

# MSIS2016: A competency model for designing curricula for Master of Science in Information Systems programs

Helena Karsten

Co-chair of the MSIS2016 task force, Association for Information Systems

Senior lecturer, Åbo Akademi

Visiting professor, Aalto and University of Jyväskylä

# Information Systems

- (suomeksi tietojärjestelmätiede, på svenska informationssystem)
- studies developing and using information technology in organizational processes, with a specific focus on processing data.
- Specific domains: business, finance, law, health, education, ....
- Main tension in constant changes
  - Information and communication technologies (ICT) are developed constantly
  - Methods of IS development likewise
  - New domains turn to ICT

# Competence, competency

*Competencies represent a dynamic combination of cognitive and metacognitive skills, demonstration of knowledge and understanding, interpersonal, intellectual and practical skills, and ethical values.*

Lockoff et al. (2010, p. 21)

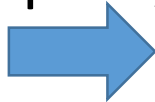
# Dublin Descriptors

Graduates need:

- To “have demonstrated knowledge and understanding that is founded upon and extends and/or enhances that typically associated with Bachelor’s level, and that provides a basis or opportunity for originality in developing and/or applying ideas, often within a research context”
- Be able to “apply their knowledge and understanding, and problem-solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study”
- “Have the ability to integrate knowledge and handle complexity, and formulate judgments with incomplete or limited information, but that include reflecting on social and ethical responsibilities linked to the application of their knowledge and judgments”
- Be able to “communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously”, and
- To “have the learning skills to allow them to continue to study in a manner that may be largely self-directed or autonomous”

(Bologna Working Group, 2005)

# From USA centered to global coverage

- An MSIS degree comprises at least 30 semester hours (USA)/ 60 ECTS credits (Europe) and requires at least 11 months of full-time study (or an equivalent amount of part-time work). This total should not include possible bridge modules in IS and/or the domain of practice.
- USA: MSIS is a professional practice master's degree -> 11 months
- Some parts of Europe: Preparation for research studies with a written thesis -> 2 years
- Local regulations vary much regarding structure and length of Master's programs
- In several countries, competence models already used (Australia, Singapore, Japan, ...)  
 We decided to build a model based on competences

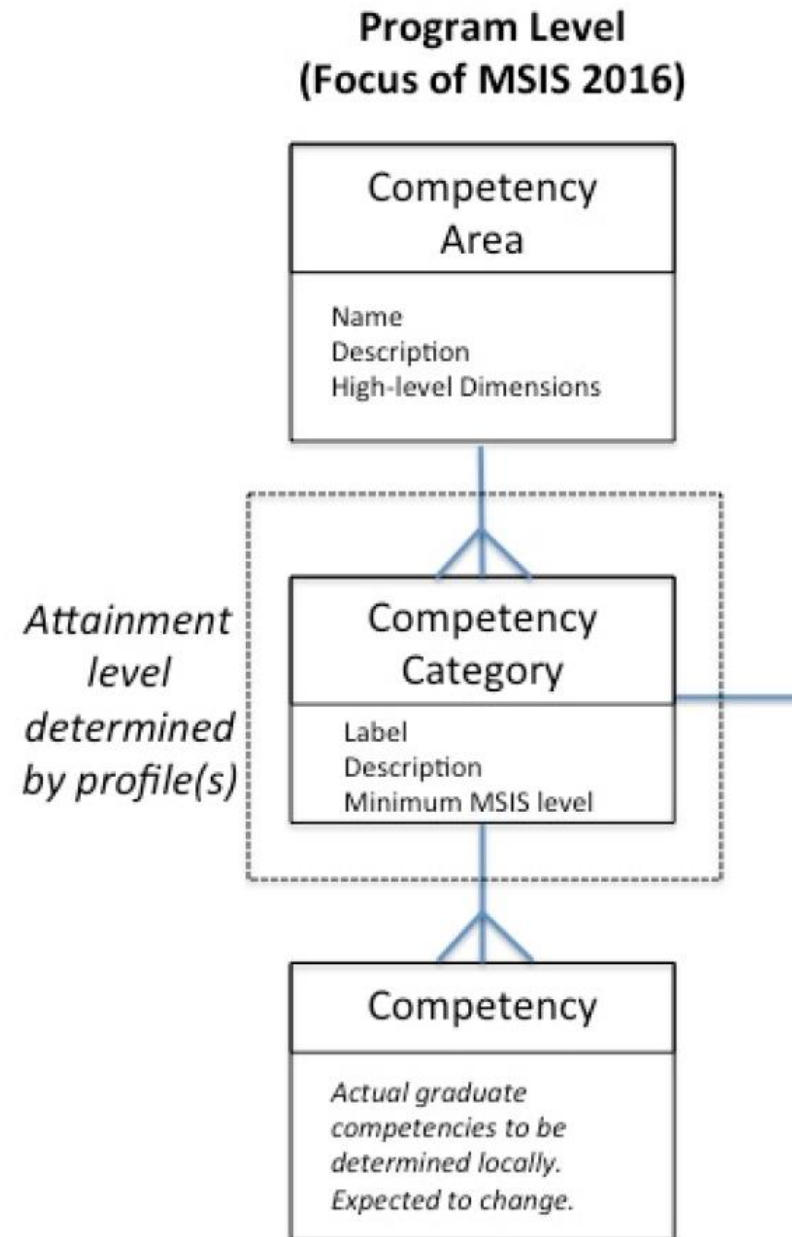
# Main professional competence frameworks consulted

- SFIA
  - SFIA Foundation. (2015). *SFIA6: The complete reference guide*. SFIA Foundation. Retrieved from <https://www.sfia-online.org/en/sfia-6/documentation>
- e-cf
  - CEN (2014) *User guide for the application of the European e-Competence Framework 3.0*. CWA 16234:2014 Part 2.
- DQP
  - Adelman, C., Ewell, P., Gaston, P., & Schneider, C. G. (2014). *The degree qualifications profile: A learning-centered framework for what college graduates should know and be able to do to earn the associate, bachelor's or master's degree*. Lumina Foundation. Retrieved from [http://degreeprofile.org/press\\_four/wpcontent/uploads/2014/09/DQP-web-download.pdf](http://degreeprofile.org/press_four/wpcontent/uploads/2014/09/DQP-web-download.pdf)

# Focus on knowledge, skills and attitudes

- Earlier recommendations listed courses (both core and elective/specialized) with learning objectives and topics
- Body of Knowledge: hierarchical knowledge area / knowledge unit / topic
- Focus was on cognitive aspects of learning, leaving out applicable attitudes and skills
- We wanted to turn to experiential learning with focus on competences at the time of graduation
- Our chosen structure seeks to be sufficiently general to allow local implementations to vary and to have a longer life span than specific examples of learning outcomes and competences.

# Structure of MSIS 2016





# Structure of the competency model

## Specialized Competencies

Additional information Systems competencies that build on the core competencies and allow the graduates to perform more sophisticated tasks and act in more specialized professional roles.

## Core Competencies

### Areas of Information Systems Competencies

- Business Continuity and Information Assurance
- Data, Information and Content Management
- Enterprise Architecture
- Ethics, Impacts and Sustainability
- Innovation, Organizational Change and Entrepreneurship
- IS Management and Operations
- IS Strategy and Governance
- IT Infrastructure
- Systems Development and Deployment

### Areas of Individual Foundational Competencies

- Critical Thinking
- Creativity
- Collaboration and Team work
- Ethical Analysis
- Intercultural Competency
- Leadership
- Mathematical and Statistical Competencies
- Negotiation
- Oral Communication
- Problem Solving
- Written Communication

### Areas of Domain Competencies

Core competencies in a domain of human activity such as business, government, health care, law, a field of scientific research, etc.

## Areas of Information Systems Competencies with Pre-master's Elements

- Data, Information and Content Management
- IS Management and Operations.
- IT Infrastructure
- Systems Development and Deployment
- Role of Information Systems in Organisations (Foundational Understanding of IS)

**Professional Profile: IT Consultant/Systems Analyst (US architectural model; 10 three semester credit courses).**

<b>Bridge Modules in IS</b>	As needed, depending on student background
<b>Bridge Modules in Domain of Practice</b>	As needed, depending on student background
<b>Required Modules</b> in IS (include elements developing individual foundational competencies)	<ul style="list-style-type: none"><li>• Advanced Systems Design and Development Creating Domain Value with Data</li><li>• Enabling Innovative Organizational Change with IT</li><li>• Enterprise Architecture and Systems Infrastructure</li><li>• Integrated Capstone</li><li>• IS Project Management</li><li>• IS Strategy and Management</li><li>• User Experience Design</li></ul>
<b>Elective Modules</b>	Two electives based on the specialized focus of the program

**Professional Profile: Start-up Entrepreneur (Bologna architectural model, eight courses, two projects and thesis).**

<b>Bridge Modules</b>	None
<b>Required courses</b>	<ul style="list-style-type: none"><li>• Creating Domain Value with Data</li><li>• Advanced Systems Development (including UX)</li><li>• IS Strategy and Management</li><li>• Enabling Innovative Organizational Change with IT</li><li>• Enterprise Architecture and Systems Infrastructure</li><li>• Sustainable Start-up</li><li>• Intellectual Property Rights</li><li>• Research Methods</li></ul>
<b>Required projects</b>	<ul style="list-style-type: none"><li>• Building Digital Services</li><li>• Starting a Company</li></ul>
<b>Master's thesis with a seminar</b>	

# Reference

Topi, Heikki; Karsten, Helena; Brown, Sue A.; Carvalho, João Alvaro; Donnellan, Brian; Shen, Jun; Tan, Bernard C.Y.; and Thouin, Mark F. (2017) "MSIS 2016 Global Competency Model for Graduate Degree Programs in Information Systems," *Communications of the Association for Information Systems*: Vol. 40 , Article 18.  
Available at: <http://aisel.aisnet.org/cais/vol40/iss1/18>