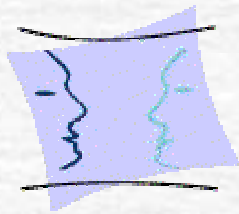# Context-Aware Infrastructures for Mobile Services

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Overview

- Context

- Services

- Context-aware service discovery and orchestration

- Scenario

Context-Aware Infrastructures for
Mobile Services

Context

- Context (Dey):

  Context is any information that can be used to characterize the situation of an entity. An entity is a person, place or object that is considered relevant to the interaction between a user and an application, including the user and application themselves.

- Context-Awareness:

  A system is context-aware if it uses context to provide relevant information and/or services to the user, where relevancy depends on the user's task.

- That's much more than getting data from physical sensors!
  - Exchange server, Summer School Schedule
  - Users' habits

Services

- Small set of specialized functions
  - reinventing something new?
  - Web-services
    - HTTP, XML, SOAP -> transport, data, function invocation
    - WSDL -> service description
    - UDDI -> service discovery

- What for?
  - Context
    - Information on users' situation, Summer School Schedule
  - User information
    - Personal data, User Preferences, Single Sign-In
  - Information services
    - Time tables, Floor plan

Service Discovery/Orchestration

- Discovery in environment with mobile entities
  - Many queries -> publish/subscribe characteristics
  - Context-aware queries -> nearby services
  - Quality of services -> refresh period, quality of results

- Orchestration/Usage of services
  - Plug together for powerful applications
  - Is there need to do this context-aware?
  - Standardized interfaces

Scenario

🔥 Reminder

- Generic application can be used anywhere
- Uses several context sources
  - Exchange
  - Location
  - Time
- Uses several services
  - Looks for local public transport timetables (bus, tram, subway)
  - Mapping service

Scenario

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Scenario

- Benefits
  - Context aware reminder.
- Problems
  - Service Interface
    - One interface for all public transport information services world wide…
  - Context Representation
    - Current location -> time table input format
    - Time table output format -> reminder format

Context-Aware Infrastructures for Mobile Services

Literature

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⌁ Bill N. Schilit: *A System Architecture for Context-Aware Mobile Computing*. PhD thesis, Columbia University, New York, NY, US, 1995.

⌁ Thomas P. Moran, editor: *Human-Computer Interaction*, volume 16 of *A Journal of Theoretical, Empirical, and Methodological Issues of User Science and of System Design*. Lawrence Erlbaum Associates, Mahwah, New Jersey, Context-Aware Computing edition, 2001.

⌁ *Special Issue on Context-Aware Computing*, volume 5 of *Personal and Ubiquitous Computing*. Springer Verlag, 2001.

Thank you for your attention!

Feedback welcome!