

The e-CF at the Computer Science Faculty of Technical University (Poland)

Marek Bolanowski

The Faculty of Electrical and Computer Engineering Rzeszow
University of Technology/Polish Information Processing Society
IT Competence Council



Sektorowa Rada
ds. Kompetencji
Informatyka



POLSKIE TOWARZYSTWO INFORMATYCZNE

Presentation plan

- University and Faculty - short presentation
- Overview of university graduates
- Needs reported by employers
- Who is a modern IT specialist
- Legal norms defining the process of education at the University and their correlation with e-CF
- E-CF from the point of view of the student, university and employer
- Summary



The goals of the presentation

- What are the possibilities of implementing the e-CF in the university environment in relation to the needs of the job market
- How can the students use the e-CF to build and develop their careers
- What are the difficulties associated with the implementation of the e-CF in the university environment

Rzeszow University of Technology

TECHNICAL UNIVERSITY **STATUS**

- 7** FACULTIES
- 28** COURSES OF STUDY
- MORE THAN **14 000** STUDENTS
- 850** SCIENTIFIC AND DIDACTIC STAFF
- NEARLY **200** LABORATORIES
- ABOUT **40** POSTGRADUATE COURSES
- EMPOWERMENT TO AWARD HABILITATION DEGREE IN **5** DISCIPLINES
- EMPOWERMENT TO AWARD DOCTORAL DEGREE IN **10** DISCIPLINES



The Faculty

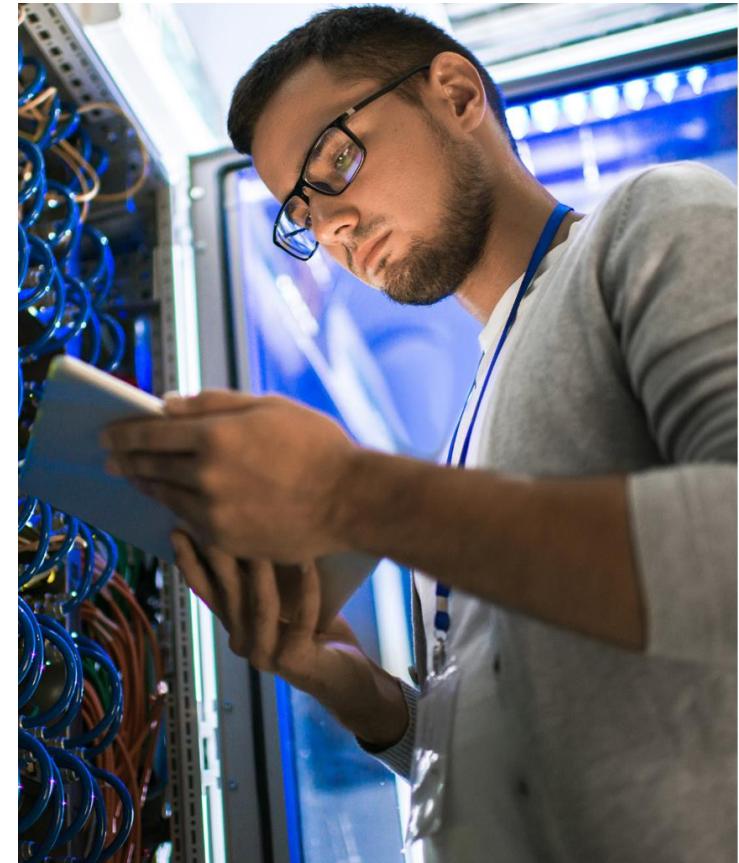


Sektorowa Rada
ds. Kompetencji
Informatyka



WE PROVIDE COURSES IN

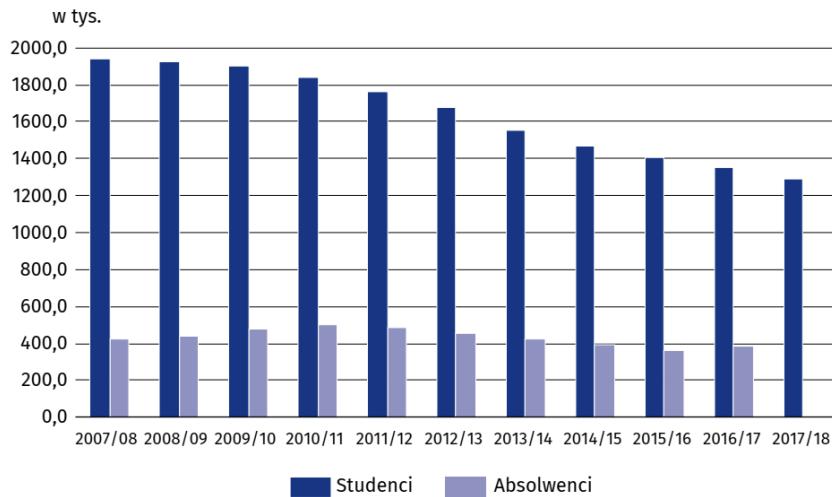
- AUTOMATIC CONTROL AND ROBOTICS
- COMPUTER SCIENCE
- ELECTRICAL ENGINEERING
- ELECTRONICS AND TELECOMMUNICATIONS
- POWER ENGINEERING



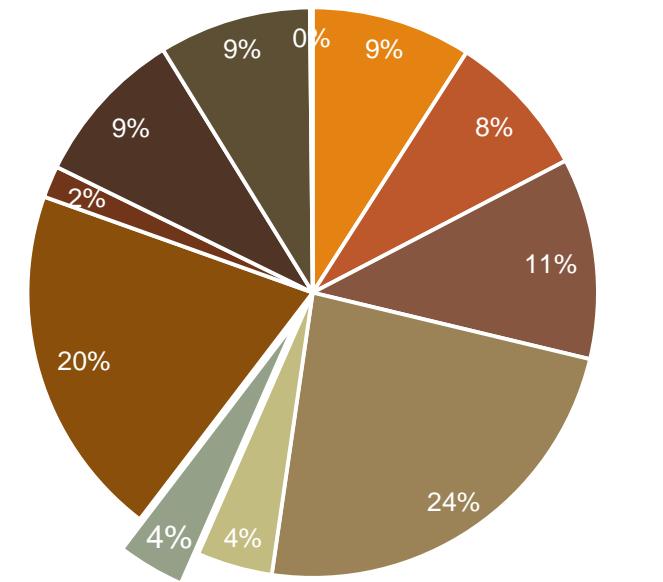
Higher Education in the IT context

(The Central Statistical Office)

University students and graduates in 2007 - 2017



Percentage of university graduates finishing IT related majors



- Number of students: 16000
- Needs of the job market in Poland: 50000

- Kształcenie
- Nauki społeczne, dziennikarstwo i informacja
- Nauki przyrodnicze, matematyka i statystyka
- Technologie teleinformacyjne
- Technika, przemysł, budownictwo
- Zdrowie i opieka społeczna
- Indywidualne studia międzyobszarowe
- Nauki humanistyczne i sztuka
- Biznes, administracja i prawo
- Technologie teleinformacyjne
- Rolnictwo
- Usługi

Job market requirements

- Looking for:
 - Programmers
 - System and network administrators
 - Security specialists
 - System architects
 - Analytics
 - Testers
- Additional competences
 - Good interpersonal communication
 - Ability to work in a group
 - Ability to solve problems independently
 - Fast learning
 - The biggest problem: small number of educated candidates available to work in the IT industry

PARTNERS

ASSECO
POLAND

 Bank Pekao

G2A.com

Deloitte.

Heli-One


PGE
Dystrybucja S.A.

ICN Polfa Rzeszów S.A.
w korporacji  VALEANT

 Microsoft


INŻYNIERIA

PGS
SOFTWARE


CISCO

Alcatel-Lucent 

 **Pratt & Whitney**
A United Technologies Company
Pratt & Whitney Rzeszów


PZL Mielec
A Sikorsky Company

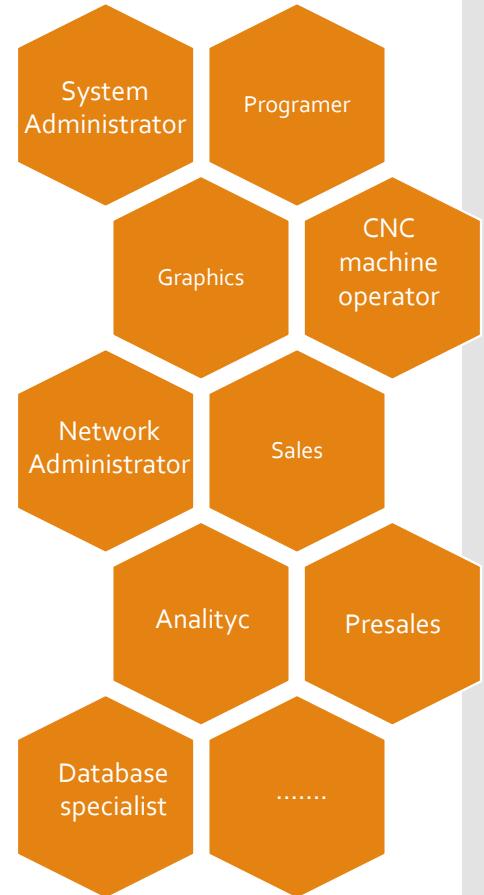

SANOFI

SKANSKA


zelmer
niezawodnie

IT specialist – definition

- Small and medium companies
 - Do not have special HR department
 - Looking for IT specialists (1 or 2 people to work with their organisation's IT systems)
- The same problems can be seen in the local government units
- There is no one definition of an IT specialist
- There is a need for common base of terminology for universities and employers
- E-CF may be the answer



Legal norms defining the process of education at the university

- The Act of 27 July 2005 Law on Higher Education. It specifies that the education program must include the assumed learning effects, a description of the educational process leading to these effects with ECTS credits assigned to individual modules.
- Learning effects must comply with the National Qualifications Framework (KRK) for Higher Education, at levels 6 and 7 of the Polish Qualifications Framework (PRK)
- The Polish Qualifications Framework is a description of the eight qualification levels in Poland corresponding to the appropriate levels of the European Qualifications Framework
- Universities can autonomously create their own majors (course of study, profiles) compliant with the effects in the KRK
- There is a dedicated application to prepare a given module to meet the requirements of KRK
- It is recommended to update the contents of the modules at least once a year.

Engineering studies (first degree of study) Level 6 of PRK

	Descriptive categories and aspects of primary importance	Level 6
Knowledge	Zakres Kompletność perspektywy poznawczej, Zależności	He knows and understands w zaawansowanym stopniu – fakty, teorie, metody oraz złożone zależności między nimi
	Głębia rozumienia Kompletność perspektywy poznawczej, Zależności	różnorodne, złożone uwarunkowania prowadzonej działalności
Skills	Rozwiązywanie problemów i stosowanie wiedzy w praktyce Złożoność problemu Samodzielność w działaniu Innowacyjność podejścia Warunki działania	Is able to innowacyjnie wykonywać zadania oraz rozwiązywać złożone i nietypowe problemy w zmiennych i nie w pełni przewidywalnych warunkach
	Uczenie się Samodzielność Metody	samodzielnie planować własne uczenie się przez całe życie
Social competence	Komunikowanie się Zakres wypowiedzi Złożoność wypowiedzi	komunikować się z otoczeniem, uzasadniać swoje stanowisko
	Tożsamość Uczestniczenie Poczucie odpowiedzialności Postępowanie	He is ready for kultywowania i upowszechniania wzorów właściwego postępowania w środowisku pracy i poza nim
	Współpraca Praca zespołowa Warunki działania Przywództwo	samodzielnego podejmowania decyzji, krytycznej oceny działań własnych, działań zespołów, którymi kieruje, i organizacji, w których uczestniczy; przyjmowania odpowiedzialności za skutki tych działań
	Odpowiedzialność Konsekwencje działań własnych Konsekwencje działań zespołu Ocena	

KRK module card

- Computer Network – [card example](#)
- Aim of the module – education in the area of computer network plan, design and administration
- Correlation with the e-CF
 - ICT profile: **NETWORK SPECIALIST** (profiletool.ecompetences.eu)

The screenshot shows the European e-Competence Framework profile tool interface. At the top, there's a logo for the European e-Competence Framework and a navigation bar with options like 'e-CF view', 'ICT profile', 'Compare', 'Print/export', 'Language', 'Select all', and 'Clear'. The main content area is titled 'Network Specialist' and contains sections for 'Summary statement', 'Mission', 'Deliverables', 'Accountable', 'Responsible', 'Contributor', 'Main task/s', 'KPI area', and 'e-competences'. The 'e-competences' section is a grid where rows represent competencies and columns represent dimensions (Dimension 2 and Dimension 3) and levels (e-1 to e-5). Some cells in the grid are highlighted in yellow or orange, indicating compatibility.

- 90% percent of compatibility

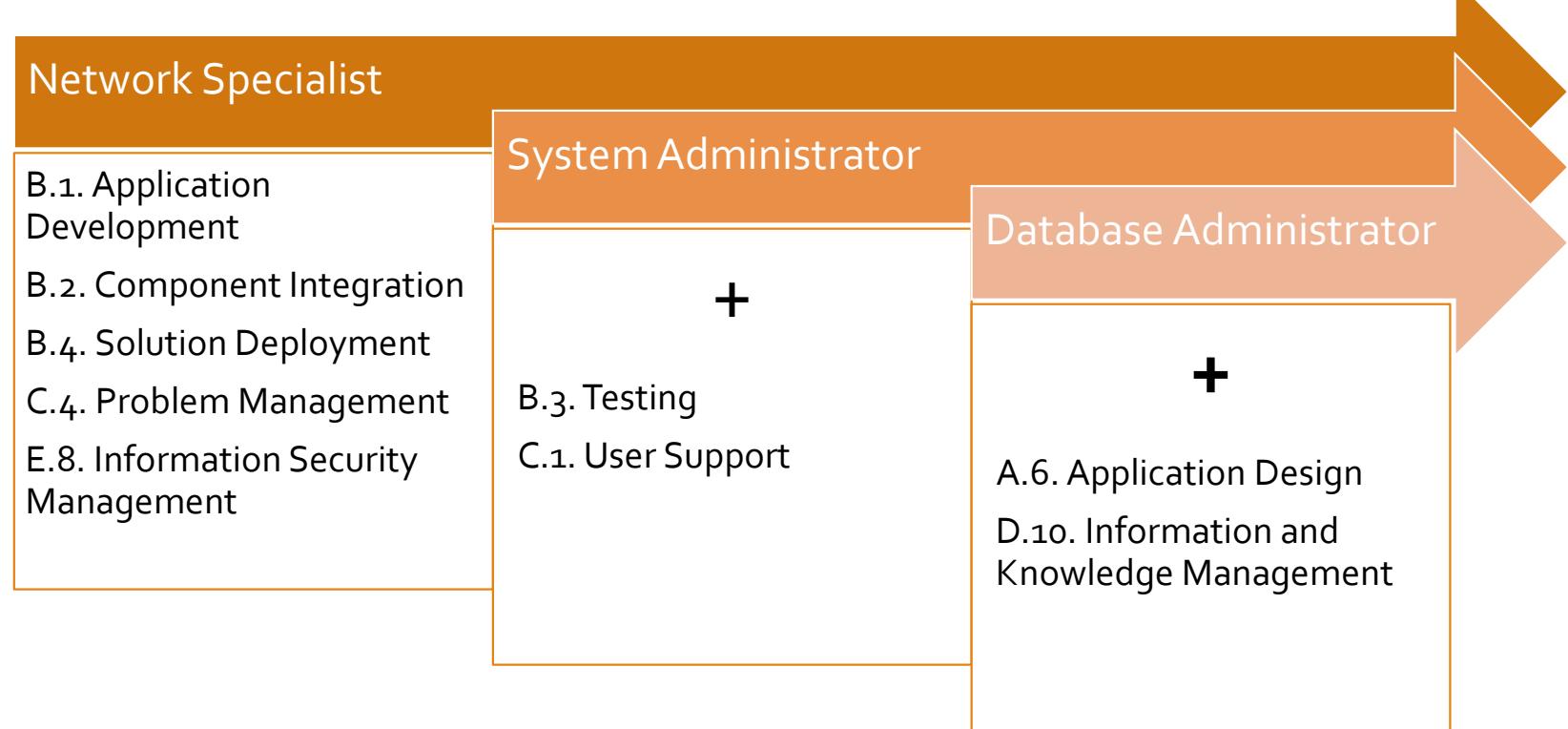
The remaining 10 %

- Students have a variety of modules during the course
- Students can shape their professional profiles by themselves
- Some modules and activities are optional. For example:
 - Additional courses (certified courses, e.g: CISCO CCNA, CCNP, ALU ACSP, MICROSOFT, ISACA...)
 - Obligatory internships at companies (min. 1 month)
 - Work in student science groups
 - Optional modules (the student must choose one out of 4 modules)
 - Work in research teams
 - Cooperation with the industry
 - ...
- E-CF shows the possibilities and can be the framework for the student's career



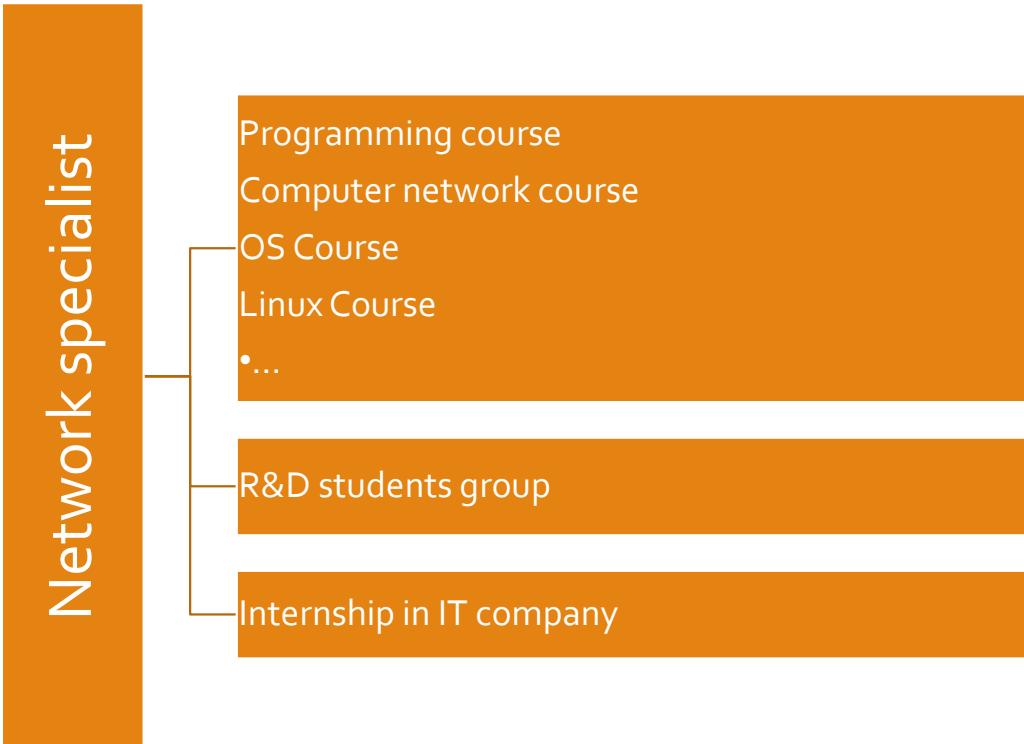
E-CF from the students' point of view

- Organizes the requirements of the job market
- It creates a common terminology dictionary
- Helps to determine competences
- It helps in career planning (profiletool.ecompetences.eu)



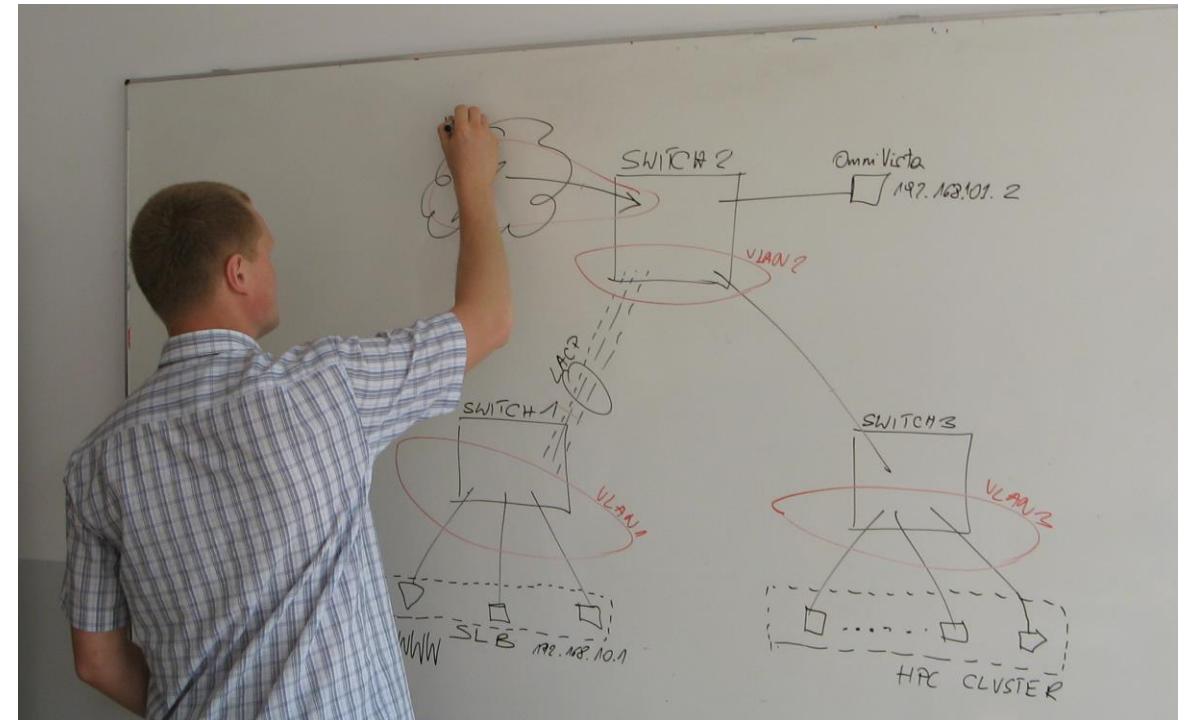
E-CF from the teachers' point of view

- Allows teachers to periodically verify the content of the educational module
- Allows to focus teachers' attention not only on technical skills
- Helps to internationalize the education process
- Introduces additional content to educational process
- Indicates and verifies the interrelations between modules, courses, teachers...



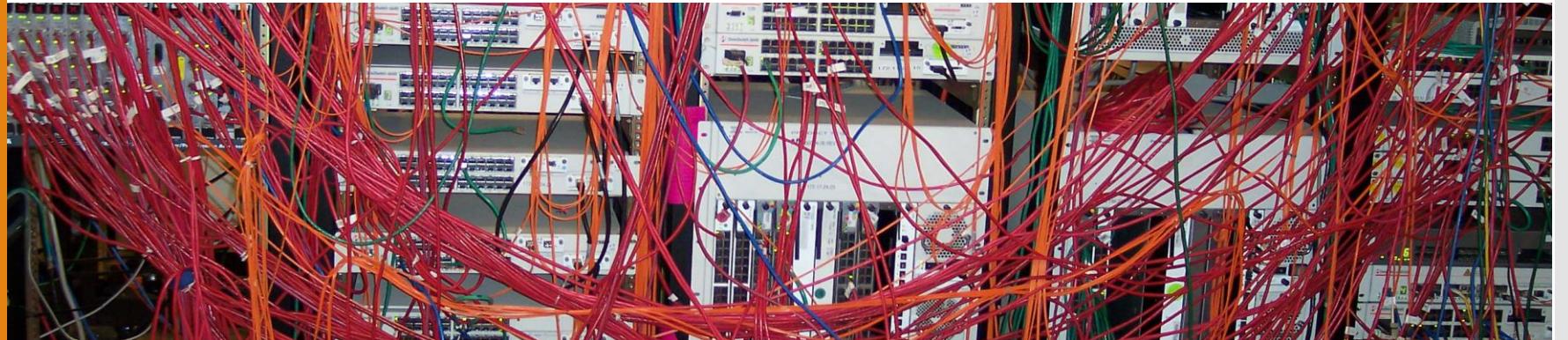
E-CF from the point of view of the University

- Framework for training specialists
- Help in the preparation of teaching programs
- Help in preparing new majors and specialties
- Common terminology in conversations with employers



E-CF from the employers' point of view

- Improves communication between companies, students and universities
- Helps to organize the employment structure
- Allows a company to prepare internship programs
- Allows a company to actively participate in the educational process
- Reduces the costs of the recruitment process
- Enables retraining of students from related majors (eg. from mathematics to computer science)



Summary

- E-CF is another very important document to read, understand and implement
- Time consuming implementation
- The need for coordination of activities between the university, industry and students
- The need for e-CF promotion
- Implementation costs at the university and in companies



Thank you for your attention

Marek Bolanowski, mb@prz.edu.pl

