The topic thus far ...

Motivating Ubicomp, capture applications

Today: Context-Awareness
Recall Mark Weiser

- Chief Technologist
  Xerox PARC

- Began Ubiquitous Computing Project in 1988

- Paradigm shift

Weiser motivation

"The most profound technologies are those that disappear."

"The whole purpose for ubicomp are, of course, the applications."

Ubiquitous Computing
Ubicomp application features

- Scalable interfaces

- Three C's
  - Correction
  - Context
  - Capture (last wed.)

Context-Aware Computing

Effective use of context is the key to a ubicomp environment that does the right thing.

Supporting the right abstractions and services for handling context makes it easier to design, build and evolve context-aware applications.
Defining Context

- Information used to characterize the situation of an entity

- Entity - person, place or object relevant to the interaction between a human and some computational service

Implicit input

- Lots of ways to provide context
  - explicit
  - implicit

- We emphasize implicit context, that applications do not have easy access to
**Context types**

- Who, Where, When, What
- Identity, Location, Time, Activity

**Categories of C-A applications**

- Presenting information and services
  - location-aware reminders
- Automatically executing a service
  - nearest printer
- Attaching context to information
  - stick e-Notes
C-A Applications hard to build

- Cyberguide case study: no separation of concerns

Separation of Concerns

- Acquisition
- Representation
- Storage
- Distribution
- Reaction ← this is the application (finally)
Inspiration

- Analogy to GUI toolkits

- What is the context equivalent to the GUI widget or interactor?

Eg. The Context Toolkit

- Anind Dey, Daniel Salber, Gregory Abowd

- http://www.cc.gatech.edu/fce/ctk

- 3 abstractions
  - widgets, interpreters & aggregators
Context Widgets

- Simplify application's view of world

Flexible Representation
Focus on Entities

Ubiquitous Computing

Focus on Context, not Source

Ubiquitous Computing
Context Challenges

- Finding compelling applications
- Higher-level programming abstractions
- What are standard context types?
- Handling privacy
- Dealing with imperfect context
Compelling Applications

- The Aware Home: creating **new capabilities** by making a home 
  **aware** of its occupants.
  - Aging in Place
  - Early Childhood Development
  - Domestic Communication

Ubiquitous Computing