



**Mälardalen University
Research & Education @
Department of Computer Science and
Electrics (IDE)**

Ivica Crnković
Mälardalen Real-time Research Centre
Sweden

<http://www.idt.mdh.se/~icc>

PROGRESS

A national Swedish Strategic Research Centre



MÄLARDALEN UNIVERSITY

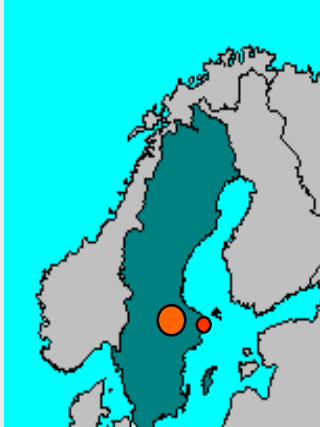
MRTC

MÄLARDALEN REAL-TIME
RESEARCH CENTRE



Swedish Foundation for Strategic Research

Mälardalen University (MdH)



Mälardalen University, Vasteras (Västerås)

Prof. in Software Engineering
<http://www.idt.mdh.se/~icc>
ivica.crnkovic@mdh.se



Department of Computer Science &
Electronics

Real-Time Systems Design Lab

Computer Science Lab

Software Engineering Lab

Electronics and Intelligent systems Lab

1977 Mälardalen University was founded

39 Undergraduate Programs

47 Graduate Programs

12 International Master Degree Programs (MIMA)

1000 Employees

60 Professors

16 000 Students

300 PhD Students

12 M€ Research funding



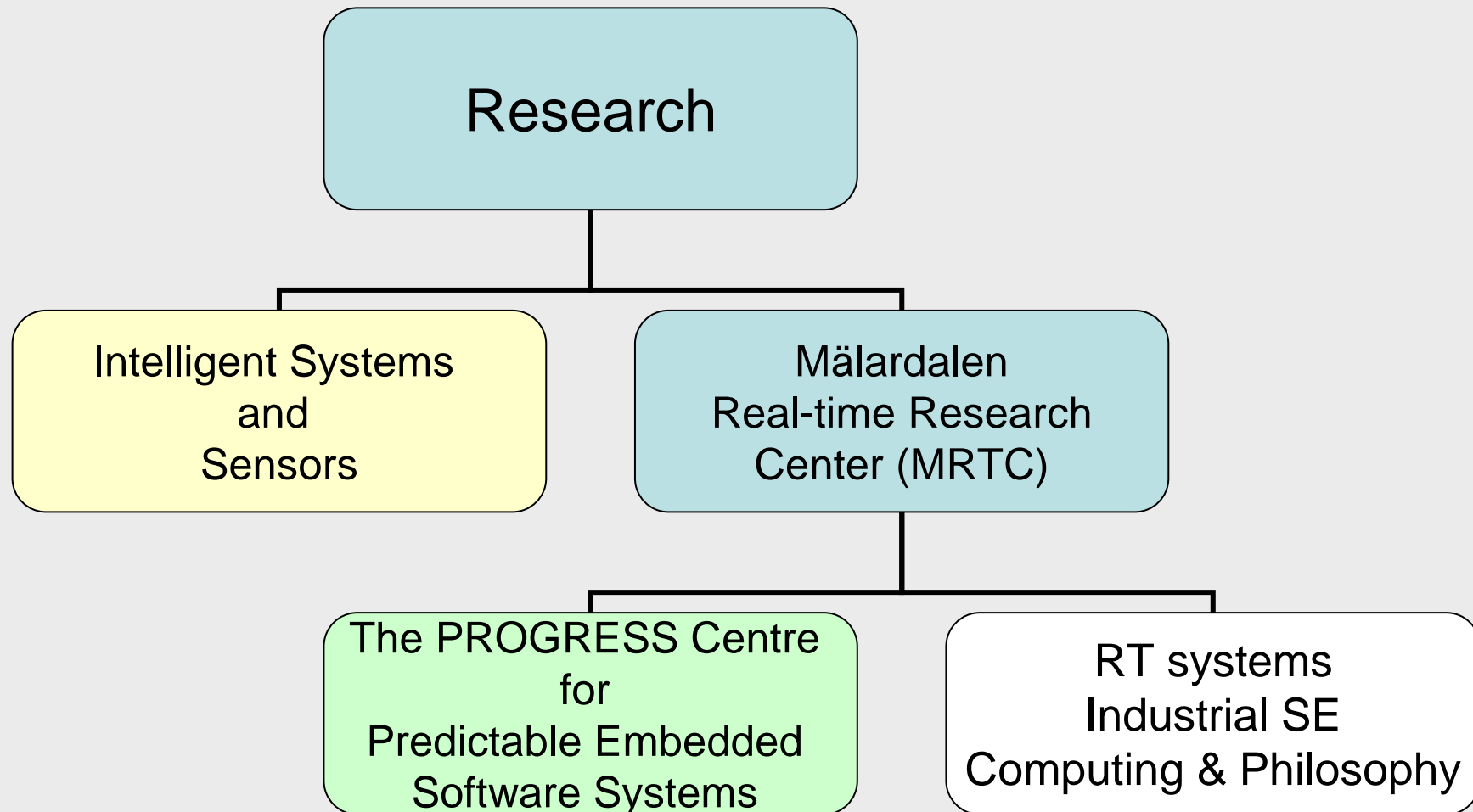
IDE- department of computer science and engineering



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

- Strong focus on research: > 60%

IDE Research Organisation



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)

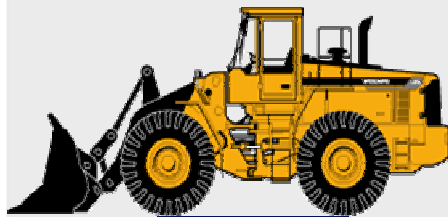
Microsoft Research (Clemens Szyperski)

TUFTS U., Boston (Judith Stafford)

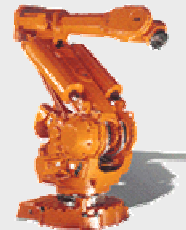
Research Domain

- Embedded systems
- Industrial – software intensive systems

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



VOLVO

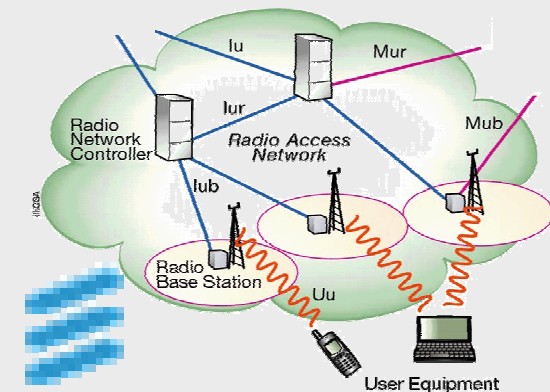


ABB



Bombardier Transportation

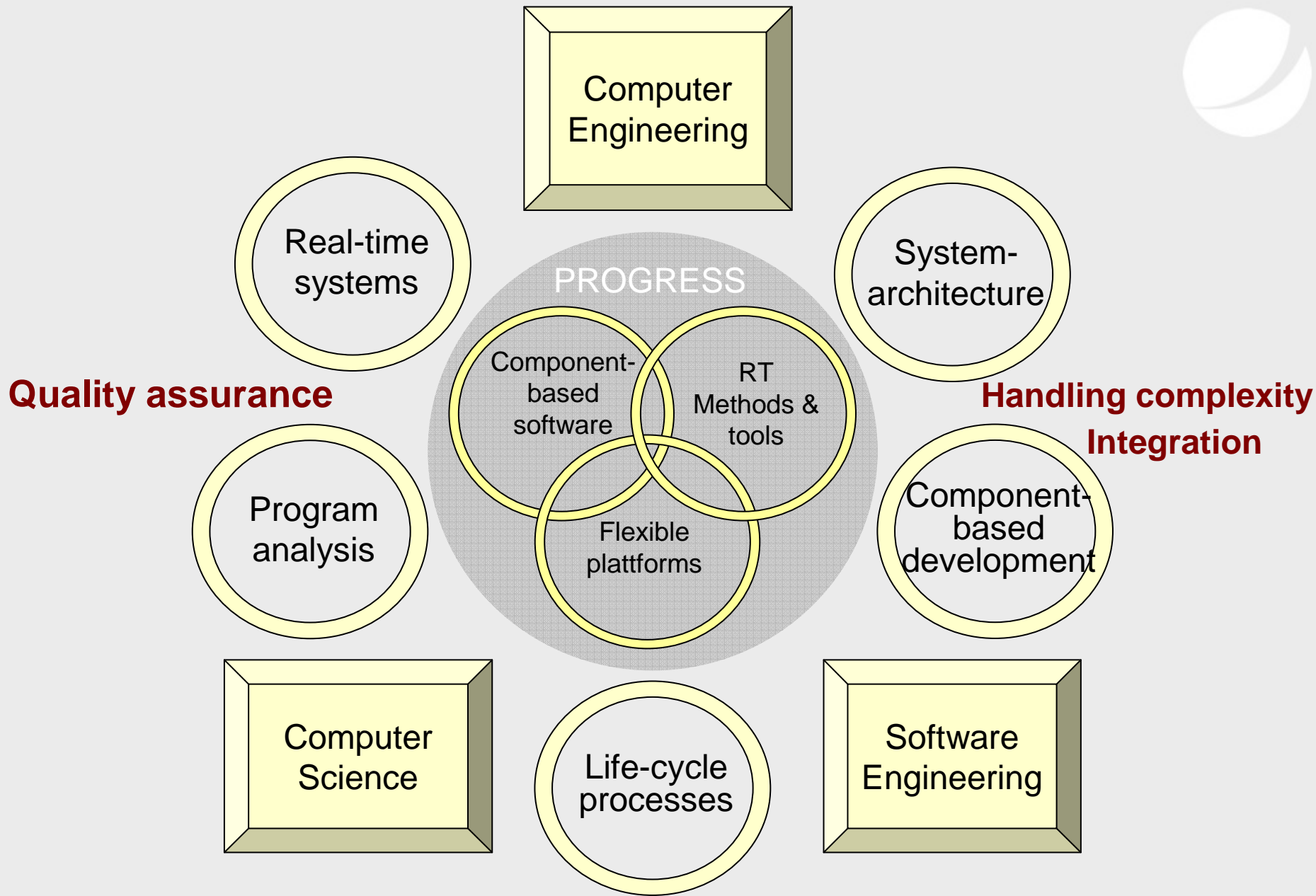
- Focus on Real-Time
- Some aspects of dependability



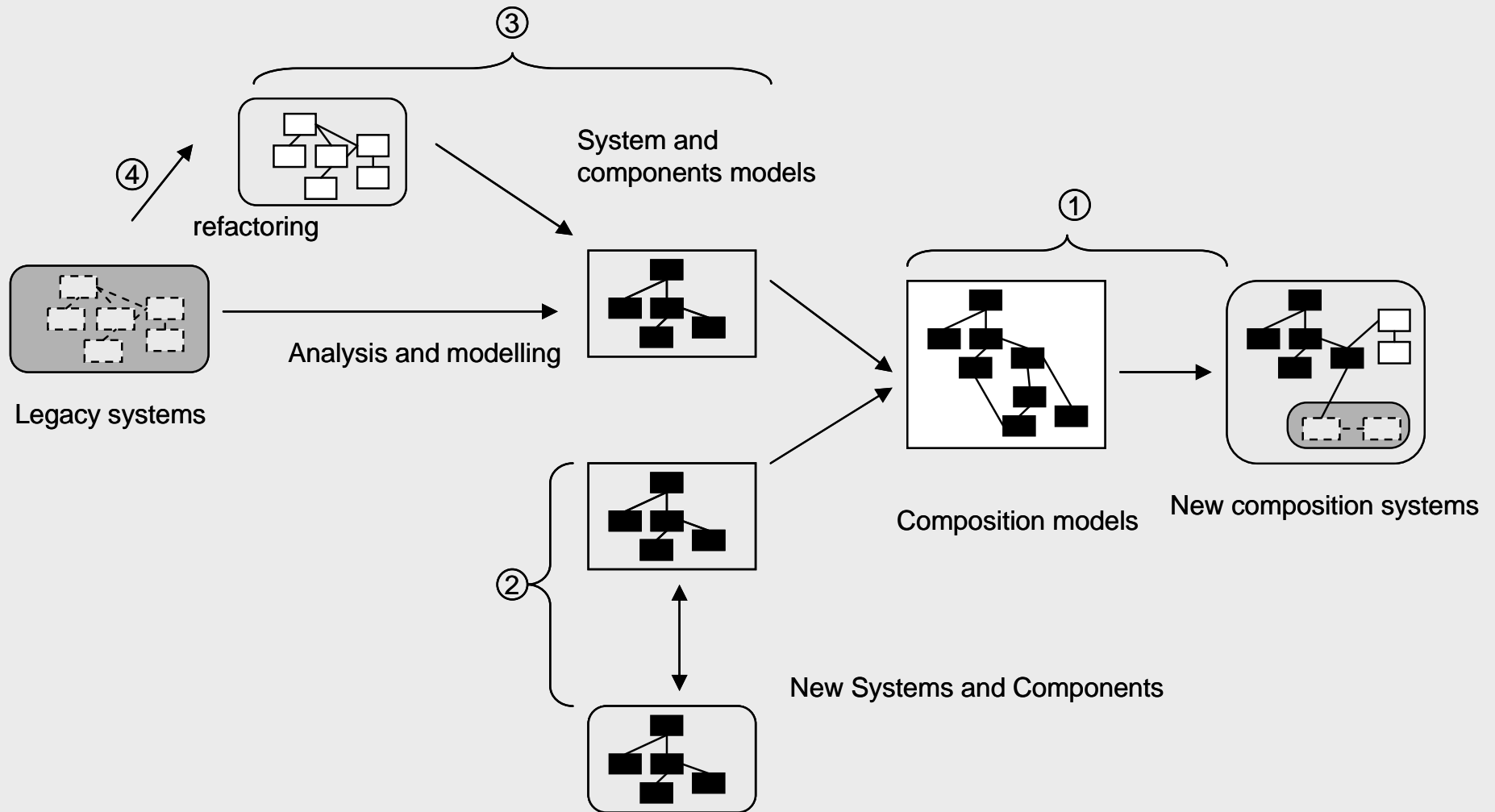


Research Projects

- PROGRESS (national centre of excellence – 4M€ - 6 years)
- SAVE, SAVE++ (National project – 4M€)
- SAVE-IT Industrial projects (ABB, Ericsson, Volvo -2M€)
- H5 – 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



Sustainable development of ECS



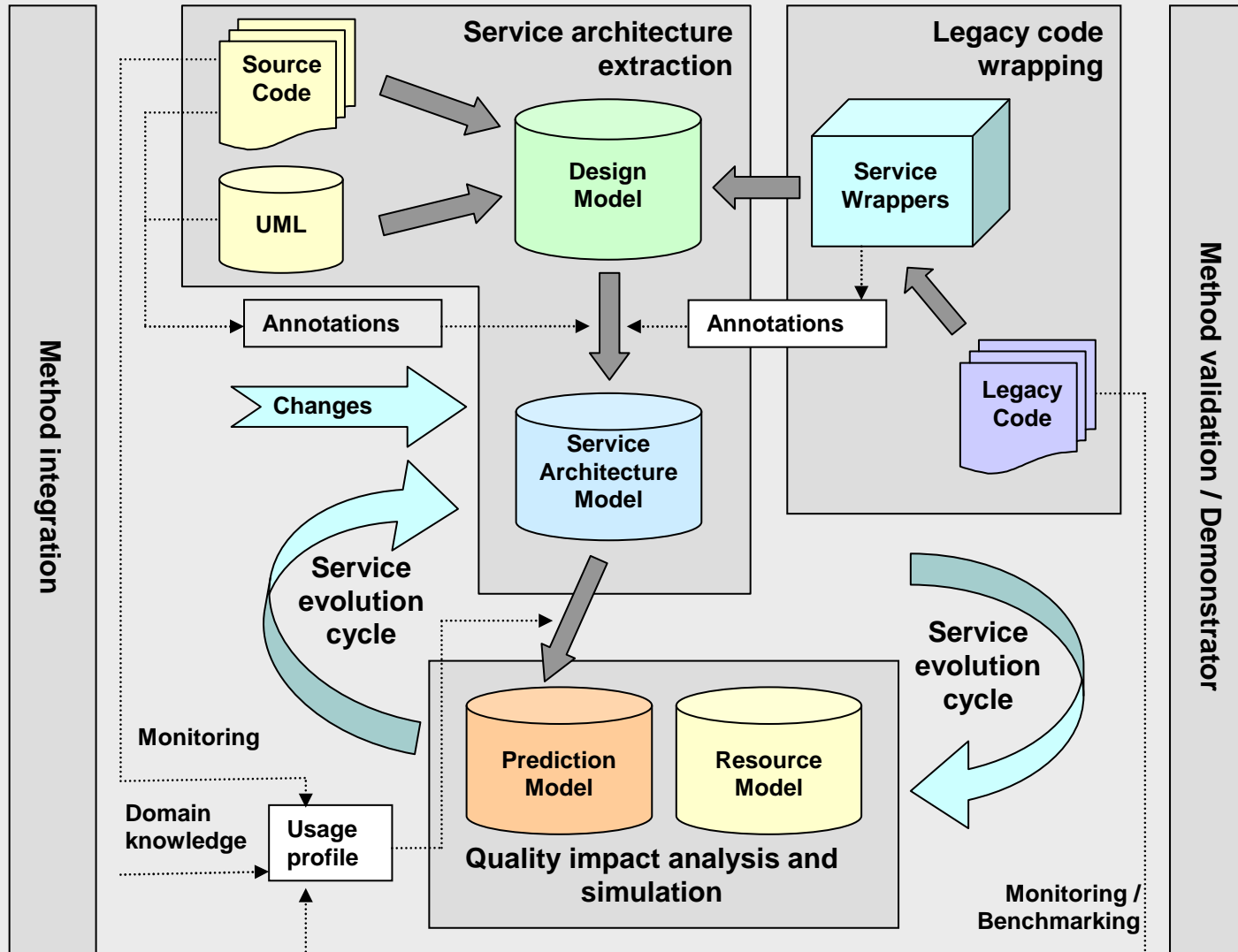
Q-ImPrESS

(Quality Impact Prediction for Evolving Service-oriented
Software (Q-ImPrESS)
Fp7 STREP project



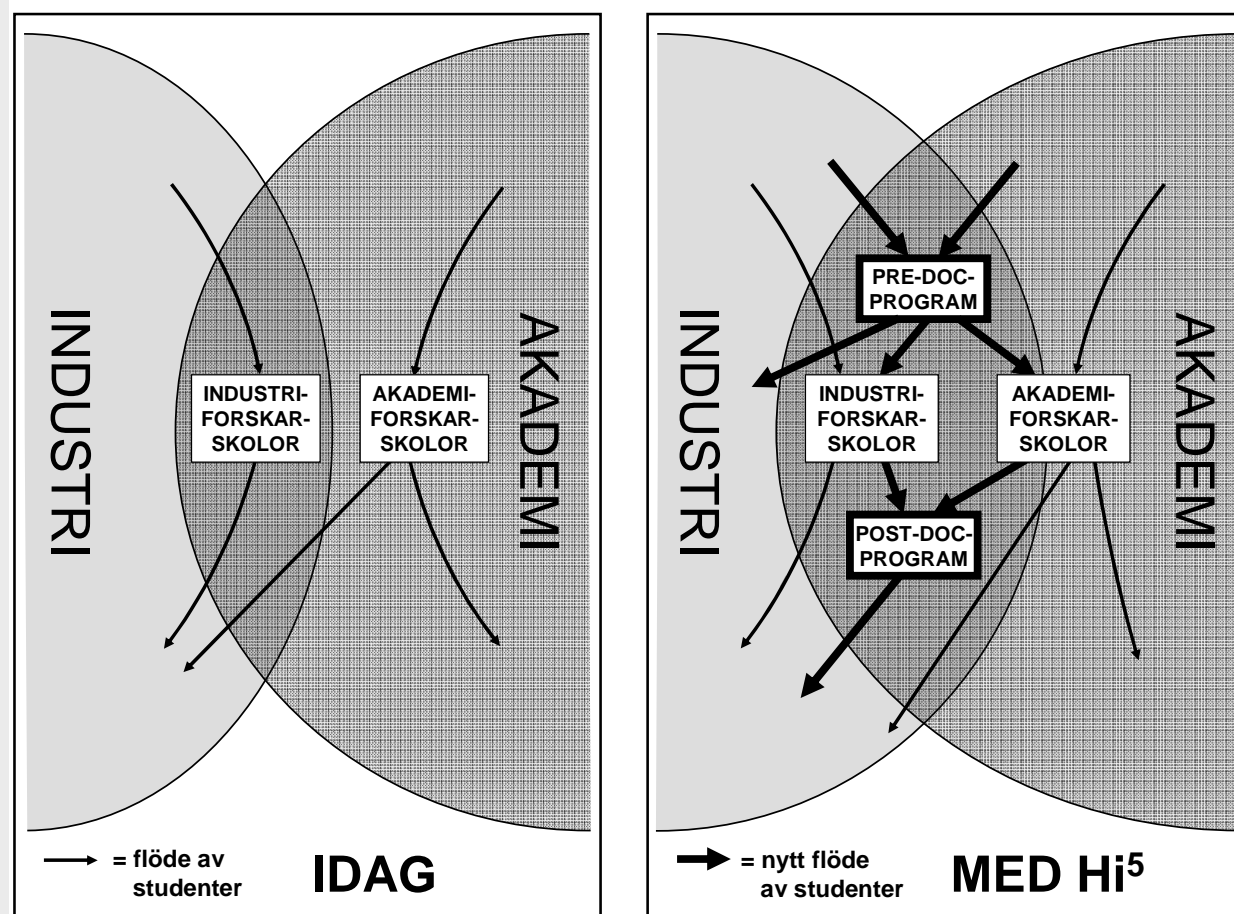
Organisation name	Role and size	Country
FZI Forschungszentrum Informatik	Research institute	Germany
ABB Forschungszentrum	Industry / large	Germany
University of Mälardalen	University	Sweden
Politecnico Milano	University	Italy
Charles University Prague	University	Czech Republic
Itemis GmbH & Co. KG	Industry / SME	Germany
Softeco Sismat S.p.A.	Industry / SME	Italy
Ericsson Nikola Tesla	Industry / large	Croatia

Vision



H5 (Swedish national projects)

- Improvement Industry – reseach communication



FLEXI – ITEA2 project



- From idea to final product in six months
 - Agile methods and distributed development
 - ABB,MDH Sweden
 - Nokia
 - Philips
 -

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



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

Software Engineering

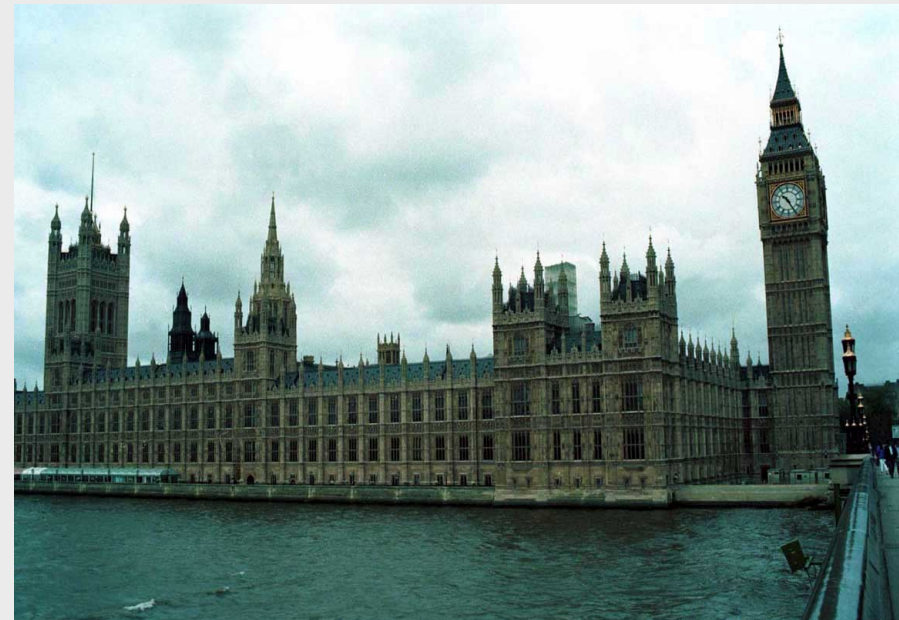


- Efficient and high quality Software Engineering becomes necessary for software intensive systems to
 - Focus on
 - Software Architecture
 - Embedded systems



SE European Master Common SE program

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



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...
-