Creative Technology (CreaTe): A new BSc-programme to attract engineers as design artists

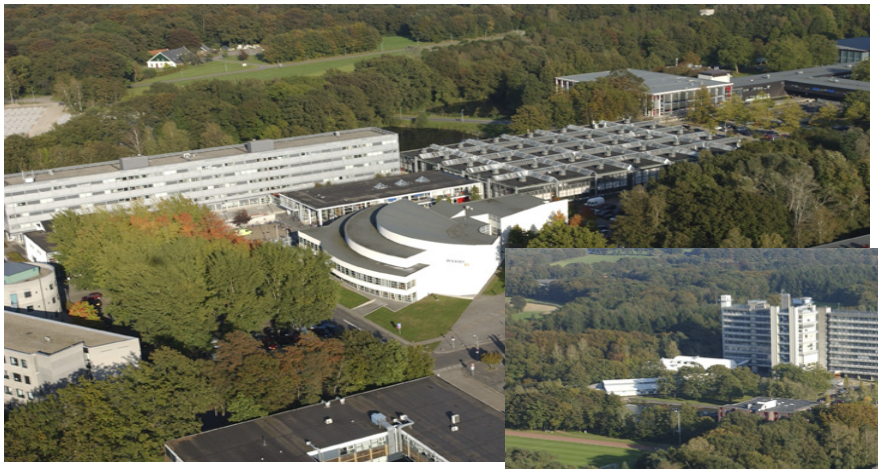
Zsofi Ruttkay, Ton Mouthaan,
University of Twente, Enschede, The Netherlands
zsofi@ewi.utwente.nl, a.j.mouthaan@utwente.nl

University of Twente
The Netherlands

Profile of the university

- Research University
- Science, Engineering, Society
- Entrepreneurial University

University of Twente
The Netherlands



Study and Research

Sports and leisure

Living and Pleasure

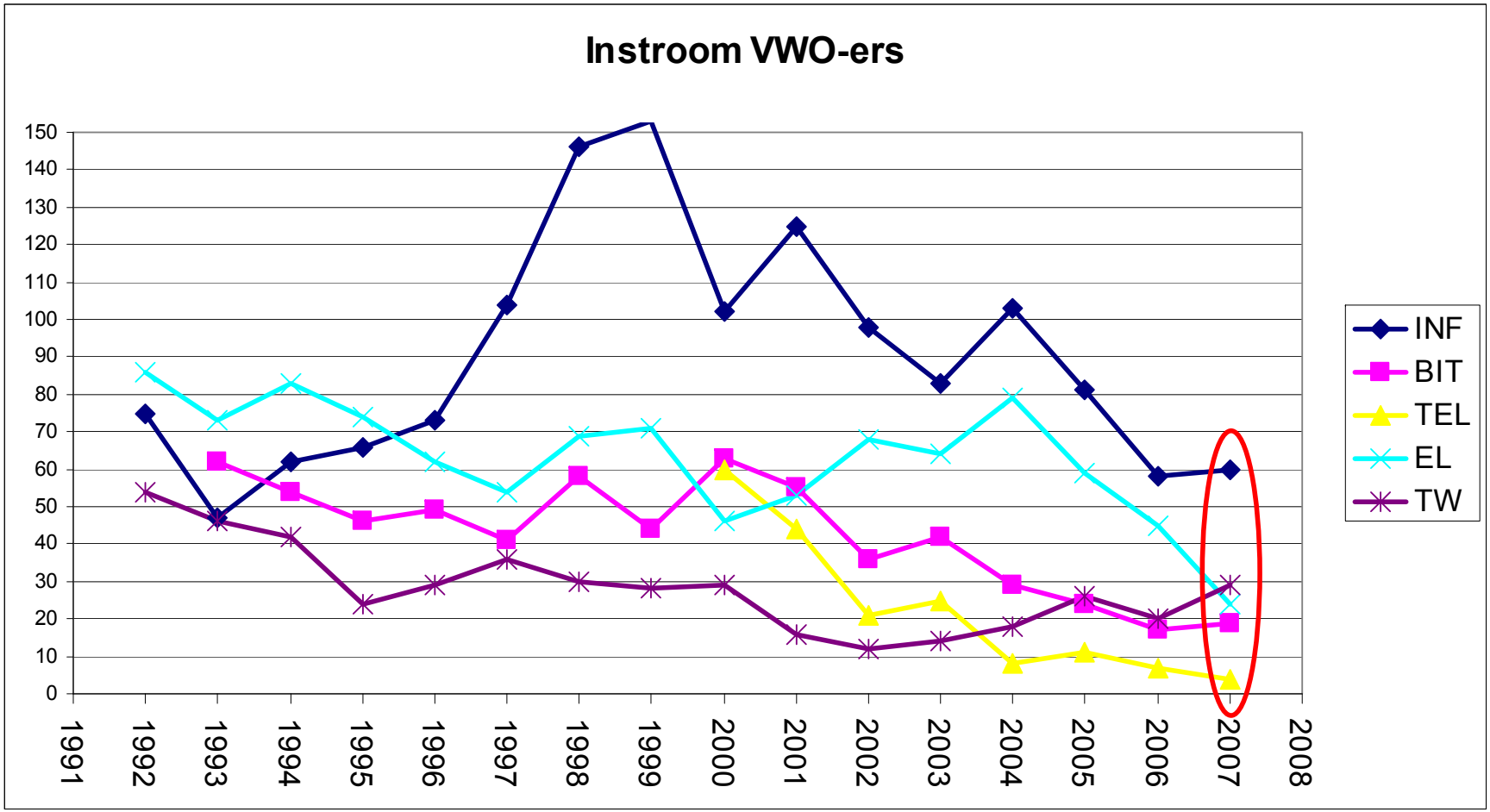
University of Twente
The Netherlands

University of Twente
The Entrepreneurial University

- Founded in 1961
- 7500 students + 700 PhD
- Entrepreneurial Research University with focus on:
  - → ***Nano & Microsystems*** (MESA+)
  - → ***ICT and ICT applications*** (CTIT)
  - → ***Biomedical Engineering*** (BMTI)
  - → ***Governance Studies*** (IGS)
  - → ***Behavioural Sciences*** (IBR)
  - → ***Mechanics, Processes*** (IMPACT)


University of Twente
The Netherlands

Motivation


Instroom VWO-ers
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
INF
BIT
TEL
EL
TW

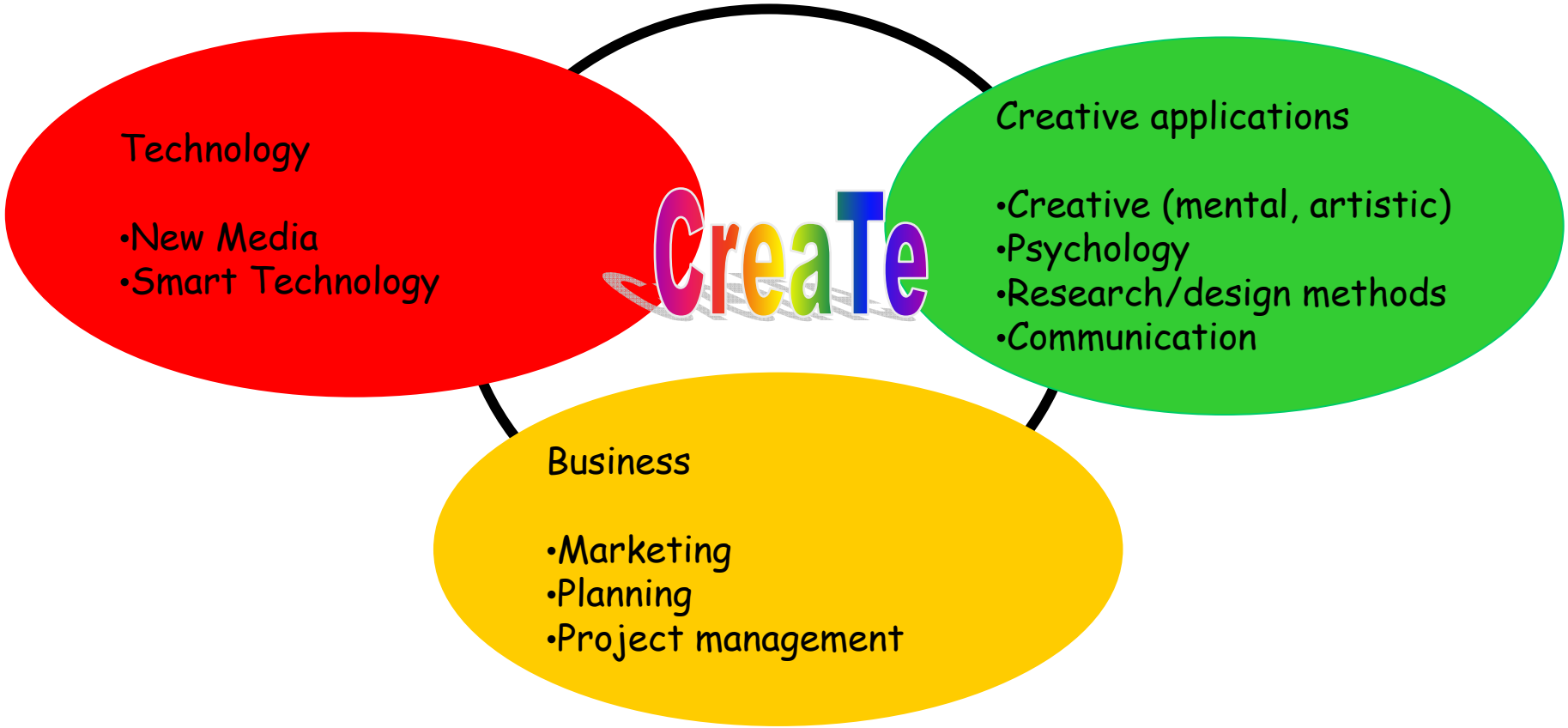
Deeper motivation …

- Sience vs design
  - Corporate Netherlands (application vs manufacturing)
  - Interest sec school leavers (750…)
    - Find 'new' 21st century school leavers
    - 21st century: individual/unique drive, results (quickly), impact/relevance , choices
    - Category non-science profile with interest in technology
- What do we want?

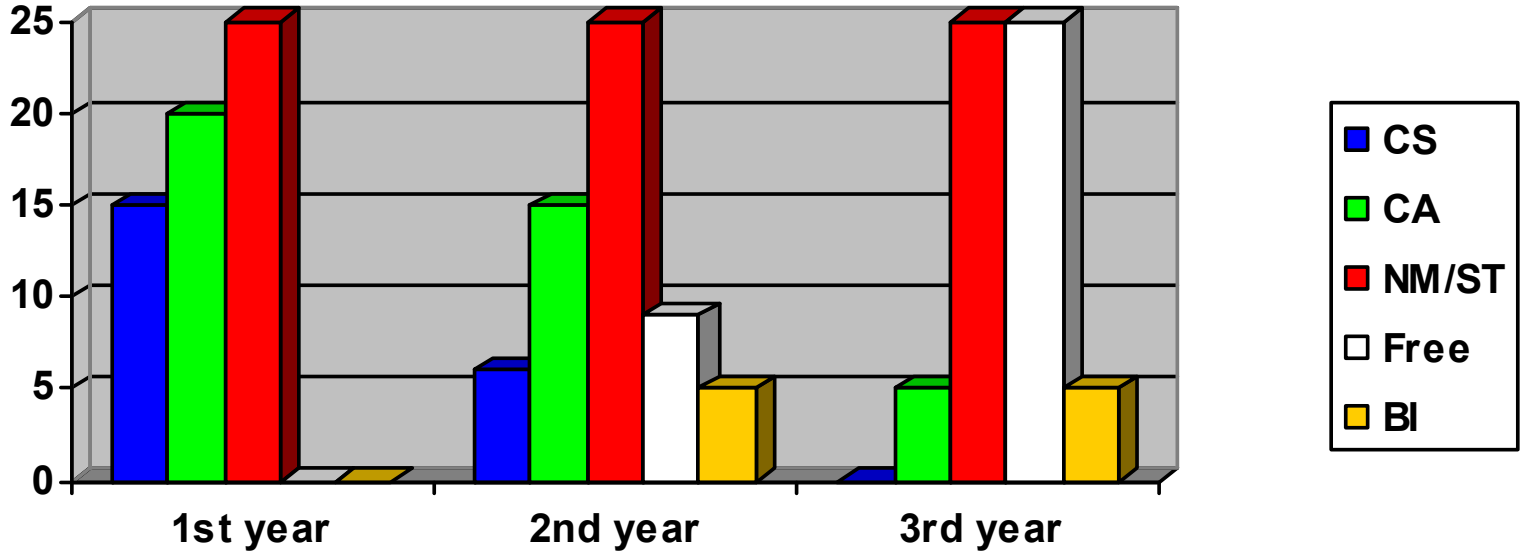
The new Bachelor Creative Texhnology

The **multidisciplinary education** will addresses all aspects, by:

- providing a basic **knowledge of the technologies** to be used, enough to make sure that your ‘dreams’ can be realized;
- training for c**reativity problem solving**, to give a chance for really sparkling ideas;
- endowing students with skills and tools to **be able to implement prototypes**, try out ideas by using latest, high-level tools;
- educating to understand **user acceptance** and success criteria in a globalized world;
- developing skills **to design attractive solutions**, as of aesthetics of appearance and interaction means, leaving space for even the artistic;
- improving the **communicative skills** and **psychological knowledge**, inevitable for dealing with people who would benefit from the new services;
- helping to place new applications in a **business context**.


Technology
•New Media
•Smart Technology
CreaTe
Creative applications
•Creative (mental, artistic)
•Psychology
•Research/design methods
•Communication
Business
•Marketing
•Planning
•Project management

EC



CS= computer science
CA= creative applications
NM/ST= new media/smart tech
BI= business

University of Twente
The Netherlands

Second half of YEAR 3: **Application**
Real-life application project (Bachelor project)
Optional course

YEAR 2 and first half of YEAR 3: **Expertise**	
Optional courses	
New Media special courses	Smart Technologies special courses
Creative Applications	
Business	
Computer Science	

YEAR 1: **Foundation**
New Media and Smart Technology basics
Creative Applications
Computer Science and Maths

First year programme

CA	Creative Applications year 1		EC
DE1	Sketching for CreaTe		2
DE2	Graphical Design		2
DE3	Designing in Context		3
DE4	Ergonomics		2
CA1	We Create Identity		3
CA2	Have Fun and Play!		6
CA3	Living and Working Tomorrow		6
CE1	The Heart of Mathematics		2
	Total		**26**

NM	New Media year 1		EC
NM1	Web Technology		6
NM2	Interactive Visualization		8
	Total		14

ST	Smart Technologies year 1		EC
ST1	Smart Systems		6
ST2	Dynamical Control		9
	Total		**15**

CS	Computer Science year 1		EC
M1	Motion and Modeling		4
M2	Signals and Systems		3
CS1	Intro to CS		4
CS2	Intro to Porgramming		4
	Total		**15**

CA	Creative Applications year 2	EC
DE5	Advanced Graphics Design	2
DE6	3d Modelling	2
DE7	Digital content creation tools	2
CA4	Hybrid Worlds	6
CS5	Ambient Screens	9
CE2	Creative Explorations in Art, Science and Technology	2
	Total	**23**

BI	Business year 2	BI
DE5	Design Marketing	3
DE6	Business Magnagement	3
	Total	**6**

	New Media year 2	EC
NM3	Web 2.0 Mashups	3
NM4	Virtual Environments	6
NM5	Game Fevelopment	6
	Total	**15**

	Smart Technologies year 2	EC
ST3	Control Systems	4
ST4	Wireless Communication Systems	4
ST5	Mechanical Engineering	4
ST6	Sensors	3
	Total	**15**

CS	Computer Science year 2	EC
MA4	Strategies and Protocols	3
MA5	Queues and Logistics	3
CS3	DB technology	3
CS4	Programming and Algorithms	3
	Total	**12**

	Creative Applications year 3	EC
BP	Bachelor Project	15
	Total	**15**

	Business year 3	EC
BP	Business practice	5
	Total	**5**

	ST/NM year 3	EC
AE	Elective courses	20
	Total	**20**

	Optional year 3	EC
MI	Minor A+B	20
	Total	**20**

	Optional courses choice	EC
FE	Finite Element Methods	3
HM	Human Motion Simulation	3
CV	Computer Vision	3
AS	Advanced Ambient Systems	3
ES	Embedded signal processing	3
RS	Random signals and noise	3
MS	Microsystems	3
RM	Research Methodology and Experiment Design	3
BP	Business Planning	3
MP	Media Psychology	3
HTP	History of technology project	3
HAP	History of art project	3
	…	

Applications

- More focus needed
  - Health (/)
  - Sport
  - Media (/)
  - Education
  - Lifestyle (/)
  - Art, culture
  - …
- Close connection with creative industry

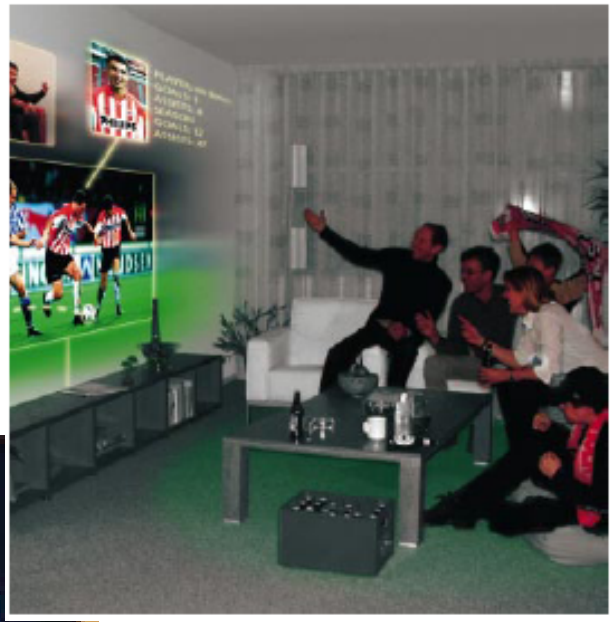
At home

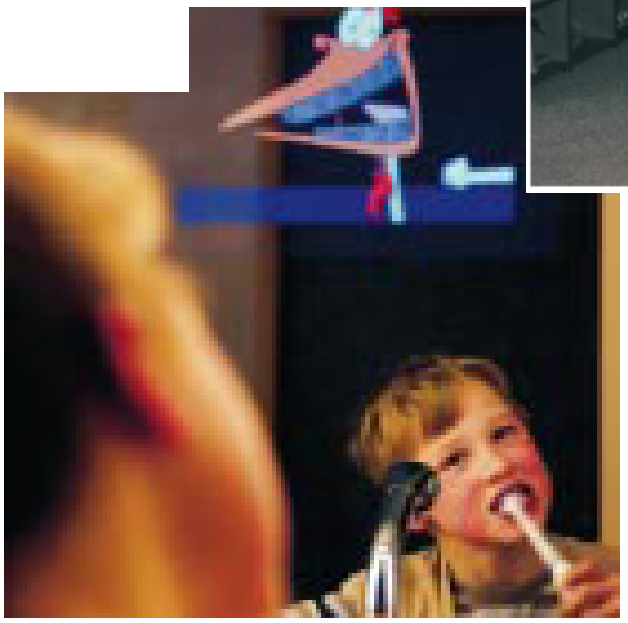
iCat

User-interface robot

Exploring enjoyable interaction with iCat

Philips Research





At home…

Electronics will become fully **embedded** in people's environments ('ambient') and capable of **responding** to their needs and desires (intelligent, responsive, adaptive)

People to the foreground, Technology is embedded (hidden in the background)

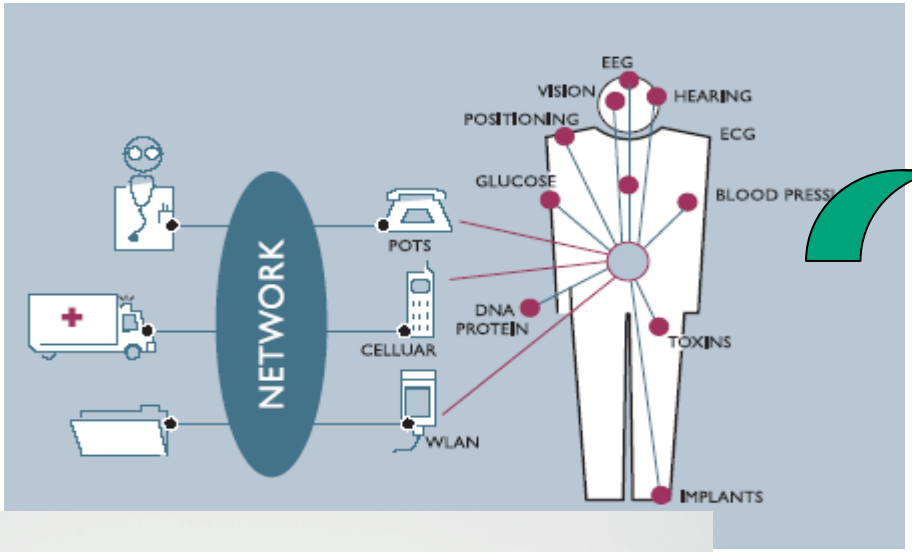
Computers everywhere

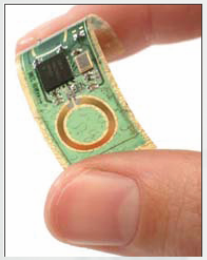
Source: Philips

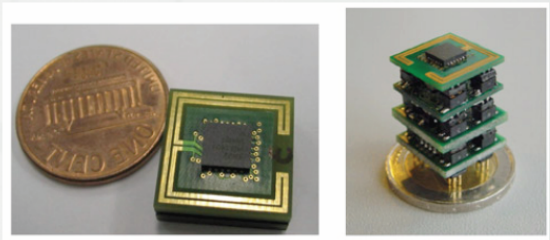
Sports

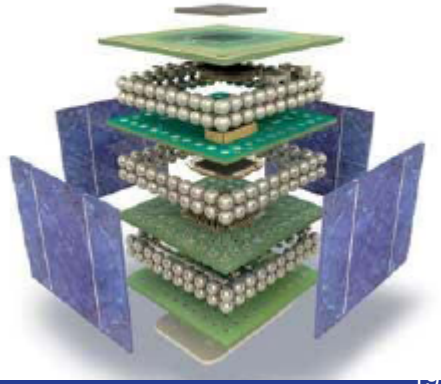

Timing of catch
Time
Athletes
1 2 3 4 5 6 7 8
Power eff.
Rower 1: Dirk Lippits
Boat accel. (m/s2)
Catch time (s)
Power eff. (%max)
2.4
0.76
81
Targets
0.76
83

Health monitoring….

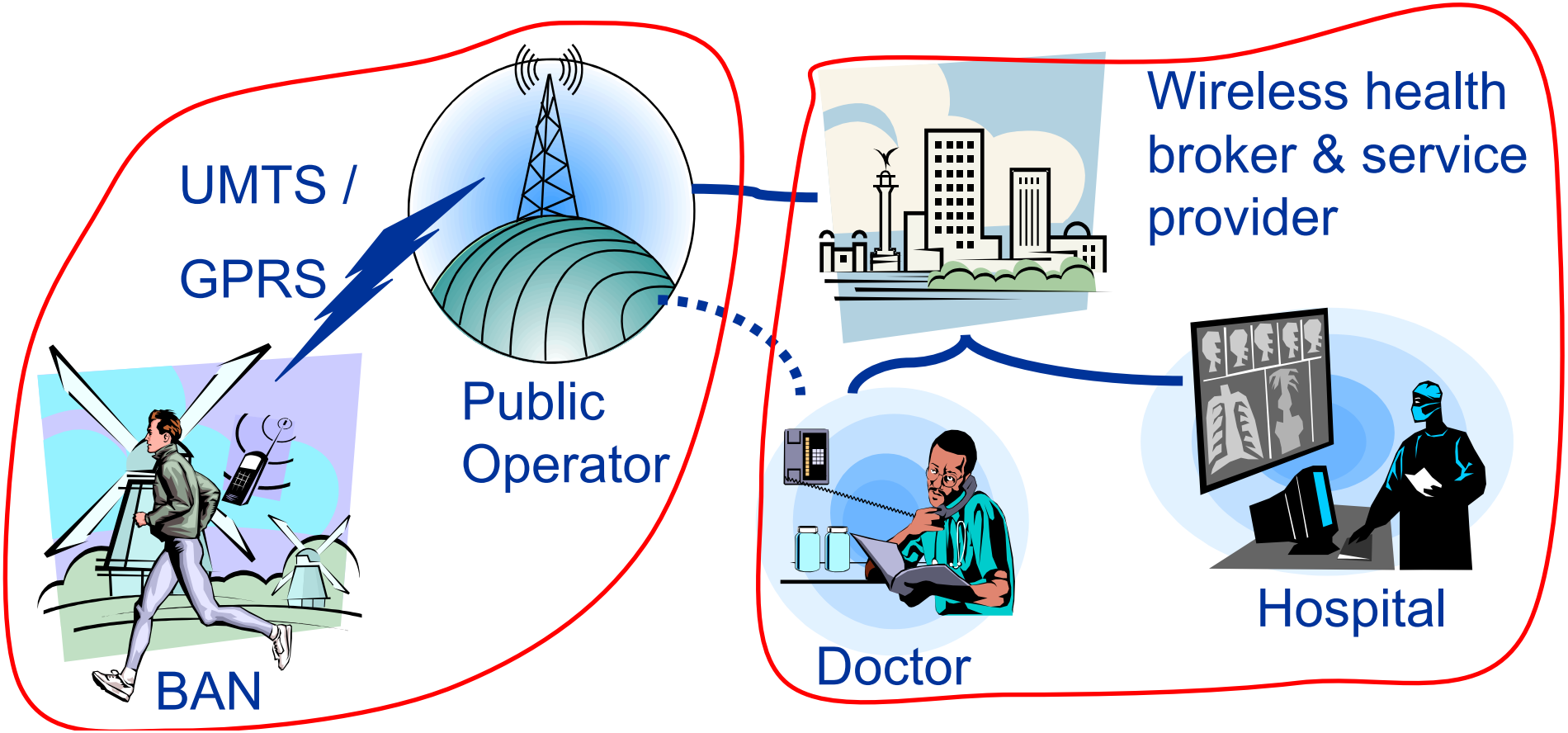






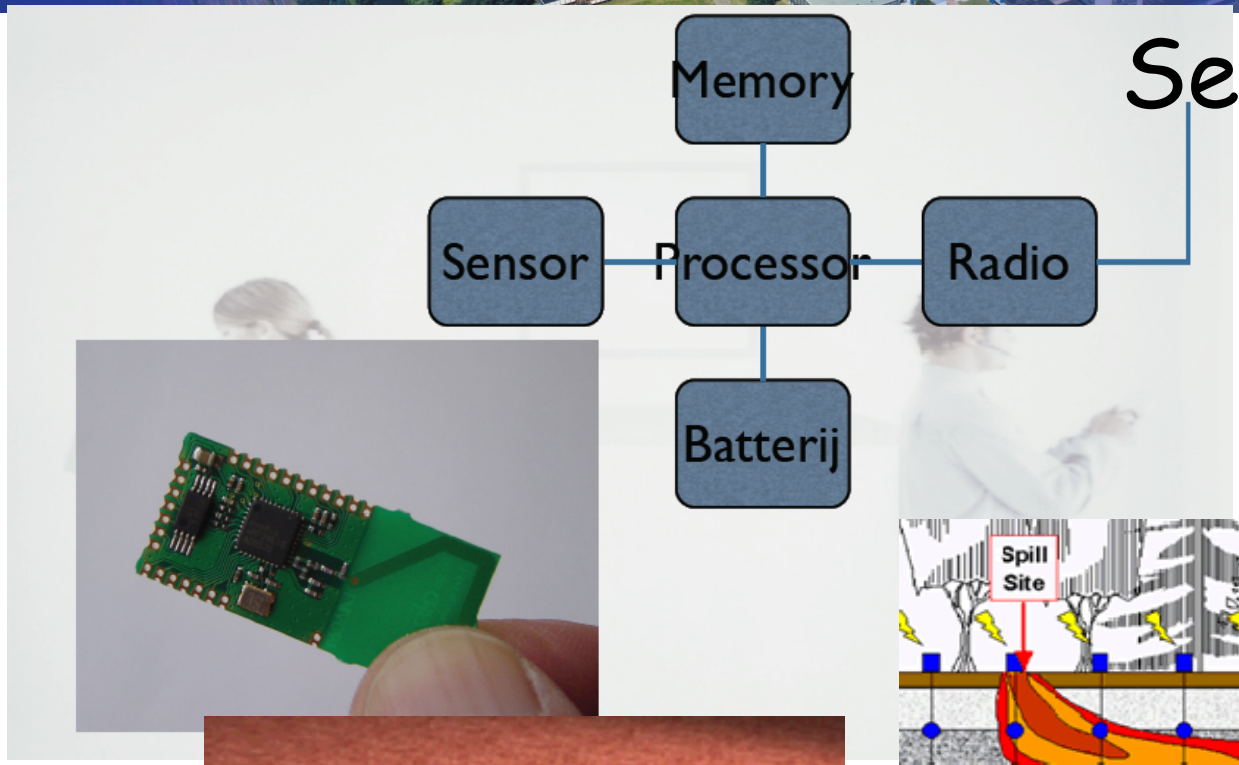


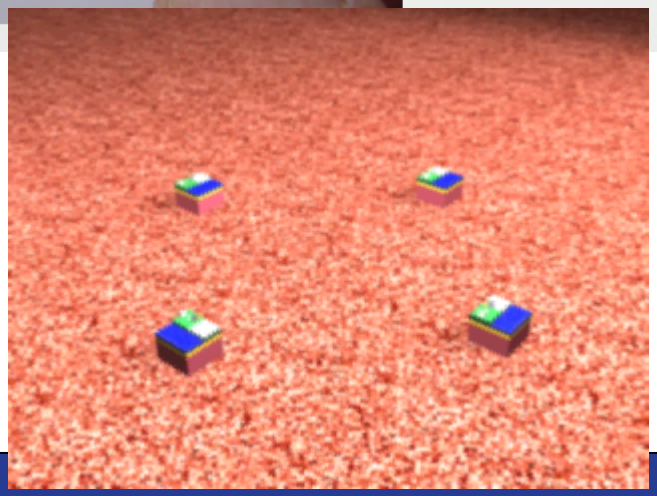

Example: Mobile Personal Healthcare Services
Any time any place Health information (context aware)

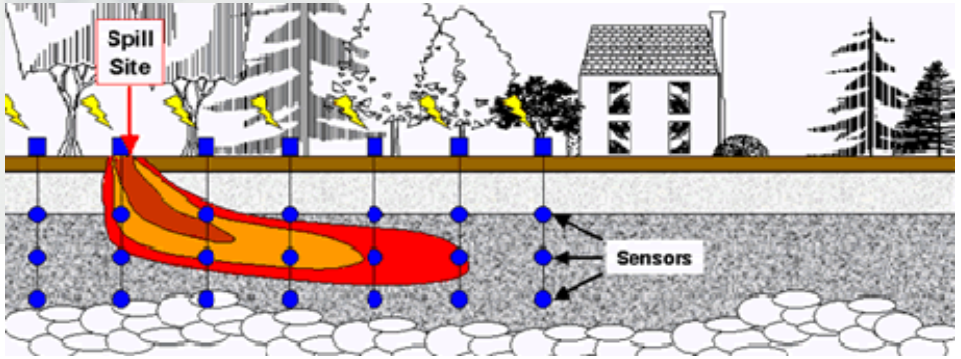


Technology-oriented + **Organisation-oriented**

Sensor networks

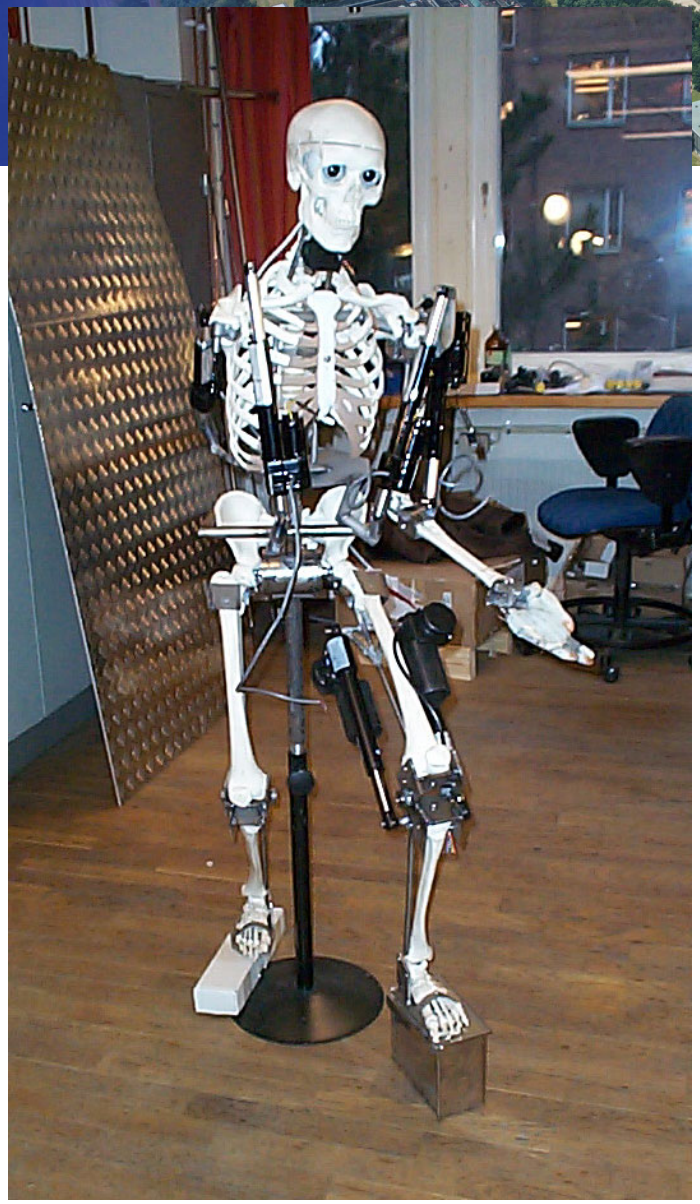






Traffic, mobility

Voor het gevaarlijke werk….



ir. Edwin Dertien

ir. Gijs van Oort

After BSc?

- Work
- HMI, BIT, CS (?), EE (?), IO (I hope), TBK,….
- Specialise in domain (not here)

Conclusions?

- Let see….

Real smart systems…