

LEARNING FROM FINNISH EXPERIENCE WITH THE JOINT DEVELOPMENT OF INFORMATION SYSTEMS

UNIVERSITY OF HELSINKI

TUOMAS NAAKKA

KATI KETTUNEN



HELSINGIN YLIOPISTO

**Planning
of
Program
s**

**Planning
of
Teaching**

**of
Teaching
Offering
s
(Timetab**

Teaching

**Admissi
on**

Support Services for Teaching

Maintaining rights to study

Support Services for Studying

Applying

Planning of Studies

Studying

Planning
of
Program
s

Planning
of
Teaching

of
Teaching
Offering
s
(Timetab

Teaching

Admissi
on

Support Services for Teaching

Maintaining rights to study

Support Services for Studying

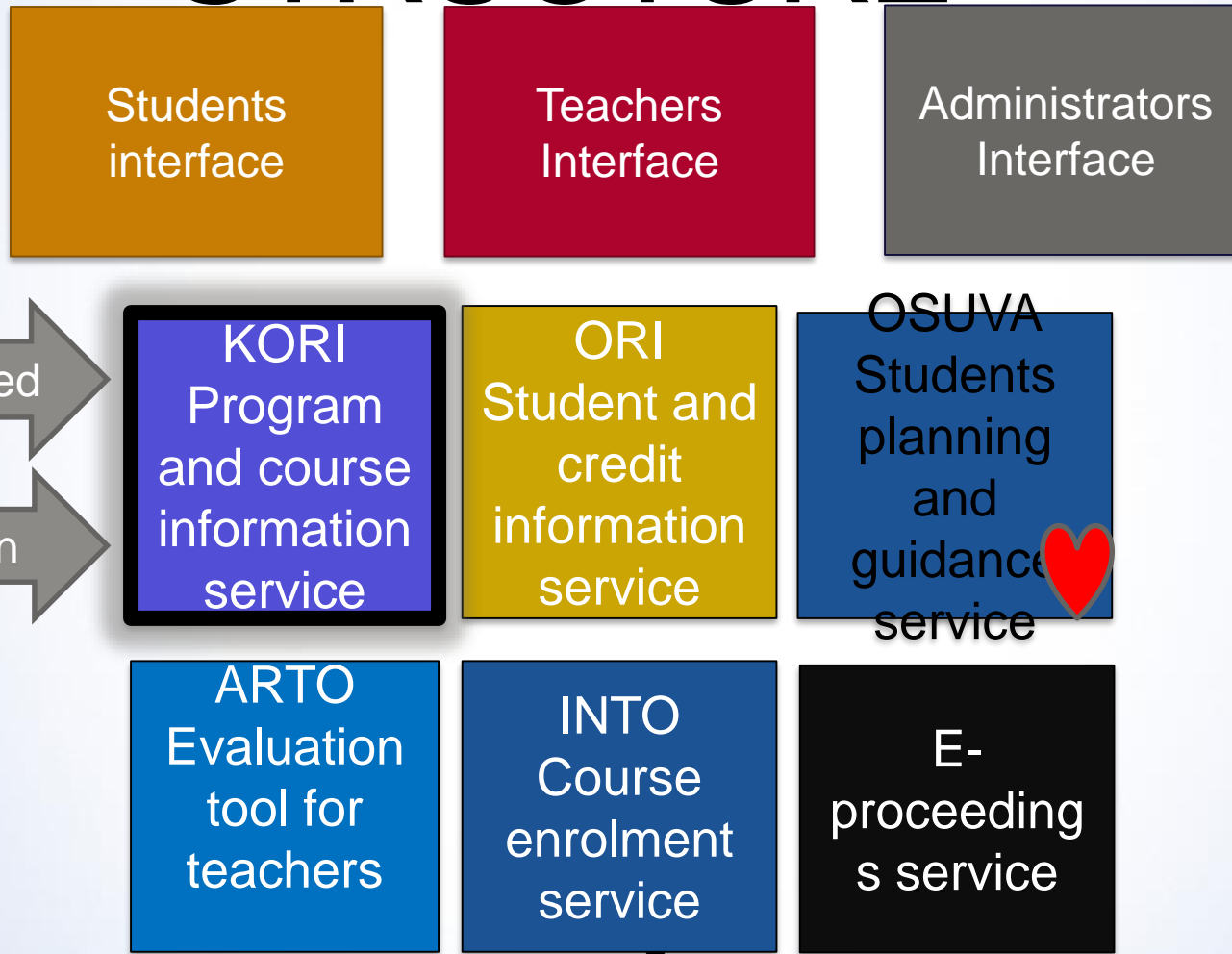
Applying

Planning of Studies

Studying



SYSTEM STRUCTURE



TIMELINE

New SISu

- 2013: SISu project started: first prototypes, process work
- 2014: procurement for developers and UI designer
- 2015: first version of study planning
- 2016: second version of study planning, Funidata Inc. founded
- 2017: more modules and interfaces
- 2018: usable product (to replace old SIS Oodi)

University of Helsinki

- 2013: SISu project support (UH developers, UI design)
- 2014: Digital Teaching and Learning project started
- 2015: piloting with students, data transfer (Oodi-SISu)
- 2016: testing, data transfer
- 2017: pilots; production use in August 2017
- 2018-19: evaluation of the product and replacement of old SIS Oodi



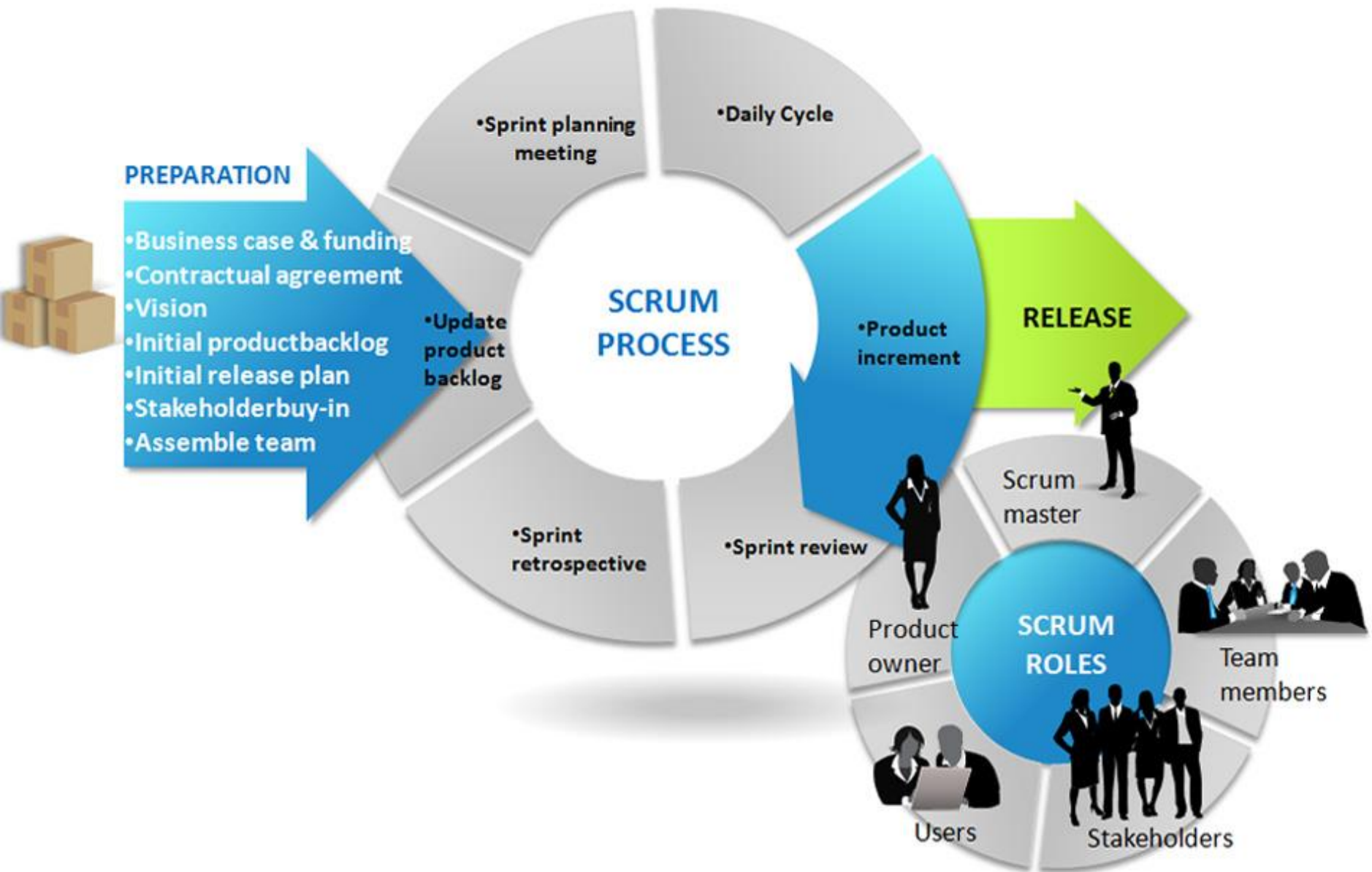
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SISU DEVELOPMENT



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SCRUM PROCESS



DEVELOPMENT PRACTICE

- Took a lot of effort to turn the project in to an agile project
- 2013: prototyping with an internal team mixed with external developers
- Steering group and product owner coaching
- Scrum has been used in project from the beginning
- Two product owners both from University of Helsinki and Aalto University
- One from University of Tampere
- Good:
 - many people can steer the development, write tickets and participate in the scrum process
 - shared responsibility relieves the pressure
- Bad:
 - not very easy to find a solution between many participants
 - nobody is clearly responsible



DEVELOPER ACQUISITION

- University of Helsinki has a very small team of internal developers
 - University of Tampere as well, Aalto has no internal developers
- Software development and UX development etc has to be put out to tender
- University of Helsinki has made framework agreements in both areas
- Software development: 3 vendors
 - Bidding between 3 vendors
- User interface design: 1 vendor
- Agile framework agreement: buy developers for a certain period of time, they work under client supervision



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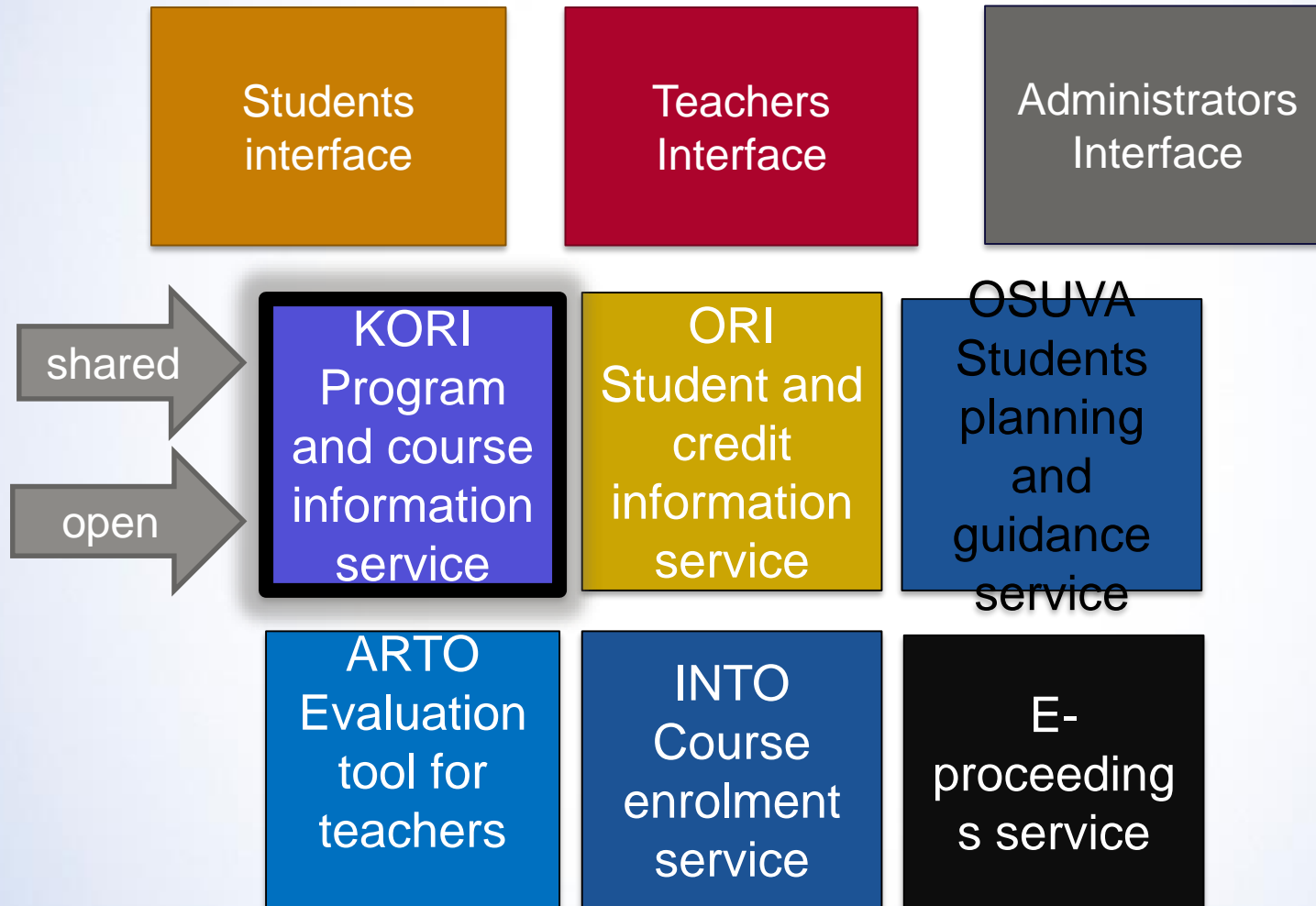
DEVELOPERS

- SISu development used University of Helsinki agreements until Funidata Ic. was founded
- Aalto made framework agreement for developers as well
- In the beginning there were 3 developers and internal UI designer
- One team until 2015, now two teams
- Both teams have developers from two vendors
- 1-2 UI designers



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SISU COMPONENTS



SISU COMPONENTS

Opiskelijan
käyttöliittymä

Opettajan
käyttöliittymä

Hallintohenkilön
käyttöliittymä

KORI
Koulutus- ja
Opetustietopalvelu

ORI
Opiskelijatieto-
rekisteripalvelu

OSUVA
Opintojen
suunnittelun ja
ohjauksen palvelu

ARTO
Opetuksen
toteutusten ja
kokonaisuuksien
arviointipalvelu

ILMO
Opetukseen
ilmoittautuminen
palvelu

Sähköinen asiointi

TECHNOLOGY CHOICES

- Angular.js
- Java
- Postgres.sql
- REST+JSON interfaces
- Clear division between front end and back end
- Modules are separated based on data



CAPACITY SERVICE

- Funidata Inc acts also as a capacity provider
 - Bought from outside
 - Enables scalability, monitoring etc
 - Docker containers->possibility to use continuous integration
- All the universities have their installations in the same place
- Courses are stored in same database instance
- Other modules are separate (sensitive data)



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INTEGRATIONS



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INTRODUCING THE SISU SYSTEM IN UH

Project timeline 2016-2019

- Data transfer (Oodi-SISu) and data quality
- Integrations (SISu->other systems)
- Reporting
- Archiving (digital)
- Process work ->define and implement the new process of study administration

New software

- Course evaluations as part of building a new course feedback system based on pedagogy and helping pedagogical research
- Other missing parts (study guides, digital returning of thesis...)



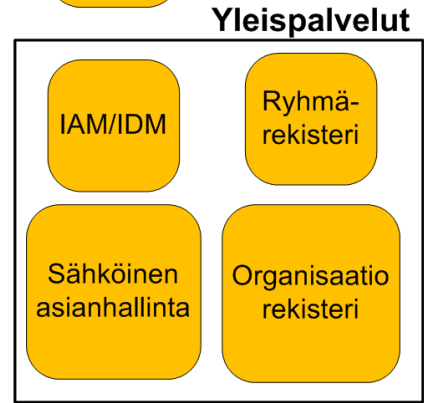
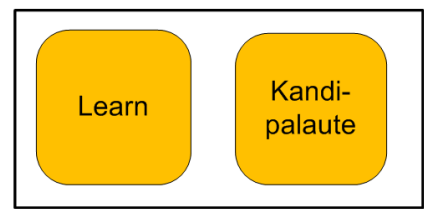
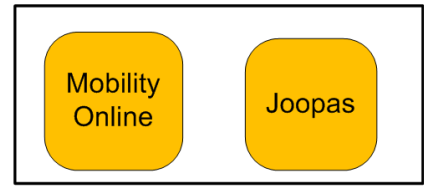
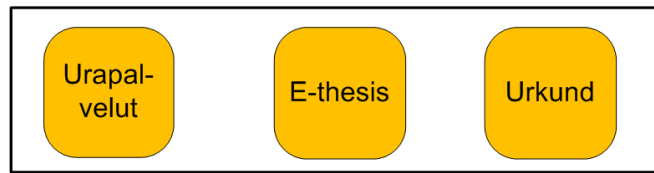
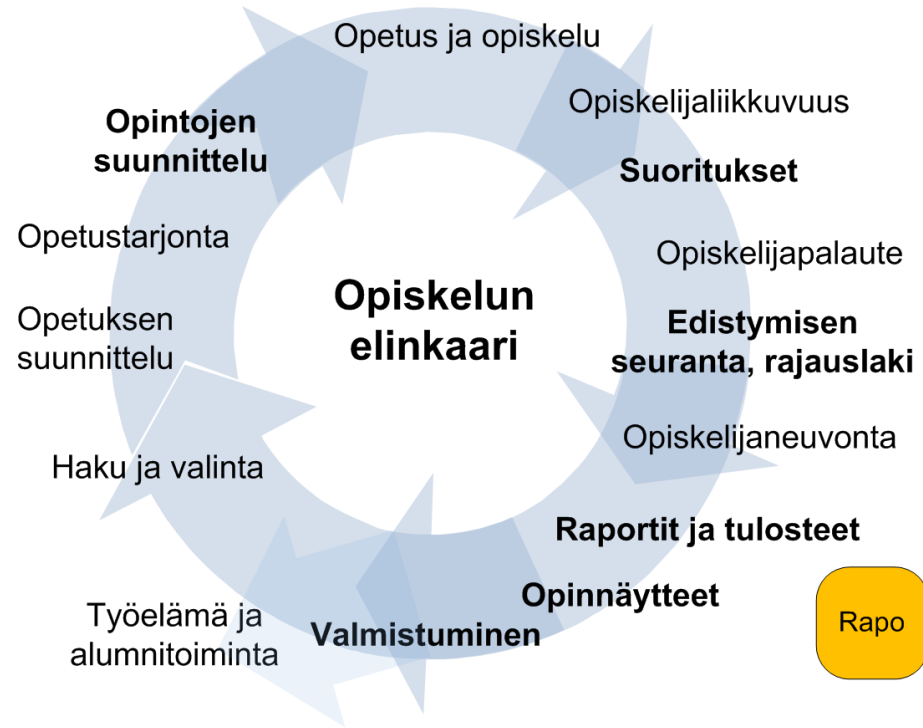
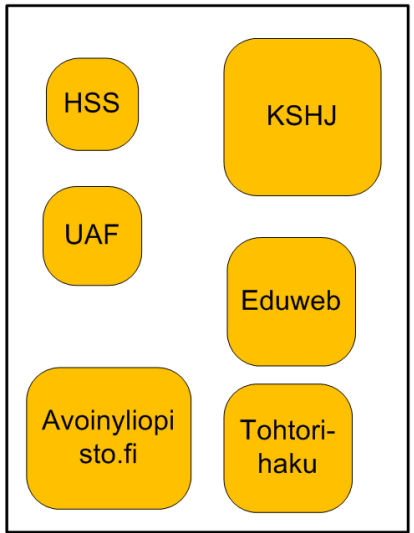
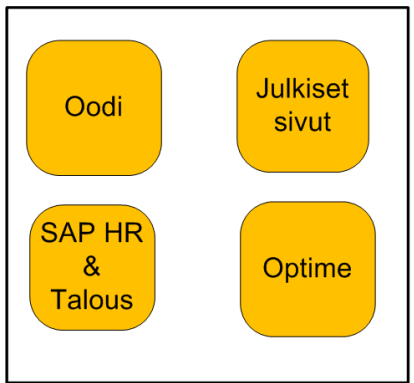
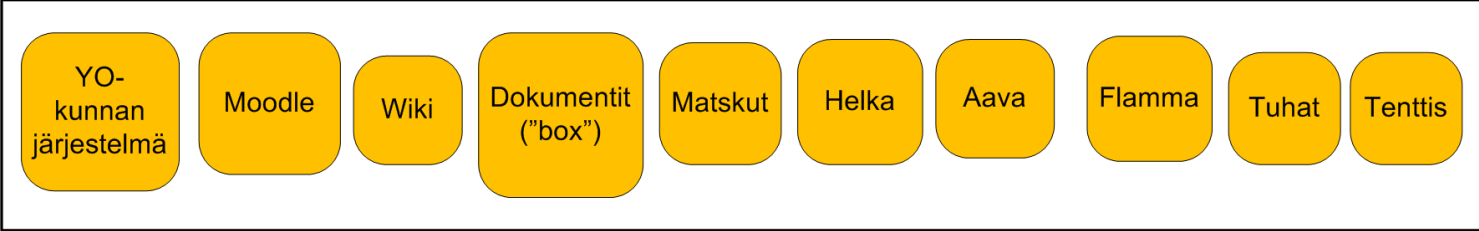
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DIGITAL TEACHING AND LEARNING ENVIRONMENT PROJECT 2014-2016

- Basic idea: to make the University of Helsinki environment function together with the new SIS and other systems
- Main goal: Quality of studying
- Will continue in smaller volume as part of Introducing the SISu -project



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Educational development

- Versatile methods for assesment and e-assesment
- Flipped classroom
- Blended learning
- MOOC and open education



Student and teacher services

- Personalized services for everyday use
- Notifications and reminders from different systems
- Places, times and other basic information in mobile device
- Services are buildt based on SIS and other master data systems



Digital teaching and learning – physical spaces

- Flexible firniture, technology is ubique and easy to use
- Standardized solutions and innovative practises



Developing skills

- Students´ICT driving license
- Training and support for teachers
- Minimun standards of digital teaching, quality

DIGITAL TEACHING AND LEARNING PROJECT

- Project timeline 1.1.2014 - 31.12.2016
- Primary environment for all students and teachers
- Principles:
 - design first, user friendly
 - Agile, lean startup – type
 - Responsive, mobile
 - Open source
 - Built on top of the master data systems, enterprise architecture (SIS, Timetabling, Intranet etc.)



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Osasto / Henkilön nimi / Esityksen nimi

RESOURCES

- Over 20 persons involved in project
 - 4 Product owners
 - 3 teams with 6-10 developers, from three Finnish companies
 - User interface designer
 - And many experts from student and study services...
- Beginning of 2016
- Course page piloting and policy decisions



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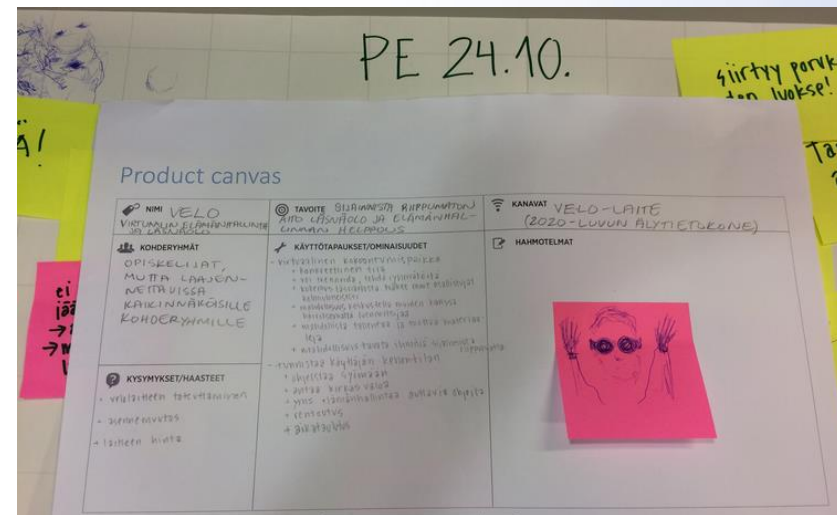
STUDENTS FIRST – WHAT STUDENTS NEED

Feedback from students, seminars and happenings

Workshops for new ideas-> opinder

Competition for best ideas, reward

Student panel, all the competitors and student union



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DIGITAL TEACHING AND LEARNING ENVIRONMENT

Five modules in production and published as OSS

- My studies and my teaching
 - Courses, credits, task list, lunch menu, news etc
- Student and teacher portfolios
- Course pages and course search
- Open university course catalogue

One module in piloting

- Opinder – learning buddy finder for students
- Experimental

Hopefully fully in production 2016/2017



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MY STUDIES

What's happening today?

Responsive

- Mobile
- Personified

Gathers data and notifications from different sources



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MY STUDIES

MY STUDIES

EMAIL FLAMMA LIBRARY SUOMI SVENSKA

WEBODI COURSE SEARCH

REGISTRATION FOR THE 2016-2017 ACADEMIC YEAR

All degree students and specialist training students have to register as either attending or non-attending for every academic year if the degree is not completed by July 31, 2016. The registration is not completed by July 31, 2016. The registration is not completed by July 31, 2016. The registration is not completed by July 31, 2016.

Read more →

NOW IN MY STUDIES

TIMETABLE COURSES EXAMS

List Day Week Month Add to calendar

17.05.2016 09:00 - 12:00
Practical course in bioinformatics (BIOT204)
GIS-luokka 443, 4. k,
Latokartanonkaari 7
Show on map Show route

USEFUL INFORMATION

Health and wellbeing →
Exchange opportunities and traineeships abroad →
OneDrive →
For student
RekryNet
Opinder

Pick up sociology books from library ✓ X

Add new todo item... +

MY STUDIES

EMAIL FLAMMA LIBRARY SUOMI SVENSKA

WEBODI COURSE SEARCH

NOW IN MY STUDIES

TIMETABLE COURSES EXAMS

List Day Week Month Add to calendar

17.05.2016 09:00 - 12:00
Practical course in bioinformatics (BIOT204)
GIS-luokka 443, 4. k,
Latokartanonkaari 7
Show on map Show route

17.05.2016 10:00 - 12:00
Formulation III - Paullina's teaching (test)
CK107, Gustav Hällströmin katu 2 B Show on map Show route

17.05.2016 12:15 - 14:00
Lumen ja jään geofysiikka
E207, Physicum, Gustaf Hällströmin katu 2 A
Show on map Show route

17.05.2016 13:00 - 16:00

USEFUL INFORMATION

Health and wellbeing →
Exchange opportunities and traineeships abroad →
OneDrive →
For student →
RekryNet
Opinder
Opiskelijalle - biotieteiden laitos

Pick up sociology books from library ✓ X

Add new todo item... +



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DIFFERENT VIEWS

NOW IN MY STUDIES

TIMETABLE COURSES EXAMS

list day week month MAY 16, 2016 Today < >

W21	MO						
08:00							
09:00							
10:00	10:00 - 12:00 Formulation III - Venla's teaching, U40 A sali A111, Unioninkatu 40						
11:00							
12:00							
13:00							
14:00							
15:00							

COMPLETED STUDIES

No completed studies found from the last six months

[See a list of your completed studies in WebOodi](#)

NOW IN MY STUDIES

TIMETABLE COURSES EXAMS

list day week month MAY 2016 Today < >

W	SU	MO	TU	WE	TH	FR	SA
19		1	2	3	4	5	6
		10:00 Forn	09:00 Prac 12:15 Lum	09:00 Prac 10:00 Chili	09:00 Prac 14:00 Forn	12:15 Itali	
20		8	9	10	11	12	13
		10:00 Forn	09:00 Prac 12:15 Lum	09:00 Prac 10:00 Forn	10:00 Forn 14:00 Forn	12:15 Fren	
21		15	16	17	18	19	20
		10:00 Forn	09:00 Prac 10:00 Forn	09:00 Prac 10:00 Forn	09:00 Prac 10:00 Forn	09:00 Prac 14:00 Forn	
22		22	23	24	25	26	27
		10:00 Forn	09:00 Prac 10:00 Forn	09:00 Prac 10:00 Forn	09:00 Prac 10:00 Forn	09:00 Prac 12:00 Geog	

COMPLETED STUDIES

No completed studies found from the last six months

[See a list of your completed studies in WebOodi](#)

NOW IN MY STUDIES

TIMETABLE COURSES EXAMS

list day week month MAY 15 — 21, 2016 Today < >

W21	SU	MO	TU	WE	TH	FR	SA
08:00							
09:00			09:00 - 1 Practic course	09:00 - 1 Practic course	09:00 - 1 Practic course		
10:00		10:00 - 12:0 Formulati III - Venla's teaching, U40 A	10:00 in bioir Form (BIO) GIS-1 443, teach b	10:00 in bioir Form (BIO) GIS-1 443, teach b	10:00 in bioir Form (BIO) GIS-1 443, teach b	10:00 in bioir Form (BIO) GIS-1 443, teach b	
11:00							
12:00			12:15 - Lumen jaan geof				
13:00			13:00 Pract cour				
14:00			in bioir (BIO) GIS-1 443, teach b		14:00 - 16:0 Formulat. Group 1, U40 sali 1, Unioninkat		
15:00							

COMPLETED STUDIES

No completed studies found from the last six months

[See a list of your completed studies in WebOodi](#)



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FAVORITES

Edit 

LUNCH MENU

Salmon in smetana
G, L

Kebab casserole with cheese
G, [S], V, VL

Bönor och nötter Kung Po
M, PÅ, [S], SO, V, VE

Strawberry quark
G, K, I

Porthania

Tweets

 Follow

 **Opinder UH** @Opinder_UH 7m

Tunnelmia eilisestä opiskelijajapaneelistä. Kiitos kaikille osallistujille!
pic.twitter.com/4H7f8gXcrW



Tweet to @Opinder_UH

RECEPTION CENTRE MENUS CHANGED AFTER ASYLUM SEEKER PROTESTS

YLE UUTISET | NEWS | 2.10.2015

UN REPRESENTATIVE URGES SUSPENSION OF SÁMI ELECTIONS

YLE UUTISET | NEWS | 1.10.2015

STORM BLOWS IN ON FRIDAY, POWER CUTS EXPECTED

YLE UUTISET | NEWS | 1.10.2015

DOMINIK KEMPA: EFFICIENT CONSTRUCTION OF FUNDAMENTAL DATA STRUCTURES IN LARGE-SCALE TEXT INDEXING

HELSINGIN YLIOPISTO - TAPAHTUMAKALENTERI
2.10.2015

SEIJA VIRTANEN: REDOX REACTIONS AND WATER QUALITY IN CULTIVATED BOREAL ACID SULPHATE SOILS IN RELATION TO WATER MANAGEMENT

HELSINGIN YLIOPISTO - TAPAHTUMAKALENTERI
2.10.2015

ALHADI ALMANGUSH:

DREDGING FOR PORT OF BRONKA A THREAT TO GULF OF FINLAND

FINLAND 1.10.2015

SDP MULLING INTERPELLATION AGAINST CUTS IN RAIL TRAFFIC

FINLAND 1.10.2015

FINLAND FALLS FOUR PLACES IN MAJOR COMPETITIVENESS RANKING

FINLAND 30.9.2015



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USER FEEDBACK

Students love the software

My studies feedback:

“Perfect! I did not even imagine I could have this kind of front page”



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MY TEACHING

For teachers

Very similar to my studies



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Osasto / Henkilön nimi / Esityksen nimi

USER FEEDBACK

Teachers are more difficult to please

My teaching feedback:

“I don’t find my courses”
(does not teach in any course)

“I can’t modify my courses”
(tries to modify course in My teaching, not in course page)



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COURSE PAGES

Very easy to use

To be used in every course

Easy transfer to Moodle and other learning environments

Gathers data and notifications from different sources



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Courses view

WEBODI COURSE SEARCH

NOW IN MY STUDIES

TIMETABLE COURSES EXAMS

Current Upcoming Past

01.10.2015 - 31.05.2016
Basics of the Japanese writing system and reading comprehension online 2
992992, O
Virve Hele

11.01.2016 - 13.06.2016
Formulation III - Venla's teaching
590155, Course (6cr) , Nevalainen Tom
Auvo Kristian , Virkonen Venla

Go to Moodle →

11.01.2016 - 13.06.2016
Group 1
Course , Sim

Pick up sociology books from library ✓ X

Add new todo item... +

USEFUL INFORMATION

Edit ⚙

- Health and wellbeing →
- Exchange opportunities and traineeships abroad →
- OneDrive →
- For student →
- RekryNet
- Opinder



Course page



FORMULATION III - VENLA'S TEACHING

590155, Course, 6 cr, Tom Nevalainen, Venla Virkonen, 11.01.2016 - 13.06.2016



Teaching language **en**



Kaisa_2012_3_photo by Veikko Somerpuro

Welcome to course!

I'm waiting to see you on lectures.

If questions, please contact:

venla.virkonen@helsinki.fi, +358 40 123 456

Moodle



> MESSAGES

> TIMETABLE

> MATERIAL

> FEEDBACK

> COURSE OVERVIEW

Basic Biotechnology in Forestry (MPAT232)

Basics of the Japanese writing system and reading comprehension online 2

Biotieteiden perusteet II, syksy 2015

Childhood and society

Economic Botany

Formulation III - Pauliina's teaching (test)

Formulation III - Venla's teaching

Group 1



Group 2

Formulation III - basics

Formulation III - basics of auditions

Formulation III - auditions, group

Formulation III - basics of



Feed-back

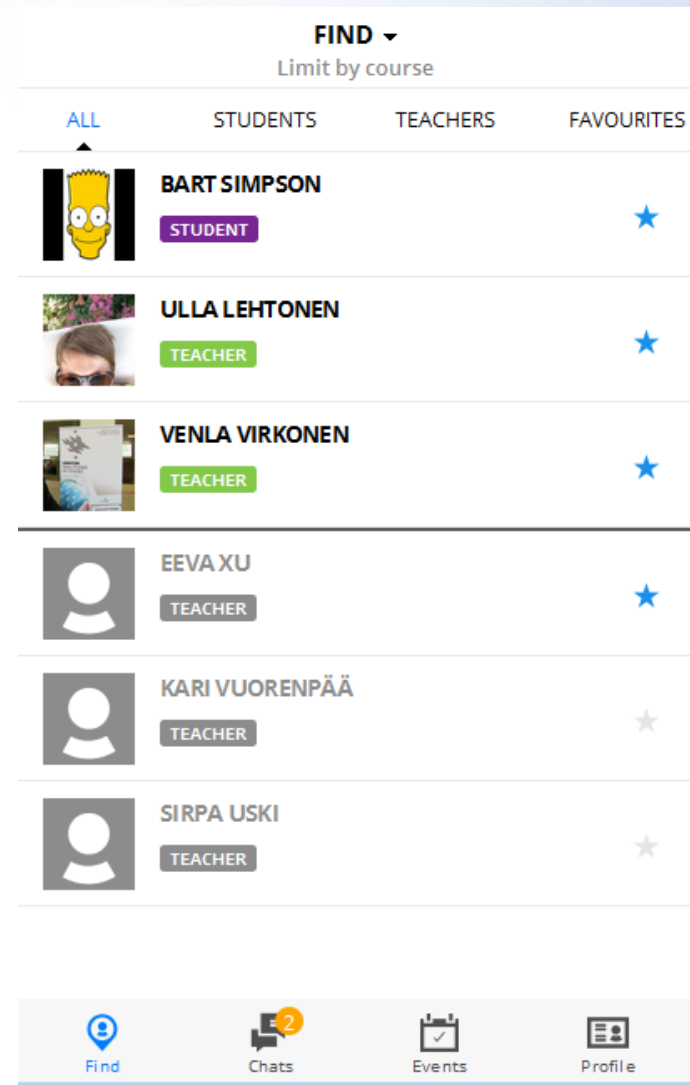
OPINDER

- Mobile first
- Experimental
- Pilot phase concept testing



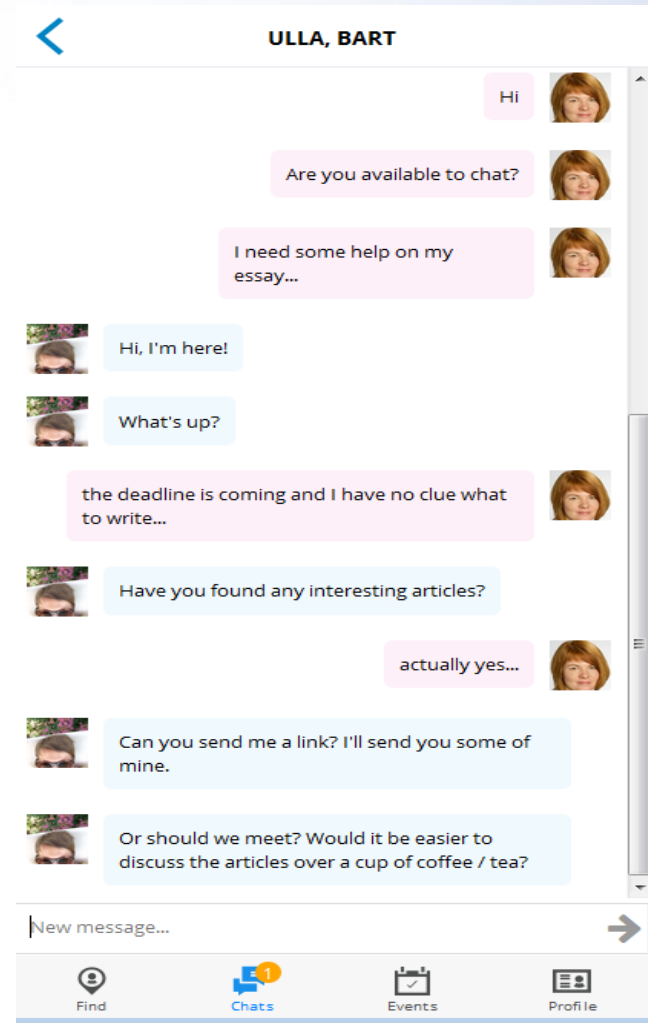
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- Find your learning buddy
- Who is studying in the same courses as you?
- Info from SIS



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- Chat
- The need for chat came up from students piloting the first phase version

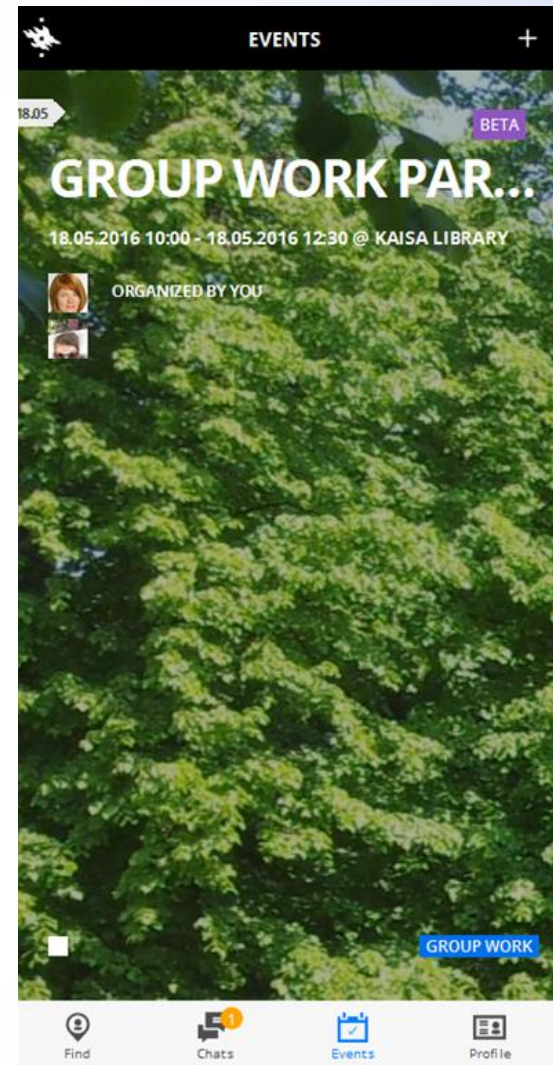


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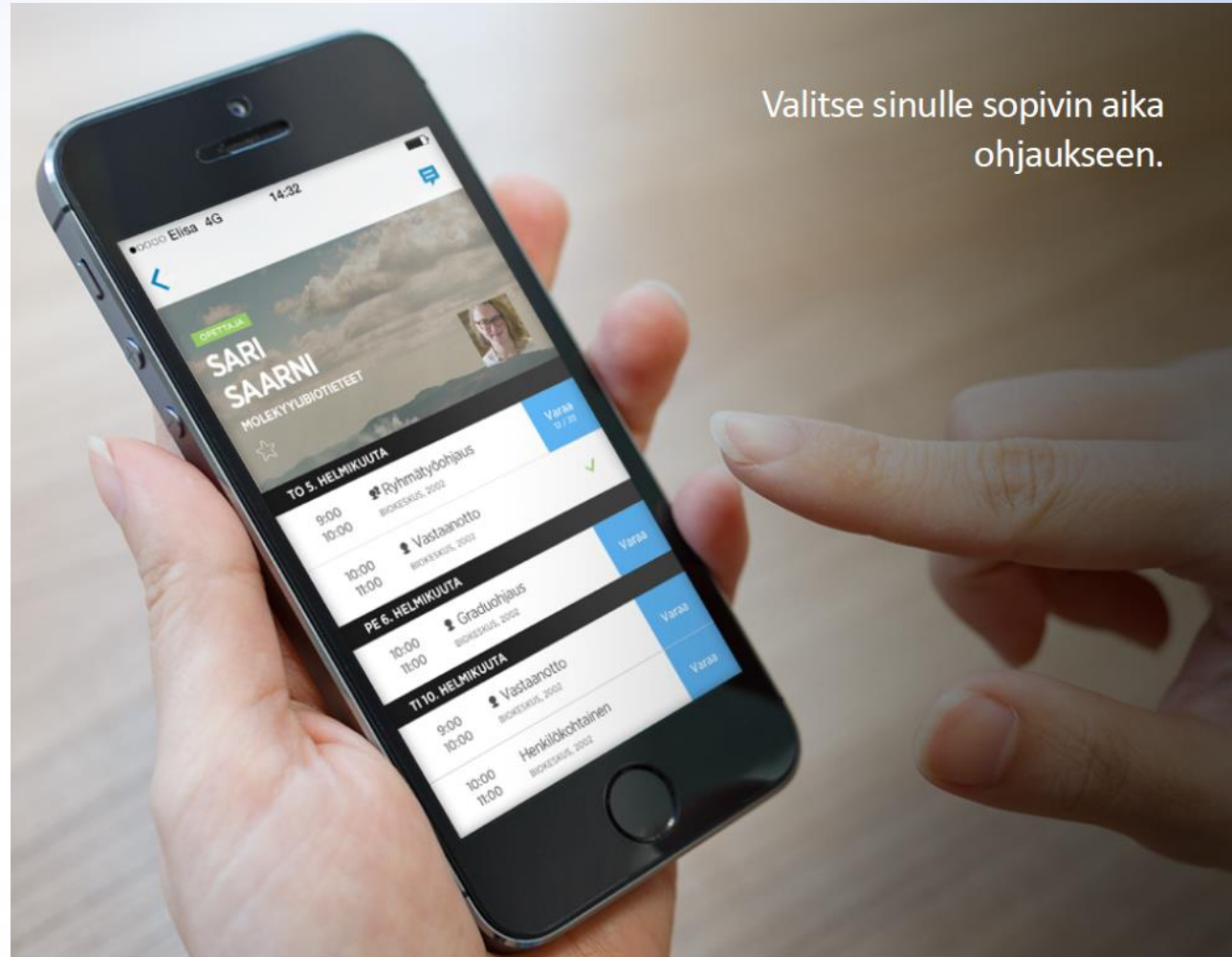
- Create an event
- Invite your buddies to the event



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- Teachers can create events
- For example supervising sessions



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MORE INFORMATION

More information about Digital teaching and learning environment -project

- <http://courses.helsinki.fi/>

Open source site

- <https://courses.helsinki.fi/open>

...Demo site coming soon



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MORE INFORMATION

SISu test site (partly accessible without account)

<https://sis-helsinki-test.funidata.fi>

<https://idean.invisionapp.com/share/YQ2H115EA#/screens>

National standardisation

- Concepts and standards (in Finnish)
 - <https://confluence.csc.fi/display/OPI/Yhteentoimivuuden+tuki>
 - Emrex: solution for electronic transfer of student records between higher education institutions in Europe
 - <https://confluence.csc.fi/display/EMREX/External+material>



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- Muista
 - Dev teams, ux
 - How to fit to sis and others (kuva)
 - Integrations. Notifications, mobile-first, mobile (uni)
 - Demos

- CSC – käsitteet -linkki



DEPLOYMENT TIMETABLE FOR ONGOING PROJECTS

2015s 2015f 2016s 2016f 2017s 2017f 2018s 2018s

OPTIME = timetabling and facility booking software

Silta-
vuorenp

Viikki
Kumpula

Keskusta
Meilahti

Digital teaching and learning environment

Integrations to different student services →

New SIS built together with Aalto, Jyväskylä and Tampere Universities

Deployment of new SIS



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EDUCATIONAL TECHNOLOGY SERVICES

HIGH QUALITY TEACHING AND LEARNING THROUGH EDUCATIONAL TECHNOLOGY

- Staff of 23
- We offer centralized and f2f services, support and training for the teaching staff
- Testing, piloting and building new innovations and software
- Projects:
- Exam (electronic examination software)
- Digital teaching and learning environment
- MOOCs



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4488
teachers and researchers

c. 48 900
users in Moodle during the year

399 710
blog visitors/month

20 147
electronic forms in public use

335 301
individual wiki users