Mälardalen University
KISEK Meeting
Västerås
March 31 – April 1, 2008

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Mälardalen Real-time Research Centre
Sweden
http://www.idt.mdh.se/~icc

PR🌱GRESS

A national Swedish Strategic Research Centre

MÄLARDALEN UNIVERSITY

MRTC
MÄLARDALEN REAL-TIME
RESEARCH CENTRE
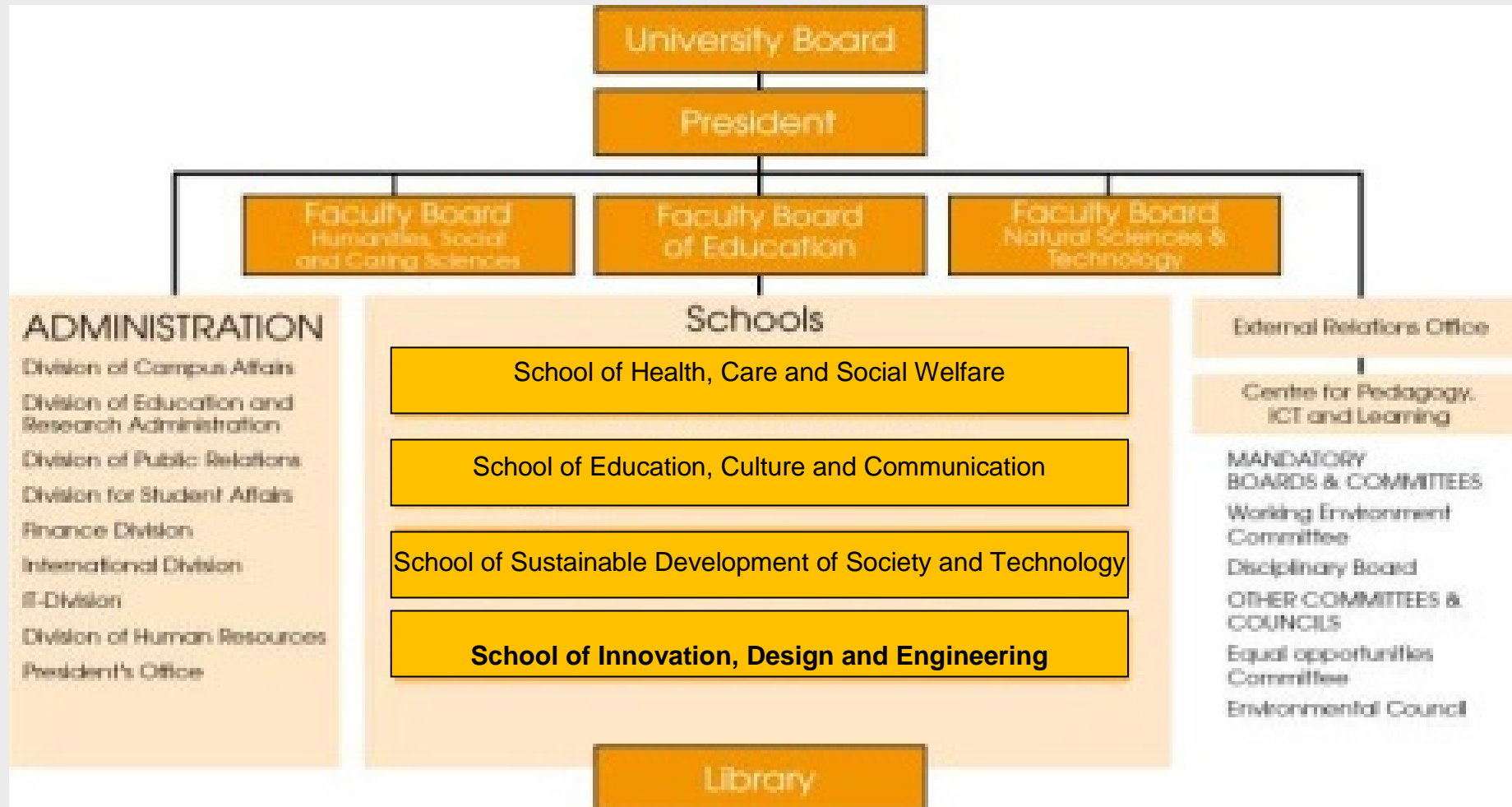
Swedish Foundation for Strategic Research
SCIENCE · TECHNOLOGY · MEDICINE

Welcome to Västerås

2008-04-11

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![Mälardalen University logo](MÄLARDALEN UNIVERSITY)
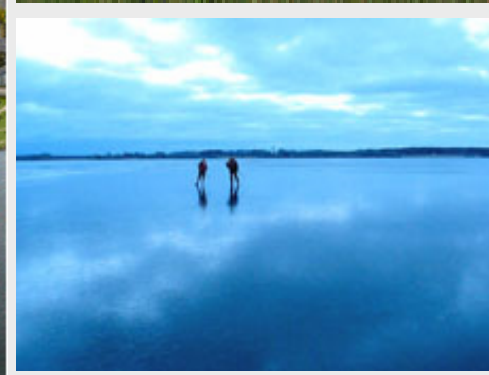
Facts and figures
•With approximately 15,000 students Mälardalen University is Sweden's second largest institute of higher education.
•We were also the first university in the world to be environmentally certified.
•The University's close linkages with trade and industry are an important factor in our graduates' success in the labor market after graduation.
•Mälardalen University also educates most entrepreneurs in Sweden.

- Founded in 1977
- 15,000 students
- 2 campuses
- 1,080 employees
- 42 professors
- Approx. 850 courses (modules)
- Approx. 60 programs
- Approx. 40 supplementary courses and programs
- 15 International Master programs
- 4 schools

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Organizational chart:

University Board
→ **President**

President branches to three Faculty Boards:
- **Faculty Board** — Humanities, Social and Caring Sciences
- **Faculty Board of Education**
- **Faculty Board** — Natural Sciences & Technology

ADMINISTRATION
- Division of Campus Affairs
- Division of Education and Research Administration
- Division of Public Relations
- Division for Student Affairs
- Finance Division
- International Division
- IT-Division
- Division of Human Resources
- President's Office

Schools
- School of Health, Care and Social Welfare
- School of Education, Culture and Communication
- School of Sustainable Development of Society and Technology
- **School of Innovation, Design and Engineering**

Library

- External Relations Office
- Centre for Pedagogy, ICT and Learning

MANDATORY BOARDS & COMMITTEES
- Working Environment Committee
- Disciplinary Board

OTHER COMMITTEES & COUNCILS
- Equal opportunities Committee
- Environmental Council

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IDT – School of Innovation, Design and Engineering

Staff – ca 200 employees

1. **SE - Division of Software Engineering**
2. **ES - Division of Embedded Systems**
3. **CSN - Division of Computer Science and Networks**
4. **IFT - Division of Intelligent Future Technologies**

IDE/Västerås

5. ID - Division of Information Design
6. PDL - Division of Production, Design and Logistics
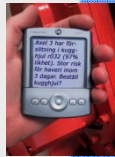7. IEB - Division of Innovation, Entrepreneurship and Business Creation

Research Domain
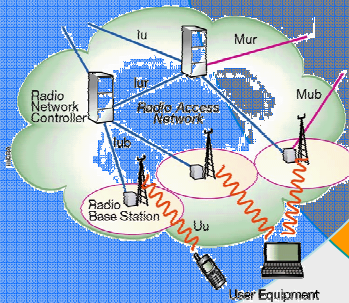
- Embedded systems
- Industrial – software intensive systems

"IT-inside" – embedded computer systems – "Product-IT"

VOLVO

ABB

Bombardier Transportation

- Focus on Real-Time
- Some aspects of dependability

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IDE Research

IDE- department of compuer science and engneering

- Staff: ~100
  - 10 Professors
  - 20 Researchers/Senior Lecturers
  - 60 PhD-students (~20 of which are Industrial PhD-students)
  - 10 Lecturers
  - 10 Admin+Engineers

- Strong focus on research: > 60%

- IDT total
  - 217 – staff, 2000 students,

MRTC cooperation

National research cooperation

**Swedish Networks and Schools
(ARTES, CUGS, SAVE-IT, RAP)**

UU (B.Jonsson, P.Gunningberg, W.Yi)

SICS (B.Ahlgren,B.Levin)

KTH (M.Törngren)
BTH (C.Wohlin)
LiTH (S.Nadjm-Tehrani)
LTH (K-E.Årzén, P.Runesson)

Industrial cooperation

40+ COMPANIES
~20 industrial phD Students

Volvo PC
Volvo CEC

PBM StressMedicin

Ericsson
ABB
CC-Systems
Bombardier
Arcticus

Ardendo

VTEC
Volcano CT

Westinghouse

Zealcore
Senseboard
RealFast
Comet

Int'l research cooperation

EU NoE ARTIST
Philips Research (L.Steffens, R.v.Ommering)
U. York (Alan Burns, …)
TU Eindhoven (M.Chaudron)
UPC Barcelona (J.Fuertes)
SSSA Pisa (G.Buttazzo)
TU Porto (E. Tovar)
U.Catania (L.LoBello)
TU Wien (H.Kopetz,P.Puschner)
U.Zagreb (M.Zagar)

U. Aveiro (L.Almeida)
C-Lab (F.Stappert)
U. Tampere (P. Abrahamsson)
TU Darmstadt (N.Suri)
Manchester U (Kung-Kiu Lau)
U. Cantabria (M.G.Harbour)
L'Aqualia University (Paola Inverardi)
MIT (K.Lundqvist)

Monash U (H.Schmidt)   **U.Virginia (J.Stankovic)**
U.New South Wales (J.Xue)   **UT Austin (A.Mok)**
Seoul Nat'l U (S.Lyul Min)   **SEI/CMU (K.Wallnau)**
IIT Bombay (K.Ramamritham)   **UC Irvine (K.J.Lin)**
U.Rio Grande (C.Pereira)   **Georgia Tech.(V.Mooney)**
Microsoft Research (Clemens Szyperski)
TUFTS U., Boston (Judith Stafford)

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Research Projects

- PROGRESS (national centre of excelence – 4M€ - 6 years
- SAVE, SAVE++ (National project – 4M€)
- SAVE-IT Industrial projects (ABB, Ercisson, Volvo -2M€)
- Hi5 – National projects (1M€ 4 years)
- Q-Impress, ALL-TIMES (FP7 STREP)
- ARTIST (EU NoE)
- FLEXI – ITEA2 Project
- .....
- Funding:
  - 2,5 M€ per year (this includes personal costs)
  - 70% externally funded
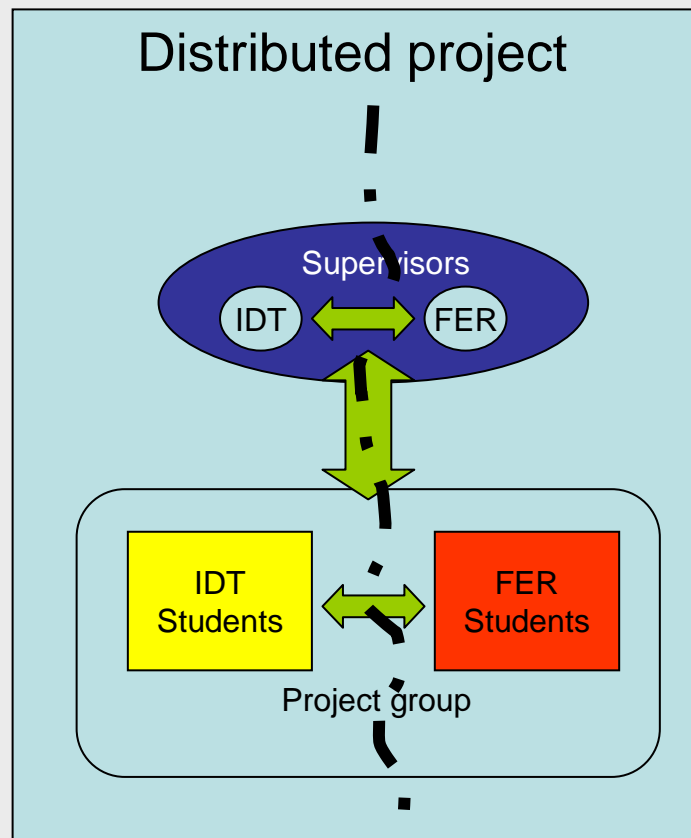
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MDH –Croatia research cooperation

- Projects:
  - EU TEMPUS
    - KISEK - **Collaborative Internationalisation of Software Engineering in Croatia, http://www.fer.hr/kisek**

  - Croatia – Unity to knowledge Fund –
    - DICES - **Distributed Component-based Embedded Software Systems, http://www.fer.hr/dices**
    - **FER Zagreb, FESB Split, Ericsson Nikola Tesla, MDH**
    - **Funding 200 k€ + (at least) 20 k€ from Ericsson**
      - **3 Phd Students from FER + Senior lecturer from FESB, 3 Profs 10% involvement (local investment)**
      - **Idea: Double PHD degree – registration at FER & MDH**
      - **Longer stays at MDH**
      - **Challenge: how to achieve double degree**
      - **Challenge: ensure the full funding**
  - **EU FP7 STREP – Q-IMPRESS, Quality Impact Prediction for Evolving Service-oriented Software, http://www.q-impress.eu/Q-ImPrESS/CMS/index_html**
    - **Ericsson Nikola Tesla, Zagreb**

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EDUCATION - MDH – Croatia cooperation

- MDH –FER
- DSD – Distributed Sofware Development

Distributed project

Supervisors

IDT ⟷ FER

IDT Students ⟷ FER Students

Project group

FER Students are registered at FER and MDH
Positive experience:

      Students like it and are motivated
      Students work hard
      Students learn more that techniques

Challenges
      Administrative differences
            time, ECT
      Challenges for students:
            to overcome the differences
            to start to work enough early

http://www.fer.hr/rasip/dsd

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EDUCATION - MDH – Croatia cooperation

- **MDH – FER**
  - Part of PHD course on FER (Ivica)
    - Private initiative, not directly visible on MDH
  - NEW initiative
  - Common MSC /BSC Thesis
    - common supervision – Mario & Ivica
    - Common registration and recognition of the thesis (the thesis, not the entire exam)
    - The "distance supervision"
    - The first cases – the future PHD students
    - The business model – double registration

- **MDH – ETFOS**
  - A PHD course planned in ETFOS (Ivica)

- **MDH – FOI – Varazdin (Ivica)**
  - PHD course in 2007 – a combination of visits and lectures/projects on distance
  - The students registered at MDH and FOI

- **MDH – ZSEM (Zagreb's school of Economy and Management) (Ivica)**
  - Undergraduate course – Software Engineering and Management
  - Double registration
  - a combination of visits and lectures/projects on distance

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Studying at Mälardalen University

- **Education free of charge**

- **Accommodation guaranteed**

- **Computer facilities and modern laboratories**

- **Pleasant study environment**

- **New learning processes**

- **Services for disabled students**

- **Social events organized for guest students**

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Undergraduate programs

- **Computer Science**
- **Electronics**
- **Robotics**
- **Interactive Programming and Computer Games**

Master International programs

- **Software Engineering**

  - **Software Architecting Profile**

  - **Real-time Embedded Systems Profile**

- **Real Time Embedded Systems**

- **Robotics**

- **Electronics & Intelligent systems**

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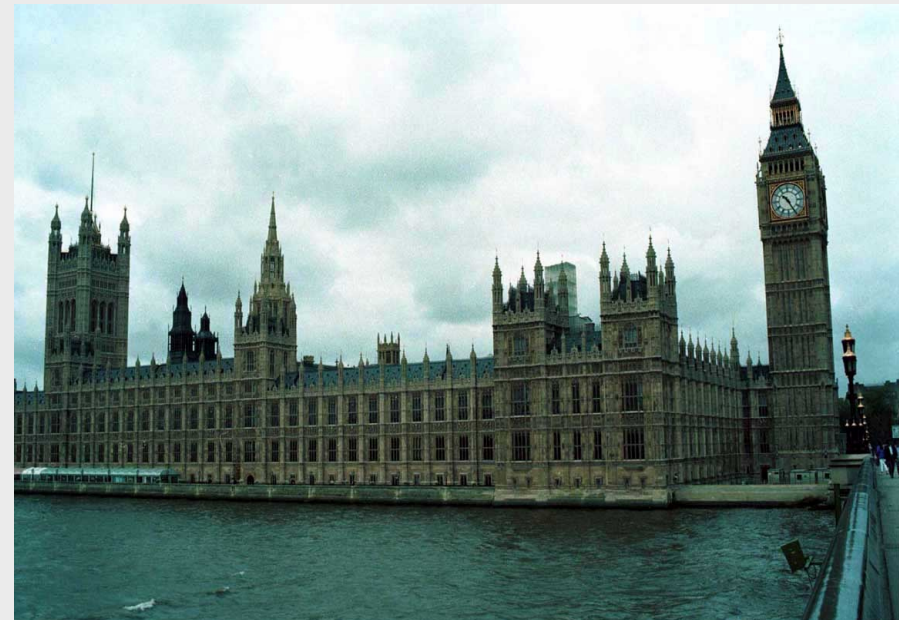# Software Engineering

- Efficient and high quality Software Engineering becomes necessary for software intensive systems to

  - Focus on
    - Software Architecture
    - Embedded systems

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SE European Master
Common SE program

- Mdh – Sweden
- Vrije University – Amsterdam
- Westminster University – London
- L'Aqualia University, Italy

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Cooperation with Croatia

- MDH – FER
  - A common course on a master level
  - Guest professor at FER
  - Guest student at FER
  - (organizing conferences☺)
- MDH – FOI (Varazdin)
  - Postgraduate course
- MDH – ETF Osijek
  - plan for a postgraduate course
- MDH – ZSEM (School of Economics)
  - SE for economists
- Discussing a cooperation with Uni Dubrovnik
- Several unsuccessful applications, some successful, and at least one pending…
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