Block 1: Introduction – Overview, Requirements, Knowledge Profiles

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Juliane Herzog, MSc.
University of Applied Sciences Technikum Wien

University of Applied Sciences (UAS) Technikum Wien – Hochtstaedtplatz and ENERGYbase
Austria’s Largest Purely Technical UAS

- 2013 | Moved into the new building at Hoechstaedtplatz
- 2011 | Start of construction of the new building at Hoechstaedtplatz,
- 2008 | Moved into the second location at ENERGYbase
- 2004/05 | Degree programs switched to bachelor’s/master’s system
- 2003 | Opening of the headquarters at Hoechstaedtplatz
- 2000 | Became Vienna’s first university of applied sciences
- 1994 | Founded at the initiative of FEEI – Association of the Austrian Electrical and Electronics Industries and respected industrial enterprises
Organization

- **Institution | University of Applied Sciences Technikum Wien**
  - ~ 3,100 students, about 6,000 alumni
  - 28 degree programs: organization of the courses of study, development and advancement of the curricula
  - 16 departments: technical know-how and expertise in the areas of instruction and research
  - 4 study centres
  - Steering and decision-making committee: University of Applied Sciences Council

- **Operator | University of Applied Sciences Technikum Wien Association**
  - Overall financial and legal responsibility
Research & Development

- Four main areas of research
  - Embedded Systems
  - Tissue Engineering
  - eHealth
  - Renewable Energy

- Funded R&D projects | contract R&D projects

- Among the top 5 in the UAS sector in terms of research & development
  - At the moment 3 major FHplus structural development projects (Embedded Systems, Tissue Engineering, eHealth) at the moment
  - Currently about 40 funded research projects
  - Appr. 20 innovation checks every year

- Josef Ressel Centre for Verification of Embedded Computing Systems
Funded project: eLearning4eHealth Network

- **Project overview**
  - International eHealth experts network
  - Development of internationally coordinated teaching and certification programs
  - Offers for academic and vocational education

- **Current activities**
  - Determination of the current status quo in education in eHealth
  - Survey of requirements of different user groups
  - Development of knowledge profiles
Study: State of the art in education in eHealth

- Selection criteria of relevant educational services
- Internet based literature research
- Definition of three target professions
- Definition of three main thematic content categories
- Evaluation criteria
- Status analysis
  - Division into two analysis: All educational services and certification programs
Study: State of the art in education in eHealth

- 211 programs, 47 certifications

![Figure 1. Occurrence of thematic sub-areas in certification programs according to the professions. Left: Within the EU; right: Within the US.](image-url)
Study: State of the art in education in eHealth

- Great variety of educational programs
- Uneven distribution between target audiences
- Offerings adjusted to education for individual professions
- High presence of certification programs in the academic area in the US
  - Designed to meet the requirements of a broader target group
- Difference between EU and US: Coverage of the FML domain
- Importance of Standardization
- Programs not internationally coordinated and harmonized
Survey - Requirements of user groups

- Basis: Analysis of contents of educational programs
- Participants:
  - Network partners
  - IHE Austria
  - HL7 Austria
  - Austrian Medical Chamber
  - Students from the University of Applied Sciences Technikum Wien
Survey - Requirements of user groups

- Structure of the questionnaire
  - Personal information
  - Field of activity
  - eHealth
    - Relevance of applications
    - Use of knowledge areas related to eHealth
    - Opinion on content within the education in eHealth

- Responses: 61 questionnaires
  (41 professionals, 20 students)
Survey - Requirements of user groups

- Differentiation in professionals and students
- Further filtering criteria:
  - Profession
  - Education
  - Gender
  - Work experience in general and in eHealth (professionals)
  - Interest in eHealth (students)
Survey - Requirements of user groups

- Students (n=20)

<table>
<thead>
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<th>Age</th>
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<td>Rather strong</td>
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<tr>
<td>I do not know the term.</td>
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Table 1. Characteristics of the students

Figure 2. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of students
Survey - Requirements of user groups

- Professionals (n=41)

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<thead>
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<td>For 30 years and longer</td>
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Table 2. Characteristics of the professionals
Survey - Requirements of user groups

- Professionals (n=41)

**Figure 3.** The 5 most and the 5 least used knowledge areas to work in the field of eHealth of all professionals

**Figure 4.** The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of all professionals
Preliminary results: First drafts of knowledge profiles

- Examples for roles
  - Physician
  - IT Architect
  - Lawyer

- Selected thematic content categories
  - IT/Engineering
  - Healthcare
  - Finance/Management/Law
Preliminary results: First drafts of knowledge profiles

<table>
<thead>
<tr>
<th>Thematic content category</th>
<th>Knowledge Area</th>
<th>Module</th>
<th>Physician</th>
<th>IT Architect</th>
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<td></td>
<td>Application of standards (e.g. IHE XDS, ATNA)</td>
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<td>X</td>
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<td>IHE Security</td>
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<td>Databases</td>
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<td>EHR</td>
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<td>Health data management</td>
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<td>X</td>
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<tr>
<td>Usability</td>
<td>Principles</td>
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</table>
Preliminary results: First drafts of knowledge profiles

<table>
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<th>Thematic content category</th>
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<th>Module</th>
<th>Physician</th>
<th>IT Architect</th>
<th>Lawyer</th>
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<td>X</td>
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<td>Medical Terminology - Coding systems</td>
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Preliminary results: First drafts of knowledge profiles

<table>
<thead>
<tr>
<th>Thematic content category</th>
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<th>Module</th>
<th>Physician</th>
<th>IT Architect</th>
<th>Lawyer</th>
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<td>Project Management</td>
<td>Activities, Systems</td>
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<td>Regulatory and legal issues</td>
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EU – US eHealth Cooperation Initiative
Workforce Development Work Group

It started with a Memorandum of Understanding

- In December 2010, the European Commission and the US Dept. of Health and Human Services signed a **Memorandum of Understanding (MOU)** to:
  - Help facilitate more effective uses of eHealth/Health IT;
  - Strengthen their international relationship; and
  - Support global cooperation in the area of health related information and communication technologies.

- In June 2013, Kick-off eHealth Cooperation Initiative
- In August 2013, Launch Workforce Development Work Group

Workforce Development Work Group – Phases

- To successfully complete the activities the work group is breaking down the work into three phases:

  - Competency Analysis
  - Identifying a curriculum based on competency analysis
  - Definition and agreement on common standards of competence and professionalisms

http://wiki.siframework.org/Workforce+Development+Work+Group

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Workforce Development Work Group – Classifications

- They categorized the roles into three classifications:
  - Domain (5):
  - Settings (2):
  - Skill Level (4):

IT Baseline Skills

http://wiki.siframework.org/Workforce+Development+Work+Group

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### Competency Matrix

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<tr>
<td>Know and apply the policies for accessing, collecting, entering, retrieval and storage of patient data for your role, as part of the appropriate patient care team</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
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<tr>
<td>Determine what data is needed for specific functions of the EHR, where that data is located, and who has access to it</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Access only those patient records for which you have a “business case” and “legitimate relationship” per your role, work duties, etc.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Understand the policies and procedures related to third party access, secondary use of information, disclosure and extraction of data related to the electronic health record</td>
<td>X</td>
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<td>X</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Recognise how health information systems can be used to coordinate patient care</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Recognise the role a complete medication record plays across the care continuum, including primary and secondary care</td>
<td>X</td>
<td>X</td>
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<td>X</td>
<td>X</td>
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<td>X</td>
</tr>
<tr>
<td>Understand how health information exchanges and telehealth can improve care coordination between providers, increase access to specialist treatment and support regional models of service delivery</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Understand how clinical decision support systems work to help clinicians to make informed, evidence-based and best practice decisions</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Understand and responsibly use information processing tools to support health care professionals in their clinical decision making</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Identify the points of intersection between ePrescribing systems and clinical decision support systems</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Recognise the different types of clinical decision support systems, and describe how they can enhance clinical care</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>X</td>
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Outlook

- Referring to EU-US eHealth Cooperation Initiative Workforce Development Workgroup further steps will be:
  - Definition and description of skill levels
  - Definition of further roles and more detailed description of thematic content categories
  - Detailed description of knowledge and skills
Thank you for your attention!

www.healthy-interoperability.at/ehl
Designing the optimal education for eHealth

Block 2: International experiences

- **Impulse statements from:**
  - Prof. Dr. med Sylvia Thun, FH Niederrhein – Germany
  - Justin Fyfe, Applied Research Manager (Software), Mohawk College – Canada
  - Prof. Luís Torres Pereira, University of Trás-os-Montes e Alto Douro – Portugal
  - Dr. Jan Muzik, Czech Technical University Prague – Czech Republic

- **Experiences and expertise:**
  - Target audience: Whom do we teach?
  - Content: What do they have to know?
  - Learning objectives and competence levels: Where and how far do we take them?
  - Materials and methods: How do we teach and assess?
Designing the optimal education for eHealth

Block 3: Discussion

- Together with the attendees the educational eHealth landscape shall be discussed and the following items are covered.
- All participants will then:
  - Explore available educational offers
  - Discuss experiences, differences and cooperation's between disciplines
  - Identify gaps and potentials for the future

Knowledge profiles

Roles

What we want to teach?

Whom we want to teach?
eLearning4eHealth Network

Thank you for your attention!

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Backup

Students – Professions

Figure 5. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of students in Healthcare

Figure 6. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of students in Engineering
Figure 7. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of male students.

Figure 8. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of female students.
Students – Interest in eHealth

Figure 9. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of students with a very strong interest in eHealth.

Figure 10. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of students with a rather strong interest in eHealth.

Figure 11. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of students with rather no interest in eHealth.
Figure 12. The 5 most and the 5 least used knowledge areas to work in the field of eHealth of professionals in Healthcare

Figure 13. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of professionals in Healthcare
Figure 14. The 5 most and the 5 least used knowledge areas to work in the field of eHealth of professionals in Engineering

Figure 15. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of professionals in Engineering
Figure 16. The 5 most and the 5 least used knowledge areas to work in the field of eHealth of professionals in Management

Figure 17. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of professionals in Management
Figure 18. The 5 most and the 5 least used knowledge areas to work in the field of eHealth of male professionals

Figure 19. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of male professionals
Figure 20. The 5 most and the 5 least used knowledge areas to work in the field of eHealth of female professionals

Figure 21. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of female professionals
Backup

Professionals – Education in Austria

Figure 22. The 5 most and the 5 least used knowledge areas to work in the field of eHealth of professionals completed their education in Austria

Figure 23. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of professionals completed their education in Austria
Figure 24. The 5 most and the 5 least used knowledge areas to work in the field of eHealth of professionals completed their education outside Austria.

Figure 25. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of professionals completed their education outside Austria.
Backup

Professionals – Work experience in general <5 years

Figure 26. The 5 most and the 5 least used knowledge areas to work in the field of eHealth of professionals with less than 5 years work experience

Figure 27. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of professionals with less than 5 years work experience
Backup

Professionals – Work experience in general 5-14 years

Figure 28. The 5 most and the 5 least used knowledge areas to work in the field of eHealth of professionals with 5-14 years work experience

Figure 29. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of professionals with 5-14 years work experience

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Professionals – Work experience in eHealth 15-29 years

Figure 30. The 5 most and the 5 least used knowledge areas to work in the field of eHealth of professionals with 15-29 years work experience

Figure 31. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of professionals with 15-29 years work experience
Figure 32. The 5 most and the 5 least used knowledge areas to work in the field of eHealth of professionals with less than 1 year work experience in eHealth.

Figure 33. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of professionals with less than 1 year work experience in eHealth.
Figure 34. The 5 most and the 5 least used knowledge areas to work in the field of eHealth of professionals with 1-5 years work experience in eHealth

Figure 35. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of professionals with 1-5 years work experience in eHealth
Backup

Professionals – Work experience in eHealth 6-10 years

Figure 36. The 5 most and the 5 least used knowledge areas to work in the field of eHealth of professionals with 6-10 years work experience in eHealth

Figure 37. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of professionals with 6-10 years work experience in eHealth
Backup

Professionals – Work experience in eHealth >10 years

Figure 38. The 5 most and the 5 least used knowledge areas to work in the field of eHealth of professionals with more than 10 years work experience in eHealth

Figure 39. The 5 most and the 5 least necessary knowledge areas to work in the field of eHealth in the opinion of professionals with more than 10 years work experience in eHealth