

# Aalto University

Breaking boundaries for creativity and  
innovation in **Science**, **Art**, **Technology** and  
*Business*

Katrina Nordström, professor  
Aalto University  
School of Chemical Technology

Presentation material kindly provided by professor Mauri Arila  
& Mr. Markku Markkula, special advisor of Aalto leaders

# Aalto University: WHEN, WHY, HOW ?

## From three universities to one in 1.1.2010

Art & Design  
founded 1871 (TaiK)



Science & Technology, founded  
1849 (TKK)



Economics,  
founded 1911 (HSE)



4300 Faculty and staff  
330 professors  
15 000 FTE students  
75 000 alumni

# WHEN ?

1994 TKK proposal: Foundation based university  
Ministry of Education not interested  
2002 Proposal: international University of Helsinki  
metropolitilan area



Aalto University 1.1.2010  
3 schools (Eng,Econ,Art)

1.1.2011  
6 schools  
Eng (4), Econ (1), Art and  
Architechure (1)

1990 1994 2002 2004 2005 2007 1.1.2010

1990's Joint study modules, eg.  
International Design Business  
management (IDBM), Product  
Development Project; Research  
collaboration not very active

2006 High-level working group  
2007 FIN government Proposal: "Innovation  
University", +++ skakeholders support

2005 Yrjö Sotamaa (Rector  
TaiK) proposal:  
Merging the three  
Universities



# WHY ?

New operational concepts and higher level of ambition called for from Finnish universities

Money (state and private) available,  
But not for conventional models

Learning outcomes needed to match global job market & global and national challenges

Interdisciplinarity is a routine in industry – why not in Academia ?

The three universities acknowledged a need for renewal, decentralize administration, put focus on research (science and art) and teaching.

The government wanted to reduce the number of universities and pool resources.  
(In 2009 there were 20 universities, the evident long-term goal is less than 10).

# HOW ? Working groups & key deliverables to address by August 2009

## Example : Teaching practices

	Key deliverables	By
Learning culture	• Plan of action on improving sense of community: extra-curricular activities, etc.	May '09
	• A plan for new student tutoring by faculty and senior students	May '09
	• Plan of action on “rules of the game” for more disciplined studies	May '09
	• Code of conduct for both students & faculty	May '09
	• Guidelines on how to assess suitability and aptitude in student selection	Jun '09
Quality	• Brochure: What is quality teaching in Aalto University	Mar '09
	• Plan for pedagogical training in the three schools	Mar '09
	• Plan on how to reduce student/teacher ratio	Apr '09
	• Plan for teaching and course feedback system on Aalto level	Apr '09
	• Plan for an award and incentive scheme in quality teaching	May '09
	• Plan on how to foster cross-disciplinary teaching	Jul '09
	• Guidelines on teaching skills assessment in recruiting faculty	Aug '09
Synergies	• Plan on how to create value from the combination of expertise from the three schools	Apr '09
	• Plan on where to reduce costs and improve productivity through co-operation between the schools	Apr '09
	• Plan on the structure and curriculum for undergraduate college	Aug '09
	• Plan on how to ensure smooth mobility between schools	Aug '09

# Planned immediate action to build excitement among students (2009-2010)


1. Organize events in Spring 2009, competitions, etc. to encourage and enable encounters between students from the three schools

 Competition: new courses, visitors, projects; events postponed


2. Recruit TOP international professors to teach a few superb courses

 Competition: a few top professors coming in 2009-10

3. Welcome the new students in August 2009 truly into the Aalto community: faculty & student tutors, events, fun

 Somewhat improved tutoring, no major events yet, partly postponed

4. Make the opening of academic year in September 2009 an *Aalto EVENT* that is appealing and exciting particularly to the students

 Postponed into January 2010

# (Example: Teaching) Main results of completed preparations for 2010



Plans of action to enhance the quality of learning experience in Aalto University. These reports are based on rather broad discourse among the Aalto community, yet they are purposefully very concise.

- *Teaching and Learning Strategy for Aalto University*
- *Guidelines for Quality of Learning at Aalto University*
- *Plan for Pedagogical Training and Fostering Cross-disciplinary Teaching*
- *Plan for Teaching and Course Feedback at Aalto University*
- *Improving Teacher-to-Student Ratio at Aalto University*
- *Guidelines on Teaching Skills Assessment*
- *Plan for an Award and Incentive Scheme in Quality Teaching*
- *Koulutuksen kehittämistoiminnan johtaminen ja organisointi Aalto-yliopistossa*
- *Opintojen ohjauksen ja tutoroinnin kehittäminen Aalto-yliopistossa*
- *Code-of-Conduct for Aalto University*
- *Improving Sense of Community*
- *Raportti synergioista Aalto-yliopistossa*
- *Liikkuvuus Aalto-yliopistossa*



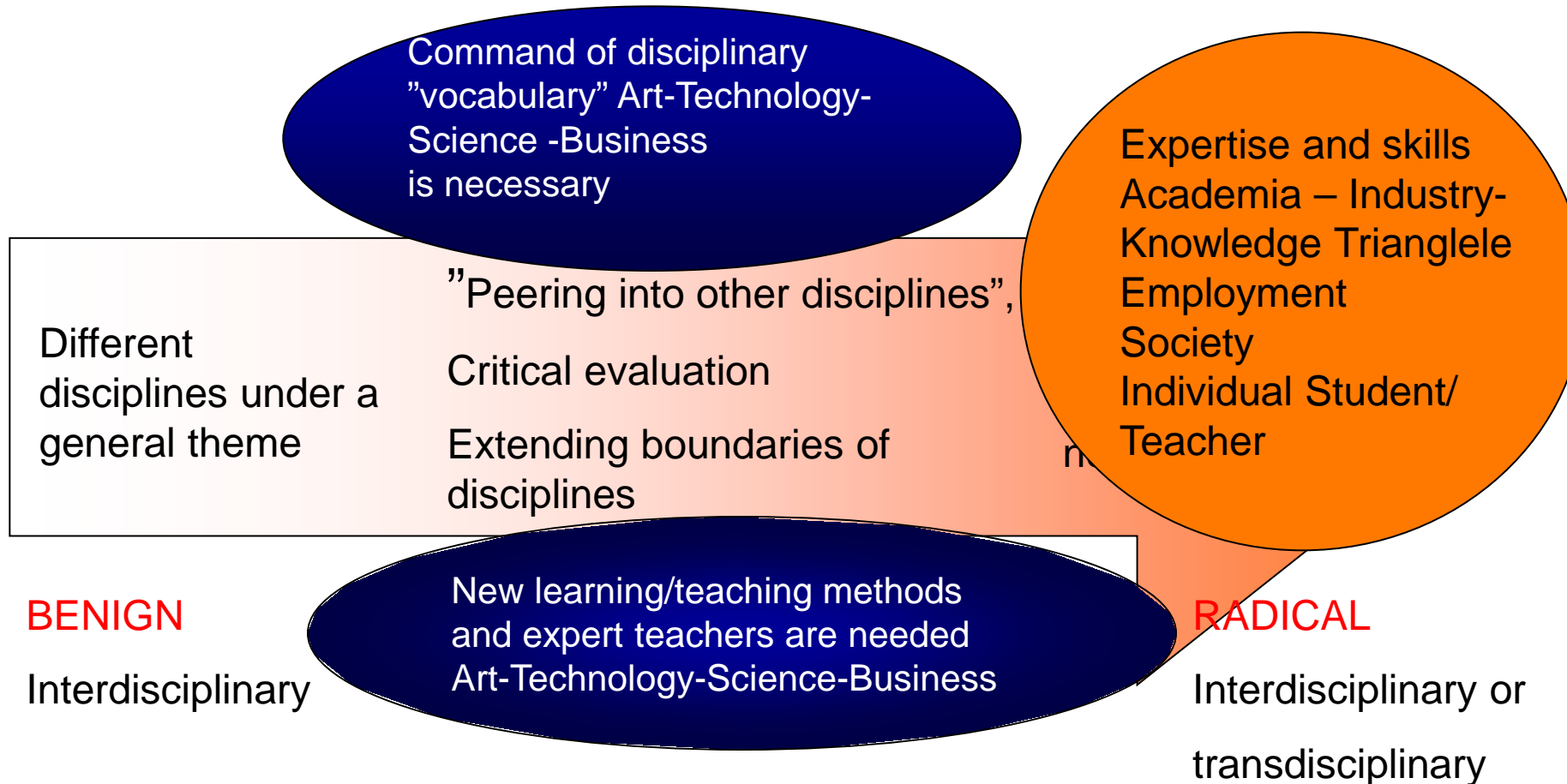
Analysis and plan for the Aalto Bachelor Program.



Improved networking within Aalto thanks to events and meetings.



# HOW ? Towards transdisciplinarity





# How?

- "Where the best connect and succeed" (from the vision of Aalto University)
- Motivation for quality and ambitious goals in all fields is #1, extra incentives for interdisciplinary exercise
- Interdisciplinary academic programs (master programs IDBM and Creative Sustainability; Brain research program, Energy Efficiency program,...).
- Aalto factories, platforms for collaboration. E.g. Aalto Design Factory.
- Mobility opportunities in bachelor programs. Free selection of 50/180 credits
- All bachelor education will be centered on Otaniemi campus by 2015. "Aalto bath" for new students. "AaltoBachelor" programme in 2013
- Incentives for collaboration when the university allocates resources to the six schools, and when rewarding professors for good outcomes.

# Aalto University through eyes of a professor: Some personal opinions

2009

- Initial confusion, anxieties, not enough information
- Hopeful and positive that changes will take place; but why not just re-organize Helsinki University of Technology ?

2010

- Too many changes at the same time, every day need to adjust to something new; very tiring
- Good to see that administration is decentralized ; good to see that emphasis is on science and scientific output - what about funding ??

2011

- Too much fuss about leadership; losing colleagues as engineering school structure changes
- Interesting new contacts from school of art, good to see that teaching environment appears to be changing



” *I have never enjoyed school as much as I have this past year in the IDBM program.*



Have a look at:  
[www.aaltodesignfactory.fi](http://www.aaltodesignfactory.fi)

# Mindset is the Key

*Expertise made fun*

” *...at times it felt like we lived at Design Factory, but that's the best way to experience the true power and possibility of the building*



**EU Calls for Transformation:**  
**Europe needs pioneering regions, as pathfinders and rapid prototypes.**  
**Helsinki Region has forerunner instruments in use:**

*Intensive experiences*

- Aalto Design Factory
- Aalto Venture Garage
- Aalto Camp for Societal Innovation
- and many more ...

” *The ability to share knowledge is one of the most rewarding features.*



Markku Markkula  
CoR & Aalto University

*Sharing ideas*

# What is your favourite space ?

What is your favourite space ?



Inspiring spaces  
to learn and teach ?



# HOW ? : Strong Research-Based University

*“We are dedicated to long-term, high-quality research of high scientific value and impact on society”.*



Core

- **Computation and Modelling**
- **Materials**
- **Design**
- **ICT**
- **Media**



Growing

- **Global economic business processes**
- **Process and Systems Competance**
- **Architecture**
- **Art**



Emerging

- **Service Economy**
- **Digitization**
- **Energy**
- **Human-orientated living environments**

Integrated to regional and global ecosystems





# Regional Innovation Ecosystem University Campus 2020

Nokia

Rovi

Aalto

EIT ICT Lab

la  
en City

## AALTO STRATEGIC FOCUS

- Digitalization
- The service economy
- Energy and sustainable use of natural resources
- Human-centric living environment

According to the plans, by 2020, there will be new investments of 4-5 billion € metro, tunnel construction of ring road, other infra, housing, office and business buildings, public services, university buildings, sports and cultural facilities...



# Aalto Design Factory & Aalto Tongji Design Factory: Encourage Digi Natives & Venture Garage Mindset

***“In the Design Factory the students come first. ...  
Research and expertise are the most important sources of, and preconditions  
for, innovation.***

***Diversity of innovation relies on a strong research base as well as other  
factors, such as a climate and ways of working that encourage innovation  
creativity and the ability to take risks.” president Tuula Teeri***





# SOMETHING UNIQUE: 100 AALTO UNIVERSITY STUDENTS RENTED THEIR OWN TRAIN HELSINKI – SHANGHAI WORLD EXPO IN 2010



- Home
- Follow us
- About
- FAQ
- Partners
- Team
- Calendar
- Participants
- TEDx
- Patron

**Aalto on Tracks** is taking around 100 people from the Aalto University community with a private train from Helsinki to Shanghai World Expo, China, on May 2010. That's over 10 000 kilometers and a week on tracks!

Our goals are to take Aalto University, Finland and Finnish education to the world. We want to unite Aalto people and create an unforgettable learning experience for around a hundred Aalto people and guests.

[Follow us on the map and via Talky!](#)



 [Tracks on Twitter](#)

[www.aaltontracks.com](http://www.aaltontracks.com)



Tongji on Tracks is in Helsinki! Have a look at video of their arriving:  
<http://www.youtube.com/user/aaltouniversity#>  
22:57:16.05.11 from web

# Venture Garage

Where *New Technologies*  
Meet *Ambitious Entrepreneurs*



**50** Startups  
Community of **3000** Entrepreneurs



Garage Coaches:

VC Funding Raised **\$200M**

**20** Exits Made

[kristo@aaltovg.com](mailto:kristo@aaltovg.com) / [twitter.com/KristoOvaska](https://twitter.com/KristoOvaska)

- The actual place where Android Aalto, Startup Sauna etc are happening
- On Otaniemi hitech hub campus
- Coaches include founders of Angry Birds and MySQL
- Very exciting place and concept
- **In the middle of a campus of 32,000 hitech professionals and scholars from 110 countries**



# New ways of COLLABORATIVE LEARNING AND WORKING by the system-level interventions



# LabLife3D: Enter a virtual teaching space

LabLife3D at Aalto University



A view of the virtual laboratory



Entering a clean room



Learning in the virtual laboratory



The LabLife3D Team:

Eero Palomäki, Pekka Qvist, Pekka Joensuu, Reija Jokela, Olli Natri, Marko Närhi, Elina Kähkönen, Päivi Korpelainen, Mariannne Hemminki, Jari Vepsäläinen





Thank you for your attention !

*Katrina.nordstrom@aalto.fi*