Workshop "**Infrastructure for Smart Devices**"
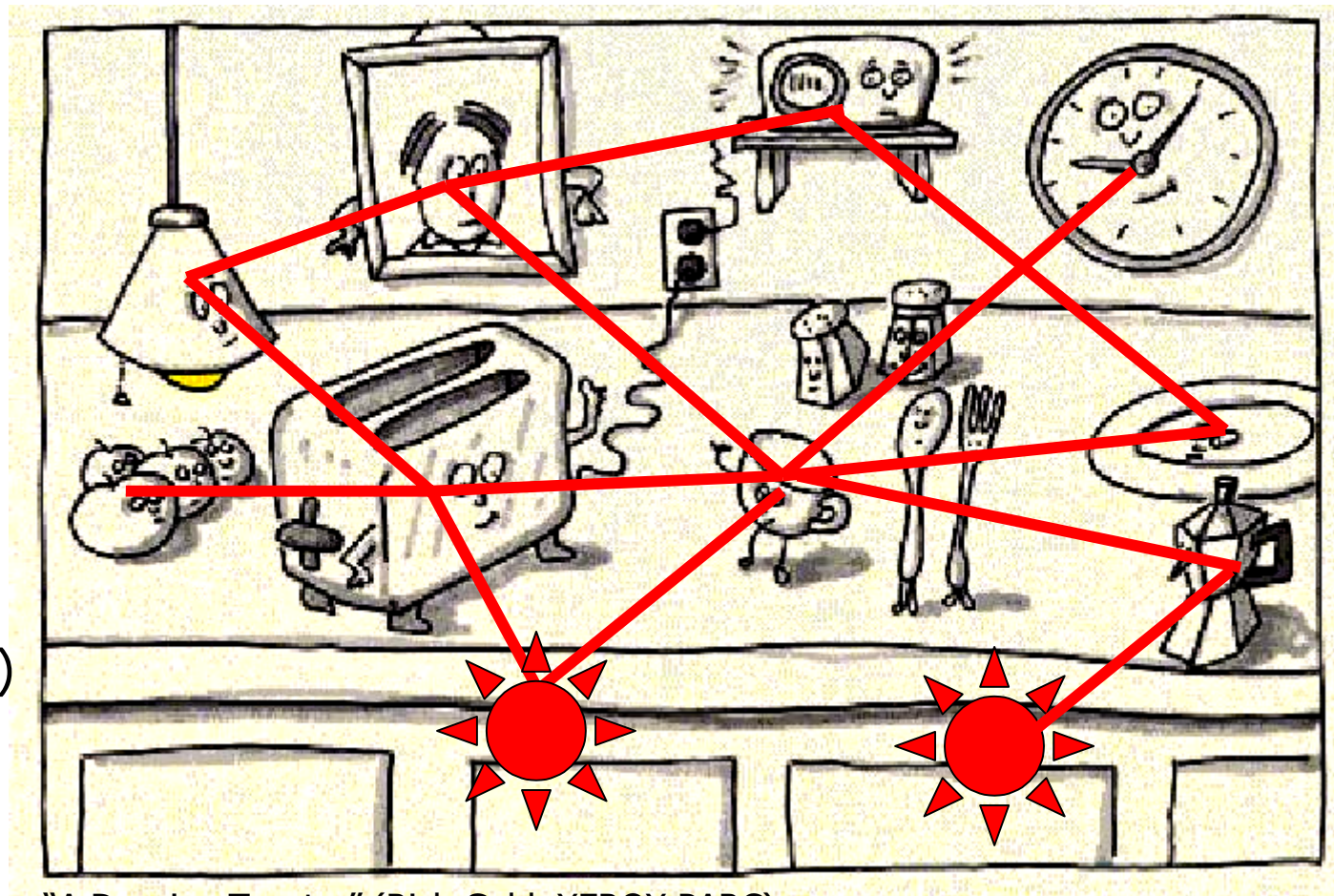## - Making Ubiquity an Actuality -
Sep. 27, 2000 (@HUC2k, Bristol)

Tim Kindberg
(HP Labs Palo Alto)

Friedemann Mattern
(ETH Zurich)

Joachim Posegga
(SAP Karlsruhe)

"A Dancing Toaster" (Rich Gold, XEROX PARC)

General Remarks

- ~ 50 participants
- ~ 20 abstracts / position statements received
  - all in the handouts
  - 9 have been selected for presentation
- Schedule
  - 3 blocks with 3 presentations (12 min. each)
  - discussions after each block
  - panel discussion on security and privacy

Presentations

- Fritz Hohl: Why We Need a Common Platform for Digital Worlds
- Marc Langheinrich: The 5th Dimension - Building Blocks for Smart Infrastructures
- Johan Plomp, Petteri Alahuhta: A Platform for Ubiquitous Context-Sensitive Applications
- Jim Youll, Raffi Krikorian: Wherehoo Server - An interactive location service for software agents and intelligent systems
- Simon Schubiger-Banz, Sergio Maffioletti, Beat Hirsbrunner, Amine Tafad-Bouzid: Providing Service in a Changing Ubiquitous Computing Environment
- Alexander Leonhardi, Martin Bauer: The VIT-System - Experiences with Developing a Location-Aware System for the Internet
- Keith Cheverst, Christos Efstratiou, Nigel Davies and Adrian Friday: Architectural Ideas for the Support of Adaptive Context-Aware Applications
- Sigrid Steinholt Bygdås, Pål S. Malm, Tore Urnes: A Simple Architecture for Delivering Context Information to Mobile Users
- Brad Johanson, Emre Kiciman, Armando Fox: Moving Data and Interfaces in an Interactive Workspace

Motivation

- **Hardware** for Ubicomp exists
  - handheld devices, wireless networks…
  - more to expect in the near future

- **Software**
  - application specific, ad-hoc

- **General concepts** / infrastructure
  - missing or rudimentary (e.g., Jini, UPnP,…)
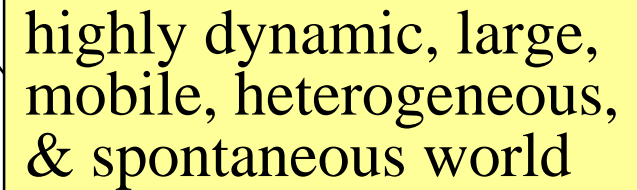
Do We Need Infrastructures?

- See position statement by R. Kehr & A. Zeidler
- "Infrastructure-less" mobile phone systems?
  - no specific hardware, central management,…

- Consider infrastructures in the real life
  - examples: electricity, roads,…
  - just there or even invisible
  - "open platform"
  - makes life easy
    - e.g., deployment of new services

Infrastructure in IT?

- **Traditional** infrastructure in IT
  - **operating systems**: environment, services,…
  - **middleware** (CORBA, Jini,…):
    common services, protocols for cooperation,…

- **Internet** infrastructure (—> open platform!)
  - DNS
  - cooperating routers, time servers,...
  - IP, TCP,…: common formats / protocols
  - Web standards (platform for other applications)

Infrastructure for Ubicomp?

highly dynamic, large, mobile, heterogeneous, & spontaneous world

- Enable cooperation

- Guarantee security, privacy, availability, reliability

- Provide services
  - directory, location, context, event delivery, registry, brokering,…

- Facilitate spontaneous networking, service creation, mobility,...

- ...

Common and Open Infrastructure?

- Necessary: simple; incorporate legacy infrastructures (Internet,…), scalable

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- Interesting questions, e.g. concerning registries
  - who owns the mapping from IDs (e.g., product codes) to data (e.g., a product homepage)?
    - already disputed: are phone directories copyrighted?
  - big business (therefore keeping it proprietary?)
    - linking barcodes on ads to the "right" web site
    - customer profiles when "clicking" real-world objects

Infrastructure for Ubicomp

?