

Towards a research and technology based innovation ecosystem



DAAD

Workshop

Cooperation at Academic Informatics Education across Balkan Countries and Beyond

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Academia- industry cooperation models

-or how to make more responsive
the universities to the labour market
needs

- Currently:
- R&D&I labs
- Industry labs built into Master studies
- Master program in cooperation with industrial partner
- Industry supported department
- Cooperative studies, professional internship
- Dual training in mechanical engineering
- EIT Digital European business development model
- Our vision:
- Innovation ecosystem around the university
- Spin-off and start-up companies
- Dual, university-industry employment



Morgan Stanley



Key factors

- Joint Labs integrated into innovation process of a company
- EIT Digital innovation projects
- European dimension of projects → FP7, H2020
- Innovation and entrepreneurship module in MSc
- EIT Digital IDSL program (PhD)
- Innovation lab
- Open innovation



University- industry joint labs

a collaborative model of
innovation

Long-running, innovative software-engineering projects in cooperation with industrial partners

Bringing together senior scientists, postdoctoral researchers, PhD and MSc students, professionals from industry-working in teams; the competitiveness of all stakeholders increases

- **Benefits-University**

- R&D&I projects integrated into education
- Publications, PhD and diploma thesis work, curricula development
- participating MSc students → next generation PhD students, earlier results → better chance of successful PhD
- Student's mobility
- International cooperation
- Industrial-like project environment → grow on project management, collective and individual responsibility skills in maintaining high quality and respecting deadline
- More than 100 students per year

- **Benefits-Industry**

- Results of the projects are used in the software industry
- The quality of the code is a key factor for industry (even for prototype applications) Industry requires stability and conformance to the specification. University students can produce "industry quality code"
- The company gets well-trained, creative, experienced graduate students familiar with the company's task system and business model

- **Benefits-Society**

- Improves socio-economic competitiveness
- Release of the prototype software product with an open-source license

Methodology

- Work plan, weekly consultation with the company
- 1 person-month tasks
- project discussions per week
- teamwork and distributed project management open source tools (version managers, project management tools: trac, viki, mailing lists)
- virtual meetings, videoconferences tools to collect and redistribute information
- documentation tools (edoc, latex), test tools (QuickCheck, CruiseControl) and application testing environments;
- analyzing results, matching tasks to the next week, long-term planning, algorithms, literature, code analysis; coherent approach, consistent structure, avoid code duplication
- continuous transfer of knowledge because of the variable composition of teams (documentation, reports)
- careful selection of topics and tasks
- free publication;
- task is aligned with the level of knowledge
- Typical team:
 - 10-20 (BSc)+MSc and 3-5 PhD students
 - very diverse group



Skills and competencies developed

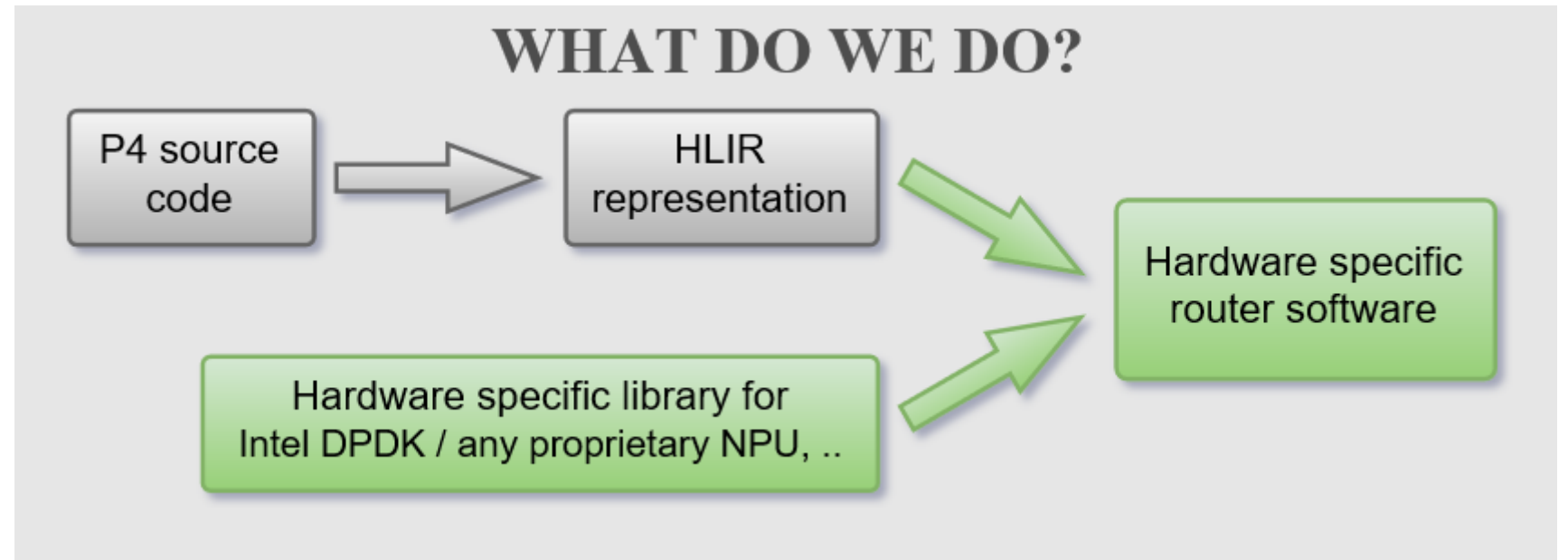
- Teamwork and use of distributed project management open source tools, videoconference and documentation tools
- understanding and analyzing large-scale industrial code (Identifying language elements in practice, identifying important cases, confidentiality), measuring efficiency and responding
- subtask specification
- critical analysis of each other's work
- presenting results
- quality and deadlines - responsibility
- participating MSc students→next generation PhD students, earlier results→better chance of successful PhD industrial-like project environment→grow on project management, collective and individual responsibility skills in maintaining high quality and respecting deadline

Project example: Static Code Analysis



- There are several BSc and MSc students working on the subject together with the PhD students
- CodeChecker is an open source tool: automated debugging in programs without running
- It has been introduced by a number of Ericsson products instead of the expensive closed solution
- In addition to Ericsson, many other users, such as Mozilla, Clang Static Analyzer and Clang Tidy Analyst Engine Improvements, Apple, Google, Ericsson, Samsung, Sony, Facebook
- Related internships, Google Summer of Code international scholarship, student's mobility
- Close collaboration: meetings, skype meetings, code review, joint mentoring

Project example: P4@ELTE



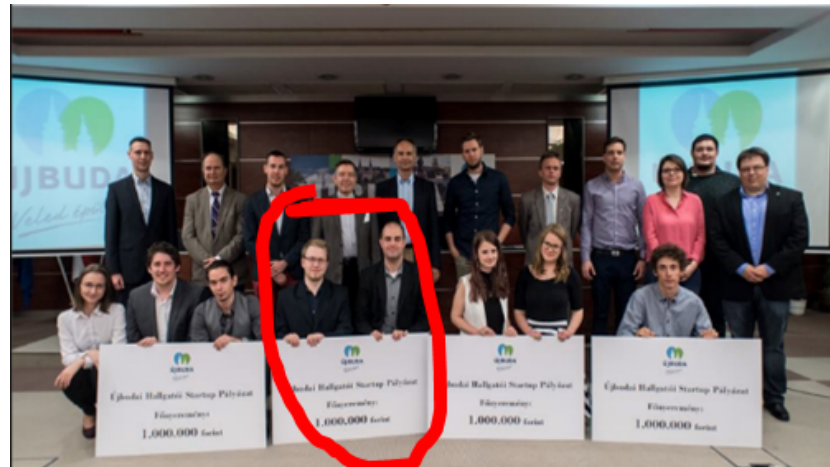
- A retargetable compiler for P4



ERICSSON RESEARCH@
ERICSSONLABS

Innovation Lab

- currently running the third year (2015, 2017, 2018)
- Examples: From the asthma monitoring app through the hydroponic system and the cost-grading application to the guitar-enhancing solution and the "applicant tracking system" for bounty hunters, a wide variety of projects were developed



Results

- operating companies (eg Pulmoment)
- increased career prospects
- work at startups,
- entry into the EIT Digital Master School
- Startup awards

SongArc



"I learned how crucial it is to never give up, to try over and over again, and that even if you fail, you should stand up and go further. One of the key things I learned is the real startup way of thinking!"

Ádám Kapos from Hungary
owner of SongArc
Master School 2015
Entry: Helsinki, Exit: Budapest
Technical Programme: SDE



BSc: ELTE – Microsoft ImagineCup Sydney finalist, 3rd place (game app)

MSc: EIT Digital Master School: SSA – Aalto → ELTE

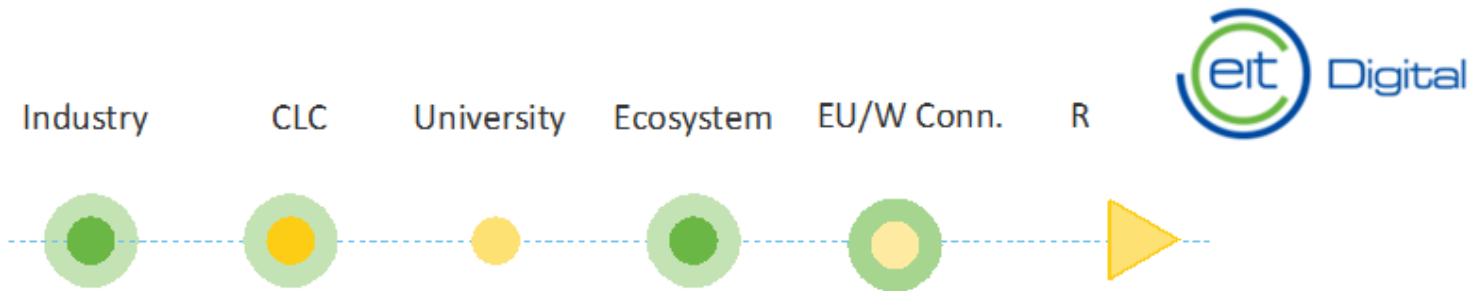
Professional internship: in his own startup, study trip to San Francisco (investors) → game app – 2,5M downloads

EIT Digital Budapest Doctoral Training Centre

- The largest and oldest DTC of EIT Digital Doctoral School
- Plays leading role in introducing a doctoral training model based on industrial co-financing
- Number of IDSL students: 8 ELTE, 5 BME, 12 European students (February 2018)



IDSL topics (Action Line alignment)



Digital Infrastructure

- Shift from network to service provision
- Realistic data creation for planning
- SDN for Network Management
- Network virtualization through IT
- 5G at the edges
- Transition from 4G to 5G
- Managing virtual distributed Clouds

Ericsson
Magyar Telekom
NOKIA

Digital Finance

Themes:

- Using blockchain in the agriculture value chain to support banking
- Smart Interactive Voice Response for bank call centers
- Remote authentication based on eIDAS to open deposit accounts
- Creation of Bank Smart Branches

Interest in:

- Digital Transformation in the Fintech area
- Cultural/organizational aspects in enterprises
- Blockchain applications

OTP Bank
E-Group

LeanNet

- Start-up company of students at PhD School
- Their themes are: Software Defined Networking (5G-based network technology)
- Contributing to the design of Magyar Telekom's new generation SDN-based data center network
- New direction:
 - Container-based microservice environments
 - SDN based network optimization.
 - MVP before product marketing, open source
- Looking for an investor



EIT Digital Budapest Accelerator

	Smart wearable devices.
	We bring it every patient's home.
	Connect them with dedicated medical team 24/7.
	We provide affordable medical service for all of us everywhere at any time.

3-12 lead ECG, SPO 2, Respiration rate, Blood pressure, Body temperature, Activity, GPS positioning.

24 hours medical observation in real time.

Diagnoses and Prescription. Medication Plan Management. Alert Response - Call Response AI on DUTY - Sophisticated decision support system in real time for the medical team following every heart beat, improving the efficiency and productivity even more.

What We Do



Bulgarian startup (ARISE)
Leading business developer: Miklós Gábor
€ 475,000 in the Nightingale H2020 project
Digital Wellbeing Innovation Area - Portable Health Device ->
Real-time monitoring of the patient's condition





Thank you for your attention!

