

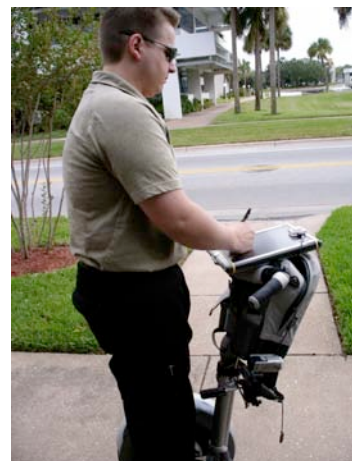
Next Generation Networks: Mobile Data Management Issues

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Next Generation Networks

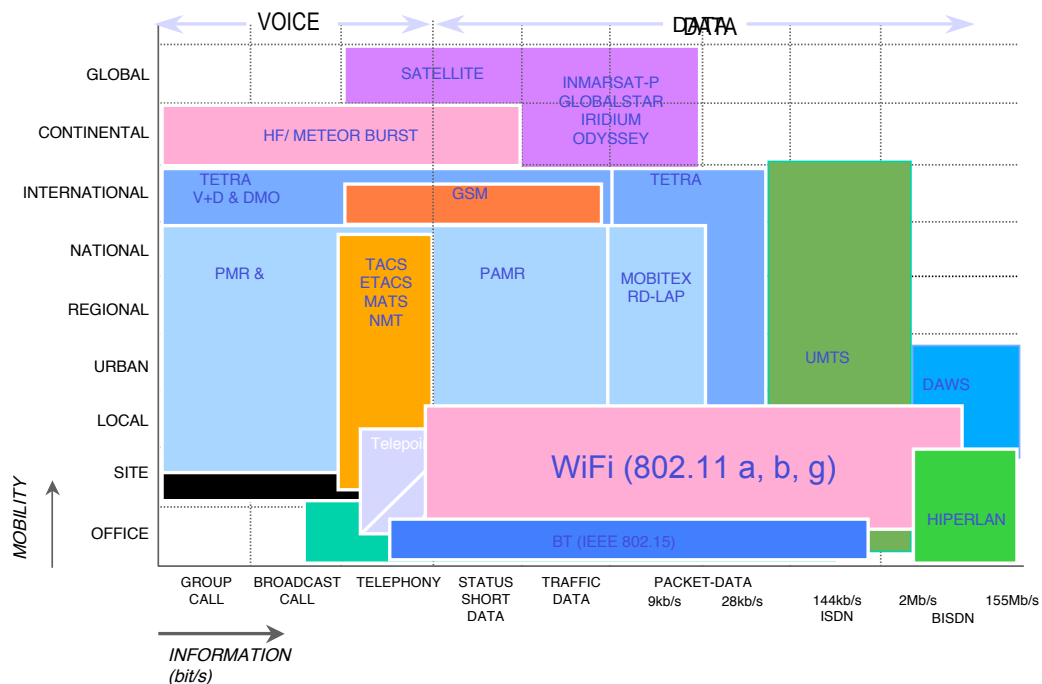
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- Ubiquitous access
- Miniaturized / embedded devices
- Ambient interfaces
- New Applications
- Challenges
 - performance, security, accessibility, adaption



Enabling Technologies: Wireless Networks

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Enabling Technology: Digitizing media

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- Your personal entertainment center



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Enabling Technology: Digitizing the world

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- embedding IT in objects of every day use



IO-Brush, H. Ishii 2004



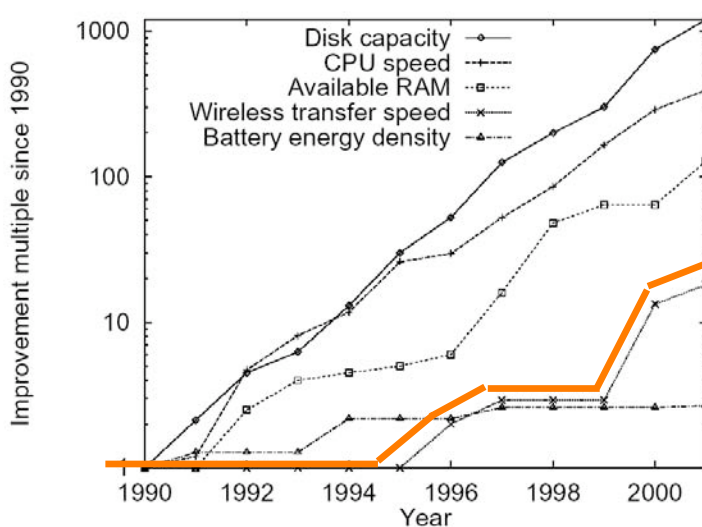
Mirror TV, Philips

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Enabling Technologies

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- Moore's Law



Disc: 2000x
CPU: 200x
RAM: 110x
Wireless: 11x
Battery: 2x

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Smart Things

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- Devices are
 - aware of user presence
 - sensitive, adaptive and responsive to users capabilities, needs, habits and emotions
 - accessible via intuitive interaction



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Enabling Technology: UHCI

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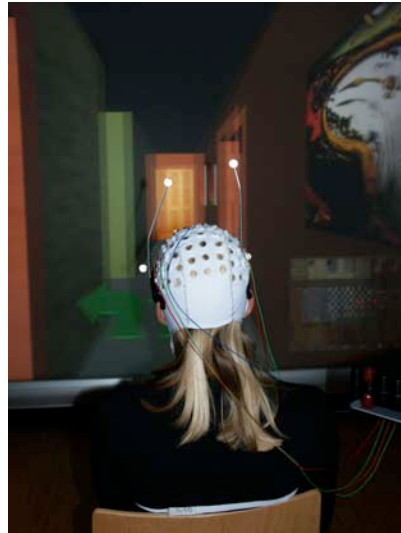
- Multimodal
 - Sensors
 - visual, auditory, olfactory, gustatory, somatic stimuli, kinesthetic and vestibular cues
 - Control
 - mouth, face, eyes, (full) body, breath, biological reactions (heart rate, skin resistancy, muscle, neural activity, ...)



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Enabling Technology: UHCI

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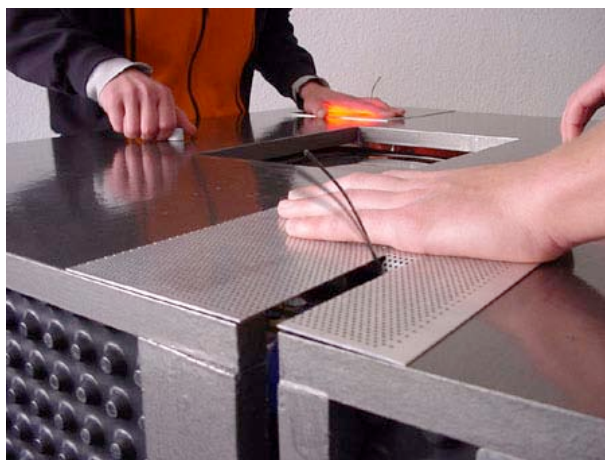


Brain Computer Interface
© TU Graz

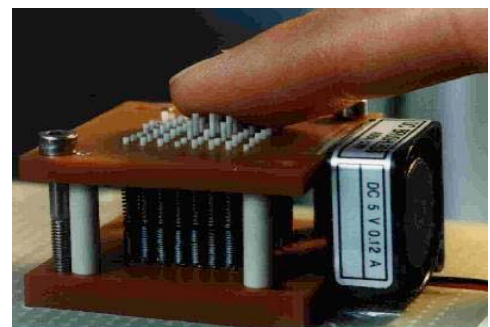
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Enabling Technology: UHCI

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Kunsthochschule für Medien zu Köln



Forschungszentrum Karlsruhe, Tactile Display

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Enabling Technology: UHCI

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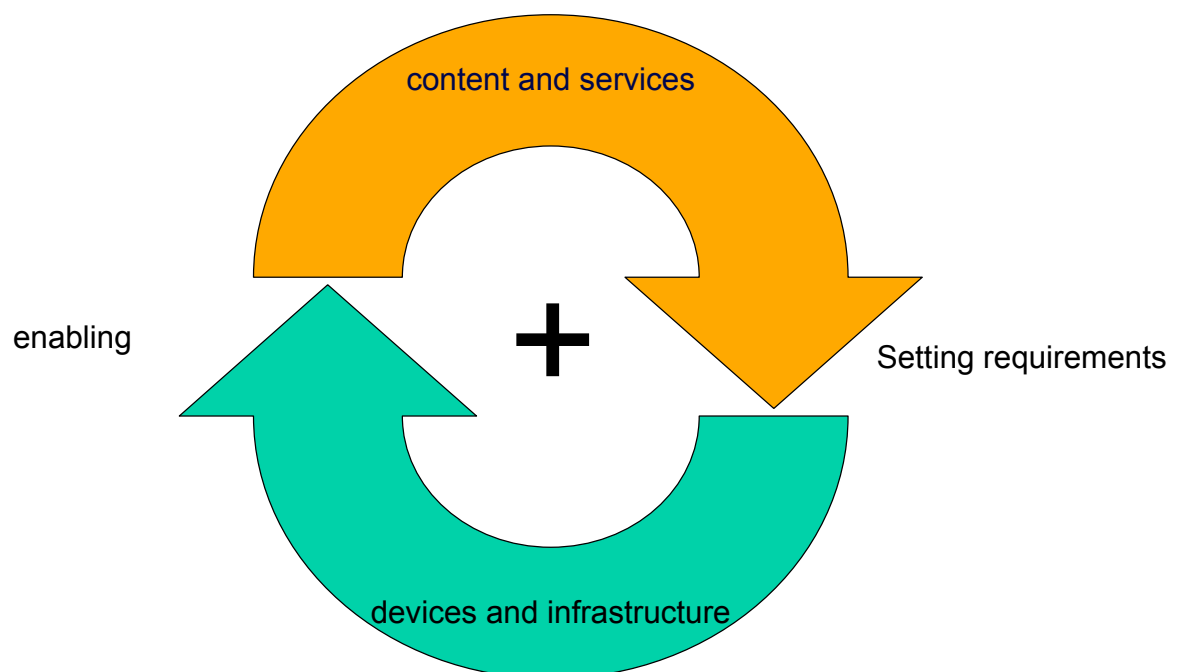


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Application Domains

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- Science
- Economy
- Public Sector
- Education and Training
- Entertainment
- Socializing



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Application Domains

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- Science
- Added Value
 - Powerful Search
 - Collaboration
 - Presentation of Results
 - Scientific Computing



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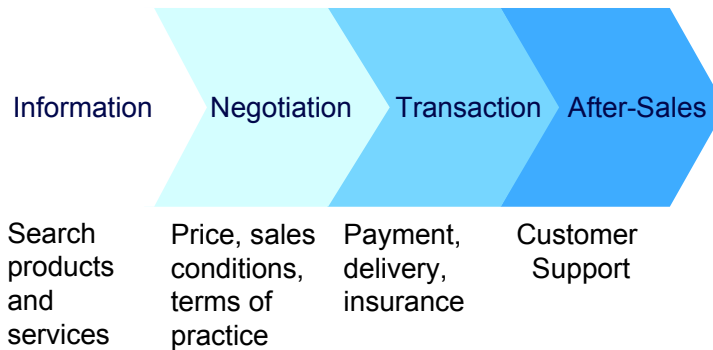


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Application Domains

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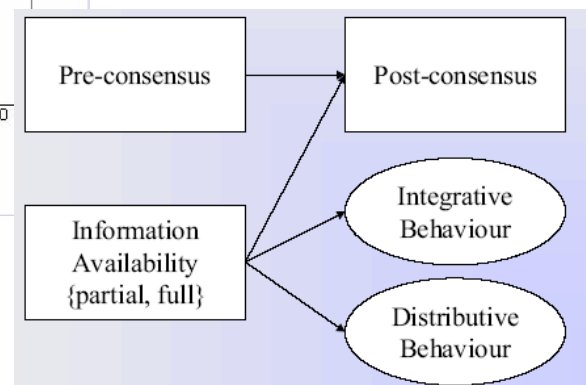
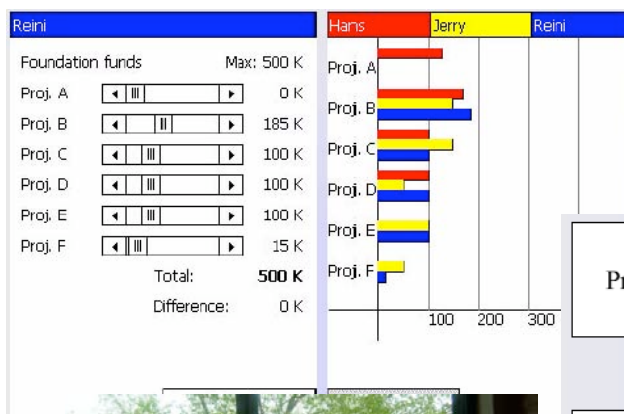
- Science
- Economy
- Added Value
 - Remote Conferencing
 - Virtual Private Networks
 - Location independent Data Access
 - Integration of Business Processes across the value chain



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Mobile Decision Support

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Application Domains

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- Science
- Economy
- Public Sector
- Added Value
 - BP Reengineering (ELAK)
 - Offering public services

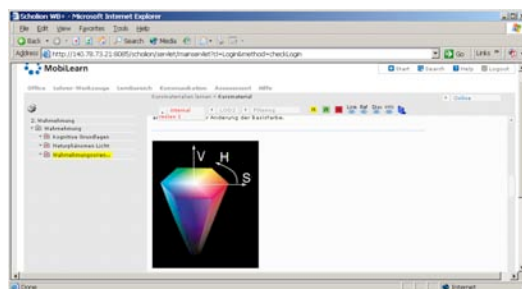


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Application Domains

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- Science
- Economy
- Public Sector
- Education and Training
- Added Value
 - Personalised content
 - New ways of learning and teaching
 - “from the sage on the stage to the guide on the side”



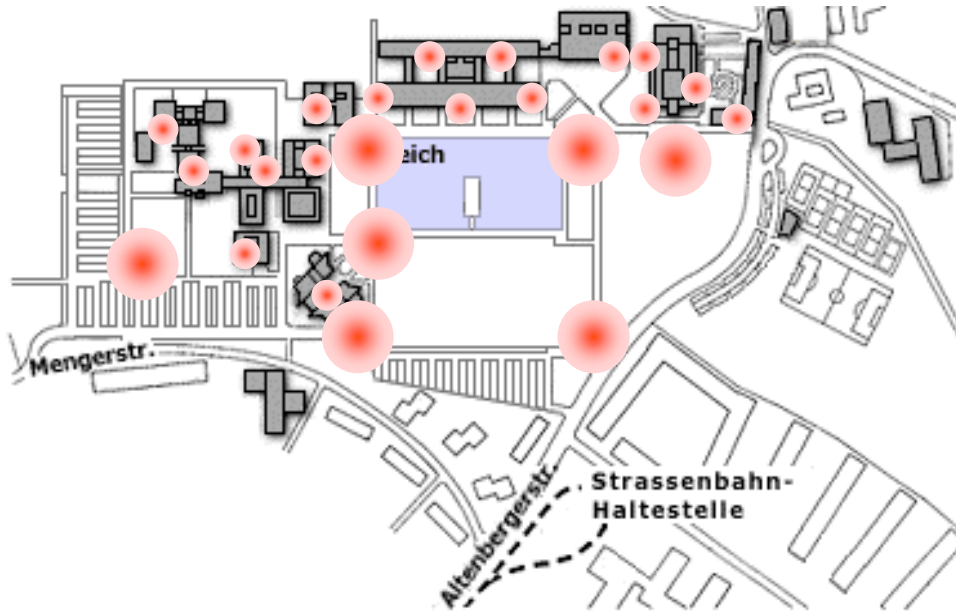
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Wireless Campus: University of Linz

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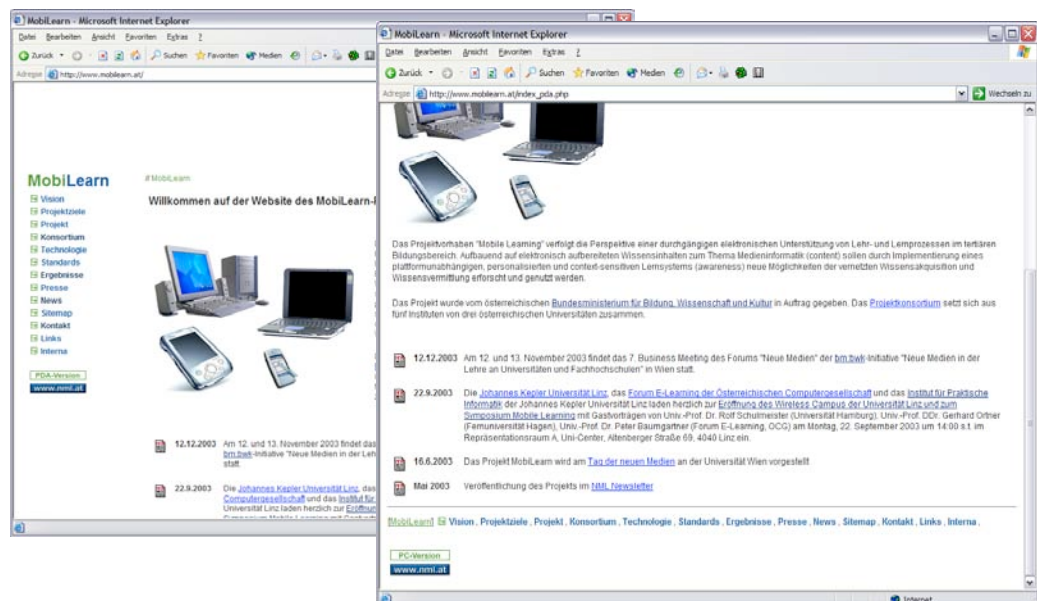
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MobiLearn

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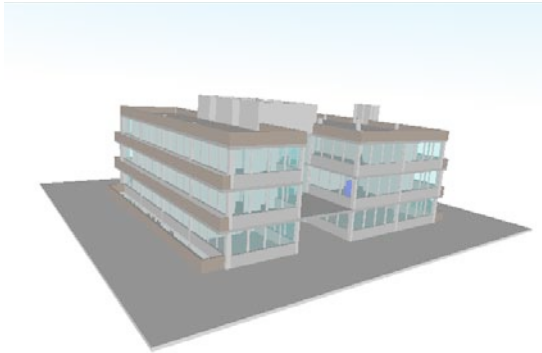
<http://www.mobilearn.at>

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Learning Spaces

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- Seamless Location/Context Awareness
 - Context awareness is ``the up-to-the moment knowledge a person requires about another group member's interaction with a share workspace if they are to collaborate effectively".

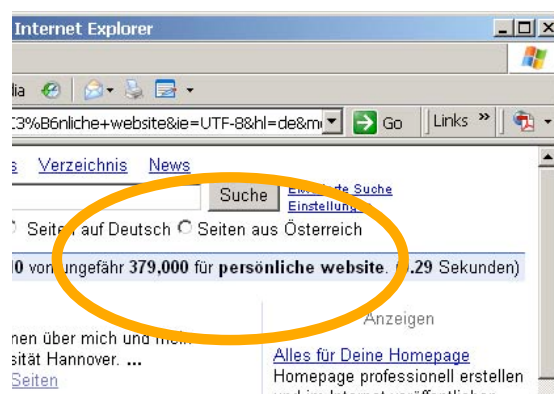


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Application Domains

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- Science
- Economy
- Public Sector
- Education and Training
- Entertainment
- Added Value
 - online-gaming
 - Higher quality on digital media consumer market
 - From consumers to producers

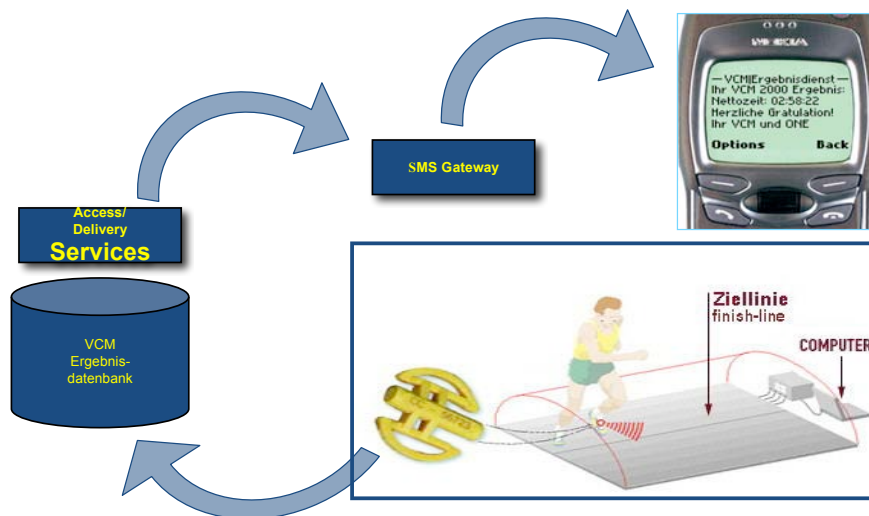


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Vienna City Marathon

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- Sensor-Based Information Delivery



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Application Domains

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- Science
- Economy
- Public Sector
- Education and Training
- Entertainment
- Socializing
- Added Value
 - Enrich quality of life
 - Participation
 - From information media to communication media

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Killer applications

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?

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Performance

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- Performance improvements
 - Shorten response time
 - Increase throughput
- From „best-effort“ to QoS guarantees
 - Supporting interactivity
 - Synchronisation of different media
 - Meet (near) Real Time constraints

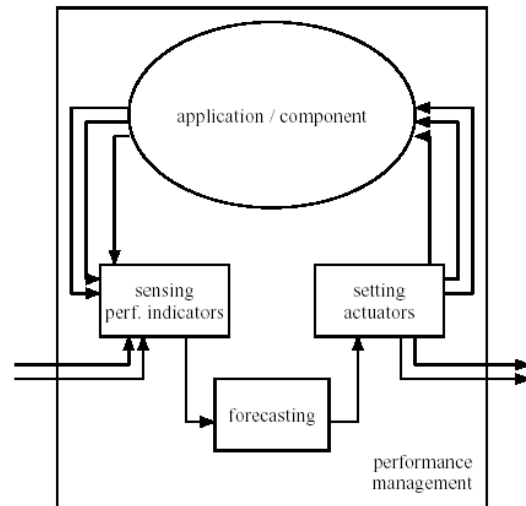
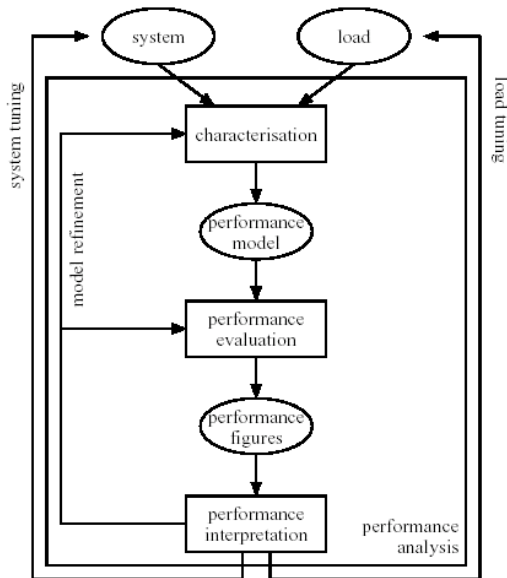
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Performance Management

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Security

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- Technical Issues
 - Encryption, authentication, integrity, ...
- Ethical and Legal Issues
 - Privacy, Trust
 - Laws of Conduct

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Usability, Accessibility

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- IT should overcome barriers not create them
 - User-oriented devices
 - Ergonomic applications
 - Support in handling
 - Intuitive usage



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Automated adaptation vs. user control

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- Personalisation and adaptation are key features of mobile services and smart environments
 - Enhance safety, ease usage, ...
- To what degree should user stay in control
 - Bad example: „Do you really want to ...“
 - Good example: Automotive industry



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