

## NEW UNIVERSITY ERP FOR STUDYING, TEACHING, AND ADMINISTRATION - PAST, PRESENT, AND FUTURE OF THE PEPPI

# Main education processes in Finland

Teaching and planning processes

Programme management

Curriculum planning

Course offering planning

Teaching

Student administration processes

Admission

Support for teaching

Study rights data administration

Support for studies

Student processes

Applying for studies

Individual study planning

Studying

# Introduction to history

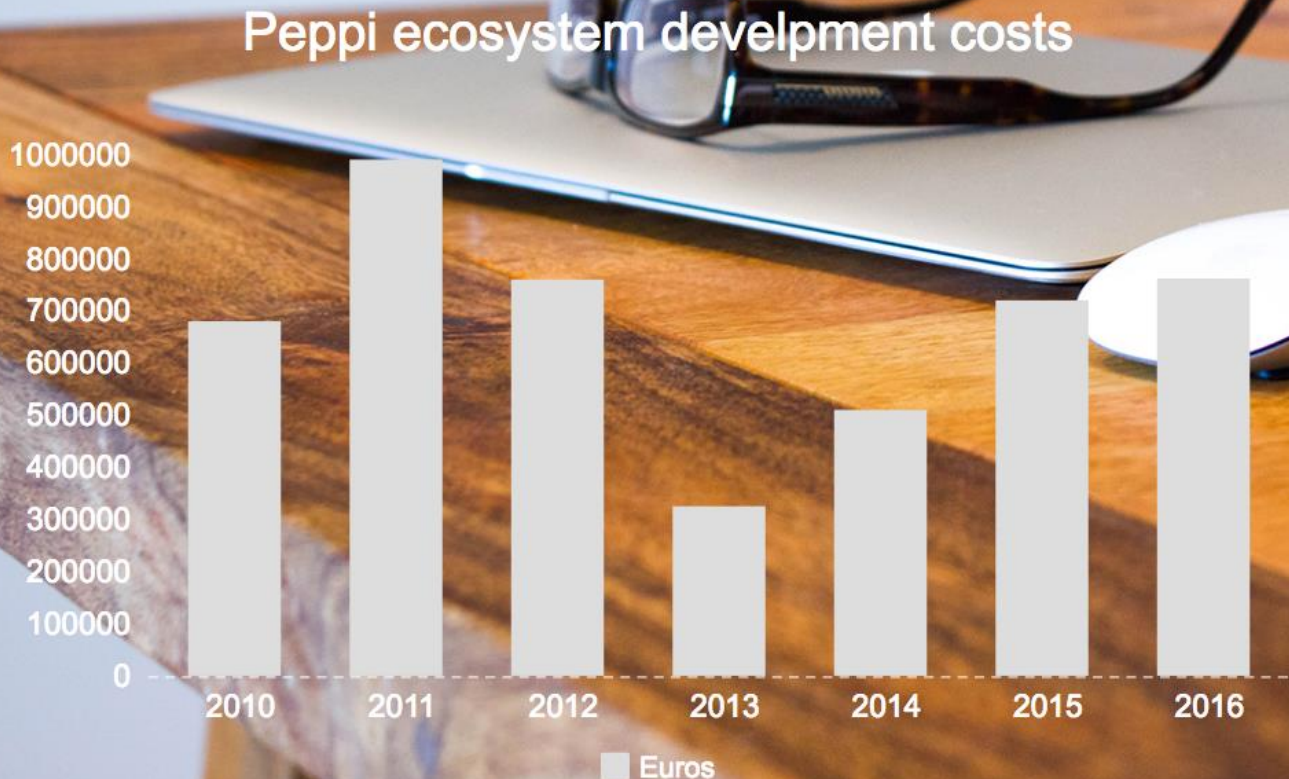
- 20 year old student information systems (SIS) in use at the moment.
- National project called ProAMK started in 2005. The goal was to create new SIS for the whole sector.
- Another national project called RAKETTI started in 2009. The goal was to create new SIS for the whole sector.

*Let's Celebrate  
20 years old systems*

.....  
*Be happy don't worry!*

# The outcome

- In 2010 two major Universities of Applied Sciences started a project called Peppi. The goal was to create new Enterprise resource planning (ERP) system for education sector and Student information system (SIS).
- Using only their own money at their own risk



**Grand total**  
5 million €

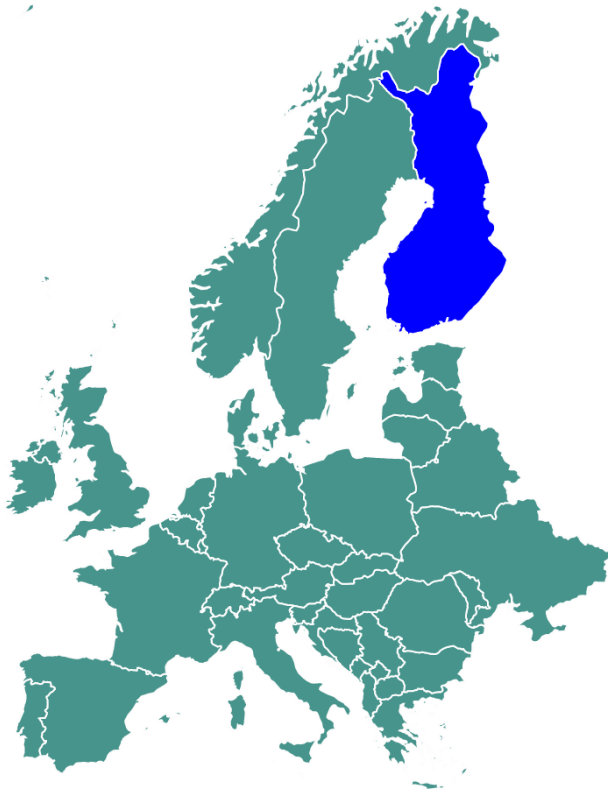




# The goals of the project

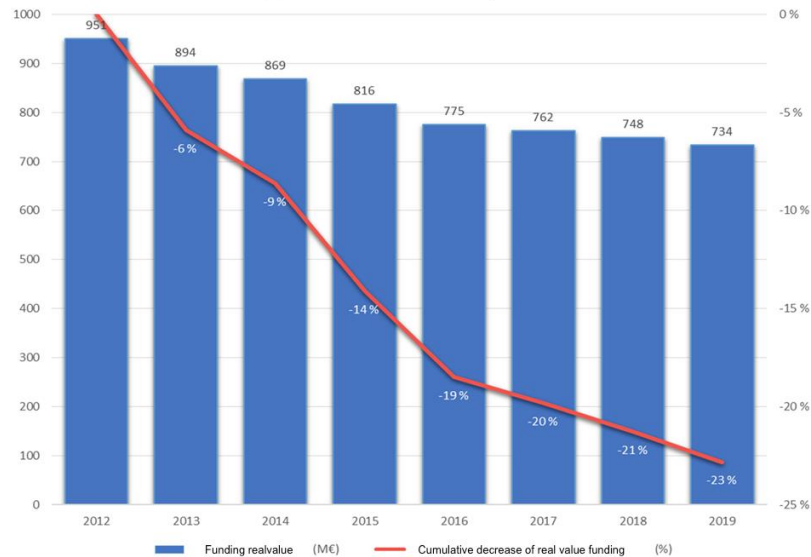
- Create an ecosystem of services created in Service oriented architecture (SOA) fashion.
- Replace old systems with new services.
- Renew the Enterprise Architecture (EA) on it's all levels:
  - Business
  - Information
  - System
  - Technology
- Create an ecosystem of services so that other HEI's could start using Peppi-ecosystem
- Create new user interfaces in modern fashion

# The environment - Finnish HEI environment



- Finnish HEI environment consists of universities and universities of applied sciences
- At the moment there are 14 universities and 24 universities of applied sciences but it is expected that there will be mergers in coming years.
- The other trend within the HEI environment is decreasing funding. The HEI's are almost entirely government funded, and due to ongoing weak economic growth, the cuts have been considerable, even 15%.

Universities of Applied Sciences funding cutbacks 2013-2019



# The environment - Establishment of the project

Background investigations on national level: what, why, when, who - and who is paying?

- Lot's of paper - No concrete results

Highly useful background information for our projects

- Limited amount of organizations involved - easier to reach understandable specifications
- Part-time participation - part-time commitment
- You have to start in order to get results

Our way:

- Develop the system for limited amount of organisations (in our case 2 biggest Universities of applied sciences in Finland)
- Publish the system as is for other HEI's and continue development through consortium



# Financial constraints

Financial resources only from the owner institutions

Decisionmaking in the project without a need to negotiate

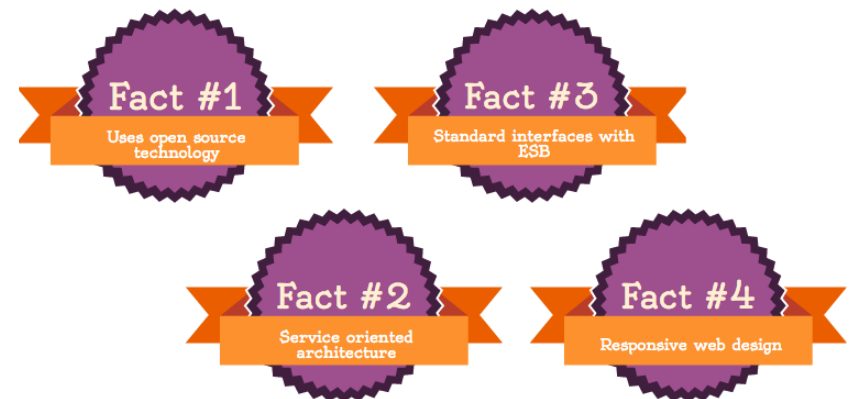
The amount of money did not allow us to waste time: the high quality results were urgently needed in a limited time

# Technical environment

The Finnish public sector's system architecture has been focusing on these principles during the last decade:

- Interoperability - service interfaces
- Enterprise Architecture
- National Enterprise Service Bus
- Mobile services
- Open data
- Open source software

We wanted to have an answer to every principle mentioned above.





# The results - new services for the Ecosystem

## Student information system

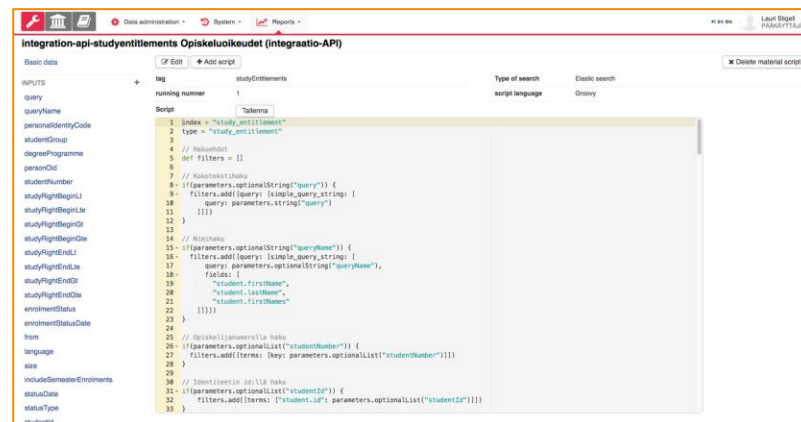
- Student registry
- Assessment / Accomplishment registry
- Code management
- Reports (eg. printed certificates and statistical reports)

## Student dashboard

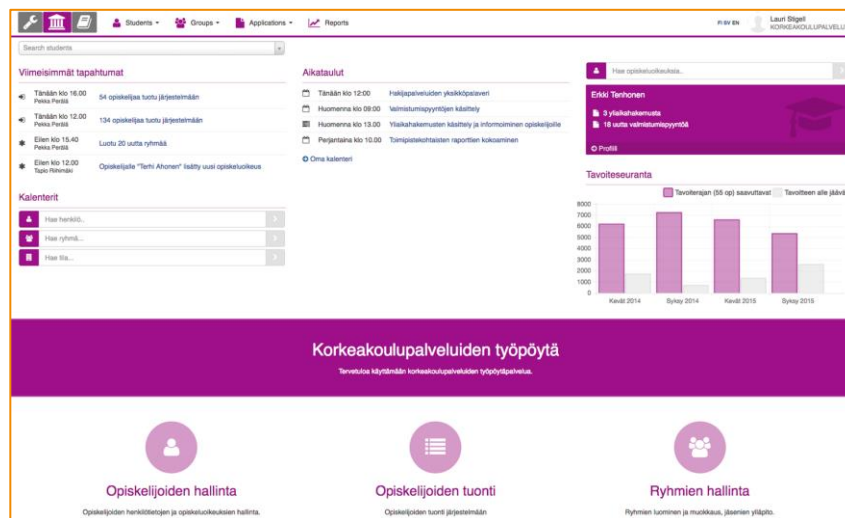
- Personal curriculum management
- Personal assessments / accomplishments
- Personal reports
- Enrollments (Courses / Semesters)
- Personal information management

## Integrated dashboards

- Intranet
- Course workspaces
- Dashboard integrations



```
integration-api-studententitlements (integratio-API)
Basic data
tag studyEntitlements
Type of search Elastic search
script language Groovy
Script
1 index = "study_entitlements"
2 type = "study_entitlements"
3 // #request
4 // #filters
5 def filters = []
6
7 // #requestihakku
8 - if (parameters.optionalString("query")) {
9   filters.add(query: "ismp:is_query_string |
10    query: parameters.string("query")
11   )
12 }
13
14 // #requestihakku
15 - if (parameters.optionalString("queryname")) {
16   filters.add(query: "ismp:is_query_string |
17    query: parameters.optionalString("queryname"),
18    facets: [
19      "student_firstname",
20      "student_lastname",
21      "student_firstname"
22    ])
23 }
24
25 // #requestihakku
26 - if (parameters.optionalString("studentNumber")) {
27   filters.add(terms: [key: parameters.optionalString("studentNumber")])
28 }
29
30 // #requestihakku
31 - if (parameters.optionalString("studentID")) {
32   filters.add(terms: [student_id: parameters.optionalString("studentID")])
33 }
studentID
```



# Desktops and Services

Shared desktop services:

Navigation menu, Search, Messages, User Information, Language settings

## Common Desktop

- Communication
- Quality Management
- Workspaces
- Materials
- People
- Tools
- Calendar

## Student's Desktop

- Transcript of records
- Calendar
- Personal Curriculum
- Progress monitoring
- Agreement Archive
- Recognition of prior Learning
- Certificates

## Teacher's Desktop

- Resource Planning
- Recognition of prior Learning
- Reporting
- Curriculum management
- Implementations
- Study Materials

## Planner's Desktop

- Resource Planning
- Recognition of prior Learning
- Reporting
- Curriculum planning
- Year planning
- Units
- Maintenance

## Study administration desktop

- Applicant procedure
- Student management
- Graduates/Diplo mas management
- Reports

## Manager's Desktop

- Planning and monitoring activities
- Project portfolios
- Reports

## Administrator's Desktop

- Desktops and Services
- Information of Resources
- Curriculum Rules
- Settings for Organisation level

Common Services:

Communication and Quality Management

Service Bus



Information resources

# Dashboards and the user interfaces

Study right search

SEARCH OPTIONS

Basic search

Advanced search

Q SAVED SEARCHES

No saved searches

Q SAVED ADVANCED SEARCHES

No saved searches

Search criteria

Surname:  First name:

Social security number:  Former surname:

Date of Birth:  OID:

Student number:  Username:

Study information

Attendance and study periods

Semester:  Attendance status for semester:

Used semesters:  Semesters left:

Start dates:  Ending date:

Study right validity:

Erokoodi:

Include inactive students in search:

Display status for the semester:

Q Search Save search Empty

V0136-2001 Basics of packaging technology 11.1.2010 - 30.5.2010

Reports Show parts Hide the parts Columns

Status	Name	Student Num...	Cr	Average	Grade	Date of completion	Assessor	Saved
0	Aaltonen, Annukka	2034287	3	3.2	3	29.2.2016	Stigel, Lauri	29.2.2016 7.48
	working group	3.8%	1		4	29.2.2016	Stigel, Lauri	29.2.2016 7.48
	exam	2.4%	2		2	29.2.2016	Stigel, Lauri	29.2.2016 7.48
0	Härnen, Liisa	2035985	3		3	23.3.2010	Rämö, Vipi	24.2.2016 11.08
0	Helander, Teo	2030891	3		3	29.3.2010	Rämö, Vipi	24.2.2016 11.06
0	Hiltunen, Monika	2030885	3		4	29.3.2010	Rämö, Vipi	24.2.2016 11.08
0	Kopponen, Meri	2048116	3		5	22.3.2010	Rämö, Vipi	24.2.2016 11.00
0	Kuckkainen, Matti	2076047	3		3	23.3.2010	Rämö, Vipi	24.2.2016 11.04
0	Niemelä, Jarmo	2077223	3		5	23.3.2010	Rämö, Vipi	24.2.2016 11.04
0	Niemelä, Jussi	2002161	3		4	23.3.2010	Rämö, Vipi	24.2.2016 11.00
0	Penttilä, Jenna	2077288	3		3	23.3.2010	Rämö, Vipi	24.2.2016 11.04
0	Poutanen, Seppo	2100720	3		1	18.8.2010	Rämö, Vipi	24.2.2016 11.08
0	Schroderus, Kaisa	2100717	3		5	23.3.2010	Rämö, Vipi	24.2.2016 11.08
0	Sivén, Pia-Riitta	2021151	3		4	23.3.2010	Rämö, Vipi	24.2.2016 11.08
0	Soukaihi, Jenni	2051244	3		3	29.3.2010	Rämö, Vipi	24.2.2016 11.01
0	Vermasa, Niila	2003339	3		5	23.3.2010	Rämö, Vipi	24.2.2016 11.04
0	Vessa, Matti	2043302	3		5	23.3.2010	Rämö, Vipi	24.2.2016 10.59
0	Vilimäki, Reijo	2051164	3		5	23.3.2010	Rämö, Vipi	24.2.2016 11.01

Maanmittausteknikan tutkinto-ohjelma, Degree Programme in Land Surveying 20.08.2015 - 01.08.2019

Add attendance Add resignation Add graduation

204597 MAANMITTAUSTEKNIKAN TUTKINTO-OHJELMA, DEGREE PROGRAMME IN LAND SURVEYING

Study dates

Attendance data

additional information of the study right

ISP

studies

KV-tilikuuuus

ANNUKKA AALTONEN

Personal information

Contact information

Permissions to release information

Additional information

Next of kin

Graduation and resignations

Näytä historiatiedot

SUMMARY

Läsnä (LÄ) 2

Poissa (PO) 0

Used present terms 2/10

absence terms used 0/2

Year	Syyslukukausi	Status	Reason	Start date	End date	Assessor	Functions	
2019	Syyslukukausi	Resigned	E3	01.08.2019	29.02.2016 06.17	Lauri Stigel	Functions	
2019	Kevätlukukausi	Present	LÄ	01.01.2019	29.02.2016 06.17	Lauri Stigel	Functions	
2018	Syyslukukausi	Present	LÄ	01.08.2018	01.01.2019	29.02.2016 06.17	Lauri Stigel	Functions
2018	Kevätlukukausi	Absent	PO	01.01.2018	01.08.2018	29.02.2016 06.16	Lauri Stigel	Functions
2017	Syyslukukausi	Present	LÄ	01.08.2017	01.01.2018	29.02.2016 06.16	Lauri Stigel	Functions
2017	Kevätlukukausi	Present	LÄ	01.01.2017	01.08.2017	29.02.2016 06.16	Lauri Stigel	Functions
2016	Syyslukukausi	Absent	PO	01.08.2016	01.01.2017	29.02.2016 06.16	Lauri Stigel	Functions
2016	Kevätlukukausi	Present	LÄ	01.01.2016	01.08.2016	23.02.2016 17.42	Admin Admin	Functions
2015	Syyslukukausi	Present	LÄ	20.08.2015	01.01.2016	23.02.2016 17.42	Admin Admin	Functions

ISP guidance

Students Events Tasks Monitoring graph Group description

Summary

MY ISP GROUP

ACT2

SS04S2

ACT1

ACT3

Students: 0 Whole degree All periods Period 1 Period 2

Sort Show all Not selected Selected Scheduled Enrolled Completed

Legend: Not selected Selected Scheduled Enrolled Completed

Student	Not selected	Selected	Scheduled	Enrolled	Completed
Esko Penttinen	35	18	75	47	
Heidi Lehtonen	23	31	85	87	
Janne Rihnenä	52	55	49	30	
Liisa Viitanen	81	52	38	16	
Mauro Ahonen	81	36		28	
Mikko Mäkelinen	92	43	33	15	
Olli Oroskela	37	56	87	19	
Pertti Lehtinen	75	61	21	11	
Tapio Tuomela	85	61	77	10	
Tina Tolonen	86	64	37	25	

# Student accomplishments

Students Groups Applications Reports

FI SV EN

Aarno Testikahdeksan 2012424, Incoming Exchange, Technology, Communication and Transport 30.07.2012 - 27.08.2017

2012424, INCOMING EXCHANGE, TECHNOLOGY, COMMUNICATION AND TRANSPORT

Total credits: 62 credits, ka. 2,81

Failed and Incompleted

<input type="checkbox"/>	<input type="checkbox"/>	Course	Name	Amount of credits	Grade		Assessor	Modified	
<input type="checkbox"/>	<input type="checkbox"/>	TT00AC39-2001	Introduction to Computer Graphics	3	4	kieleistys puuttuu	06.08.2012 Chan Koh	04.05.2016 15.34	Actions
<input type="checkbox"/>	<input type="checkbox"/>	TI00AC28-2001	Windows Phone Code Camp	3	HYV	kieleistys puuttuu	22.08.2012 Ivan Sidiyakin	24.02.2016 11.03	Actions
<input type="checkbox"/>	<input type="checkbox"/>	P-192763-2	International Cooperation on Human Rights	5	2	kieleistys puuttuu	28.02.2016 Lauri Stigell	30.05.2016 11.17	Actions
<input type="checkbox"/>	<input type="checkbox"/>	MAGS2058	Human Interaction on Computer Science	6	2	Opinnäytetyöhön liittyvä opinto	08.03.2016 Lauri Stigell	30.05.2016 11.16	Actions
<input type="checkbox"/>	<input type="checkbox"/>	TM00AA38-2002	Material Technique	3	3	kieleistys puuttuu	30.05.2016 Lauri Stigell	30.05.2016 11.15	Actions
<input type="checkbox"/>	<input type="checkbox"/>	SHKCL04-2002	Thesis, Nursery expertise	5	5	kieleistys puuttuu	30.05.2016 Lauri Stigell	30.05.2016 11.15	Actions
<input type="checkbox"/>	<input type="checkbox"/>	TI00AA04-2006	Basics on Engineering Mathematics	6	2	kieleistys puuttuu	30.05.2016 Lauri Stigell	30.05.2016 11.16	Actions
<input type="checkbox"/>	<input type="checkbox"/>	SX00AA96-2004	Geriatric Nursery	10	1	kieleistys puuttuu	30.05.2016 Lauri Stigell	30.05.2016 11.19	Actions
<input type="checkbox"/>	<input type="checkbox"/>	SXXXE01-2025	Psychiatric Evaluation Methods	3	3	kieleistys puuttuu	30.05.2016 Lauri Stigell	30.05.2016 11.19	Actions
<input type="checkbox"/>	<input type="checkbox"/>	SDXXA07-2011	Patient or Customer?	3	3	kieleistys puuttuu	30.05.2016 Lauri Stigell	30.05.2016 11.23	Actions
<input type="checkbox"/>	<input type="checkbox"/>	SHSXB01-2046	Perioperative Nursing - Practise	12	5	kieleistys puuttuu	30.05.2016 Lauri Stigell	30.05.2016 11.22	Actions



# Student semester enrollments




Students ▾
Groups ▾
Applications ▾
Reports

**Aarno Testikahdeksan** 2012424, Incoming Exchange, Technology, Communication and Transport 30.07.2012 - 27.08.2017

2012424, INCOMING EXCHANGE, TECHNOLOGY, COMMUNICATION AND TRANSPORT

Study datas

Attendance data

additional information of the study right

ISP

studies

Mobility

AARNO TESTIKAHDEKSAN

Personal information

Contact information

Permissions to release information

Additional information

Next of kin

[Add attendance](#)
[Add resignation](#)
[Add graduation](#)

## attendances

2016	 Present	LÄ	01.08.2016		17.04.2016 16.40	Aarno Testikahdeksan	Functions ▾
2016	 Present	LÄ	01.01.2016	01.08.2016	16.04.2016 23.21	Aarno Testikahdeksan	Functions ▾
2015	 Absent	PO	01.08.2015	01.01.2016	16.04.2016 23.20	Aarno Testikahdeksan	Functions ▾
2015	 Absent	PO	01.01.2015	01.08.2015	16.04.2016 23.20	Aarno Testikahdeksan	Functions ▾
2014	 Absent	PO	01.08.2014	01.01.2015	16.04.2016 23.20	Aarno Testikahdeksan	Functions ▾
2014	 Present	LÄ	01.01.2014	01.08.2014	16.04.2016 23.20	Aarno Testikahdeksan	Functions ▾
2013	 Present	LÄ	01.08.2013	01.01.2014	16.04.2016 23.20	Aarno Testikahdeksan	Functions ▾
2013	 Present	LÄ	01.01.2013	01.08.2013	16.04.2016 23.20	Aarno Testikahdeksan	Functions ▾
2012	 Present	LÄ	01.08.2012	01.01.2013	16.04.2016 23.20	Aarno Testikahdeksan	Functions ▾
2012	 Absent	OP	30.07.2012	01.08.2012	23.02.2016 17.42	Aarno Testikahdeksan	Functions ▾

# Group progress

## ISP guidance

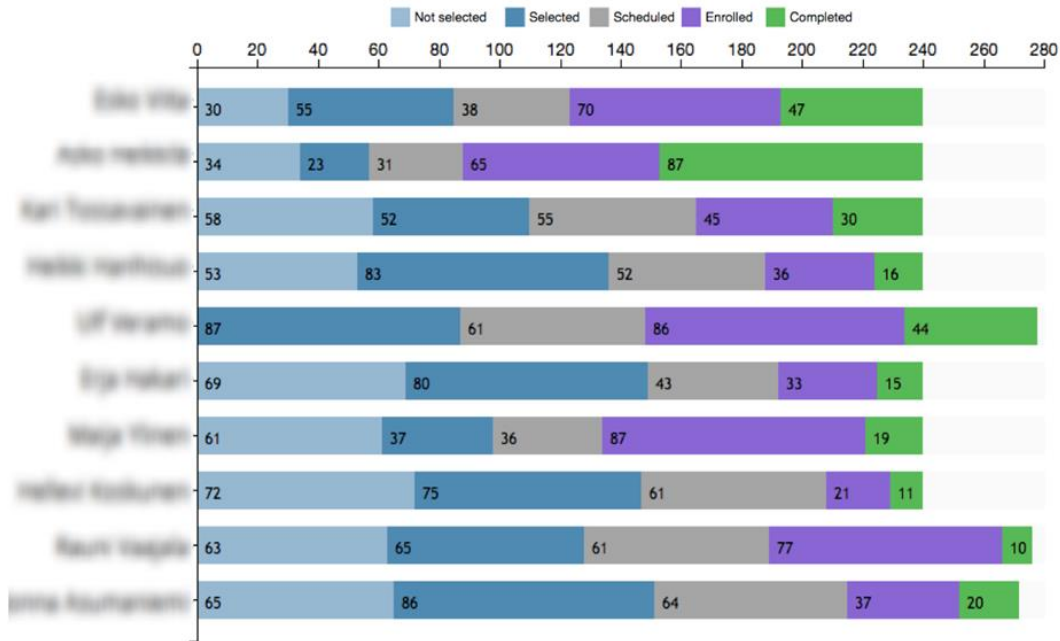
- ISP GUIDANCE
- Summary
- MY ISP GROUP
- ACT2
- SS04S2
- ACT1
- ACT3

Students Events Tasks Monitoring graph Group description

Whole degree ▾

Sort ▾

Show all Not selected Selected Scheduled Enrolled Completed



# Personal curriculum



## ISP guidance

- ISP GUIDANCE
- Summary
- MY ISP GROUP

Inspection Selecting studies Arrangement Scheduling Messages Enrollments

Select version of ISP Check Comment on ISP Approve ISP

Filter selections Close all ?

Introduction to the built environment	20 / 30 credits	+	⋮
Swedish for Civil Engineers	5 credits	+	⋮
(Common) Suomi	0 credits	+	⋮
Math and Science Basics 1	5 credits	+	⋮
Finnish for Foreigners 1	5 credits	+	⋮
Math and Science Basics 2	5 credits	+	⋮
Theoretic Basis of Design	50 / 30 credits	+	⋮
Fluid Flow and Thermal Physics	5 credits	+	⋮
Introduction to the built environment	15 credits	+	⋮
Engineering Finnish and Communication Skills	5 credits	+	⋮
Finnish for Foreigners 2	5 credits	+	⋮
Math and Science Basics 3	5 credits	+	⋮
Statics	5 credits	+	⋮
Environmental Assessment Introductory Project	5 credits	+	⋮
Construction IT	5 credits	+	⋮
Buildings and Construction	30 / 30 credits	+	⋮
Material chemistry and communication skills	5 credits	+	⋮

Test Student

**Entitlement**  
BEng (Poly), Build. Construct.

**Entitlement active**  
03.09.2015 - 31.12.2020

**Student number**  
[REDACTED]

**OID**  
[REDACTED]

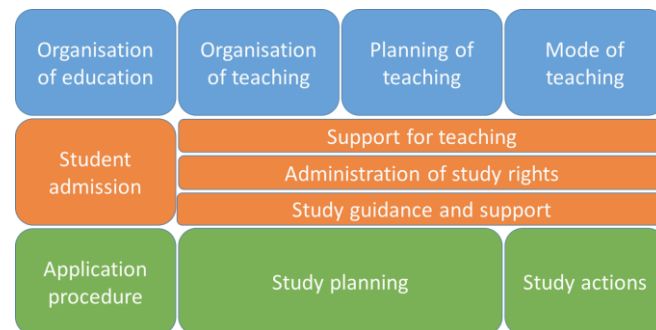
Students information »

Status  
DRAFT, selected 272 / 240 credits

Notices  
Latest completed studies:  
JAVA and J2ME Basics  
Media Design and Integration  
opari  
Chemistry  
Chemistry

# The state of the development

Project	Education and Curricula Planning	Student Application and Admissions	Study Right Management	Teaching	Studying	Studying Support Services
Enterprise resource Planning (Peppi)	█			█		
Student registry			█			
Student dashboard PSP (Pakki)					█	
Integrated dashboard	█					

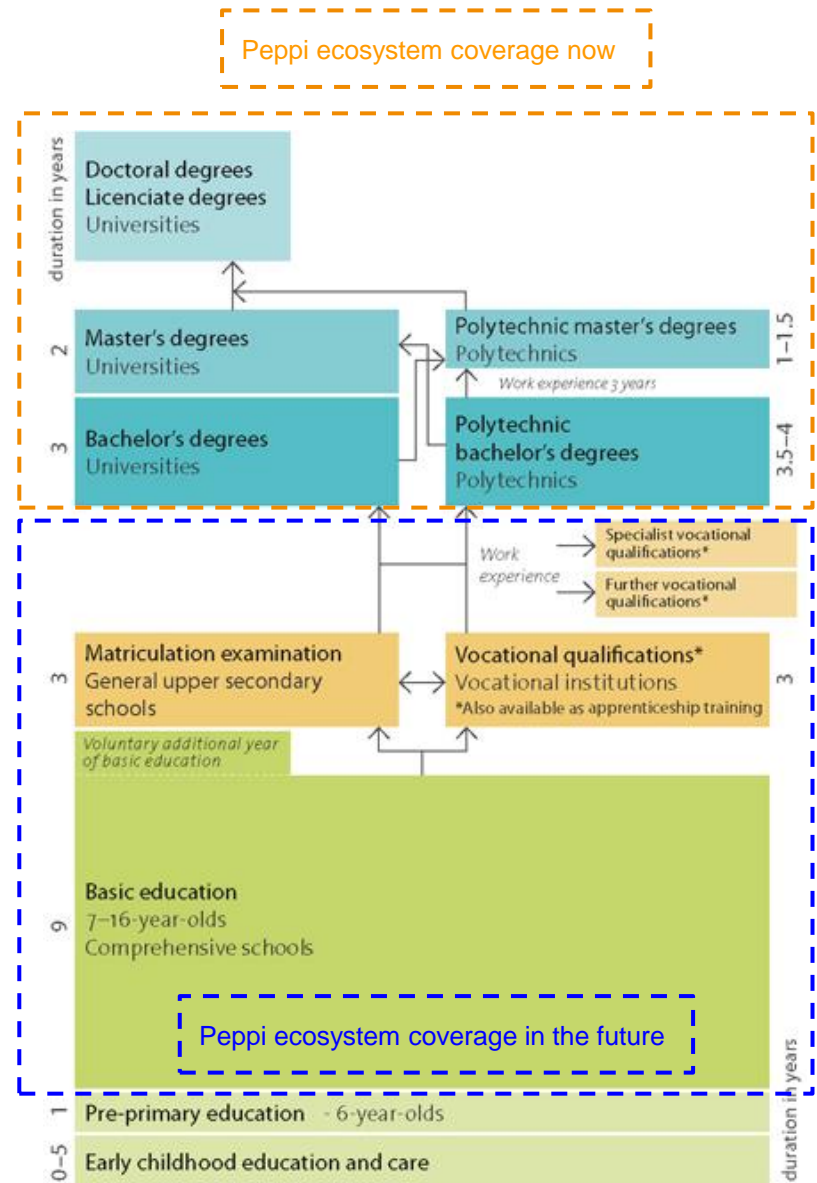


- Peppi-ecosystem covers all of the HE process areas excluding the student admission and alumni services
- Constant evaluation of future development needs



# The future

- Peppi Consortium
  - Coverage today over 56% of Finnish HEI's and still growing
    - 14 universities of applied sciences
    - 5 universities
    - 2 vocational schools
    - 10 company members
  - Growing demand on Peppi services on upper secondary education
- Co-operation on national level - our development model is open
- Co-operation on international level is what we are looking for



# The future

## Peppi Ecosystem

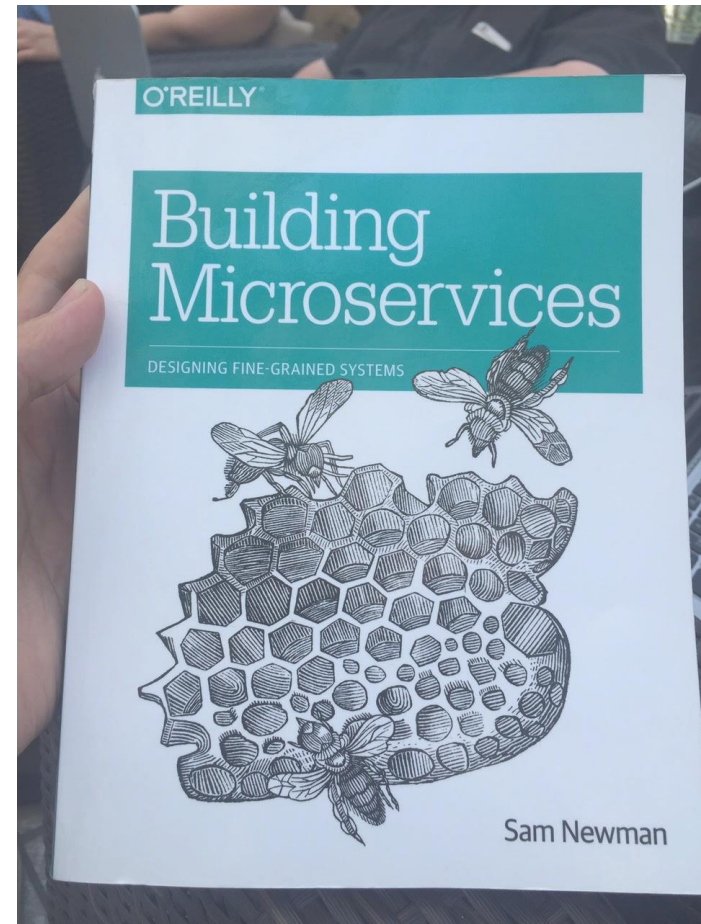
- New services are being developed based on the needs of consortium members
- Integrations to cloud services (Drive, O365, Moodle, Optima etc.)
  - Integrations to national application system (studyinfo.fi)
  - New planning and optimization tools for scheduling
- Improvement of existing Ecosystem services
- Add-on services on top of API's

# Summary

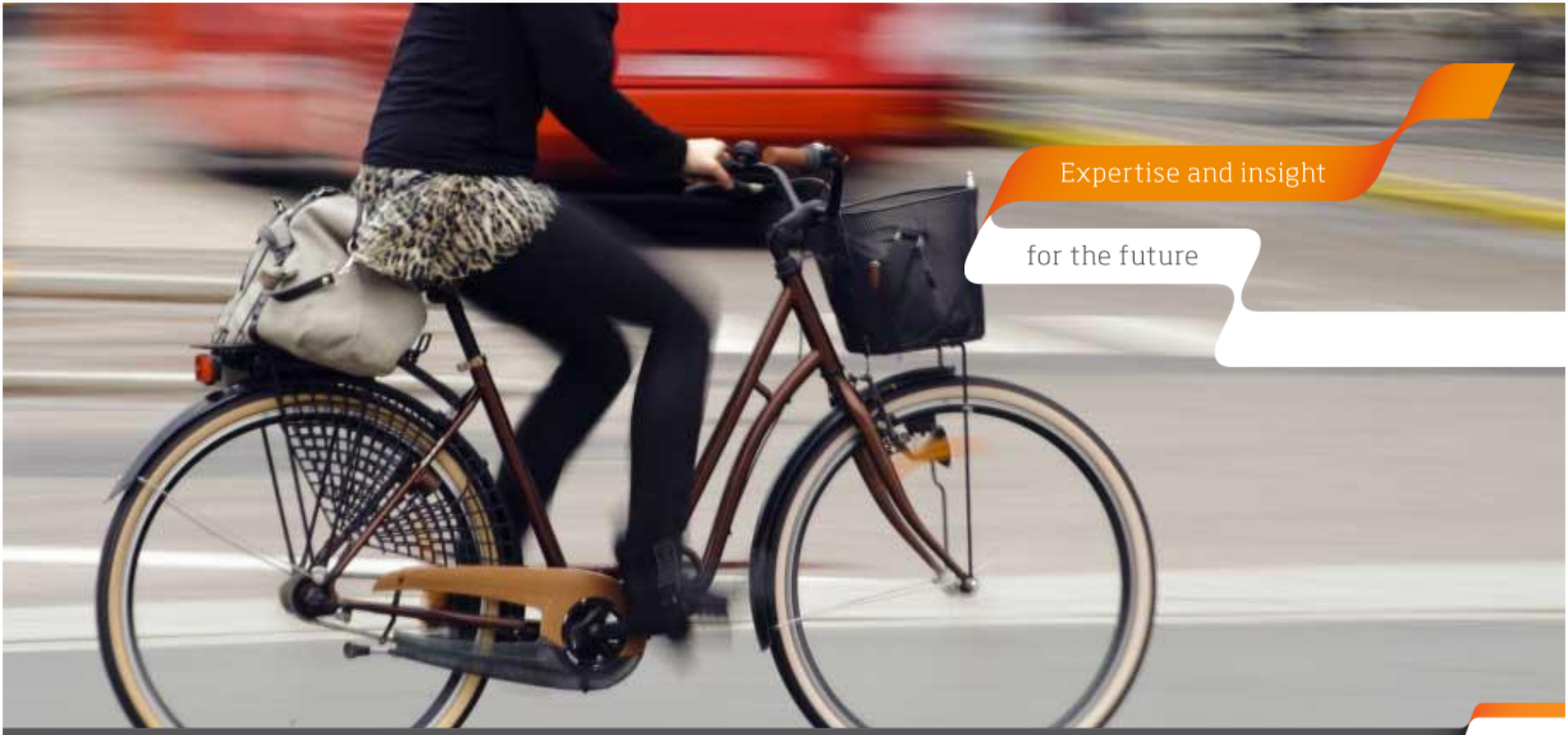
- Past:
  - Urgent need to renew old systems
  - Useful national architecture definitions and networks
- Present:
  - Project by project Peppi has covered the HE process and service needs
  - Strong growing phase
- Future:
  - Development continues
  - Cooperation on many levels
  - Continuous evaluation of our development and administrative model

## Book you should read!

- Wise approach to create SOA







Expertise and insight

for the future

Thank you!

Tuomas Orama & Jaakko Rannila