

A Process for a Living Document and Curriculum Community

1 Introduction and Overview

Among the guiding principles provided by the exploratory task force that precipitated this version of the IS model curriculum was to consider ways to sustain the process of curriculum modeling and development in an enduring and ongoing fashion. In the midst of burgeoning digitalization and the omnipresent ubiquity of information and communication technologies, there are both strengths and weaknesses to entrusting a qualified group of volunteers of a task force for an 18-24-month period to develop an increment in the evolution of a model curriculum for undergraduate programs in information systems.

Strengths of the extant process are the focus and team dynamic of focusing a team of manageable size and scope on tasks, such that a team esprit de corps and dynamic forms. Further, the operational overhead of coordination costs are manageable such that some report is produced. What is feasible in the era of rapid digitalization is to develop a repository, and community to support and maintain it. The extension of input to a broader community provides an opportunity for the body of a model curriculum report to thrive as a “living document.”

While the basis for this concept is provided in the main body of the report, this proposal proposes a potential set of concrete plans and provisions to proceed with the living document as a component of this model curriculum report. A subset of the IS2020 task force along with a subset of members of the CC2020 task force has begun to produce the beginnings of a community whose purpose is to continue to contribute and critique elements of the IS2020 model curriculum. While this concept is presented as a first draft in an evolutionary manner, the “instruction manual” for engaging in a competency basis for curriculum design and articulation should be supported by associated sponsors.

Thus, the aims of a living document and curriculum community are:

- The provision of a repository, clearinghouse and database for competencies and competency elements as a web-based tool
- Peer and community support for the development and utilization of competencies
- The facilitation of discourse on existing and proposed curricular elements
- A participatory process whereby input and modification to a candidate model curriculum may occur on an ongoing basis
- A structured open community, designed as a foundation, based on best practices from the open-source software community.

This document outlines the processes and procedures that might be used to augment and supplement the IS2020 model curriculum report in hopes of developing the tools, support, and community that allows for the iterative and emergent development of this model, such that the period between formal reports is shorter and the capture of community input is more direct and open. Here, we outline some

of the elements and phases of this endeavor, as a commitment to this facet of the aims and goals of the IS2020 project and report.

First, we will contextualize this initiative in the context of the history of the IS model curriculum process and the opportunities and challenges of embracing a living document community. We will then provide the basis and rationale for organizing the community around the foundation concept so as to keep the focus on a common resource for the betterment of information systems and computing curriculum development. To provide a potential governance structure, we outline expected operating procedures, roles, and code of conduct for participation. As this project is meant to pick up where the IS2020 report leaves off, we provide a broad outline of expected phases towards implementation and characterization of the architectural elements that will define the artifacts that will constitute the living document community directly.

2 Executive Summary and Historical Context

Traditionally, model curriculum reports represent a snapshot in time in the form of a stable "pdf" report. To avoid lengthy revision cycles, the IS2020 Exploratory Task Force provided the history and contextual need to create this model curriculum as a *living artifact* in some form of online community where the dynamic nature of changing curricular demands could be addressed, without the need for a complete revision of an outdated artifact. Such an adaptive repository would be valuable in facilitating ongoing discussion and changing requirements. The creation of permanent guidelines that continue to be relevant and that are in perpetual flux is challenging. The need for online platforms to facilitate ongoing discussion has also been recognized in prior guidelines (IS2010 and MSIS2016). An ongoing (and thus timely) discussion would be particularly beneficial and relevant for academic program heads and faculty members who design curriculum and courses. Such discussion would support IS faculty to address new competency requirements and share implementation experiences with competency-based guidelines in different educational contexts.

The exploratory task force proposed that a joint oversight committee of some nature would be formed to provide continuously updating and interpretation of the IS2020 recommendations. Without prescribing a structure, it was envisioned as a body it functions much like a senior editorial leadership of a journal. For this concept, a proper incentive structure would be essential. The approach recommended here utilizes a combination of these elements: process governance as part of existing AIS and ACM committees, and use of traditional and on-line forums as venues for discussion. Hence, a continuous discussion will proceed as follows:

- the ongoing discussion will be governed and facilitated by formal representatives from the ACM Education Board and the AIS SIGEd
- there will be an annual panel or special session in dedicated AIS and ACM conferences that focus on IS curricular issues
- the IS2020.org site will continue to serve as a platform for discussion and knowledge sharing surrounding IS curriculum design and related research

Given the existing education-based committees (or SIGs) within the ACM and AIS governance structures, this task force recognizes the importance of developing a joint body that fits within these structures.

3 Community Management and Governance Structures

While it may seem presumptuous, a well-governed community where the value is the open contribution of those who engage with the community requires some clear outlines of norms of behavior and discourse. In this regard, we borrow from both the literature on volunteer groups and from the experiences from the open-source software community. A broad sketch of leadership and roles is as follows.

3.1 Steering Group

A Steering Group shall be responsible and have oversight of operations and the value of development work for the community:

- **Members:** representatives of participating institutions, selected on the basis of engagement to this cause, willingness to promote continuity and growth of the community
- **Responsibility:** Strategies for continued relevance and value, setting priorities for development work, recruiting people to document groups, promoting broader user engagement
- **Meetings:** Quarterly meetings

3.2 Technology and Development Group

A longer-serving group must remain dedicated to the development and maintenance of the web applications that constitute the community and tooling described in this document. This group should be limited in size and oriented towards longer-term service for the continuity of the artifacts. The Technology and Operations group shall maintain the availability of the artifacts that constitute the system.

- **Members:** One to five operations and development savvy academics with direct expertise and a willingness to involve work-study opportunities for students
- **Responsibility:** Design, development, maintenance, and deployment of all infrastructure, data, and software systems.
- **Meetings:** Quarterly meetings coincident with the steering group. Ideally, those in this group are in the steering group as well.

3.3 Document Groups

A document project group shall be responsible for the development, adoption and change of a particular document, aiming to create value for curriculum design activities of the participating universities.

- **Members:** scholars from participating institutions or registered users of the community, selected based on expertise, experience and commitment to the document group
- **Responsibility:** the development of a particular document, leading to a proposal for the Steering Group to consider and where appropriate to publish.
- **Meetings:** Typically, temporary project organizations, following an agile methodology.

4 Membership

In order to engage in the community, it is necessary to become a member of the Living Document Community (LDC). This is necessary to encourage the accountability, attribution, authentication, and authorization necessary for healthy participation in the community. Although resources would be open for read-only access and review, contributions and discussion are among the privileges of membership.

4.1 Institutional Members

The Living Document Community would best operate with input and support from institutional members: academic, municipal, and corporate.

The Living Document Community would encourage institutional membership in order to acknowledge their support and give voice to organizations and institutions interested in supporting and sponsoring the Living Document Community and a Competency-Based Computing Curricula Tool (C3T).

Institutional members would contribute resources that enable the ongoing realization of the imperatives and priorities consistent with the mission of the Living Document Community and C3T. These include but are not limited to: maintenance of the C3T tooling for competencies and curriculum development and review, sponsoring participation at academic workshops and conferences, and contributing to the ongoing development and maintenance of the facilities that keep the Living Document Community infrastructure up and running.

4.2 Benefits

Institutional members receive and participate in the organization and its governance in the following ways: Each institution would have their organization logo, details and description on a page on the site as well as a Living Document Community membership badge for use on the institutional websites. Facilitate institutional proposals for discussion topics and open forums within their interest areas. Each institutional membership would receive one individual voting right at meetings as well as an annual impact report from the Board, featuring highlights from that year's activities.

4.3 Individual Members

Individuals are also able to become members of the Living Document Community; here, there are two levels of membership: Participation, and Contribution.

Participation

Participating individual members are those who sign up with a validated academic or institutional affiliation who wish to participate in the discourse surrounding the resources that appear on the Living Document Community tools and websites. Access to this participation level is granted upon verification of affiliation. While participation in discussion and comment is possible at this level, editorial and content creation are not.

Contribution

Contributing members are appointed to the Living Document Community in recognition of their contributions to the Community by virtue of, the Community but limited to active participation in discussion and review, scholarly contributions to computing curricula, or other noted activity in the area of computing curriculum development. Thus, it is by active participation that a participating individual member becomes a contributing member with access to edit content in the community. All members may work with some aspects of the Living Document Community, but contributing members are part of the editorial oversight of the community.

4.4 Value Co-creation

A community such as the Living Document Community promises to provide a valuable consultative resource for program heads and heads of department. Significant resources to assist directly in competency-based curriculum planning through the use of the C3T are a practical priority for the community. This is also a forum to exchange experiences (and presentation materials) regarding the promotion and adoption of competency models in the curriculum design process and exchange curriculum and career track examples in different educational contexts.

Educators also can gain and provide value by participating in refining and improving IS2020 competency descriptions (e.g. Providing case studies of their own course topics). Members can contribute ideas on the choice of teaching and learning methods to enable students' competencies development and realization, including the necessary dispositions. The LDC provides its members with an opportunity to develop, share and use measurement and assessment tools to be used in evaluating students' competency levels. The Living Document Community also provides a forum to discuss the design of a particular course with other educators around the selection of competencies and to what degree and manner. Members may develop, share and use course content descriptions and materials related to a particular competency area.

Curriculum researchers will also be able to participate in the refinement and improvement of research initiatives related to competency by reviewing prior academic research surrounding a particular aspect of curriculum design. Participants can contribute to and borrow from best practices. Further, as a focus for IS curricula, it is hoped the community can serve as a nexus and clearinghouse to share academic conferences and journal publishing opportunities for curriculum-focused research and output.

5 Living Document Community and Digital Citizenship

We believe that the provision of an open community that is desirous of contributions from a broad spectrum of IS educators and research is best served by the clear identification of the mores and ethics of conduct within the community. When a number of perspectives are brought to bear on what is assumed to be related or similar phenomenon, the means to agree and disagree, and perhaps the hopes of a consensus, is an optimum outcome. However, a clear set of expectations to shape and assist discourse is a prudent investment in the long-term health and viability of any community.

It is also important to bear in mind that transactions between participants and members will primarily occur in a digital space. Within the realm of digital society, the continuous access to internet-mediated materials has become commonplace as the aggregation of curricular content removes barriers to access (remote access) and provides transparency through information provision and discourse on that information.

Through all areas of the provision of internet-mediated information, there is a need to address the continuation of discourse and documentation evolution. Therefore, our code of conduct is meant to shape and foster the main characteristics necessary to facilitate sustainable media evolution (e.g. the IS model curriculum as a living document).

5.1 Background

In an effort to provide a platform for a living artifact for a curriculum model we hope that a Living Document Community also provides a basis for the scholarly exploration of the premise of the project itself.

Governance Principles

We describe a set of principles based on a living document platform example, to produce the overarching guidelines to govern any platform for sustainable documents, media or data.

The governing organization provides information and advice to its stakeholders and any controlling body by managing relationships between the governance group and other parties, e.g. higher authorities, industry and other users. Its role is to develop strategies to maintain continuity and relevance in terms of the content and the platform/organization longevity. In doing so, it sets priorities in terms of development, how the system and the community are managed and enhanced. Over time this will also lead to change management and the adoption of ideas and technology as time progresses. To complete these tasks, it must recruit people to manage elements of the system and the associated ecosystem. In these tasks, a holonomic method of operation is envisioned where the assumption of responsibility for the care of the community is its own motivation and reward to the persistence of the community such that its goal-seeking behavior is perpetuated.

The composition of the organization will be dependent on the scale and resources available to it. In general, it should consist of a top directorial governance board having roles to manage all elements of day-to-day practice from the publication, organization, the user groups and industry engagement. Therefore, membership should be broad enough to gain feedback, but narrow enough to be manageable.

As well as the day-to-day running of the organization, regular meetings must occur. These meetings should be arranged, as necessary, facilitating attendance through a wide range of media. As is customary for such a meeting, an agenda should be circulated, and documents, minutes and addenda be available to the governance group.

As an example of a Living Document Community governance structure, the task force proposes the following board of directors structure.

5.2 Board of Directors

The board shall be responsible for resources, and formal reporting and communication with founding and collaborating organizations:

- **Members:** representatives of the ACM and AIS, education boards or SIGs, Steering Group Chair, Technical developers
- **Items:** Reporting to ACM and AIS or other founding organizations
- **Meetings:** Minimum once per year

The board shall be responsible for accountability to the membership for progress on the core mission and updates on the health and well-being of the project.

Role	Tasks
President	Presides over the board Decisions on the day to day running of the system Provides direction Engagement
Vice President	Assists (above) and provides more hands-on management with the system
Secretary	Keeps the minutes and records of the board
Treasurer	Accounts for any contributions made for the maintenance, upkeep, and promotion Actions payments and financial accounting Provides period financial statements as required
ACM Representative	This person should be a representative from the Education Board of the ACM.
AIS Representative	This person should be a representative from the AIS special interest group on Education (SIGEd).
Technical Lead	Ensures the design and development of all applications, systems, and interfaces are consistent with the goals of the Living Document Community and C3T as directed by the membership and the board.
Editorial Lead	Oversees the editorial aspects of the Living Document Community.
Operations/Data Lead	Ensures that all tools, systems, and facilities are operational and maintained.

6 Living Document Community Foundation Goals

This foundation identifies several goals which it endeavors to address and support. In the first instance, its focus is on the support of both individuals and institutions who wish to browse, develop, or discuss computing curricula from a competency perspective. It aspires to advance state of the art in curriculum development, through an open-source model. Through this platform, the Living Document Community will promote the use of the Competency-Based Computing Curricula Tool (C3T) and Living Document Community features among the world-wide computing education community his model will promote

and sustain open access for all resources while protecting the intellectual property and the Living Document Community's framework's long-term viability as a focal point for competency-based computing curricula exploration. Continued community engagement will be the promotion of the Living Document Community by sponsoring panels, workshops, research, conference sessions, social media and community events.

What is supported?

An internet-mediated platform will be used to provide the infrastructure to house and service the community who choose to engage with the content managed. A statement or manifesto which expresses the purpose and function of the site allows for a transparent structure facilitating the structure of content, expressions of opinions, and the promotion of community engagement with users.

Who is supported?

Through a governed platform, a number of different stakeholders will be supported. In order to provide stability to the organization, decisions on membership and levels of access to the system must be defined as well as any membership fees or contribution expectations. Membership incurs a fee which may be institutional or individual. Each type of membership also has different levels of influence and engagement.

Events and Promotion

In order to garner participation and maintain focus on the Living Document Community's goals, it is expected the board and membership regularly participate in curriculum-related scholarly activities such as, but not limited to: workshops, panels, papers, presentations, and related fora for sharing and disseminating both the value of the project/foundation and in the general shaping and design of computing curricula and the issues that surround this endeavor. Some link to these activities and both individual and institutional membership should be articulated, planned, and accounted for by the board of directors. On an annual basis, some or all of these activities should be planned and supported. Institutional members shall endeavor to oversee, validate, and support the activities of members as meaningful professional contributions to scholarship.

6.1 Code of Conduct

A code of conduct should exist as integral to the charge and charter of the Living Document Community. The Living Document Community exists, in part, to support and promote the interests of the community. The utilization of resources and support should reflect the interest of the membership and community.

Mutual respect and courtesy among members and the broader academic community facilitate a healthy and functioning community. As an imperative, the community is designed to attract and support must remain vigilant on matters of access, equity, and diversity.

The Living Document Community shall maintain a code of conduct which includes general protections and a clear system for reporting and accountability.

Code of Conduct Outline

The Living Document Community is dedicated to a harassment-free community experience for everyone, regardless of gender, gender identity and expression, sexual orientation, disability, physical appearance, body size, race, age or religion. The community will not tolerate harassment of community participants in any form. Community participants violating these rules may be sanctioned or expelled from the community at the discretion of the Living Document Community board.

Enforcement

Community members that are asked to stop any harassing behavior are expected to comply immediately. If a member engages in harassing behavior, the Living Document Community board retains the right to take any actions to keep the community as a welcoming environment for all participants. This includes warning the offender through to expulsion from the community.

The Living Document Community board may take action to redress anything designed to or with the clear impact of, disrupting the community or making the environment hostile for any members. We expect members to follow these rules at all times.

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Phases and Milestones

In parallel with the release of the final IS2020 report, the Living Document Community is planned to progress along with these milestones and phases:

Phase 1

- Living Document Community and C3T websites are available
 - Living Document Community houses the community and discursive elements
 - C3T houses the repository and tools
- Initial features for Living Document Community in phase one:
 - Ability to sign up and establish membership
 - Individual members' academic affiliation will be verified
 - OAuth2 connect to other authentication entities
 - Ability to review elements of the current IS2020 draft
 - Ability to comment on elements of the current IS2020 draft
 - Ability to participate in open forum discussion
- Initial features for C3T in phase one:
 - Review all competencies, competency areas, competency realms, and constituent elements, from the IS2020 report
 - Ability to build a competency
 - Development Knowledge Elements
 - Knowledge Element pair tagging

- Knowledge Element attribution using the ACM CSS
- Knowledge-Skill pair selection
- Competency description
- Disposition selection

Phase Two

- Features for Living Document Community in phase two:
 - Ability to assign governance and maintenance roles
 - Ability to suggest revisions
 - Ability to suggest new content
 - Ability to discuss new proposals in open forum discussion
- Features for C3T in phase two:
 - Compare two competencies
 - Provision of an API for further processing and visualization
 - Versioning for competencies
 - Task definition

Phase Three

- Features for Living Document Community in phase two:
 - Ability to provide various levels of membership
 - Ability to provide versioning for report elements
 - Ability to suggest new curricular areas and relationship to other computing disciplines
 - Ability to vote on priorities for new proposals
- Features for C3T in phase two:
 - Extensive search and filtering for competencies
 - Ability to save a set of competencies for program coverage
 - Ability to derive from existing competencies
 - Competency to task mapping