and schools that are developing new IS-centric programs or programs in which IS has a strong component.
- It will inform accreditation bodies such as AACSB and ABET in terms of the standards that can be used to assess the IS program(s) in institutions that are being evaluated. This is especially important given the task force’s perception that the current general AACSB accreditation requirements appear to limit building depth in an IS Major.

The task force further has a number of recommendations for the revision and development of the IS2020 model curriculum in terms of the scope, committee, guiding principles, process, and
nature of the resulting model curriculum. These recommendations are outlined in the subsections that follow.

5.2 The IS2020 Scope

The IS2020 model curriculum is recommended to consider at least the following in terms of its scope:

- It should apply to IS programs in a variety of academic reporting structures, such as business schools, computing schools, and information schools.
- It should provide guidance for an IS major and minor.
- It should provide guidance on IS as a service component for other majors, e.g. in the form of an IS concentration.
- It should be able to accommodate students that follow a different intensity levels in terms of pace through the program, e.g. full time vs. part time students.

5.3 The IS2020 Committee

The IS2020 task force should have a co-chair from both AIS and ACM. The calls for these chairs should be open and the selection process transparent. Ideally, the calls should be sent out by March so that the selection process can converge into nominations by May. The selection criteria for the co-chairs include, but are not limited to:

- Experience with IS model curricula development.
- Standing in the IS community.
- Doctoral degree.
- Experience teaching undergraduate level courses in Information Systems.
- Institutional support to devote a significant amount of time to this effort.
- Undergraduate level program administration experience.
- Length of academic career.
- Publications related to IS curriculum development.
- Geographic location.

Further, the task force should consist of (1) six to eight core members who participate for the duration of the task force and (2) of temporary members appointed for specific tasks and for specific durations. Core members should represent all three regions of AIS and similar regions of ACM. One to two additional persons might represent other professional IS organizations (e.g., AITP-EDSIG, IFIP, or CEPIS), in case the ACM/AIS members are not members of those organizations. It is recommended that ACM/AIS (or the task force’s co-chairs by proxy) reach out to other professional IS organizations to gauge interest in participating in the IS2020 effort.

The call for members of the task force should be sent out as soon as the co-chairs are nominated by both organizations. The selection criteria include, but are not limited to:

- Doctoral degree.
- Experience teaching undergraduate level courses in Information Systems.
• Undergraduate level program administration experience.
• Length of academic career.
• Publications related to IS curriculum development.
• Geographic location.

Finally, the co-chairs should prepare a proposal of the task force to be approved by the AIS VP of Education and the head of the ACM Education Council. When needed, the task force will propose expert members.

5.4 The IS2020 Guiding Principles

The task force further recommends that the joint IS2020 committee consider the following key principles to guide their efforts. These principles are partly based on the IS2010 principles:
1. The model curriculum should represent a consensus from the IS community.
2. The model curriculum should be designed to help IS programs to produce competent and confident entry-level graduates well suited to workplace responsibilities or further studies of IS. In particular, IS2020 should be aligned with MS2016 to ensure a clear and smooth transition from the bachelor’s to the master’s level.
3. The model curriculum should guide but not prescribe. The model curriculum should support faculty to design their own courses and departments or schools to design their own programs.
4. The model curriculum should be flexible and adaptable to most IS programs.
5. The model curriculum should not be restricted to a specific application domain.
6. It should be determined whether the model curriculum must have a core of content that is common to all IS programs globally.
7. The model curriculum does not focus on specific issues related to pedagogy. Such, admittedly highly significant, issues are outside the scope of IS2020.
8. The model curriculum efforts should be coordinated with CC2020 to seek alignment in areas where this is appropriate and productive.

5.5 The Main IS2020 Activities

The main task of the task force is to develop a model for building undergraduate degree programs in Information Systems. The model can consist of core competencies, learning outcomes and possibly modules of learning (courses), taking into consideration the wide variety of practices globally.

To this end, the task force should at a minimum:
• Assess the status and utility of the most recent curricula (IS2010 and MSIS2016), also in light of the current work being carried out for CC2020.
• Assess the scope and status of IS teaching on undergraduate level. EDUglopedia could be a valuable resource for this, in addition to surveys and program web sites.
• Provide a basic terminology for the main elements of IS programs.
• Formulate a recommendation on how to create awareness of the IS2020 model.

5.6 The Nature of the IS2020 Model

With respect to the nature of the IS2020 model the task force has two main recommendations.

First, the task force recommends that the IS2020 committee consider developing IS2020 as a ‘hybrid model’ combining both the competencies and courses structure. The competency approach has several important advantages, as detailed in Section 3, dating back to the 1982 IS Curriculum recommendations (Nunamaker, et al., 1982). However, a structure focusing on courses may be preferable in terms of usability for IS program designers and evaluators. Ultimately, the value of a model curriculum will in large part be determined by the ease with which someone can determine a coherent collection of tailored courses for an IS undergraduate degree, minor, or another format. This aspect of the model curriculum may also be supported by the second recommendation outlined below.

Second, the task force recommends that the IS2020 committee consider designing IS2020 as a ‘living artifact’. This could take the form of an online representation of the curriculum, which is continuously updated based on ongoing insights and developments. A critical concern with the current approach to IS model curricula is the lengthy update cycles: about once every decade. Thus, the task force recommends exploring ways to keep a model curriculum up to date so that it can be responsive to changes in the discipline and in market conditions. This would at least involve the following:

• Explore the creation of a joint oversight committee. This committee could serve as the ‘editorial board’ of the model curriculum, assessing areas where updates are required, initiating such updates, and vetting proposals for updates. The members of this committee would need to be incentivized, as it likely will involve a significant amount of effort. Incentives could include appointments as IS model curriculum editors or curators.
• Explore a structured process to seek and process continuous input from the professional community, both from an academic and industry perspective. From the academic side, professional organizations such as ACM and AIS could spearhead this effort. From the practice side, the model curriculum committee could reach out and seek partnerships with organizations such as the Council of European Professional Informatics Societies (CEPIS), Association for Information Technology Professionals (AITP), IFIP, IEEE, the Society for Information Management (SIM), and the Australian Computer Society (ACS). Ensure input from both academic and professional organizations will facilitate a balance between keeping the curriculum up-to-date while controlling for including ‘fads’.
• Explore the usefulness and viability of developing a ‘curriculum designer app’. Such an app would allow IS program managers to snap together tailored IS programs based on the model curriculum by taking into account specific local requirements, educational foci, and linkages with other programs.
5.7 The IS2020 Project Organization and Timeline

Based on past experience, it is recommended that the co-chairs are available for a one-hour online meeting every week. The task force as a whole is recommended to meet online once every six weeks. A face-to-face meeting should be organized at the beginning of the work, and at least once per year during one of the major conferences (e.g. ICIS, ECIS, PACIS, AMCIS).

Annual reports should be provided to AIS VP of Education and Education Committee and ACM Education Council.

The work should be carried out during three fiscal years (July – June 2018-19, 2019-20, and 2020-2021). The work should commence soon after July 2018. The new model should be published at the 2020 ICIS conference in Delhi. All expenses should be cleared by end of May 2021.

5.8 IS2020 Awareness and Quality Assurance

The task force recommends the following baseline activities to ensure the quality of the resulting model curriculum:

- Facilitate broad feedback during the IS2020 development process through surveys, open feedback requests, and targeted interviews with members of the academic and practitioner communities.
- Provide paper presentations, panels, discussion forums, and other forms of open discussions at key AIS and ACM conferences (in particular the AIS SIGED annual meeting, AIS regional conferences, and ACM SIGCSE) during the IS2020 development period.
- Publish interim reports on the task force web site (e.g., Model Requirements, Conceptual Design, Prototype of the Model) and solicit feedback on these.
- Upon completion of a draft IS2020 model curriculum, determine the extent to which it covers curricula of leading programs in different regions. Use this assessment to further fine-tune the structure and content of the model curriculum.

5.7 The IS2020 Publication

The new model should be published as a complete report after approvals by the AIS Council and ACM Education Council. In addition, the task force should consider:

- Publishing the IS2020 model in other languages besides English, such as Mandarin, German, Arabic, Spanish, or French.
- Making available additional parts of the report on the web (e.g. 3D models).
- Preparing and making available materials for internal and external marketing.

5.8 The IS2020 Budget
Finally, it is recommended that the AIS and ACM each reserve a budget of $15,000/year for the duration of the IS2020 task force’s assignment. This amount should cover the following expense categories for the representatives of each organization:

- Flights to meetings
- Hotels
- Joint meals
- Technology costs, if necessary
- Meeting facilities, if necessary
- Logistical and consumable expenses for temporary members

Note: the amount does not include conference fees.

References


