EuroView, Würzburg, 090727

Generic Network Service Components for Networks of the Future

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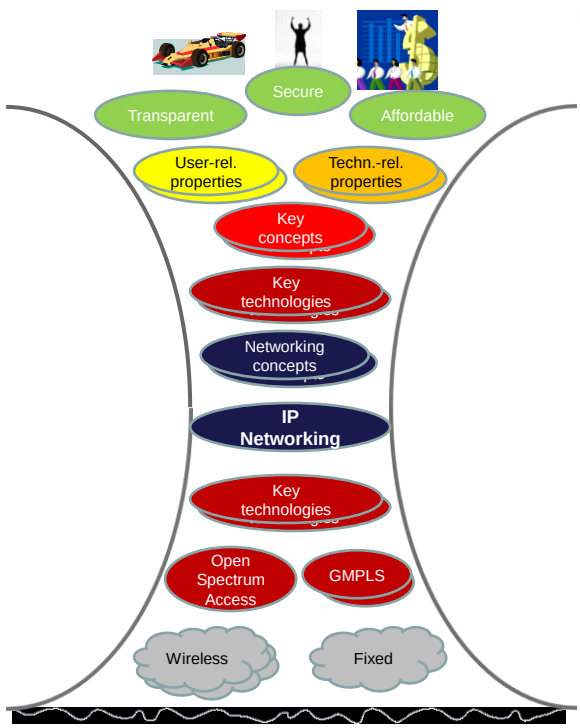
Users, Machines, Businesses

Values



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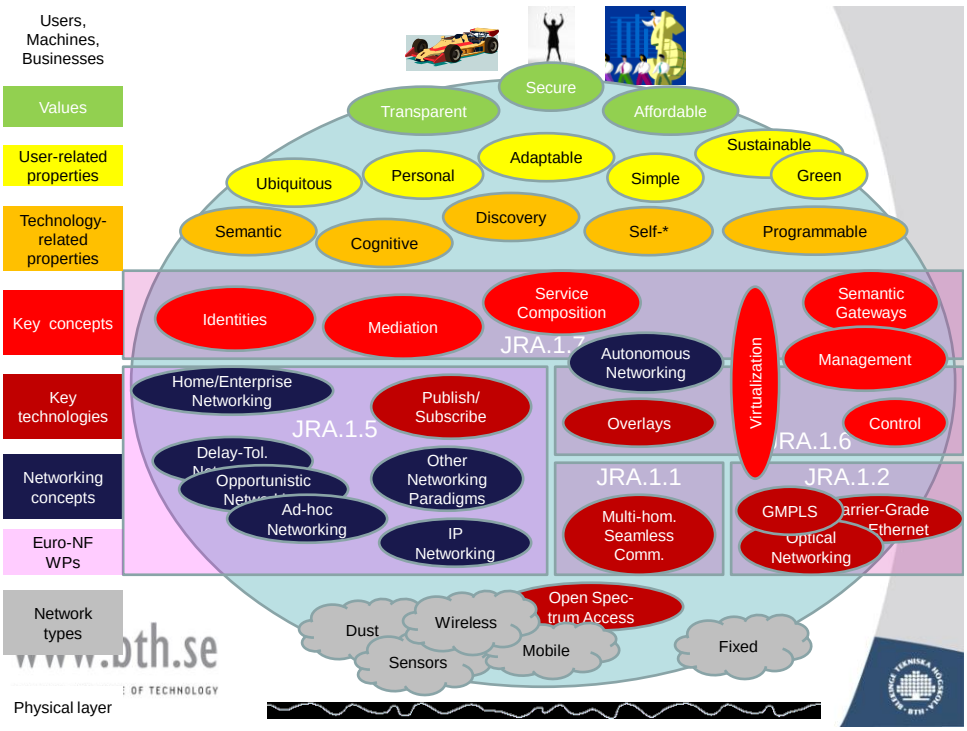
Physical layer



From the Hourglass to the Globe

- Get rid of
  - IP at the waist
  - IP's implicit feedback
  - OSI/any kind of layering
- Allow for dynamic composition of services
  - Think modular!
    - Enablers, abstraction, virtualization
  - Service Level Agreements?

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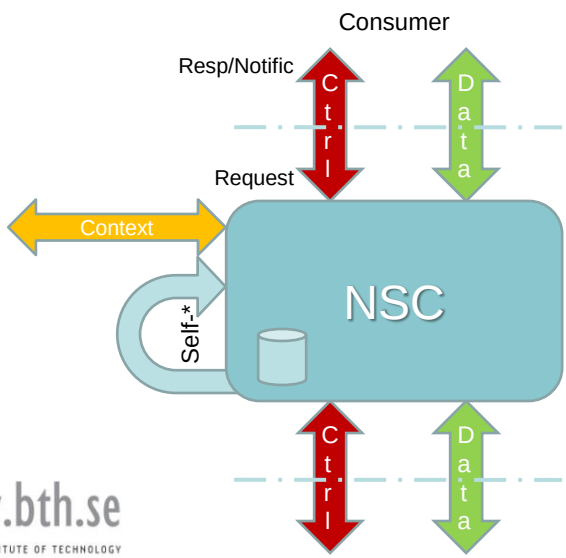
Generic Network Service Component

- Network as a service – think
  - Service Level Agreements
  - Transport tasks: video w/o jitter, reaction within a sec.
- Use case: Seamless communications
- Historic and contemporary examples
  1. NSB = Network Selection Box
  2. CGS = Cognitive Network Stack
  3. ROMA = middleware framework for Robust Mobile Applications

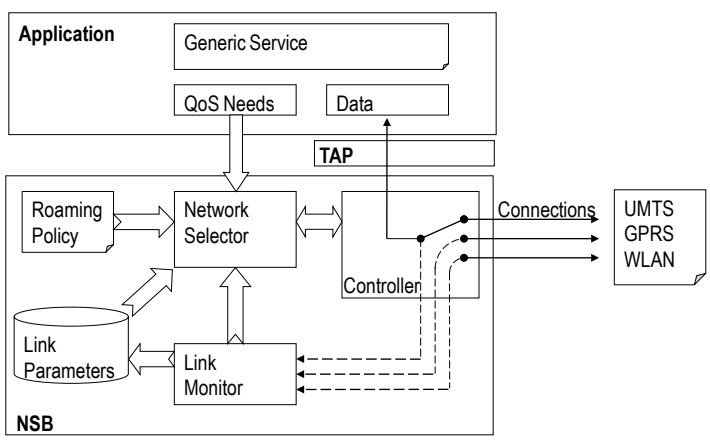
Generic Network Service Component

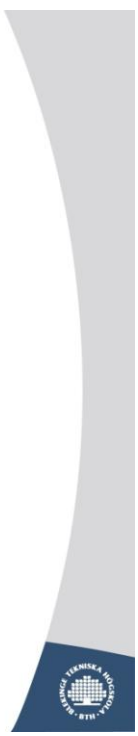


Ex. 1: NSB

- Network Selection Box
  - Seamless communications based on tunnels
  - Swedish project PIITSA
- First sketch (2004): API
- Final realisation (2006): Virtual interface
  - Transparent for the application
  - Optional control interface
- Refined implementation (2009)

Ex. 1: NSB





Ex. 2: CGS

- Cognitive Network Stack, proposed in the EuroNGI vision document 2006
  - Inspired by ”layer thinning”
    - Application, Mediation, Connectivity
  - Origin: NSB
  - Added features:
    - Mediation
    - Overlay routing,
    - Self-organisation
    - Lightweight monitoring

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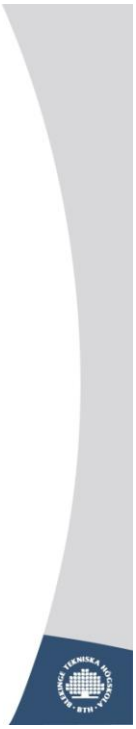
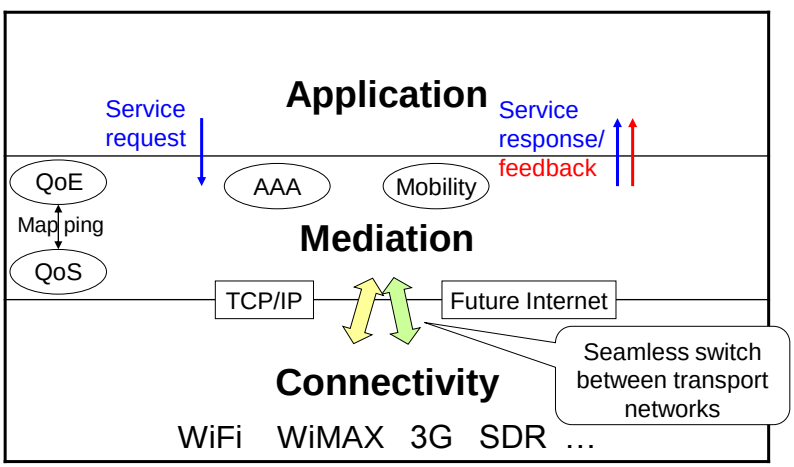


Ex. 2: CGS



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Ex. 3: ROMA

- A middleware framework for Robust Mobile Applications
- Origin: Routing in OVERlay networks
  - ROVER projects (EuroNGI, IIS/.se)
  - Augmented by handover facilities
  - Middleware to abstract the complexity of connectivity
  - Step towards functional blocks

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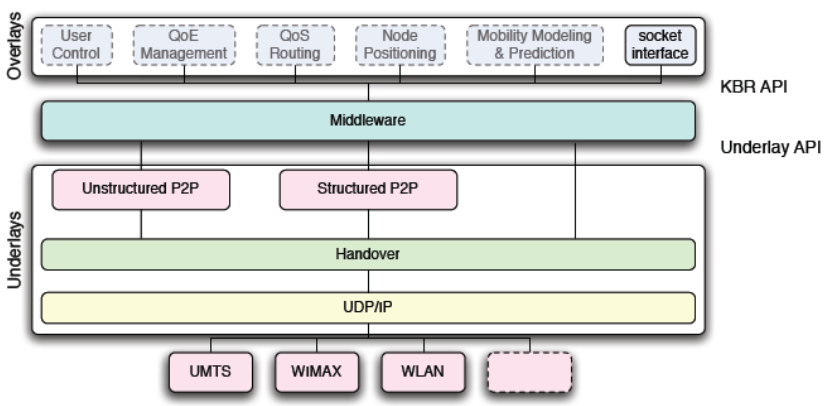
Ex. 3: ROMA



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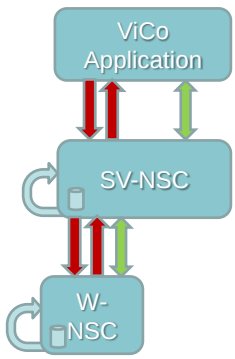
Use Case: Seamless ViCo

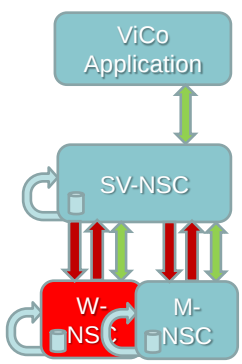
Step 1:
At the office



WLAN

Use Case: Seamless ViCo

Step 2:
Leaving the office

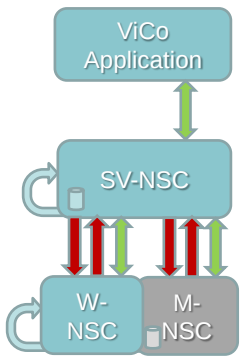


WLAN → Mobile

Use Case: Seamless ViCo

Step 3:
Returning to office

WLAN ← Mobile



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Conclusions

- Think modular! Added values:
  - Transport functions
    - SLA
    - Surveillance
  - ”Make-before-break”
- Key issue: design/standardisation of the APIs
  - Data interface
  - Control interface
    - Discovery, initiation, execution, termination
    - Feedbacks

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Questions & Discussion

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