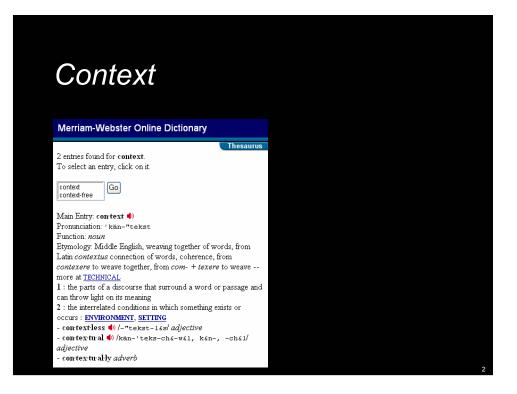
COMS E6176 Context

Steven Feiner
Department of Computer Science
Columbia University
New York, NY 10027

February 5, 2004



What can we do with context?

Pascoe, J. Adding generic contextual capabilities to wearable computers. *Proc. IEEE Int. Symp. On Wearable Computers* 1998 (ISWC 98), 92–99.

- Sense
- Adapt
- Resource discovery
- Augment (i.e., add to it)

3

What can we do with context?

B. Schilit, N. Adams, & R. Want, Context-Aware Computing Applications, *IEEE Workshop on Mobile Computing Applications*, 1994, 85–90.

- Proximate selection
 - Make it easier to access things that are closer
- Automatic contextual reconfiguration
 - Modify state of surrounding resources (e.g., move whiteboard contents with group)
- Contextual information and commands
 - Actions are interpreted in context (e.g., "migrate button" to move app to nearby display)
- Context-triggered actions
 - Actions occur when event is recognized (e.g., reminder pops up when user is at desired location/time

4

Space

- Position
 - Latitude, Longitude, Altitude
 - Local coordinates
 - Room/location name
- Orientation
- Motion

5

Time

- Exact local time (time zone)
- Morning, noon, evening, night. . . .

People

- User
- Nearby people

7

Objects/Resources

- Computer equipment
- Other

Tasks

- User/group goals
 - Write paper
 - Watch movie
 - Play game

9

Situation

Vacation, meeting, emergency, . . .

Environment

- Light
- Sound
- Smell
- Vibration
- Temperature
- Humidity
- Weather

11

Data

- Local data broadcasts
 - Radio
 - IR

Applications

- PARC Tab location-based file browser
 - Filter files based on location
- PARC Tab location-based paging
- RXRC Forget-me-not
 - Diary
- RXRC Communicator
 - Suggests best way to communicate with user, based on their location

13

Applications

- PARC Tab
 - Pointing
 - Drawing
 - Voting
 - Remote Control

Applications

- Situated information
- Situated reminders
- Context-based retrieval of information
- Context-based determination of behavior

15

Issues

- Environmental infrastructure
 - None: face recognition
 - Existing infrastructure: GPS (artificial), magnetometer/gravitometer (natural)
 - Local infrastructure
 - Industry/government/global infrastructure

Issues

- Distinction between
 - Context source
 - Means for detecting context item
 - Example:
 - *User identity* can be determined by
 - ◆ Badge
 - ◆ Voice recognition
 - ◆ Face recognition
 - ◆ ID card

17

Issues

History

Issues

- Noise
- Data fusion

19

Issues

- Privacy
 - Who can access context
 - Who can create context