

CACTUS, UbiCom and NISHE

Location-Based Services

Wereld GIS dag, Jaffalaan 9, Delft

W.Pasman

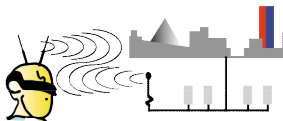
19 November 2003



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CACTUS/Computer Graphics/EWI



UbiCom

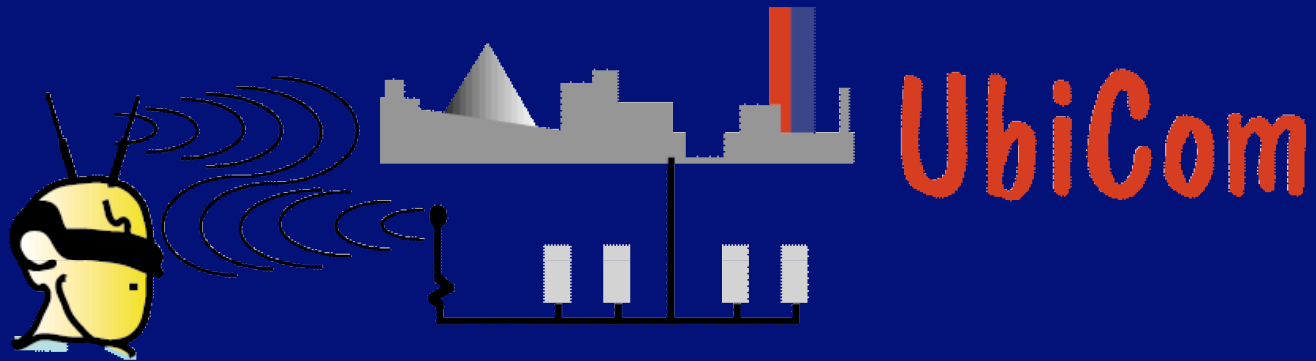


 **TU Delft**

Delft University of Technology

Overview

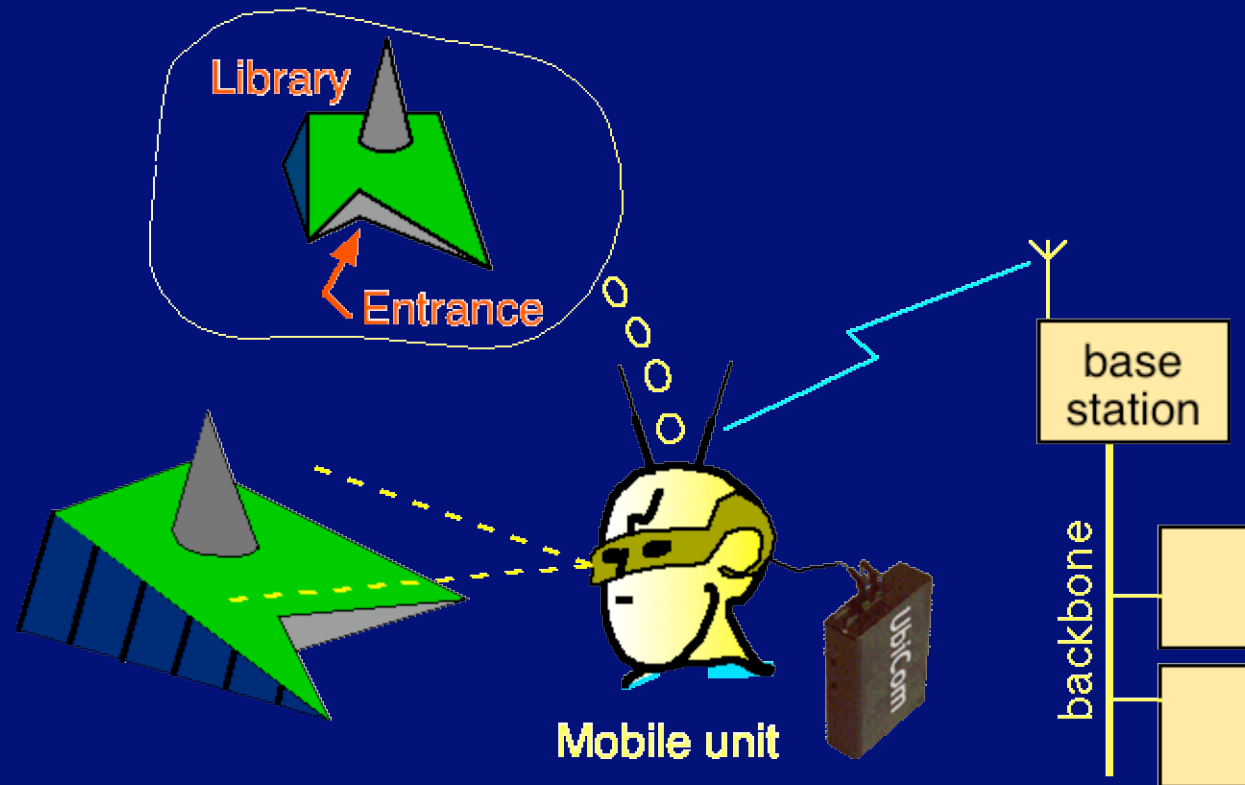
- 1 UbiCom project (ubicom.tudelft.nl)
- 2 NISHE project (vtt.fi/multimedia)
- 3 CACTUS project (cactus.tudelft.nl)



Ubiquitous Communications

www.ubicom.tudelft.nl

UbiCom Project



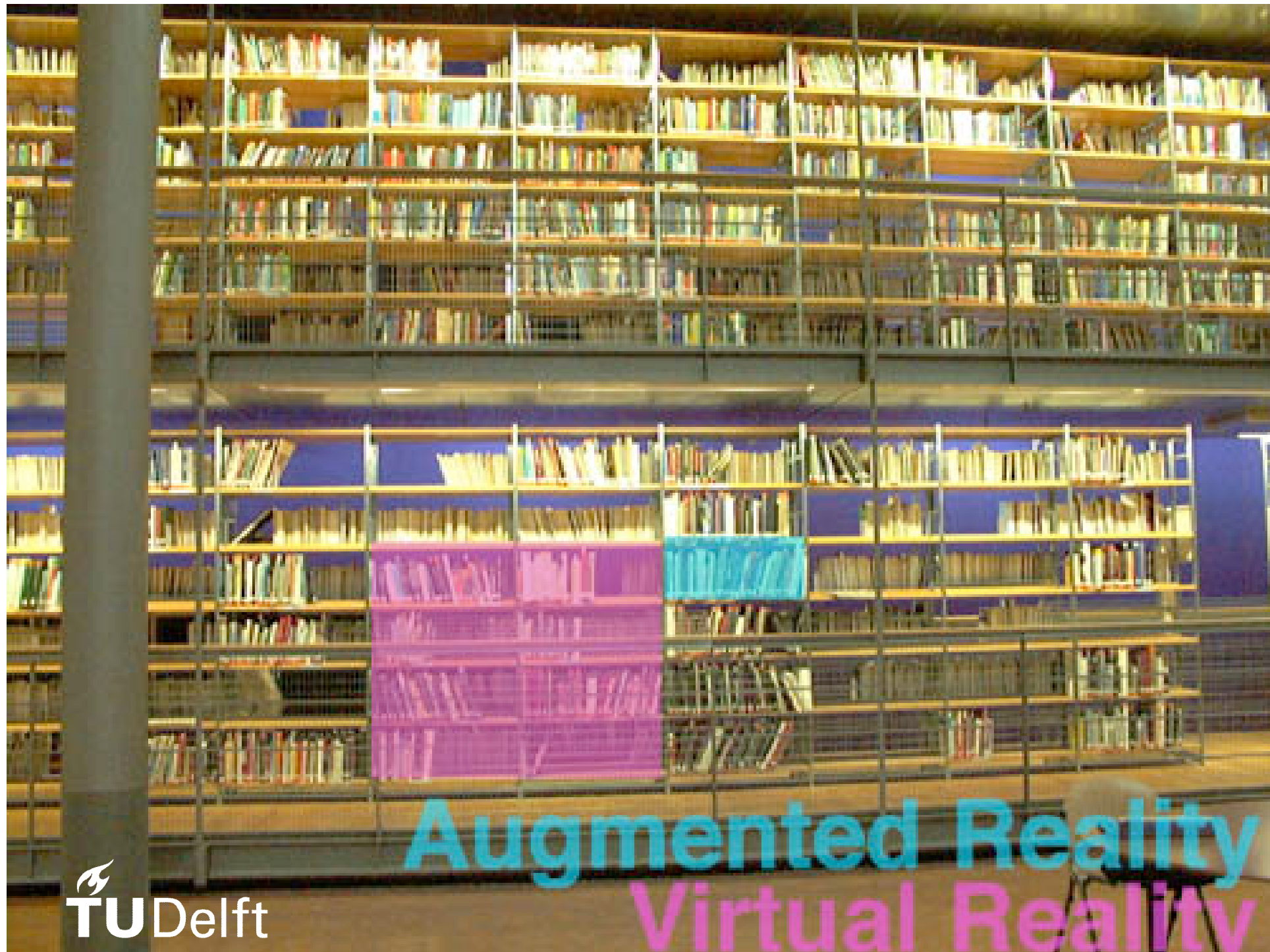
Augmented reality as the ultimate context-aware system: merging the information addressing user's needs in a context-aware way.

Applications

Delft University Library
Architect: Mecanoo
980,000 Books

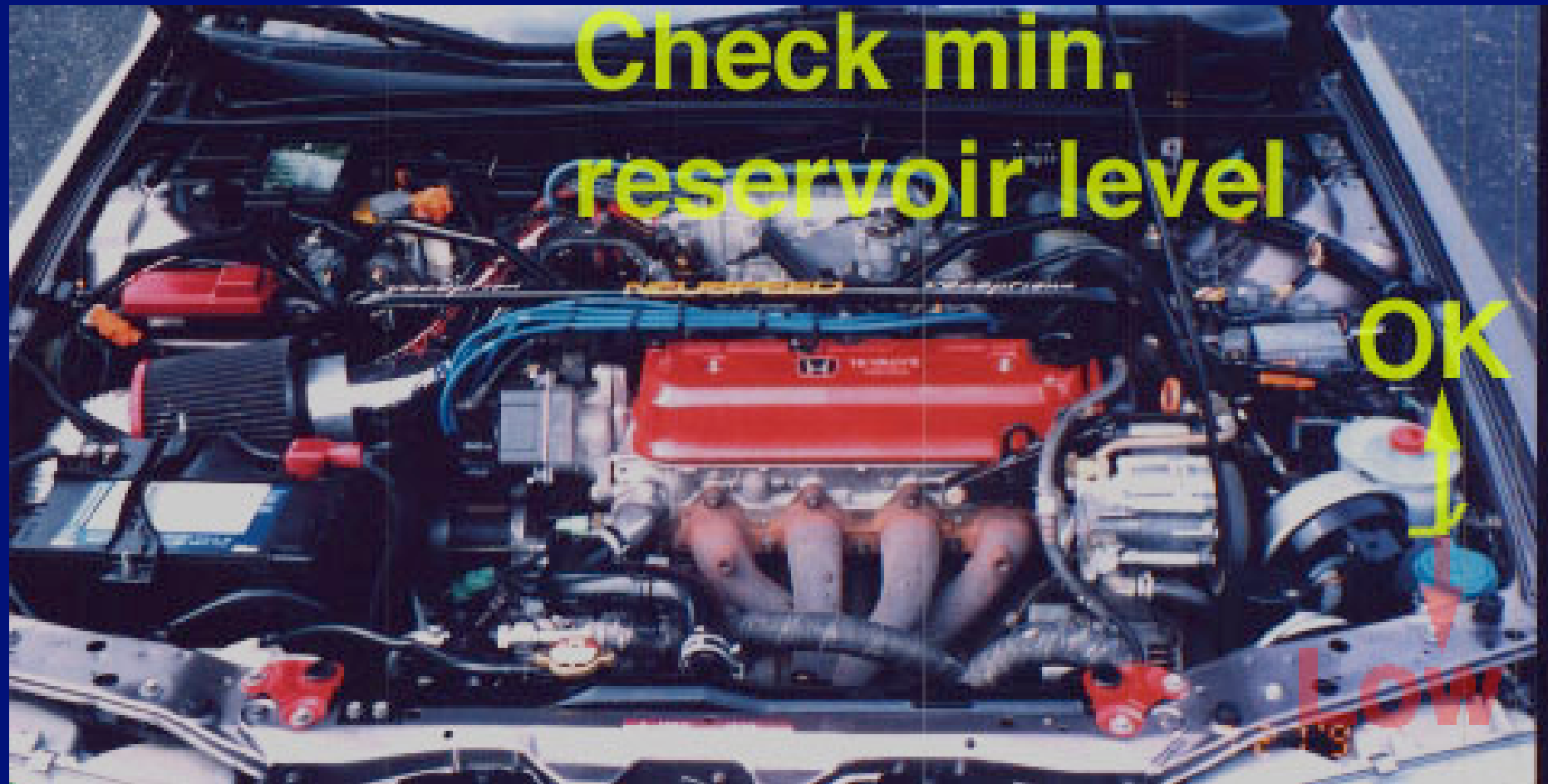
Prof. Jansen





Augmented Reality
Virtual Reality

Maintenance, assistance



Location-based Service

- Actual location. --> Low latency position tracking using GPS, camera images, inertial trackers, etc
- Selection and filtering of required data
- AR: FAST location based image generation
- Environment-aware information adaptation (lighting, placement of virtual objs, etc)

Every topic could fill multiple lectures...

Sisi Zlatanova - today: more about the GIS aspects

final demonstrator...

Heavy but working outdoors AR using integrated tracking.
Bit limited app: projecting a statue. No user interaction



NISHE

Natural Interaction in Smart Human Environments

www.vtt.fi/multimedia

NISHE

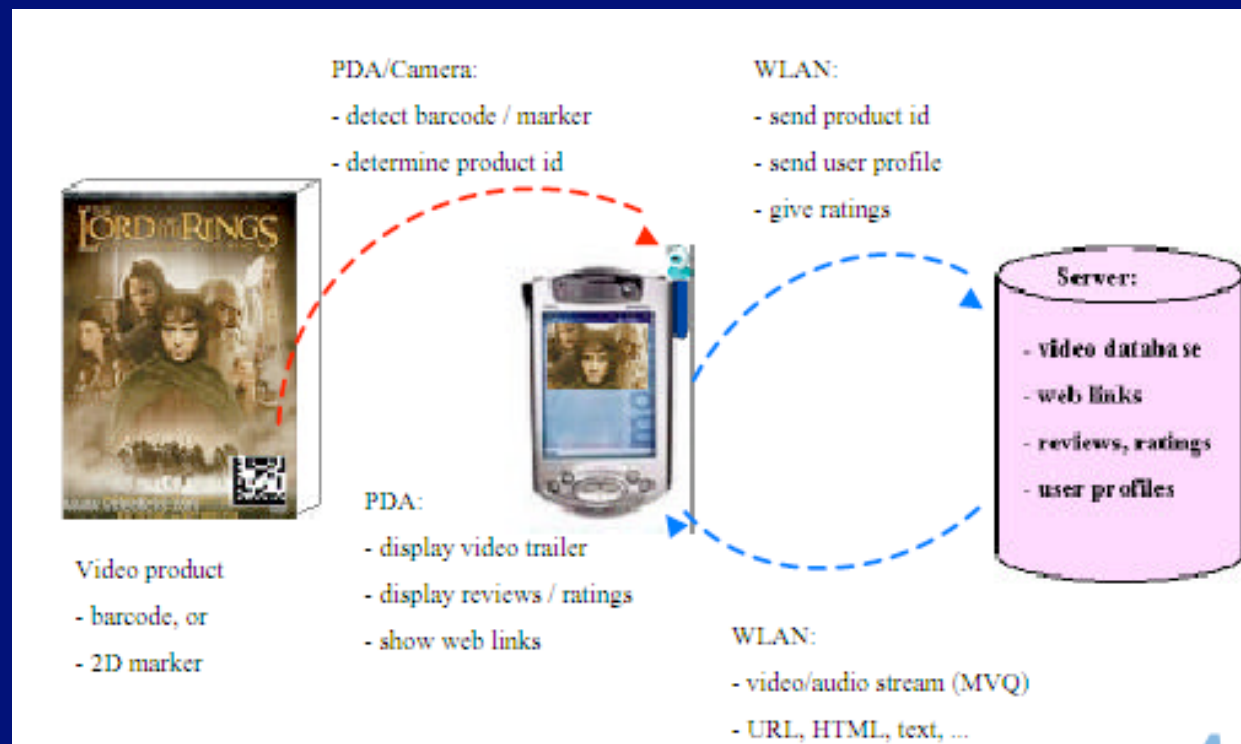
Mobile AR

Focus on what can be done NOW on PDA.

Shopping Mall guidance, Virtual Advertisements
Architectural inspection, Entertainment

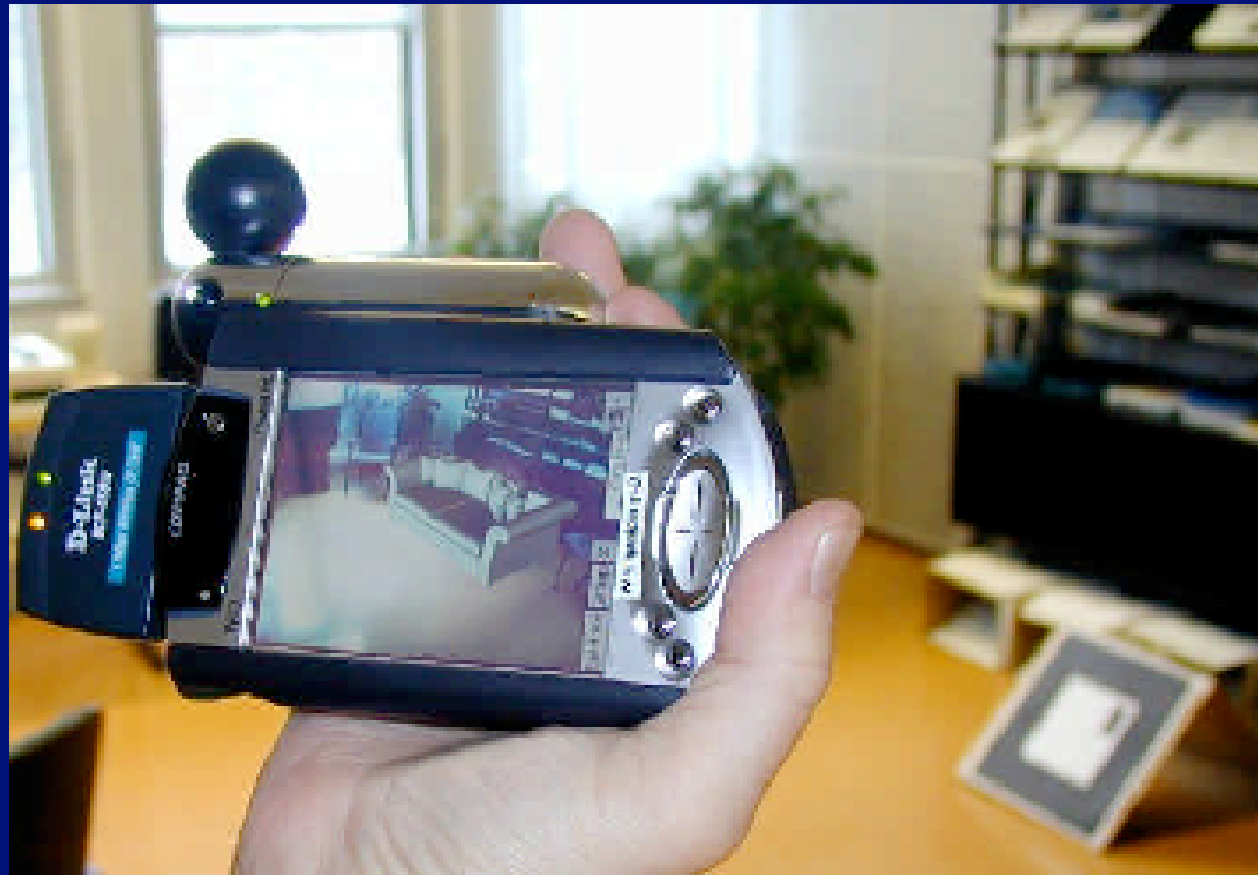
Video shopping.

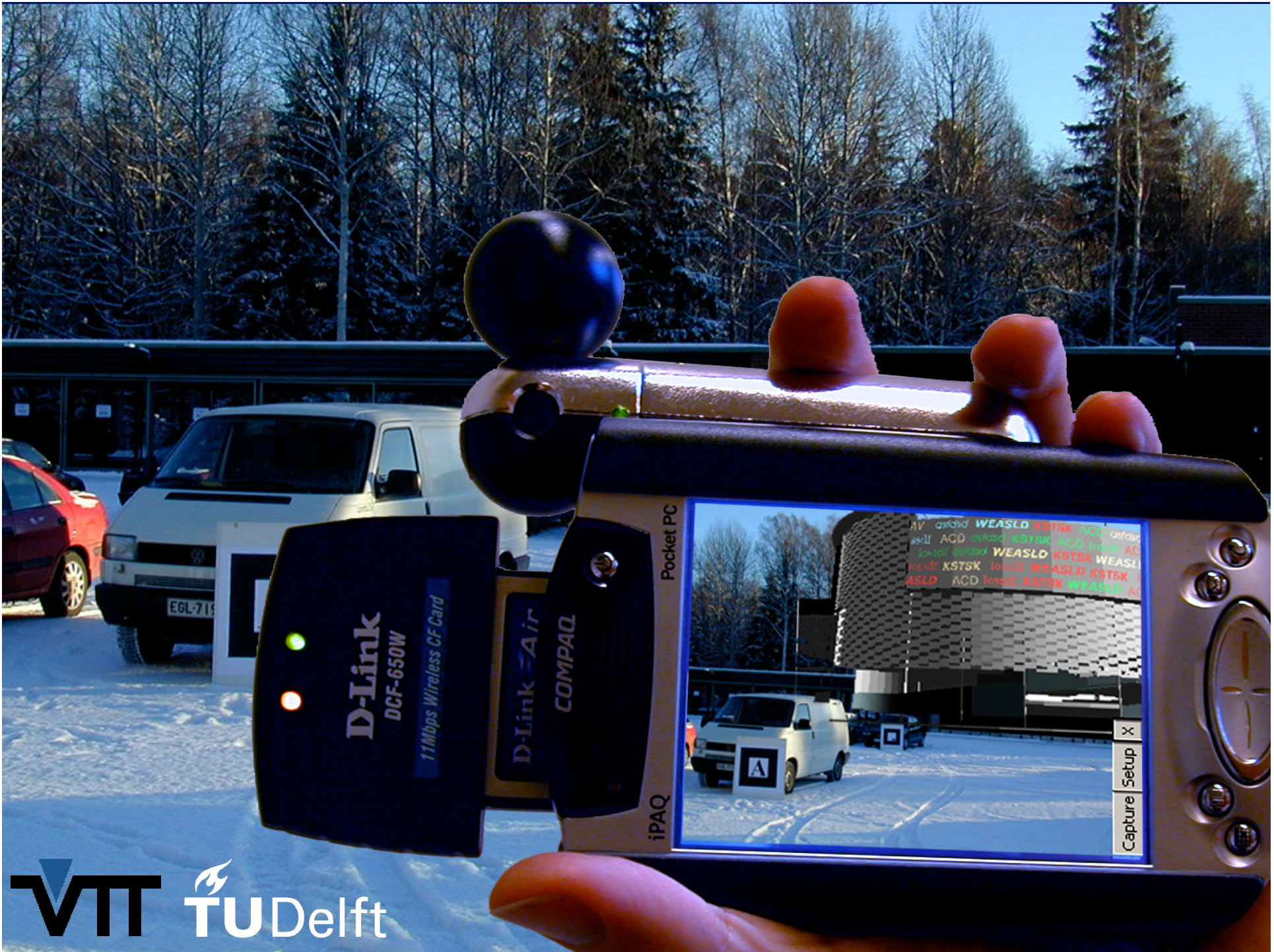
Look at the video (with PDA) and recognise barcode.
PDA plays the movie trailer for that video.



Interior design

Place marker to move furniture. Expandible marker space
Click on website to download new furniture







Context Aware Communication, Terminal and User
www.cactus.tudelft.nl

CACTUS

- Personal device is just one access point to an agent world that is loosely coupled to physical locations
- Agent world is an ad-hoc, dynamic construction of many agents offering their services

Examples: light agents, room lighting agent, painting agent, travel advisor, fridge content, currency converter, room sphere (romantic, working).

Cactus Research Topics

Trust, Consistency, Interaction

- when do we (have to) switch modalities (eg sound instead of images because the sun becomes too bright?).
- Does the user understand why this happens?
- Does the user HAVE to understand it?
- What is the mental model the user develops during interaction?
- How to set design user interfaces working with deadlines, disappearing agents, etc
- How does the user find the relevant agents ?

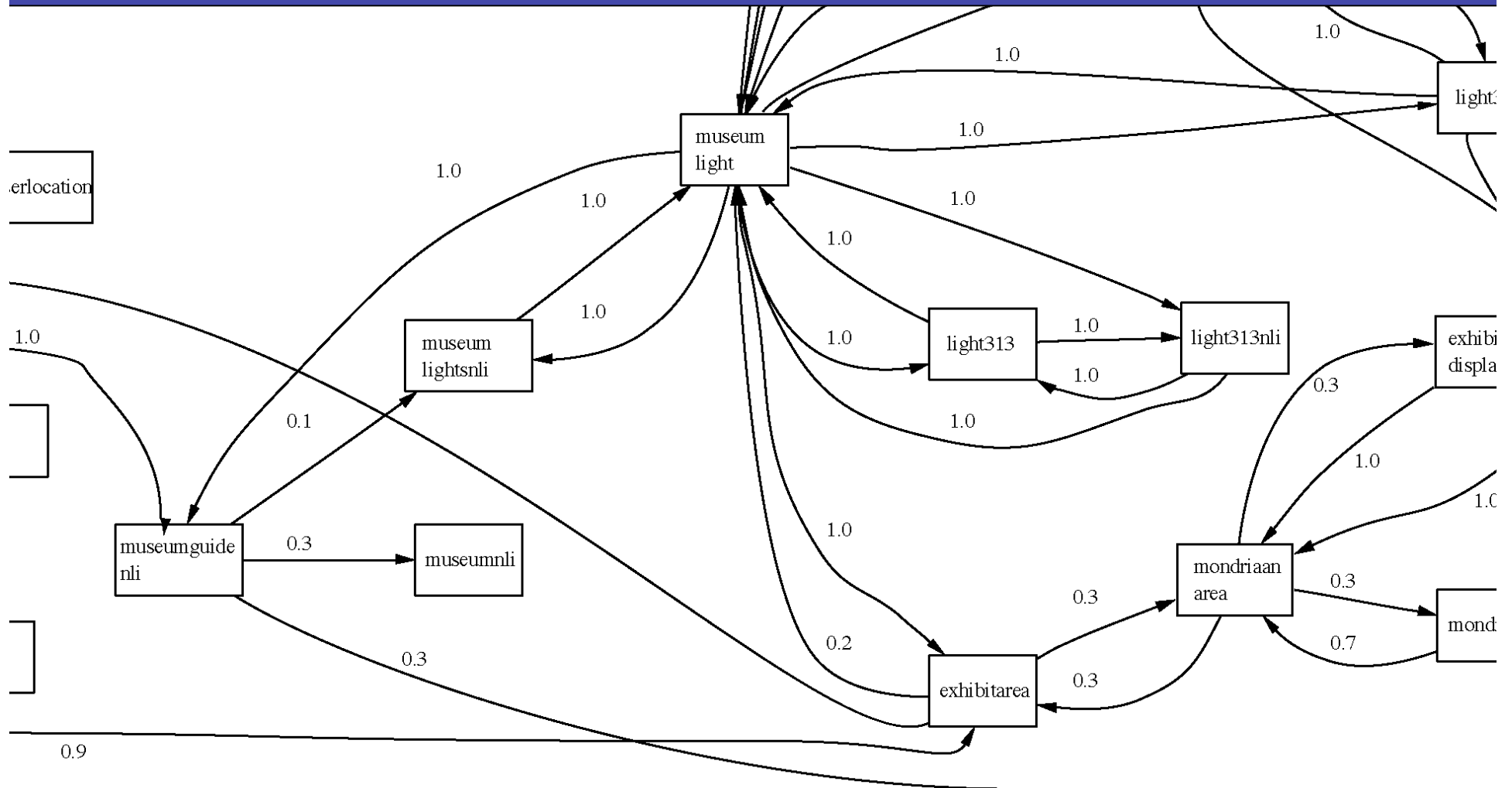
More Research topics

Ad-hoc agent network & modeling

- Where is the user
- What is he looking at?
- How do his movements affect his (radio) connectivity?
- How can the agents in ad-hoc network be organized?

Organizing ad-hoc agents

Every agent knows its place: task- location- and user- relations, and the relevance of the relation



Some details

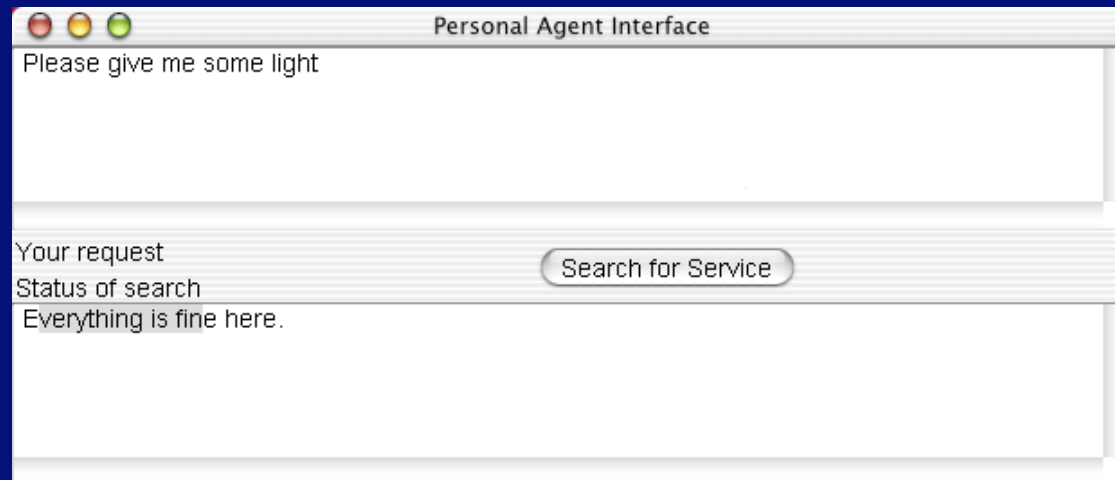
Agents change the context by changing the relations in the agent world.

Every agent also knows how the area in the physical world it 'represents'

Service Matching

Service Matching: search agent matching user's need

- Some agents in the agent world understand NL
- Context-dependent search using agent's context info
- Using Natural Language request from user
- Searching agent space for agent understanding request
- gradual extension of search space





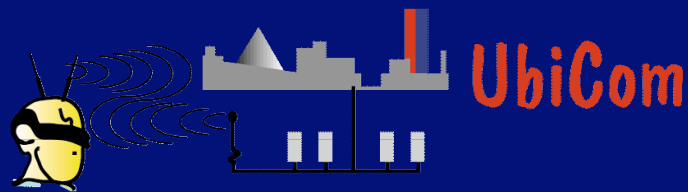
Comments? Questions? Ask them please!



www.cactus.tudelft.nl



www.vtt.fi/multimedia



www.ubicom.tudelft.nl