# SECEIP: Διαδικτυακή Πύλη για την Αξιολόγηση της Επάρκειας των Μηχανικών Λογισμικού (http://moodle.kic.teiep.gr)

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# Outline

- European e-competence Framework(e-cCF)
  - Main Project idea
  - Project partners
  - The implementation
- The need of e-competence evaluation
- Introduction
- E-competence evaluation description
  - General Description
  - General Architecture
  - Main Components
  - Applications
  - Interactions

# Outcome

- We designed and utilized a **web portal** that:
  - **provides services for learning outcomes information exchange support**
  - **refers to a graduate's knowledge, skills and competence upon completion of the Master of Science Programs in Software Engineering**
  - was developed in the framework of the project iSECRET, financed by the ERASMUS+ Programme.

# European e-Competence Framework (e-CF)

- The European e-Competence Framework (e-CF) provides a reference of 40 competences as required and applied at the Information and Communication Technology (ICT) workplace, using a common language for competences, skills and proficiency levels that can be understood across Europe.

# European e-Competence Framework (e-CF) – 2

- The e-CF fits for application by ICT service, demand and supply organizations, companies, for managers and HR departments, ***for education institutions and training bodies, including higher education***, for market watchers and policy makers, public and private sectors.

# The main project idea

- **Map e-CF to Education Outcome (Learning Outcome) for Software Engineering/Software Technology Master Programs, in other words:**
  - ***Describe LOs in terms of e-competeneces for job positions;***
  - ***Develop and implement a methodic for the LOs remote evaluation.***

# The implementation

- The *methodi*c and *tests* for remote LO evaluation was implemented *for selected* by project partners examples of *SE/ST Master Programs' courses* by creating of a prototype for Open Education Resource (OER) – *Portal for Master Programs LO evaluation*.

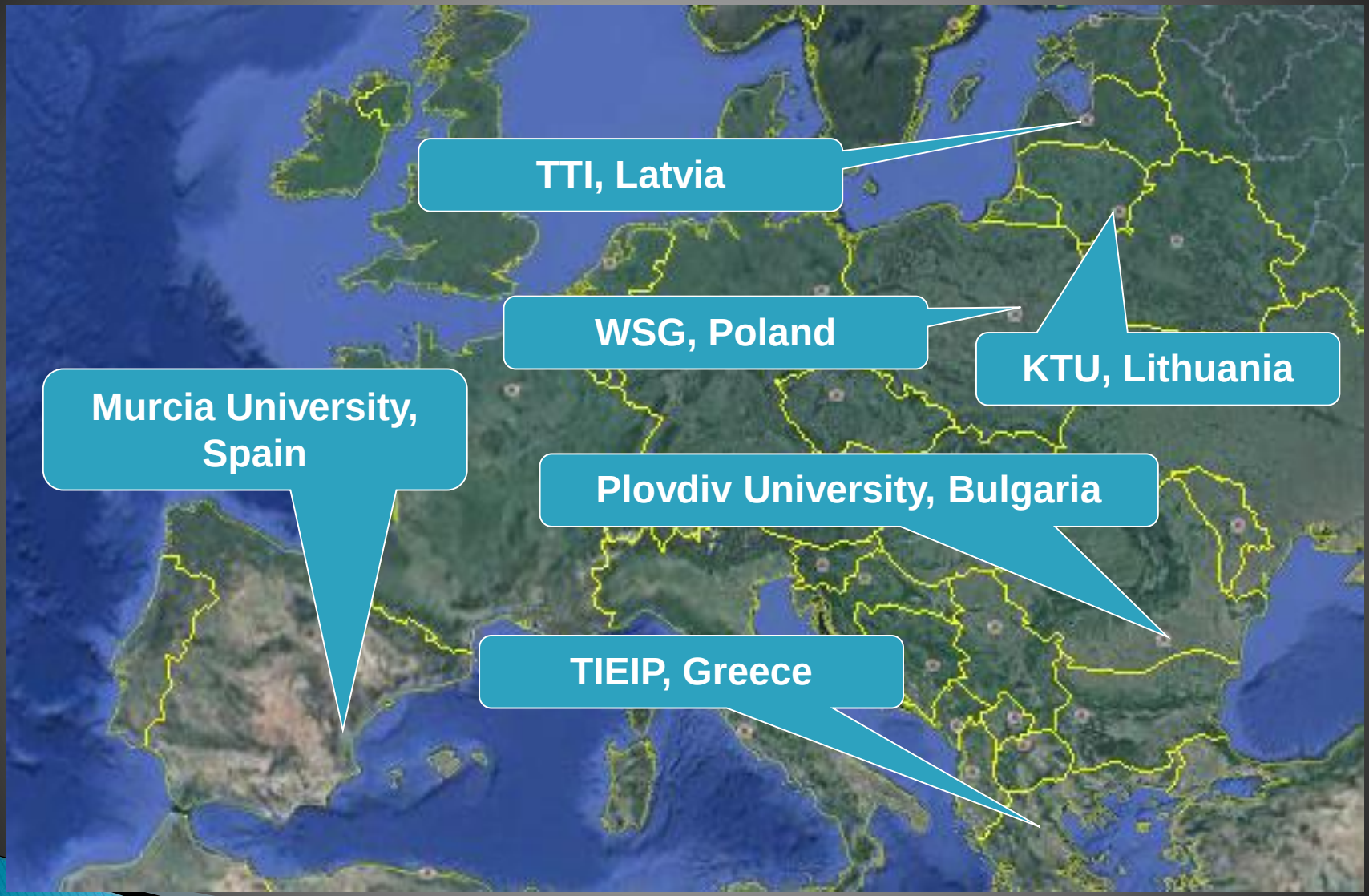
# MAIN OUTPUT: Software Engineering Competence Evaluation Portal

- The web portal was dedicated to *joint master program training content and supervision synchronization* between several European universities.

# Programme Erasmus+

- *Key Action:* **Strategic Partnerships for higher education (KA2)**
- *Project Title:* **"Implementation of Software Engineering Competence Remote Evaluation for Master Program Graduates" (ISECRET)**
- *Project Start Date:* 01-09-2015
- *Project End Date:* 01-09-2017
- *Application No*. 2015-1-LV01-KA203-013439

# The Project Partners



# The Final Goal

- To provide *a common service* for ***learning outcomes information exchange*** support, referring to a graduate's knowledge, skills and competence upon completion of the ***Master of Science in Software Engineering Programs***.

# Need of e-competence evaluation (1)

- Makes more attractive the education and training programs;
- Provides a professional environment inside the education institutions;
- Provides online self-assessment;
- Makes students more skillful to be able to meet the current needs and requirements of the labor market;
- Utilizes the lifelong learning;
- Helps students to effectively plan their careers and change their career objectives, if necessary;

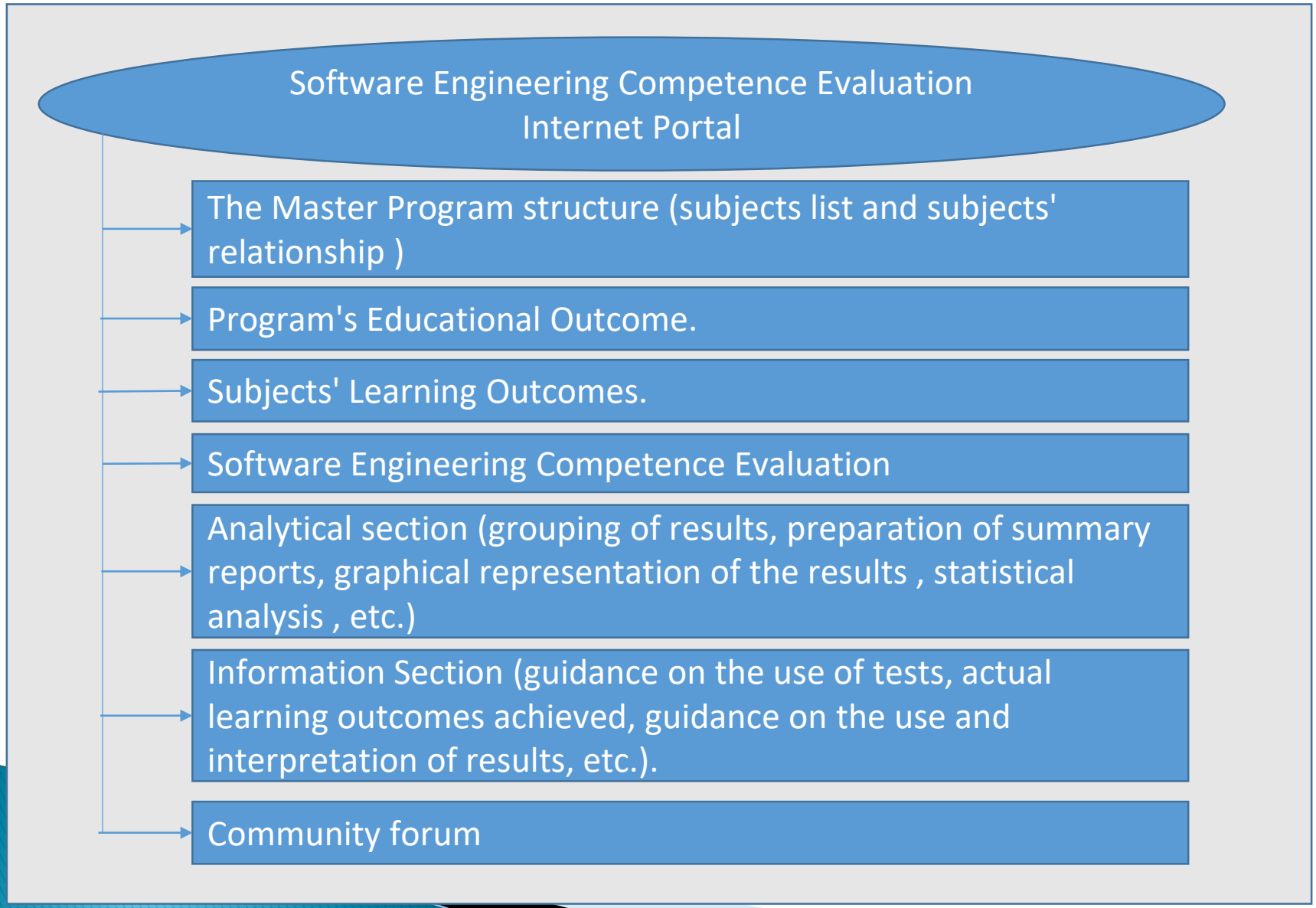
# Need of e-competence evaluation (2)

- Introduces an effective experimental framework for defining and measuring Education (Learning) Outcomes;
- Boosts innovation in Higher Education by enhancing the universities' capabilities;
- Makes the educational resources sharable, storable, findable and interoperable on a global scale;
- Introduces competence evaluation applications;
- Enforces the members of educational institutions to describe, analyze and include the proper learning outcomes in their teaching and assessment procedures.

# E-COMPETENCE EVALUATION PORTAL

- Our Portal is:
  - compatible with LMS Moodle educational databases
  - accessible through **http://moodle.kic.teiep.gr**

# Architecture



# E-COMPETENCE EVALUATION PORTAL

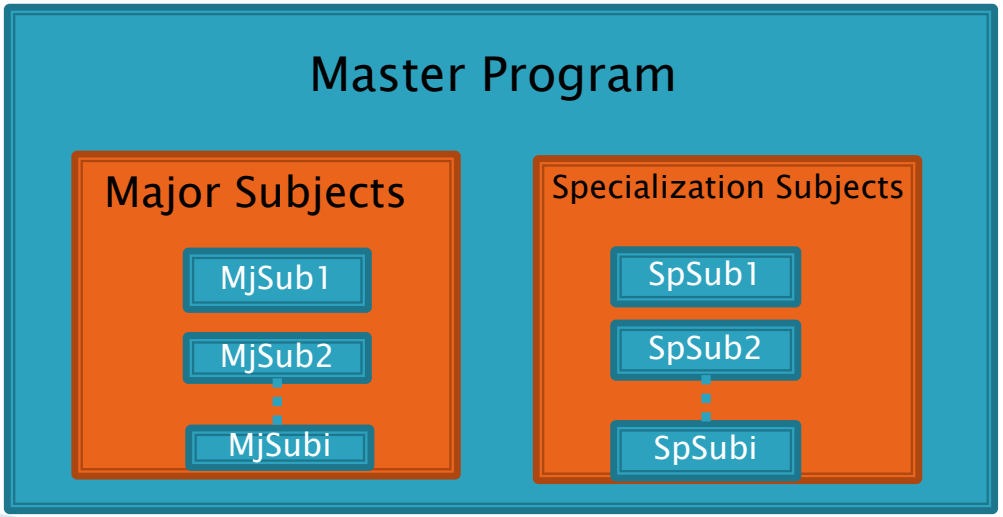
- The portal consists of the following components:
  - HOME: Link to the home page
  - MASTER PROGRAM: Template for a Joint Master Program
  - E-CF DECOMPOSITION: e-CF competences decomposition template
  - FORUM: The Forum of the Master Program
  - HELP: links to users' manual, training course, and video on the use of the portal
  - Professors' and Students' user interface
  - The Software Engineering Competence Evaluation application.

# Components – Home page

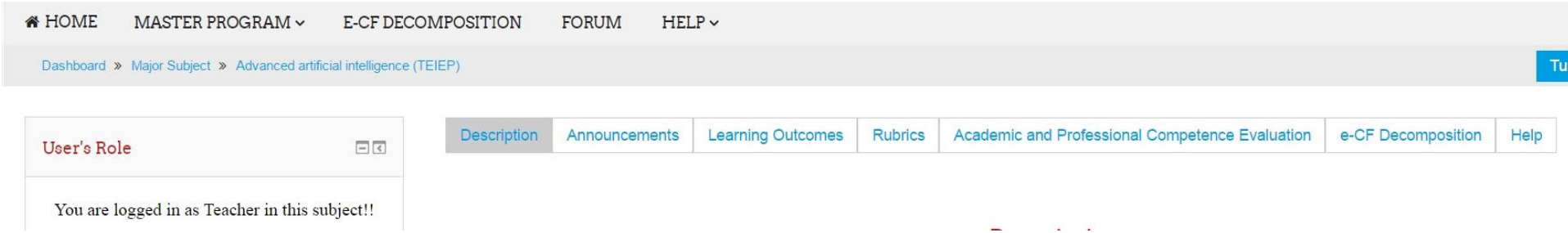
- This component is an informational web page.
  - Through this web page, the Users can be informed about the system's functionality and can be instructed on how to operate it.
- provides to the users the necessary links to the components of the system (e.g. Master Program Educational Outcome structure) that are responsible for specific functionalities.
- Every time a user desires to interact with the system, the first action to take is to visit this portal and by following the instructions can perform various actions (e.g. evaluate a competence, browse a study subject etc.).

# Components – Master Program

- **Master Program template:** includes the index of all the provided study subjects and their links.
- Students could browse all the provided **study subjects** through this web page.



# Study subjects environment




For any study subject, the user can view the following sections:

- Description
- Announcements
- Learning Outcomes
- Rubrics
- Academic and Professional Competence Evaluation
- e-CF Decomposition
- Help

# Study Subject Components (1)

- Each Study Subject component consists of the following subcomponents:
  - **Study Subject's Description**: This component includes a detailed description for each study subject as shown in the master program template that introduces the structure of Master Program Educational Outcome.
  - **Announcements**: This component includes and presents all the uploaded announcements from professors for the specific study subjects.

# Study Subject Components (2)

- **Learning Outcome:** This component describes the Learning Outcomes for each study subject of the Software Engineering / Software Technology (SE/ST) Master Program.
- **Rubric Tables**: This component helps students to understand what actual learning outcomes have been achieved by knowing a study subject.

Professors are responsible for constructing these tables.

# Study Subject Components (3)

- **Evaluation of Study Subject's competences**: This component is responsible for the realization of a remote evaluation of competences in a study subject of the Software Engineering / Software Technology Master Program.

This component is mainly used for implementing the functionality of competences that are included in professional and academic competences.

# Study Subject Components (4)

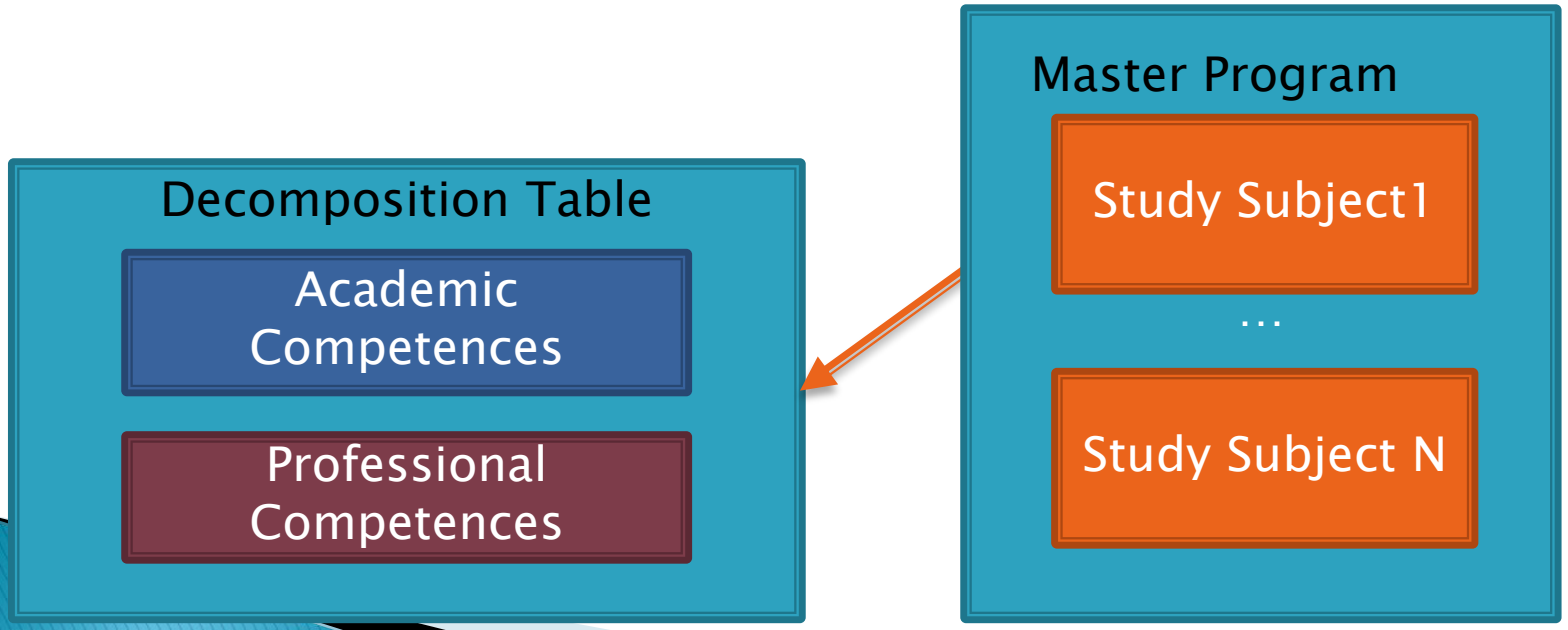
- **e-CF competence decomposition template:** This component presents the user's knowledge, skills and competence upon completion of a Master of Science Program in Software Engineering.

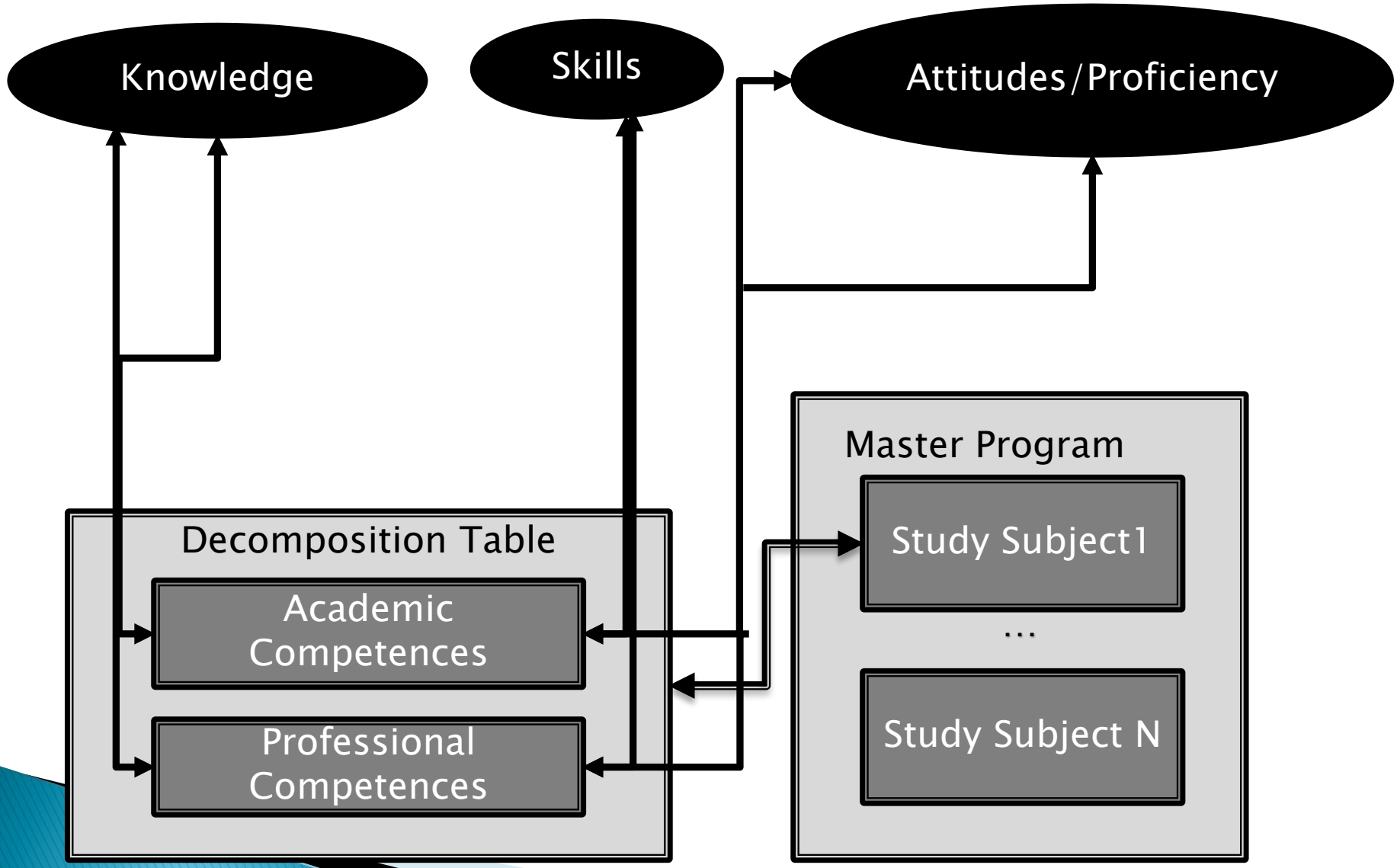
For each study subject professor is responsible for constructing a table that contains

- A set of professional competencies
- A set of academic competencies

# Competences decomposition

- The whole system is emerging by the decomposition and utilization of the European e-CF and an advanced suggested Rubrics scoring system to identify competence for: Knowledge; Skills and Attitudes/Proficiency.

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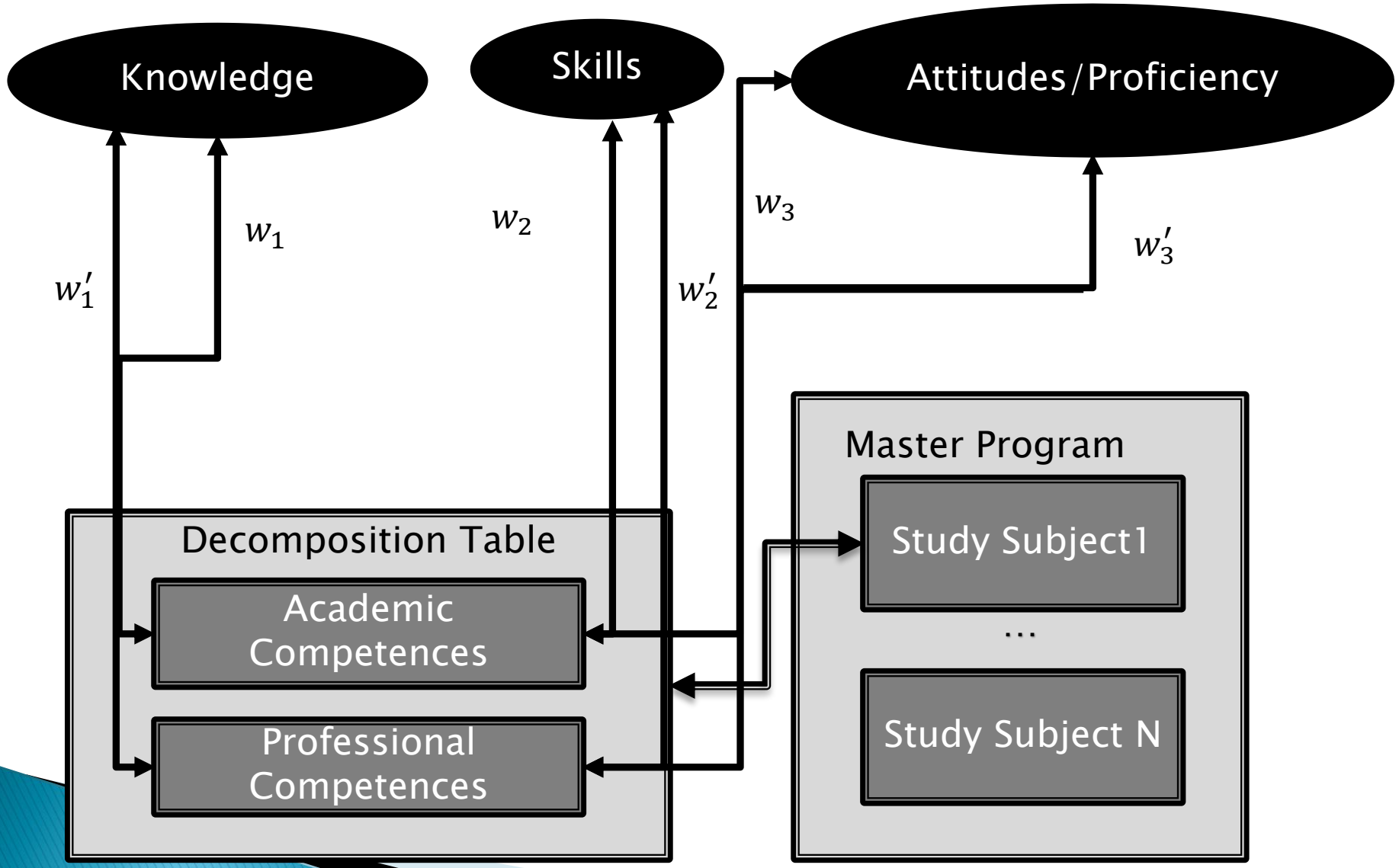
Skills
Attitudes/Proficiency
Master Program
Study Subject1
...
Study Subject N
Decomposition Table
Academic Competences
Professional Competences


Knowledge
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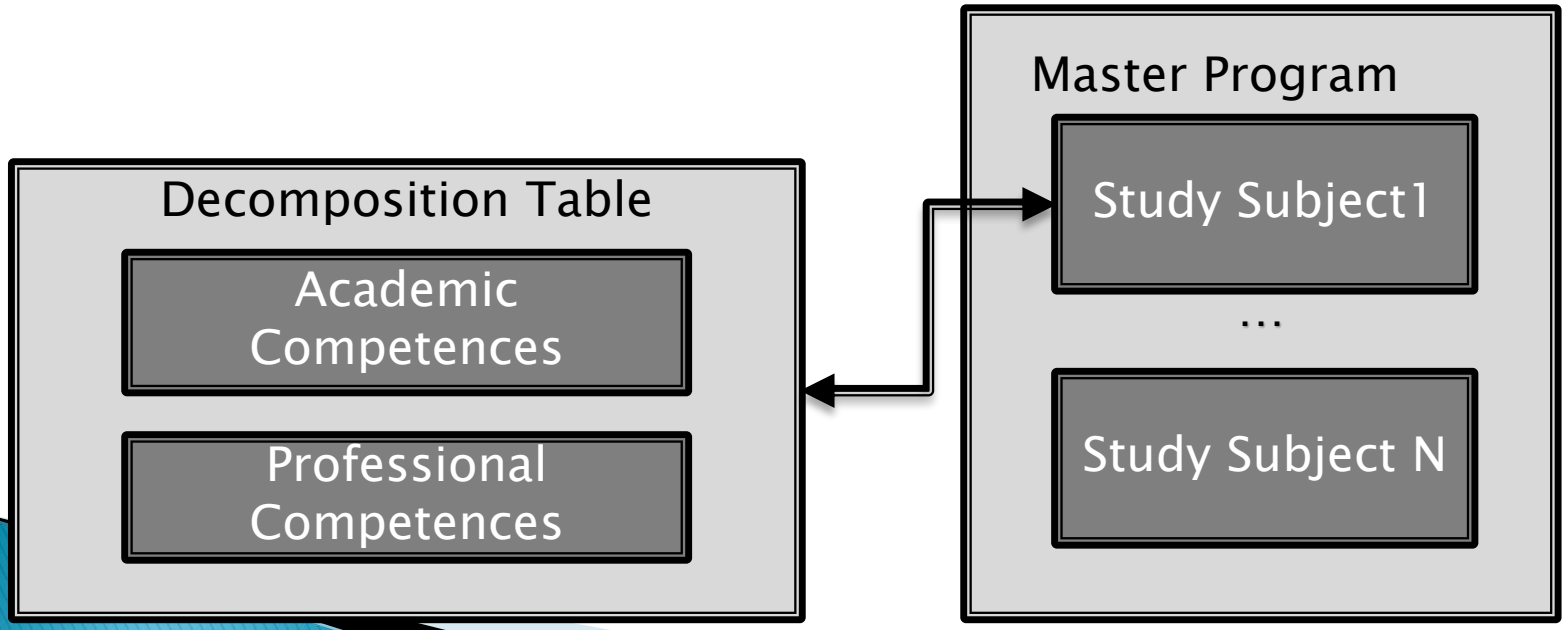
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Study Subject1
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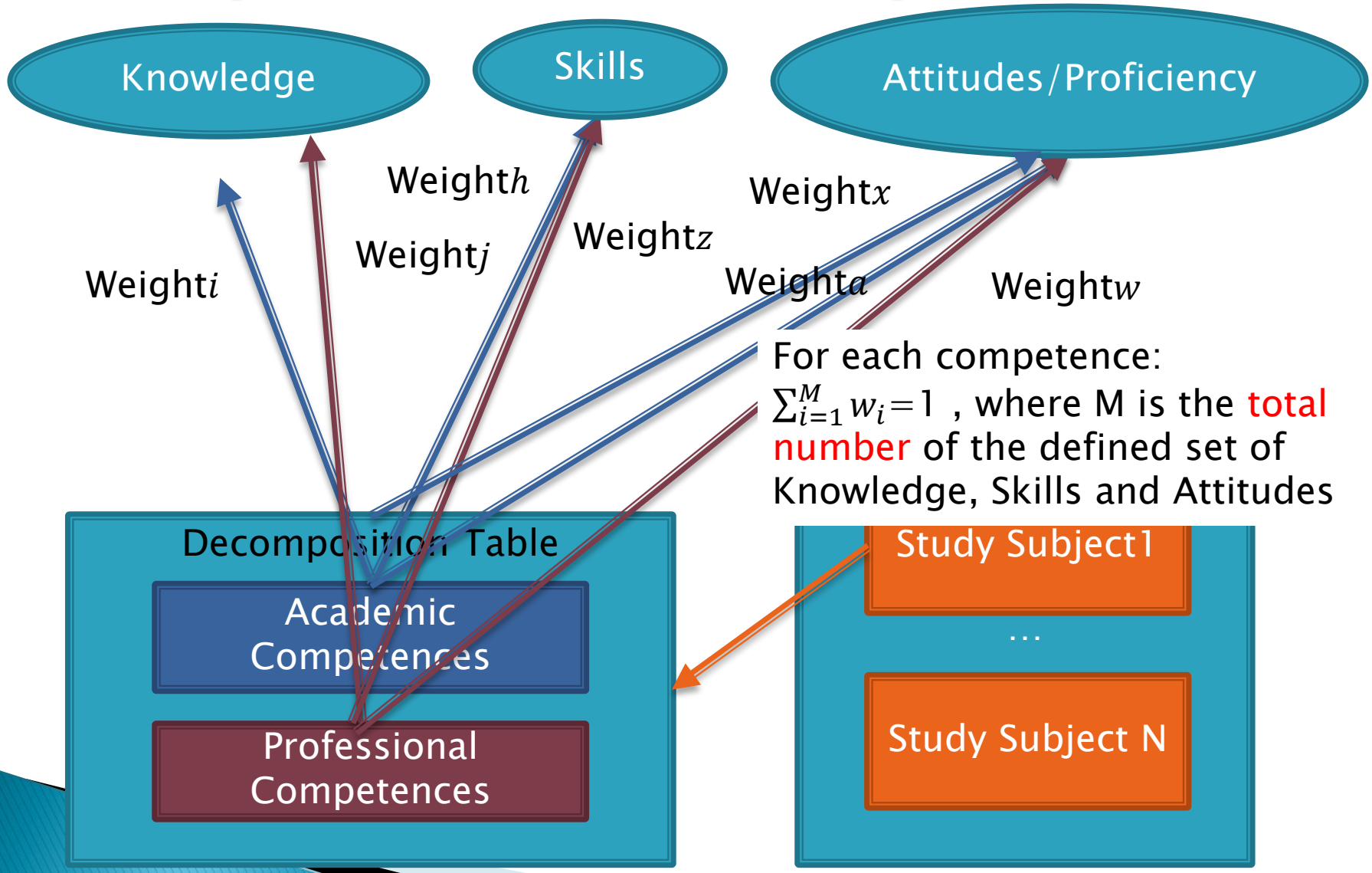
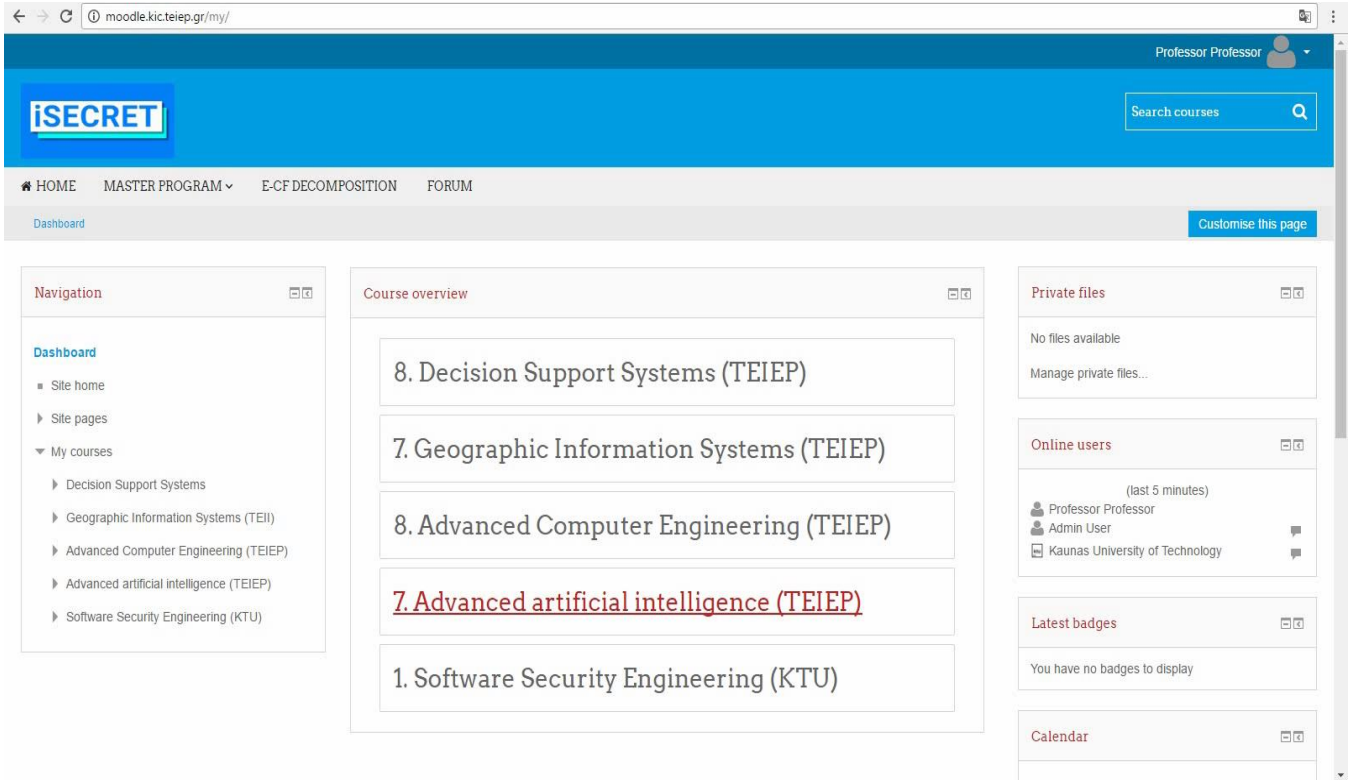
# Competences decomposition



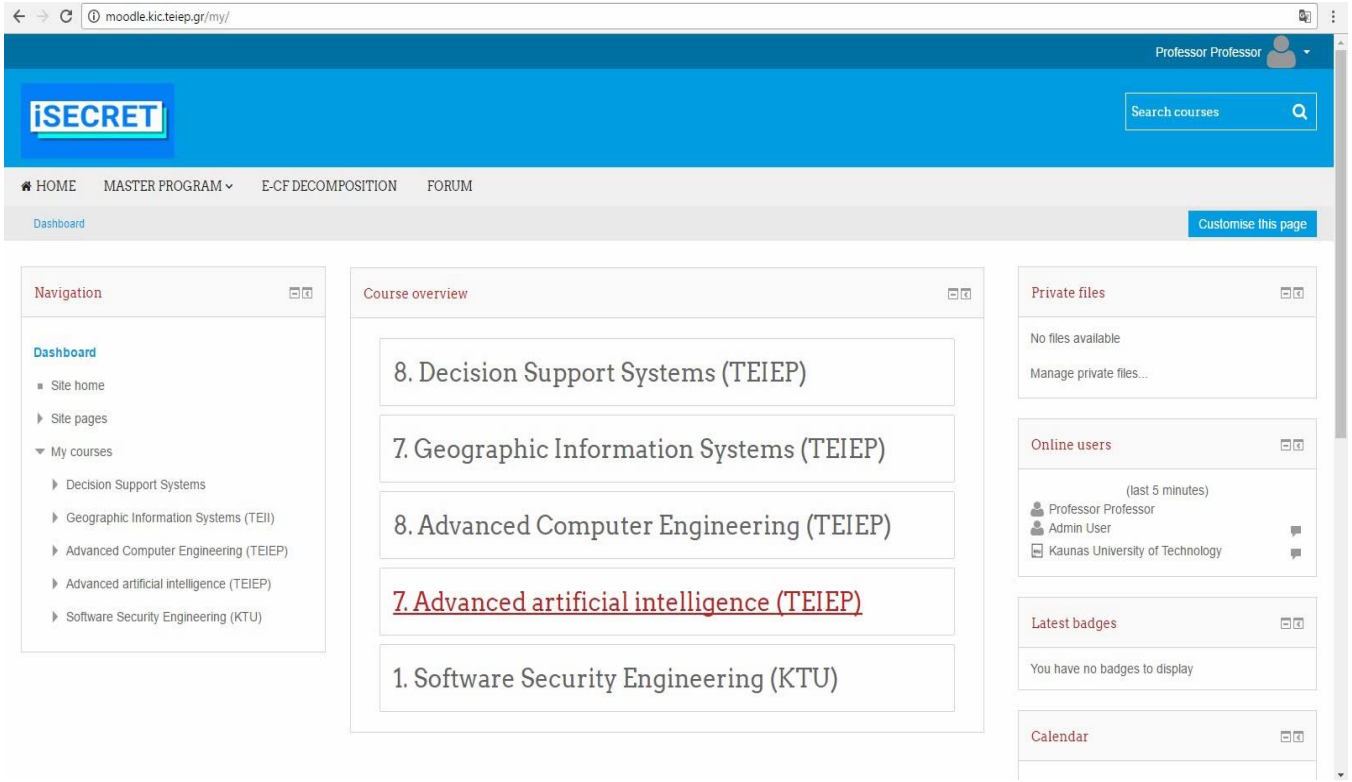
# Professors' interface

- Edit/Insert data in Study Subject
- View Study Subject
- Add Announcement
- Edit/View Rubrics
- Edit the contents on the evaluation area
- Insert/edit e-Competence
- Insert new academic competence



# Students' interface

- View Study Subject
- View Announcements
- View Rubrics
- Access the evaluation area
  - Participate in self-evaluation of a selected academic or professional competence
  - Submit evaluation
  - View evaluation results
- View the set of professional and academic competence



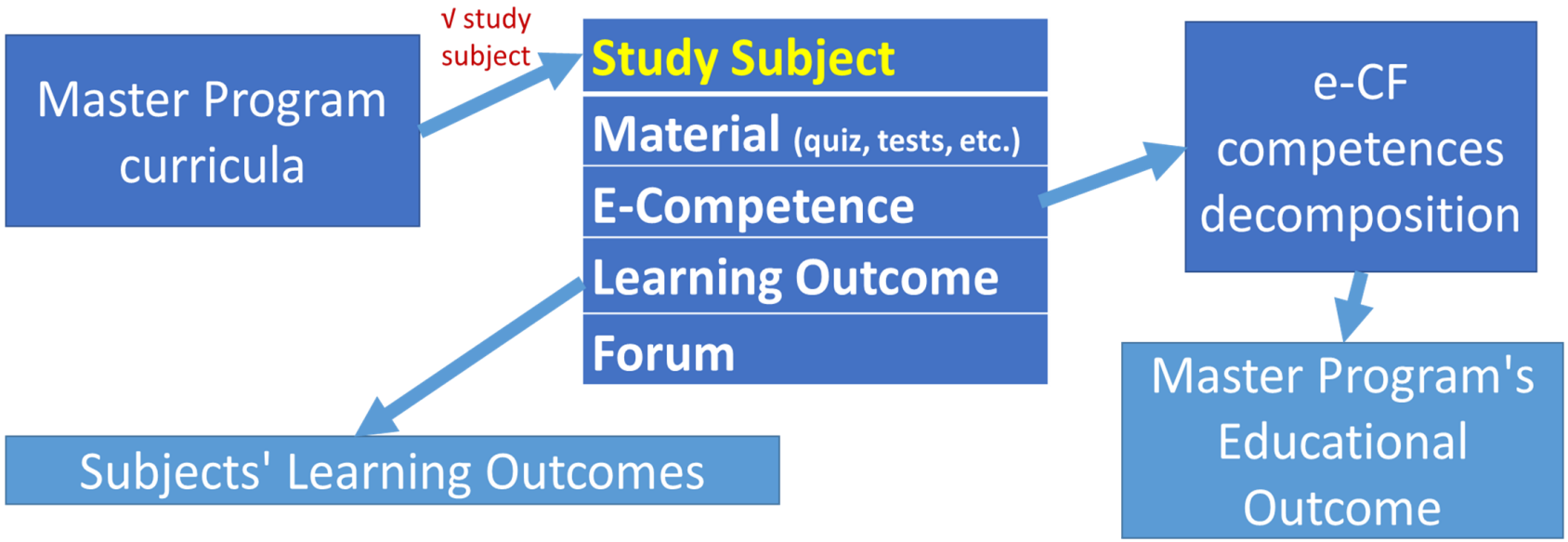
# The Software Engineering Competence Evaluation Application

- The main component of Portal is the Competence Evaluation Application, a web application that implements the evaluation of the software engineering study procedure and ensures the exchange of information and data among students and professors.

# Obtaining a set of competences

- If a graduate wants to prove or check, if he/she has the competence in a specific study subject,
- He/she browses the Study Subject link and follows the desired study subject.
- Through the Learning Outcome link, he/she will be informed about the learning outcome (knowledge/skill/attitudes ) for the chosen Study Subject.

# E-Competence Evaluation Portal Interactions



# Competence Evaluation

- We assume that the obtaining competences phase has finished and that the graduate student who will participate in the evaluation has chosen a set of e-CF competences.
- The student will be able to evaluate competences at any time from home.
- Whenever a student wants to evaluate a competence, he/she can access the Portal though his/her computer.
- The student will be able to fill out the uploaded tests.
- After completing the evaluation, the student is informed about the evaluation result and his/her learning portfolio will be updated.

# Conclusion

- The general aim of the remote competence systems is:
  - to boost innovation and digital skills in European universities;
  - to deliver high quality education and digital skills.

# Future Work

- A challenge is to increase the flexibility of our system in order to expand the list of Learning Outcomes and study subjects by any member of the European academic community.
- To evaluate the portal's scope and usability in several academic institutions.

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