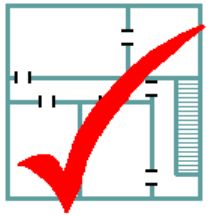
The Cambridge-MIT Institute



Autohan and Oxygen using Pebbles

Avoiding Feature Interaction

Funded partly by the CMI Cambridge MIT Institute
3 Year Project, Started October 2003.

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Research Topics

- o Feature Interaction and Scripting for Ubiquitous Devices
- o Rule-based System for control of Closed Environments
- o Eternal System Middleware
- o Language Primitives for Passive Tuple Space Data Models
- o Explore deep or shallow embedding of reflection (XML) in HLLs

Aims

o To define an architecture for interaction of ubiqutous computing devices that includes REFLECTION for both control APIs and proactive users of those APIs (application scripts).

o To explore the practical limitations of scripting languages that are constrained to fully support automated reasoning

o To explore goal-oriented system control.

o To implement rule-based contol of an environment, limiting potential feature interaction as devices and programs enter and leave.

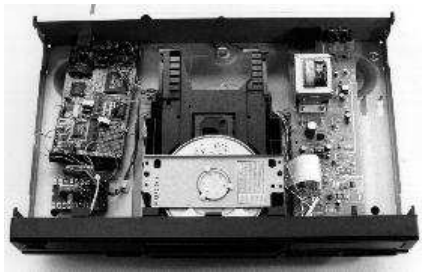
Work In Progress

- o Rule-based System Prototype for Home Control
- o Creating some hardware Pebbles with XML RPC (CD/Alarm etc)
- o Also software Pebbles: piggbybank and media server
- o Exploring Language Primitives
- o Creation of application scripts (rules) from speech and gesture

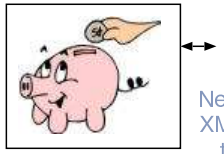
Potential Project Outputs

- o Design Principles for Top-level Application Coding in Ubiquitous Devices
- o Working rule-based system for control of closed worlds
- o Federation of multiple rule-based controllers based on levels of understanding
- o Example logic programming styles from disparate sources: experts, UML Corba, Natural Language, Gesture, IR handset.
- o Experience of canned application rehydration and debugging

Network attached XML controlled telephone set



Network attached XML controlled CD player



Network Virtual XML controlled tpiggybank

Pebbles in Oxygen and Autohan Project
University of Cambridge
Computer Laboratory and
MIT Laboratory for CSAIL