Mälardalen University
Mälardalen Research Centre

www.mdh.se

www.mrtc.mdh.se

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MÄLARDALEN UNIVERSITY

MRTC
MÄLARDALEN REAL-TIME RESEARCH CENTRE

SCIENCE • TECHNOLOGY • MEDICINE
Swedish Foundation for Strategic Research

News of today

Mälardalen University

12.000 students, about 1500 international
1000 employees, ca 50 professors
Education **free of charge**
10 international master degree programs
- Software engineering
- GSEEM (Global Software Engineering Master
- Embedded systems
- Distance courses

PHD studies (5 years)
- MDH/MRTC Internal
- Industrial PHD students
- Swedish national PHD schools
- Intl. cooperation
- (Pau University, FER Zagreb)

MDH - 4 Schools

Technology / Natural Sciences	Humanities / Social Sciences
School of Sustainable Development of Society and Technology **School of Innovation, Design and Engineering (IDT)** Staff 250	School of Health, Care and Social Welfare School of Education, Culture and Communication

IDT Research

Research staff:
~30

Research staff:
~80

ISS
Intelligent Sensor Systems

MRTC
MÄLARDALEN REAL-TIME RESEARCH CENTRE

PROGRESS

Biomedical Engineering

Artificial Intelligence

Software for Embedded Systems

Industrial IT

RT-Design

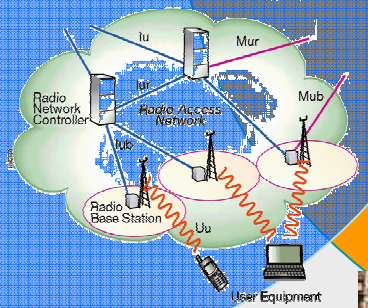
Component Based Software Engineering

SAVE-IT

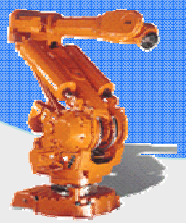
Architectures for RTS

Signals & Systems

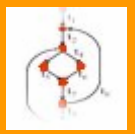
Datacom



Robotics



Program Analysis



Adaptive RTS

Debug Test

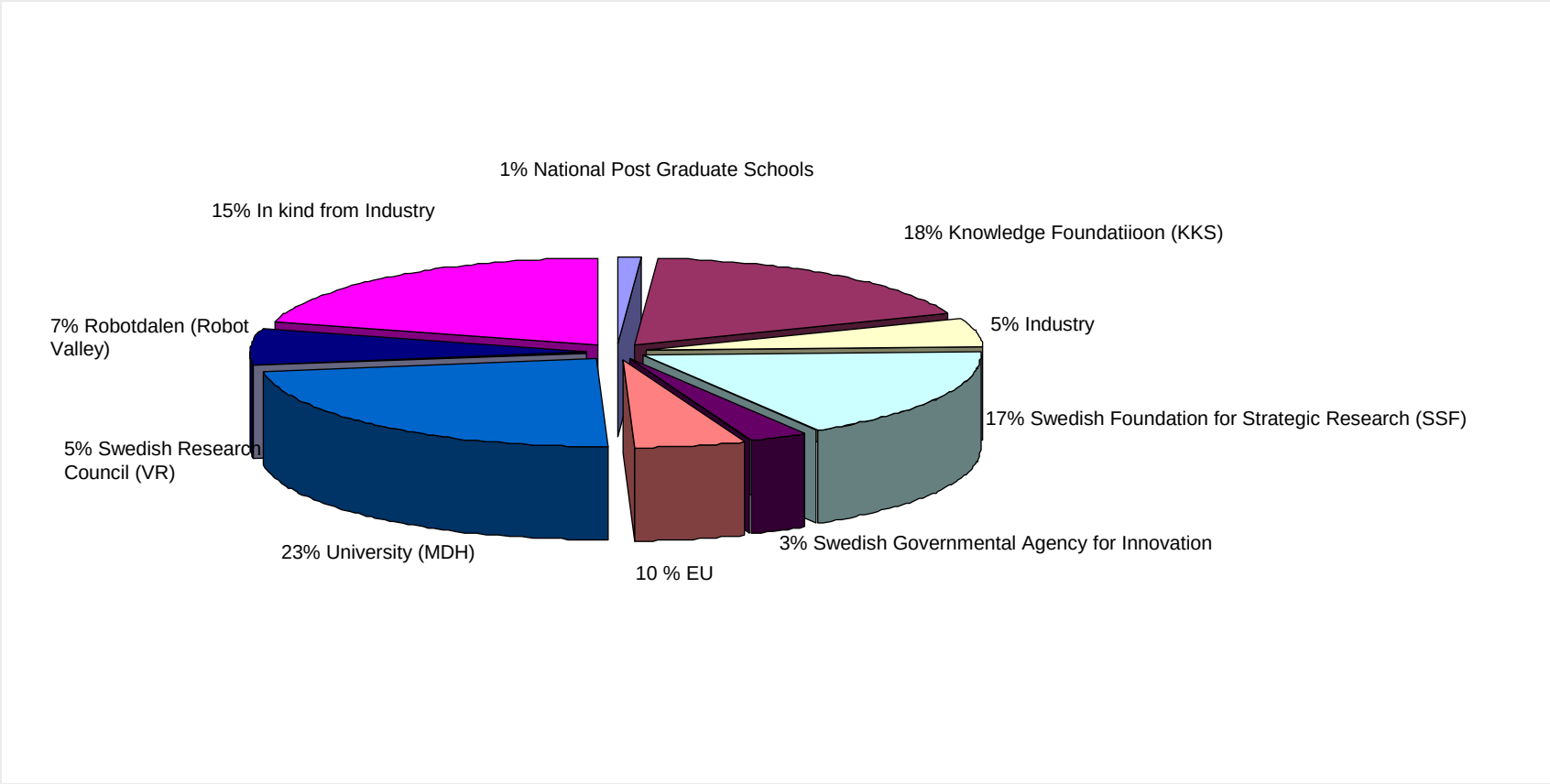
RT-Communication

RF Electronics

PROGRESS

Project	Funding agency	Time-period	Main grantee	Total Amount (MSEK)		Amount MRTC (MSEK)	
				Grant (40 M€)	In-kind	Grant (15 M€)	In-kind
Current projects (2008-)							
Q-IMPRESS	EU FP7 STREP	2008-2010	Ivica Crnkovic	31.3		4.7	
ALL-TIMES	EU FP7 STREP	2008-2010	Björn Lisper	15		3.9	
ARTIST DESIGN	EU FP7 NoE	2008-2011	Björn Lisper	42.3		0.9	
ARTIST 2	EU FP6 NoE	2005-2008	Björn Lisper	61.1		1.3	
MOMENT	EU FP7 STREP	2008-2010	Mats Björkman	26.6	10.5	(2.9)	(0.7)
KISEK	EU Tempus	2007-2009	Ivica Crnkovic	2.8		0.6	1
SISTER	EU Tempus	2008-2011	Ivica Crnkovic	2.0		0.2	
ABV	EU FP7 (People IRG)	2007-2010	Kristina Lundqvist	0.9		0.9	
EURECA	EU EMECW	2008-2011	Sasi Punnekkat	41.0		4.5	
HISCORE	VR	2008-2011	Thomas Nolte	4.1		4.1	
CARTCOM	VR, CC-Systems	2006-2011	Mikael Nolin	1.4		0.4	1.0
SAVE	SSF	2003-2008	Hans Hansson	26		12	
SAVE-IT	KKS	2004-2010	Hans Hansson	21	21	15	15
SW-Release	KKS, ABB	2005-2008	Christer Norström	0.8	0.8	0.2	1.4
PASAS	KKS, ABB		Christer Norström	1.6	1.6	0.8	2.8
RT Mediaediting	KKS,	2005-2009	Gerhard Fohler	1.6	1.6	1.6	1.6
EXTRACT	KKS, ABB, Bombardier	2006-2008	Christer Norström	2.5	2.5	2.5	2.5
MultEx	KKS, CC-Systems, Arcticus, Volvo CE	2006-2008	Mikael Nolin	2.9	2.9	2.9	2.9
WCET	KKS, CC-Systems, Arcticus, IAR Systems	2006-2008	Björn Lisper	1.9	1.9	1.9	1.9
FLEXI	ITEA, Vinnova, ABB	2007-2009	Ivica Crnkovic	5.5	11	5.5	11
FFP(Cosy)	Vinnova, Volvo	2006-2008	Jakob Axelsson	1.6		1.6	
Hi5	Vinnova	2008-2011	Ivica Crnkovic	10.0		10.0	
SWELL	Vinnova		Kristina Lundqvist	3.0		1.3	
GENIUS	Vinnova	2008	Ylva Bäcklund	0.3		0.3	
ISE	KKS, ABB, Ericsson, CC-systems, Volvo CE	2008-2010	Ivica Crnkovic	1.5	1.5	1.5	
DICES	World Bank, Croatian Government, Ericsson Croatia	2008-2011	Ivica Crnkovic	2. 2		0.5	
PIFF	HNSU	2008-2009	G.Dodig-Crnkovic	2		0.7	
BARTAP	Vinnova	2008-2010	Mats Björkman	3.2		3.2	
Open Innovation	Ericsson	2008-	Christer Norström	0.4		0.4	
Ericsson lab	Ericsson	2006-	Daniel Flemström	3		3	
CUGS (2)	CUGS	2006-2008	Björn Lisper	1.9		1.9	
PLEX	Ericsson	2006-2009	Björn Lisper	2.1		2.1	
SICS CNS	SSF, KKS, Vinnova	2007-2009	Mats Björkman	19.2		1	
PROGRESS	SSF	2007-2011	HansHansson	60		60	

Research Funding per year



IDT Funding 7,5 M€.
60% (4,5 M€) of the revenues are related to research activities
(3 M€) to undergraduate education

PROGRESS

Research Cooperation with national universitues

Royal institute of Technology

Swedish Institute in SC

Uppsala U

Orebro U

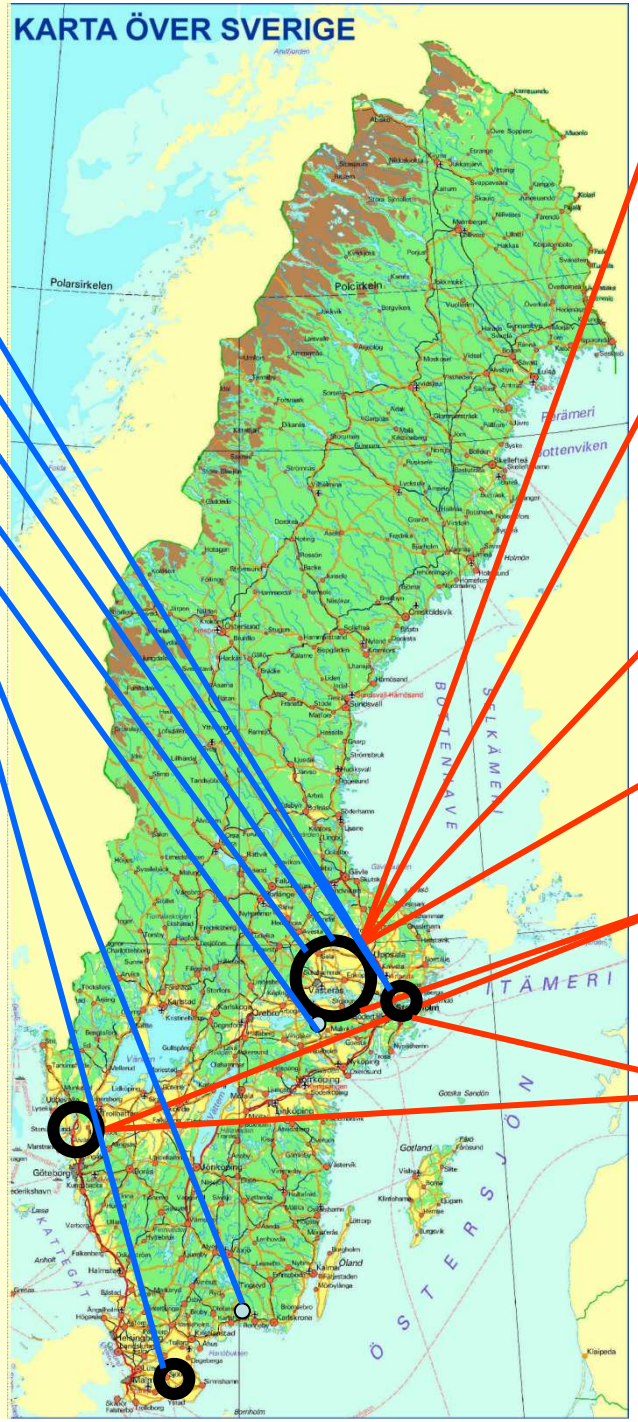
Linköping H

lekinge Institute of Technology

Lund University

National Research Schools and Networks

SERPS
ARTES
CUGS
SWEL
SAVE-IT
ASTEC
SAVE, SAVE++
Flexcon



ABB

BOMBARDIER

CC SYSTEMS

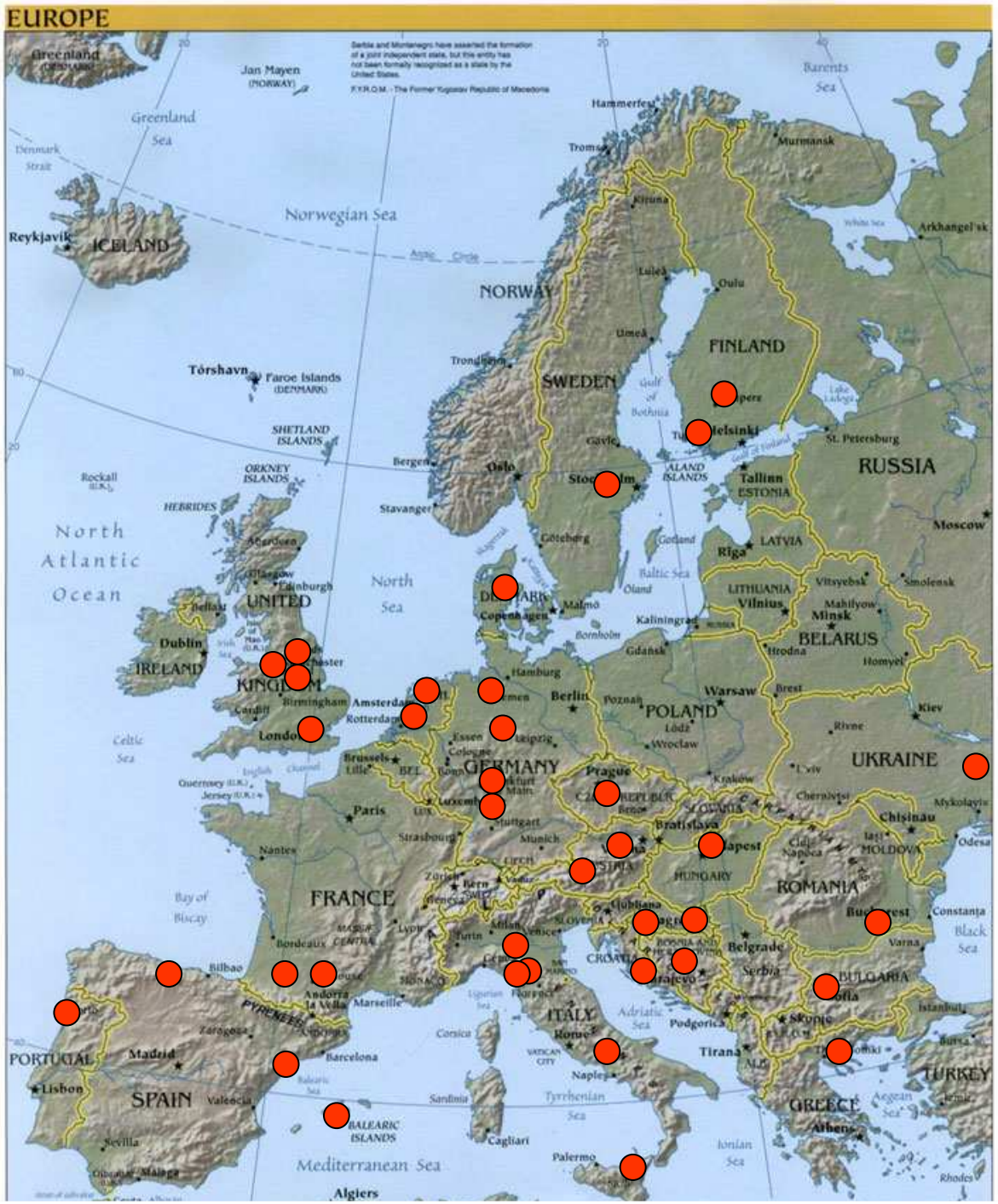
Prevas

VOLVO

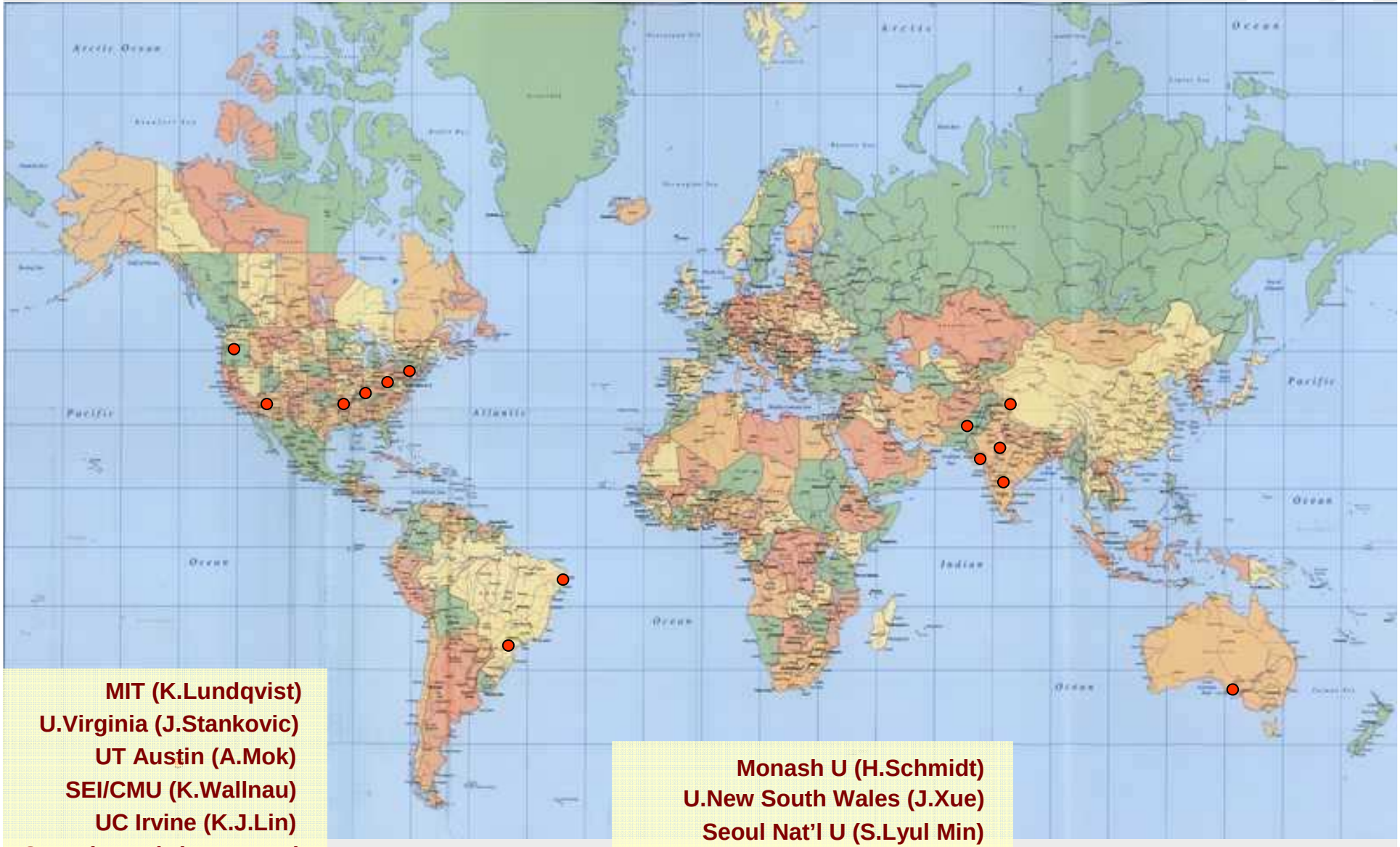
ERICSSON

Int'l research co-operation

TU Eindhoven
Free U Amsterdam
Manchester U
U. York
Westminster U.
New Castle U.
U. Cantabria
UPC Barcelona
U.Catania
U. Aveiro
L'Aqualia University
PoliT. Milano
SSSA, ISTI Pisa
TU Porto
TU Wien
Linz U
Pau U
Verimag, Grenoble
Karlsruhe U
Oldenburg U
Paderborn U
Charles U. Prague
U. Zagreb
U. Osijek
U. Split
Sarajevo U
Sofia U
Bucharest U
Thessaloniki U
KHARKOV U
U. Tampere
Åbo U
Aalborg U



PROGRESS



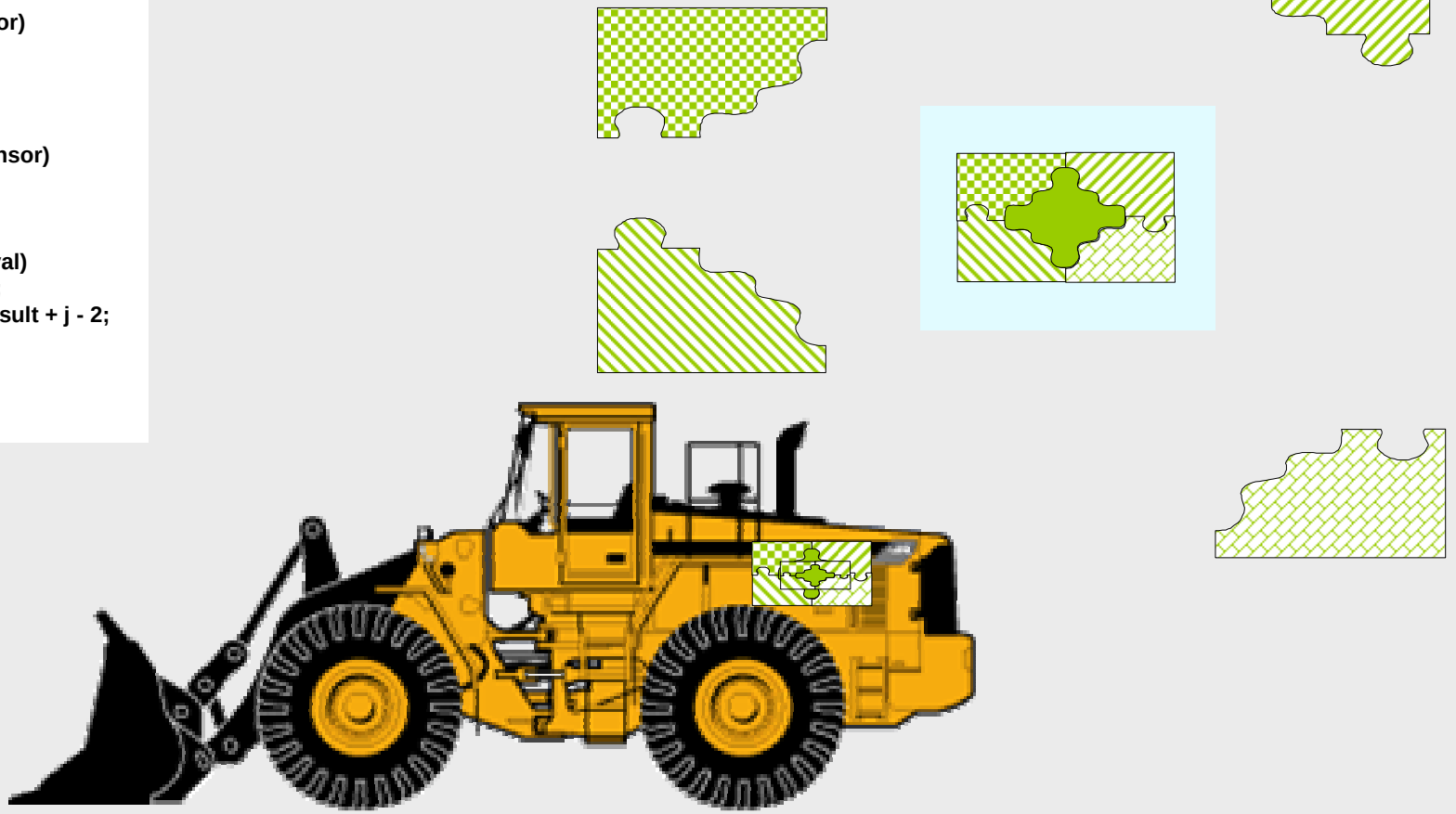
MIT (K.Lundqvist)
U.Virginia (J.Stankovic)
UT Austin (A.Mok)
SEI/CMU (K.Wallnau)
UC Irvine (K.J.Lin)
Georgia Tech.(V.Mooney)
Microsoft Research
TUFTS U., Boston

Monash U (H.Schmidt)
U.New South Wales (J.Xue)
Seoul Nat'l U (S.Lyul Min)
IIT Bombay (K.Ramamritham)
U.Rio Grande (C.Pereira)
Recife, Brazil

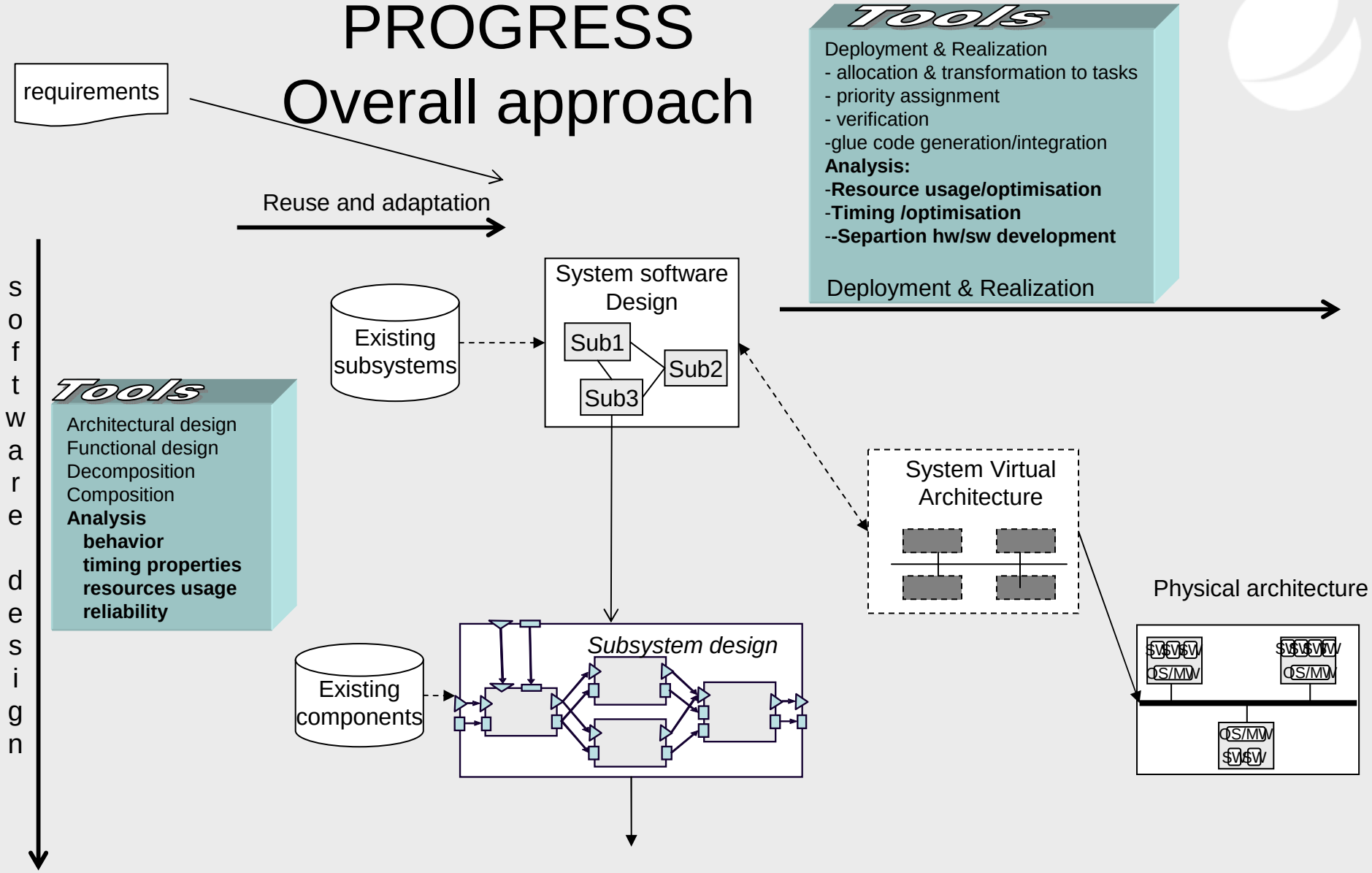
Research Example: Building predictable embedded systems using component-based approach

- Building

```
int foo(int sensor)
{
   int i, j, result;
   i = 0;
   j = 0;
   while(i <= sensor)
   {
       if(j < 5)
            j++;
       if(j > maxval)
            break;
       result = result + j - 2;
       i++;
    }
   return result;
}
```



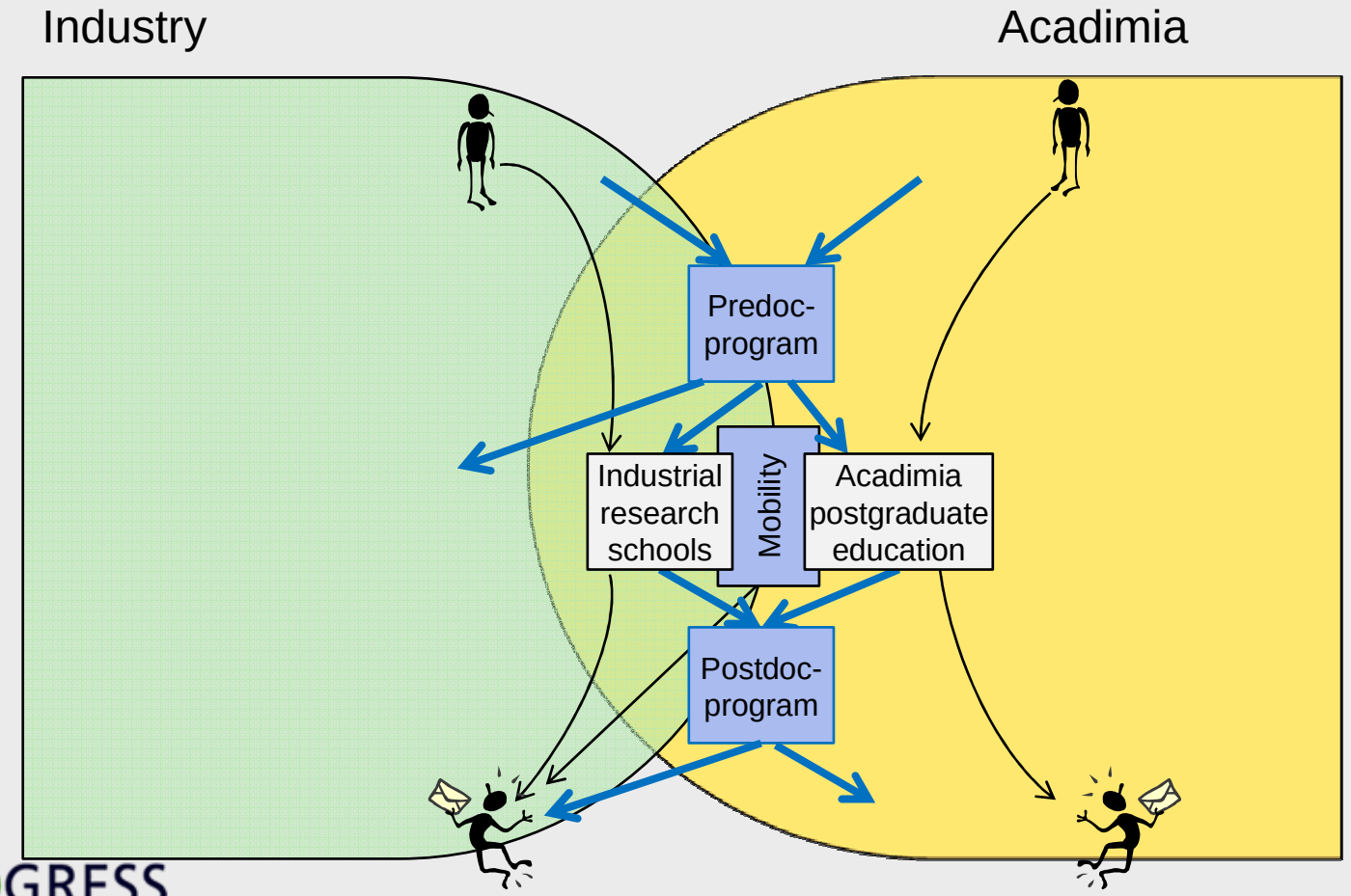
PROGRESS
Overall approach



Example of national cooperation

Hi5 -A **H**olistic and **I**mproved **I**nfrastructure for **I**ncreased **I**ndustrial **I**mpact of research'

ISE –Industrial Software Engineering program



PROGRESS

ACADEMIA & INDUSTRY