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Work Package 1 (WP1, Task 1.1) Handbook

PREPARATION: REQUIREMENTS ANALYSIS

Establishing Modern Master-level Studies in Information Systems

561592-EPP-1-2015-1- FR-EPPKA2-CBHE-JP

Version 1.0



WP1 Lead Organisation:

Kaunas University of Technology, Lithuania (P4),

National Technical University of Ukraine "KPI", Ukraine (P11)

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		Phone		
Responsible Author	KTU (P4)			
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WP1 team contacts

	Name	e-mail	Skype
NTUU KPI	Tetiana KOVALIUK	tetyana.kovalyuk@gmai.com	
KTU	Rimantas Butleris	rimantas.butleris@ktu.lt	rimasb
KTU	Kestutis Kapocius	kestutis.kapocius@ktu.lt	kkestas-2
KhNUE	Iryna USHAKOVA	iryna.ushakova@hneu.net	
LPNU	Ivan IZONIN	ivanizonin@gmail.com	
VNTU	Sergiy DOVGALETS	smdov@i.ua	
KSU	Vitaliy KOBETS	kobetz@ukr.net	
NTU KhPI	Olga CHEREDNICHENKO	olha.cherednichenko@gmail.com	marxx.olga
UDG			
UNIM			

Work package type and ref.nr	Preparation		WP1
Title	Requirements Analysis		
Related assumptions and risks	A: Consortium members & employers are willing to cooperate in training process and develop/ publish/ purchase curriculum & teaching materials; A: PC HEIs' administration & educational authorities are committed to the project goals and interested to create and support contacts with business; Risk: Lack of feedback from business; Risk: Changing in EU and PC visa policies.		
Description	Identification of the current approaches to the educational process. Analysis of the needs of companies, graduates and students in IT industry. Nomination of teachers to participate in the Program development. Meetings in EU for learning EU HEIs' DPs & curricula.		
Tasks	1.1. Identify Requirements for IS MSc (month 1-3; all EU&PC). 1.2. Workshops for PC Methodologists (month 4; P2); (month 6; P4). 1.3. Analyse Current MPIS Curricula (month 4-6; P4, all PC).		
Estimated Start Date (dd-mm-yyyy)	Month 1	Estimated End Date (dd-mm-yyyy)	Month 3
Lead Organisation	P4 NTUU KPI (EU), P11 KTU (PC)		
Participating Organisation	P1-P15, P17, P18		

Task 1.1 Stakeholders Requirements to MASTER in Information Systems (month 1-3; all EU&PC).

This deliverable will be achieved by the activity 1.1 “Identify Requirements for IS MSc”.

Organization of network between stakeholders in Ukraine and EU.

A detailed study of the IT-industry needs. This study will result from:

- interviews and company visits,
- discussion with students, graduates.

This study will improve cooperation between HEIs, IT-industry in PC, increase students and LLL trainees' competitiveness on the National and European labour markets.

Core Assumptions

- Global focus
- Building a profession – not just occupations
- Body of knowledge vs. competences – focus on the latter
- Short-term realities vs. long-term needs
- Entry requirements to the programs
- Outcome expectations of the graduates
- Structure of the curriculum
 - Program length,
 - IS courses,

- domain courses,
- industry projects,
- thesis,
- internships,
- exchange periods,
- student work required

1. How to work with employers (experienced at KNUE – P10)

Stakeholders:

- CEO of IT company;
- IT department in
 - o industrial or commercial company,
 - o bank;
 - o government;
 - o area of science research;
 - o healthcare;
 - o law;
- Start-up or Entrepreneur;
- other

Approaching the respondents:

- Meeting at the University
- Visit the company
- Presentation on IT cluster meetings
- Call to friends
- Ask Department of students employment the contacts of companies
- Call of representatives of companies
- Alumni

At the beginning of the meeting, we have to explain representatives of business:

- **MASTIS: objectives and outcomes**
 Wider objective is to improve Master Program in Information Systems according to the needs of the modern society;
 - to bring the universities closer to changes in global labour market and world education sphere;
 - to enable them to stay responsive to employers' needs;
 - to give students an idea of various job profiles in the Information Systems domain;
 - to ensure employability throughout graduates' professional and soft skills.

Specific project objectives are:

- improvement of Master Program in Information Systems according to the requirements of business;
- modernization of the current Degree Profile and curricula in Information Systems. Degree Profile and Curricula revision will be implemented in accordance with the newest standards of Higher education and the compatibility with the National qualification frameworks;
- development of innovative academic environment for Master program of Informational Systems as a platform for training/retraining, PhD, LLL;
- provision/modernization of labs infrastructure for Information Systems.

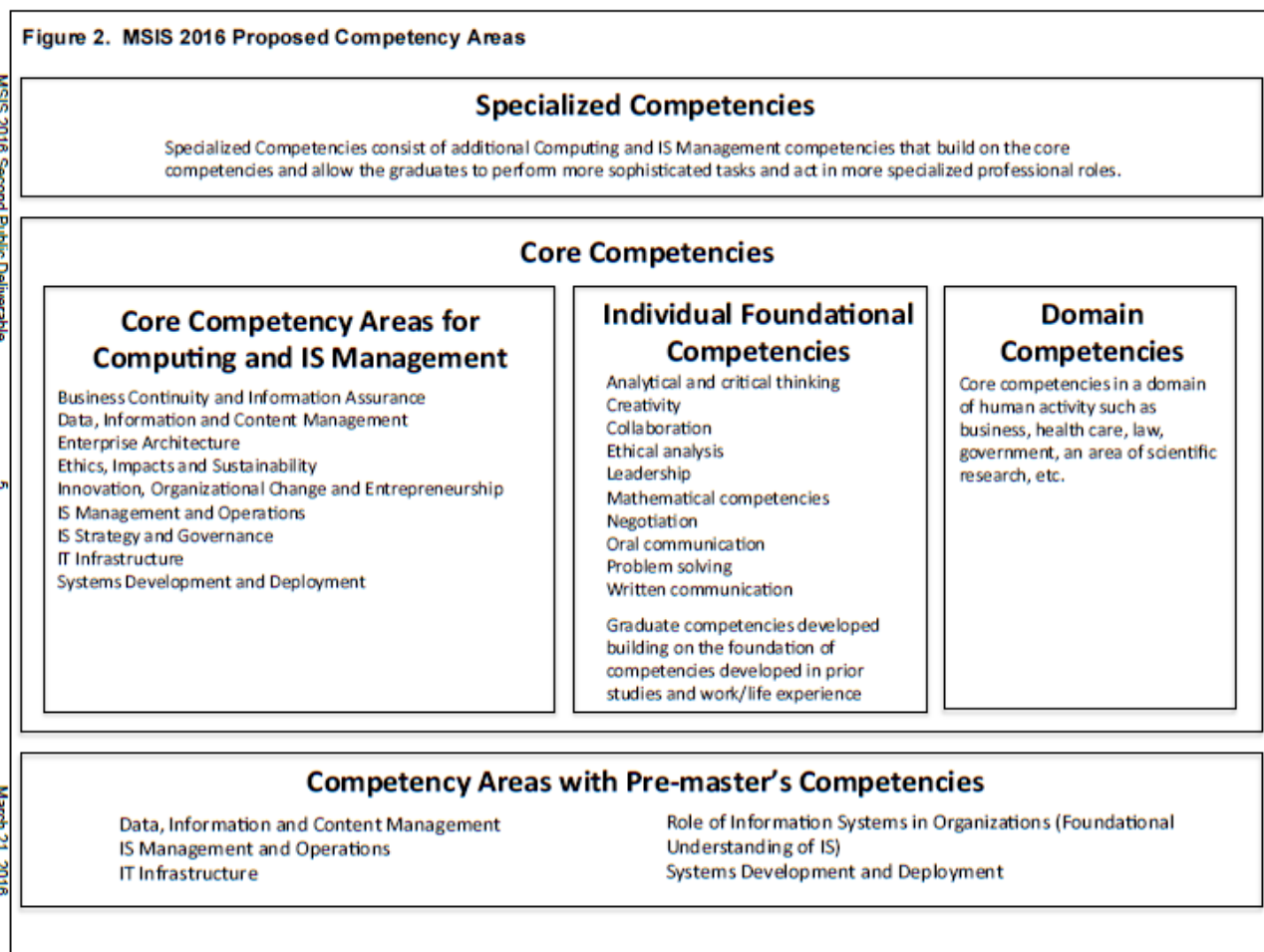
- what is Master’s degree according to National Qualification framework?

The ability to solve complex problems and issues in a in a certain field of professional activity or in the learning process, which involves research and/or implementation of innovation and characterized by uncertainty of conditions and requirements			
Knowledge	Skills	Communication	Autonomy and responsibility
Specialized conceptual knowledge acquired during training and / or professional activities at the latest achievements that are basis for original thinking and innovation, particularly in the context of research	Solving complex problems and issues which need the renovation and integration of knowledge, often under conditions of incomplete / insufficient information and conflicting requirements	Clear and unequivocal report their conclusions and knowledge and explanations that justify them, to specialists and non-specialists, particularly to those who are studying	Decision-making in complex and unpredictable conditions which requires new approaches and forecasting

- discuss with them the 1st working place for young alumni of Master in Information Systems:
- discuss existing Information and Communication Technology (ICT) competences frameworks (e-CF, SFIA, ...)
- ask representatives of business about requirements from employers (competences)

Competences (Tuning Guide)

- Competences represent a dynamic combination of cognitive and metacognitive skills, demonstration of knowledge and understanding, interpersonal, intellectual and practical skills, and ethical values. Fostering these is the object of all educational programs.
- Competences are developed in all course units and assessed at different stages of a program. Some competences are subject-area related (specific to a field of studies), while others are generic (common to any degree program).
- It is normally the case that competence development proceeds in an integrated and cyclical manner throughout the program.



MSIS 2016 Second Public Deliverable

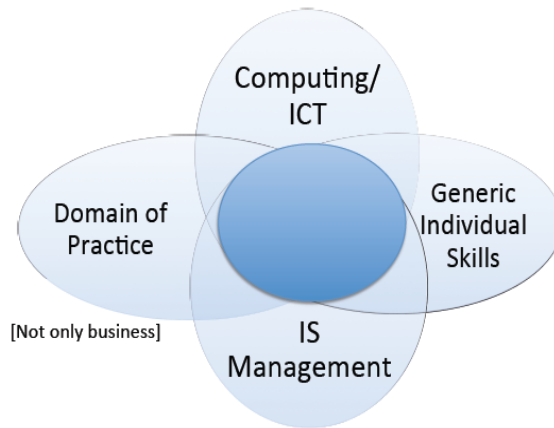
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March 21, 2018

Link to the “MSc Information System curriculum ACM-AIS” MSIS 2016:

https://www.dropbox.com/s/uze04o4ivzmsx4y/MSIS2016_second%20deliverable_3-21-2016.pdf?dl=0

Elements of a Master's Level Degree Program in IS



Competency Areas (MSc Information System curriculum ACM-AIS MSIS 2016):

1. **Business Continuity and Information Assurance**
2. **Systems Development and Deployment**
3. **Data, Information and Content Management**
4. **Ethics, Impacts and Sustainability**
5. **Enterprise Architecture**
6. **IS Strategy and Governance**
7. **Innovation, Organizational Change and Entrepreneurship**
8. **IS Management and Operations**
9. **IT Infrastructure**

	Not important at all	Very unimportant	Somewhat important	Very important	Extremely important
1. Business Continuity and Information Assurance					
1.1. Managing and implementing cybersecurity					
1.2. Monitoring system operations					
1.3. Managing system recovery					
1.4. Managing Information Systems risks					
1.5. Protecting IT assets					
1.6. Developing information assurance strategy					
1.7. Continuity engineering					
1.8. Implementing and managing quality audit processes					
1.9. Assuring safety throughout systems lifecycle					

2. Systems Development and Deployment					
2.1 Selecting between systems development approaches					
2.2 Managing plan-based, hybrid, and agile development approaches					
2.3 Specifying and documenting systems requirements					
2.4 Implementing and testing an application					
2.5 Designing systems					
2.6 Installing and integrating a new application					
2.7 Managing external systems development resources					
2.8 Managing IS development projects					
3. Data, Information and Content Management					
3.1. Selecting appropriate data management technologies based on the needs of the domain					
3.2. Securing domain data and protecting user privacy and organizational intellectual property using appropriate technical solutions					
3.3. Designing and implementing a data warehouse using a contemporary architectural solution					
3.4. Creating a scalable infrastructure for large amounts of data using parallel and distributed technologies					
3.5. Developing and implementing organizational information management policies and processes					
3.6. Integrating and preparing data captured from various sources for analytical use					
3.7. Selecting and using appropriate analytics methods					
3.8. Designing and implementing architectures for organizational content management systems					
4. Ethics, Impacts and Sustainability					
4.1. Designing and managing sustainable IT operations					
4.2. Managing IT facilities sustainably					
4.3. Aligning IT with organizational sustainability policy					
4.4. Managing sustainable procurement practice					
4.5. Managing contracts ethically					
4.6. Maintaining compliance with legislation, regulations, and standards					
4.7 Ensuring that protection of privacy and integrity guide all IT practices					
4.8 Maintaining an ethical culture					
4.9 Understanding the ethical implications of IS-related decisions					
5. Enterprise Architecture					
5. 1. Understanding enterprise architecture principles and the value it provides to businesses					
5.2. Participating in building and maintaining an EA					
5.3. Communicating and deploying an EA					
5.4. Using an EA to influence IS/IT related organizational improvement projects					

6. IS Strategy and Governance					
6.1 Conducting IS strategic analysis					
6.2 Managing IS/IT sourcing strategies					
6.3 Engaging in IS strategic planning					
6.4 Planning and implementing IS governance					
6.5 Planning for and improving sustainability					
7. Innovation, Organizational Change and Entrepreneurship					
7.1. Understanding where and how to monitor the technology environment					
7.2 Engaging in entrepreneurial thinking					
7.3 Developing a business plan					
7.4 Innovating by exploiting an emerging method or technology					
7.5 Understanding how to apply creative problem solving to technology-related issues					
7.6 Contributing to organizational development					
7.7 Identifying opportunities for and designing process improvement					
7.8. Analyzing and documenting business activities					
8. IS Management and Operations					
8. 1 Know and apply widely used Project Management tools and techniques					
8.2 Managing the IS/IT function					
8.3 Managing IS/IT staff					
8.4 Managing IS/IT service production					
8.5 Managing IS/IT sourcing models					
8.6 Managing and coordinating information resources					
8.7 Implementing relevant IT governance frameworks within the organization based on strategic guidance					
8.8 Understanding laws and regulations directly affecting IS/IT management and operations					
8.9 Managing IS/IT projects and programs					
8.10 Managing IS/IT project portfolios					
8.11 Managing software and hardware development and maintenance					
9. IT Infrastructure					
9.1 Specifying and monitoring infrastructure contracts					
9.2 Negotiating contracts and managing infrastructure vendors					
9.3 Risk infrastructure management					
9.4 Designing virtualization solutions					
9.5 Designing infrastructure solutions using external service provider(s) (cloud computing)					
9.6 Maintaining a set of standards and policies and understand the key laws and regulations to relevant infrastructure decisions					
9.7 Monitoring emerging technologies to understand their potential to support the domain					

So, what each university has to do?

For “Organization of network between stakeholders in Ukraine and EU” (Process, Successes, difficulties and solution)

⇒ Write a report about networking. Link to the template:

https://docs.google.com/forms/d/e/1FAIpQLSd7vDzSBsX1eZskUB3KvUDNfULDqSax9IB3rxq8alNe7Js_UQ/viewform?c=0&w=1

- Explain how you are collecting and maintaining lists of IT companies and IT departments, with CEO & Head’s names, phone numbers, e-mail addresses, etc.
- Did you mobilize your personal and friend’s contacts?
- Is it a new task in your university?
- Was it the task of someone in your department or faculty?
- The same for alumni contacts: collecting and maintaining lists. Is it a new task? Someone task?)
- Does this project help you to organize a real living network with alumni, and people who have some of your alumni as employees?

For “A detailed study of the IT-industry needs. This study will result from interviews and company visits, discussion with students, graduates and improve cooperation between HEIs, IT-industry in PC, increase students and LLL trainees’ competitiveness on the National and European labour markets.”

- ⇒ The Work-Package leaders (Kyiv polytech. and Kaunas) did prepare an **online survey** for IT-industry, and some universities collected responses. **The Work-Package leaders will analyse those data and prepare a report**, about industry needs (in general, and if possible for some sectors).
- ⇒ In Roma and Kaunas meetings, we decide to use also **face-to-face meeting interviews**, as planned in the project. See “How to work with employers” (above, page 4)
- ⇒ Another quick, easy and effective way to collect information is to **ask people to rank items** in 4 or 5 packs (essential, very important, important, less important). For that, print items in papers, professional card format, an item on each paper, give the items (in a random order) to people and ask him to put them in the 4 or 5 packs (with a maximum number in each pack, to oblige them to hierarchize the items, not to say that all are very important). We *had* used this method in many surveys with different population of CEO, heads of department, medical doctors, etc. People accepted it because it is easier to manipulate cards than to grade items.

AND usually, people speak during this manipulation and explain their choice; so you can collect a lot of free opinion and information from them.

Technically, we type the items in a table in Microsoft Word, in the “recto” page”, and the item n° in the same cells in the “verso”; print the page “recto/verso”, cut the cards (table cells). Prepare 4 large envelopes on which you write the scale grade (1-essential, 2-very important, 3-important, 4-less important). At the end of the interview, put the cards in the 4 envelopes with the name of the interviewed person.

RECTO Page (item labels)

<p>Business Continuity and Information Assurance: Managing and implementing cybersecurity</p>	<p>ffffffffffffffffffffffffffff</p>
<p>Business Continuity and Information Assurance: Monitoring system operations</p>	<p>gggggggggggggggggg</p>
<p>Business Continuity and Information Assurance: Managing system recovery</p>	<p>hhhhhhhhhhhhhhhh</p>
<p>dddddddddddddd</p>	<p>iiiiiiiiiiiiiiiiiii</p>
<p>eeeeeeeeeeeeeeee</p>	<p>jjjjjjjjjjjjjjjjjjjj</p>

BACK Page (item number, to carry forward the information on the table, for statistics)

Item n.n	Item 1.1
Item n.n	Item 1.2
Item n.n	Item 1.3
Item n.n	Item n.n
Item n.n	Item n.n

Back to your office, it is easy fulfil the Excel table:

Interviewed # :	
Institution:	
Responsibility:	
Interviewer:	
Region:	
Date:	
	Grade, 1-essential, 2-very important, 3-important, 4-less important
Managing and implementing cybersecurity	2 (for instance)
Monitoring system operations	1 (for instance)
Managing system recovery	4 (for instance) ...
Etc.	

Useful materials and resources:

- How to Design an Employee Engagement Survey with best practices and sample content
- [MSIS 2016 REVISION PROCESS \(The joint ACM/AIS task force\) Creating the next generation MSIS curriculum recommendation](https://msis2016review.wordpress.com/) <https://msis2016review.wordpress.com/>
- Bentley University survey (4 IS areas & 40 competences)
https://bentley.co1.qualtrics.com/jfe/form/SV_eVVBjCUUM6BoZnf

To prepare a “semi-directive” interview questionnaire that is a list of open-ended questions. Some examples (only examples, to stimulate debate...):

- (easy question to introduce the interview) Have you recruited IT people during the last 12 months?
 - How many? How many IT *bachelor's degree*? How many *master's degree*?
 - For what tasks, *bachelor's degree* IT people?
 - -
 - -
 - -
 - -
 - Why did you recruit *bachelor's degree* IT people?

- If you have recruited IT people in the last 12 months?
 - How many young IT *master's degree* (Specialist, Magister, Master)?
 - For what tasks, IT *master's degree* people?
 - -
 - -
 - -
 - -
 - Why did you recruit IT *master's degree* people?

- What are the chief qualities possessed by people who have studied IT at the Ukrainian universities?
 - ... and their other qualities?
 - ... and? ... and? ... and?
 - the chief qualities possessed by IT *bachelor's degree* people?
 - the chief qualities possessed by IT *master's degree*?
 -

- What is the main failure of the education provided in University to meet the needs of your company?
 - ... and their other failures?
 - ... and? ... and? ... and?
 - the main failure of the IT *bachelor's degree* Ukrainian people?
 - the main failure of the IT *master's degree* Ukrainian people?

- How university quality education could be improved?
 - Kind of competencies?

- Subject of the courses?
- What to add in the curricula?
- What to remove?
- What about university teaching methods?

At the end of the interview, do not forget to write the company/organisation size. And its activity. The position of the respondent, his/her age, the education he/she received at university (speciality and level) and after university?