UNIVERSITY OF CAMBRIDGE

800 YEARS
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Sentient Computing meets Social Networking

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Sentient Computing

"Sentient computing is the proposition that applications can be made more responsive and useful by observing and reacting to the physical world. It is particularly attractive in a world of mobile users and ubiquitous computers."
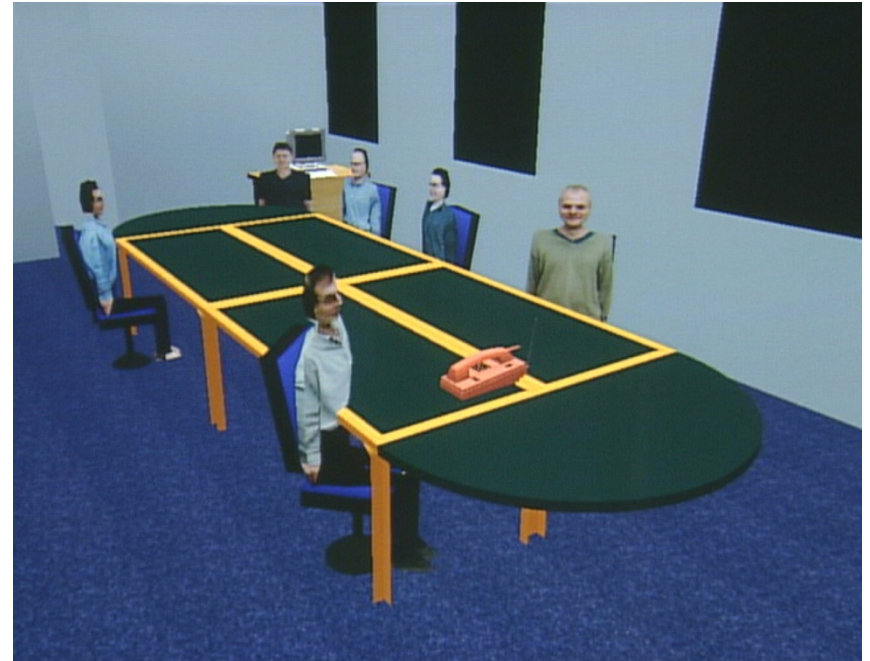
Andy Hopper, Royal Society Clifford Patterson Lecture, 1999
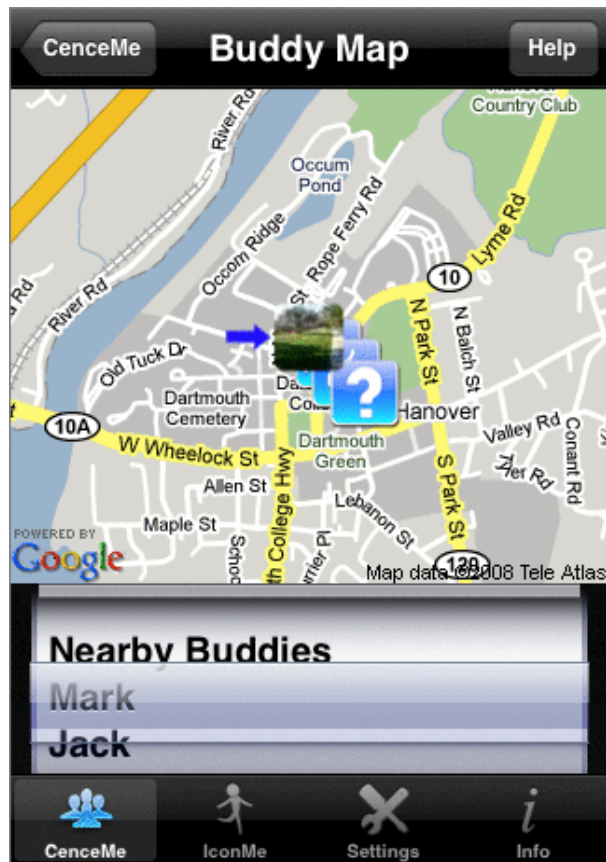
Shared Perceptions

The world as seen by users

The world as seen by the sentient computing system

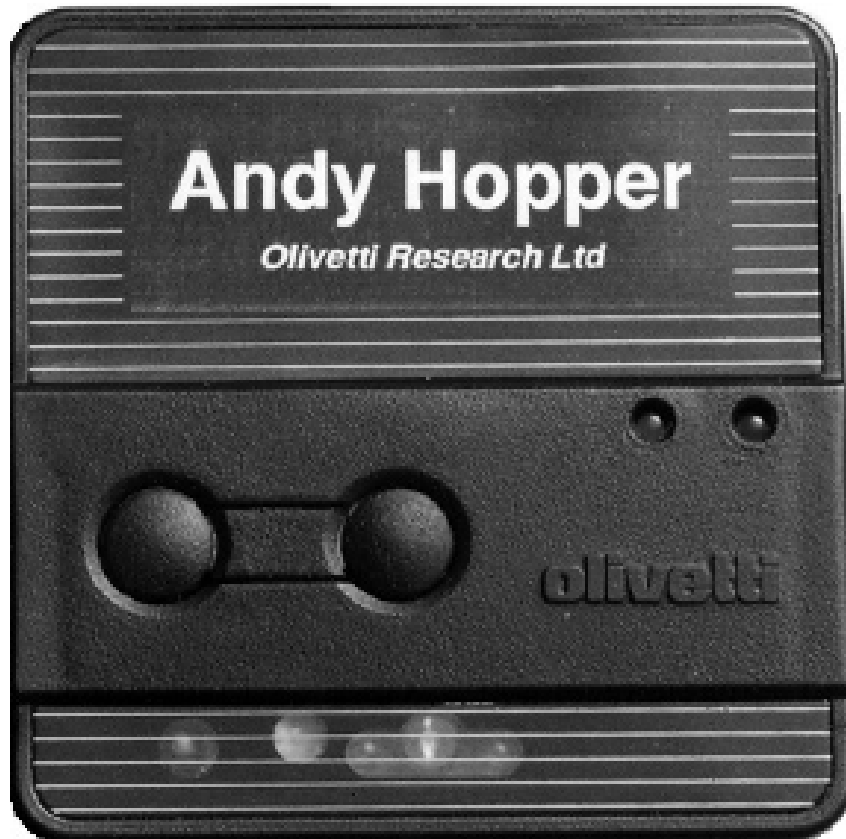# Mobile Location Aware Social Networking
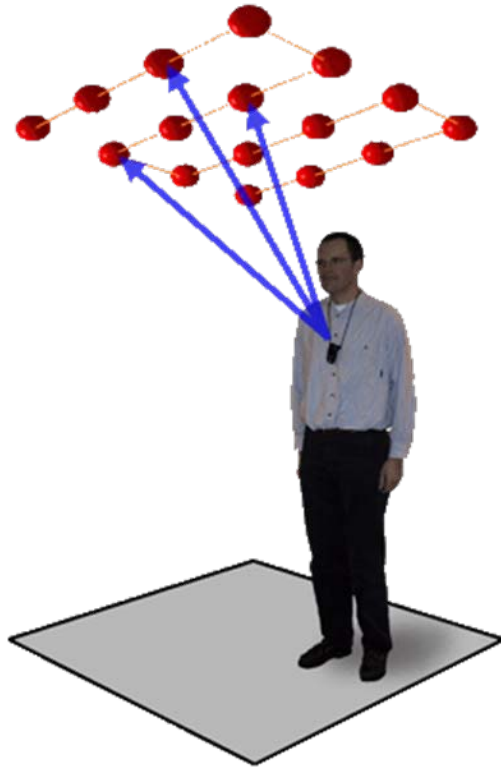
Ubiquitous Sensing

- GSM/3G

- WiFi

- Bluetooth

- Camera

- Accelerometers

- Speaker/microphone

The Active Badge System (1989-92)

- infrared-based

- badges emitted IR signals

- receivers placed in strategic locations

- room-level granularity
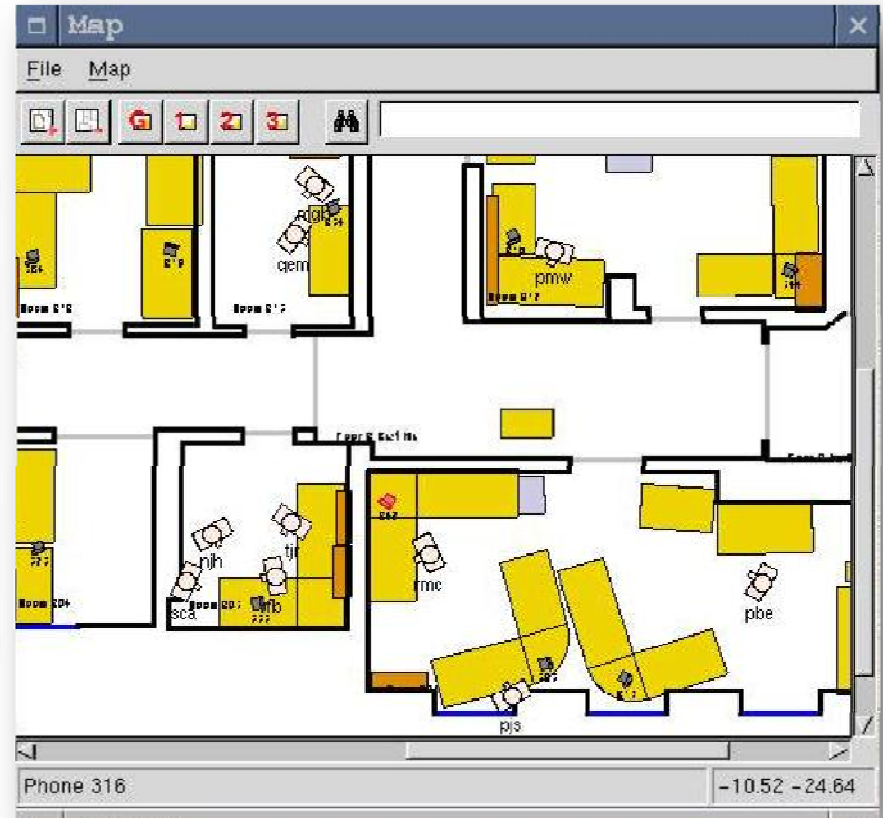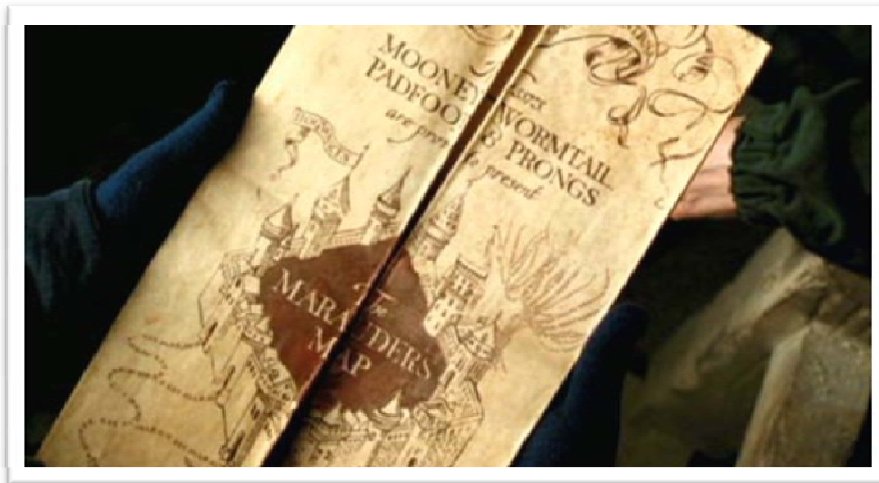
The Bat System

Sentient Computing Applications

"Any sufficiently advanced technology is indistinguishable from magic."

Arthur C. Clarke

Whereabouts Clock

Marauder's Map

Enhanced Interfaces

Status Updates

Context Awareness

- Context must be inferred from the raw sensor data available

- The inference of "Joseph is getting up from his computer" is **stateful**

- It required knowledge of the spatial containment before and after the event itself

- Instantaneous readings are not enough - we must store and utilise **history**
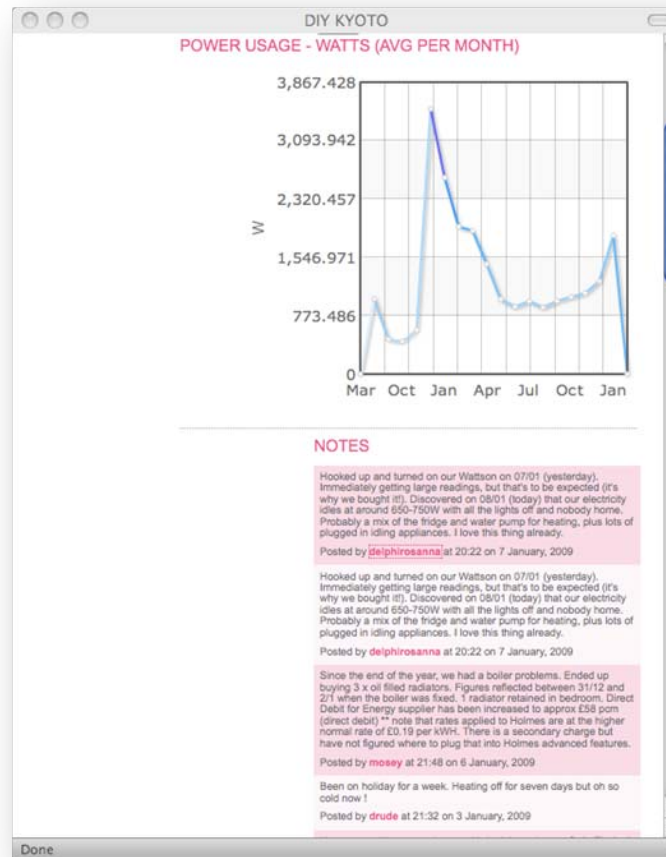
Context Awareness

Issues for discussion

- Granularity to share; privacy concerns

  - City? Building? Room? 3 cm?

  - Only share inferences, not raw data?

- Representing presence

  - Text, 2D map, 3D environment, abstraction?

Sensor Communities: NIKE+

Sensor Communities: DIY KYOTO

Thank you!

Any questions?

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More information:
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http://www.cl.cam.ac.uk/research/dtg