Towards A Ubiquitous Future
Limited Only By Our
Imagination ...
## Technologies for Ubiquitous Networks

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The Vision of Ubiquitous Network Society...

Everything of Value is Connected to the Network
The *Vision Statement* of Sun Microsystems ...

*Everything of Value is Connected to the Network*

Physical Mobility & Service Mobility
- Desktop computer replaced with embedded computing devices in physical objects
- Small and invisible
- Enhance original functionality of physical objects
- Focus on the service, not on the computer
“What are the Limitations ... ”
Technology Limitations - Connectivity?

- **Wide Area Network**
  - UMTS
- **Personal Area Network**
  - Bluetooth
- **Local Area Network**
  - WLAN
  - HiperLAN
  - LAN

Data rate:
- Outdoors: Vehicle, Walk, Fixed
- Indoors: Premise, Office
Technology Limitations - Compute Service?

• Storage Capacity
  - 80 Gbyte/sq.inch = 80,000,000,000 byte/inch
  - 80,000 pocket books of 300 pages on 1 square inch

• Telecommunications Speed
  - Optical cables: 5.2 terabits/sec
    - 600,000 pocket books of 300 pages in 1 second
  - Wireless UMTS: 2,048,000 bits/sec
    - 0.25 pocket books of 300 pages in 1 second

• IP Addressing
  - 340,282,366,920,938,463,463,374,607,431,786,211,456

• Processing Power
Technology Limitations - Adaption?

Years it took to reach 50 million users

Source: International Herald Tribune
Technology IS there...

- Broadband & Wireless LAN
- Integrated IP-Network
- Enabling Technologies like AutoID / RFID chips in objects
- Things that embed a computer
The Society ... ?

Taylor on His Way Out

- Individual HAS got Value
- Knowledge Society
- Talent, Knowledge
- Communication
- Organizing Talents
- Information, Experience, Network

Hans Appel
We are connected ...

but mostly not in touch
Break Limitations through ...

- Standards in Software Development
- Usage of Credentials in Applications
- Massiveness of Usage of Identity Management
Identity Management & Gaming

- Strategical & tactical Potential
- e-Learning – individual Senses (visual, audio)
- Alias, 680 MB zip
- Knowledge is Power
- “Valuable Business Simulation”
“The Explosion on the Edge” - The Needs of Standardization.

- Standardization in Software Development
- Credentials in ubiquitous computing applications
- Wide usage of Identity Management
Trends in Software Development

1. Overloaded Operating Systems will Disappear
2. Components and Objects will step into the Foreground
3. Mobile Code will Increase
4. Standardization of Distributed Systems
5. Embedded Systems will Increase
6. Wireless Network will be Accepted in Masses
7. Payment Models Changing

Source: Infosecurity TechTarget
“The Explosion on the Edge” - The Needs of Standardization.

java.sun.com
J2ME.org
jini.org
jxta.org
jcp.org
projectliberty.org
signaturbueendnis.de
“The Explosion on the Edge” - *Die Explosion am Rande.*

**Synchronization of Business Rules**

**Future**

**Transfer of Object Data**

**Today**

**Projects today**
Java Business Integration

Value

Time

Today Applications

Emerging Applications

Document / Data Interchange

Basic Services

B2B Services

Business Integration Services

Realtime Enterprise Services

WebServices

AutoID / RFID / NFC / ...

Java Business Integration (JBI) see www.jcp.org
Questions ?
Sun's RFID Software Architecture

Unique Differentiators:
- Complete Java Design
- J2EE Services from Backoffice into the RFID Readers
Sun's RFID Event Manager Architecture

Unique Differentiators:
- Complete Java Design
- J2EE Services from Backoffice into the RFID Readers
- Self-Healing due to Jini and Rio Architecture
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Limited Only By Our Imagination ...

Dipl.-Ing. Heinz Strauss

Executive Architect
Chief Vision Officer, Germany

Sun Microsystem GmbH
Rijks Museum, Amsterdam

- Deepening of Understanding
- Mobile
- Floor Plan
- Games
- Object information
- Creativity
- Self-motivation
Sensor Networks

- Cars as Dynamic Nodes of Network
- Speed, Position, Breaking, etc.
- Members of Swarm
- Share Information in Segment
- Bank of Fog