ContextAware Personal Remote Control

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Background

• Easy Access
  – Access to large db of audio, video content
  – Natural way of interaction

• HomeLab
  – Demonstrating prototypes of AmI systems
  – Test bed for research initiatives
Why CA?

• Overload of information & functionality
  – Increased UI complexity

• Appropriate behavior
  – Less intrusive, polite
  – Adhere to social conventions
What makes a system CA?

CONTEXT IS:
• STATE OF THE USER
• STATE OF THE PHYSICAL ENVIRONMENT
• STATE OF THE COMPUTATIONAL ENVIRONMENT
• HISTORY OF USER-COMPUTER-ENVIRONMENT INTERACTION

EXPLICIT INPUT ➔ CONTEXT AWARE APPLICATION ➔ EXPLICIT OUTPUT
Definition of CA?

Within the field of HCI the device can be called context aware if it can use information relevant to the user of the application extracted either through sensing or other means, excluding the explicit input given by the user, analyze it and adapt its behaviour or the internal state based on the reasoning either defined by the application or the user.
Directions in CA research

• Location awareness
• User activity tracking
• Context modeling
• raw sensor data analysis, high level facts extraction, learning, …
• little research on the usability
PRC concept

• Mobile personal assistant
• Carrier application: EPG
• CA:
  – Prevent annoyance with intrusive devices
  – Attractive attention appropriately
  – Prevent overload of functionality
Memory Prostheses

• Forget-me-not (Rank Xerox)
• The Memory Glasses
• The Wearable Remembrance Agent
How?

- Sensing light, touch, motion, noise, devices
- Derive meaningful facts: in the suitcase, user arrives, in the hand, …
- Inference logic to adapt the behavior
Scenarios

User arrives

User is watching TV

In suitcase

“Dancer in the dark”
Starts now!
watch | ignore
Next steps

- User study:
  - User acceptance of autonomous and less predictable device behavior
  - The impact of individual preferences
  - What are the building blocks for the user to program system behavior
Next steps

• User control over the system behavior
• Inference engine:
  – Extendable
  – Verification of the rules consistency
• Context model
  – Relationship between the cues
  – Means of high level facts extraction
Ideas

User Profile \rightarrow System Context

Sensors \rightarrow low level facts

Application \rightarrow Service 0 \rightarrow Inference Engine

high level facts

Rules