

Event Detection and Notification in the World-Wide Sensor Web

<http://data.cs.washington.edu/peex/>

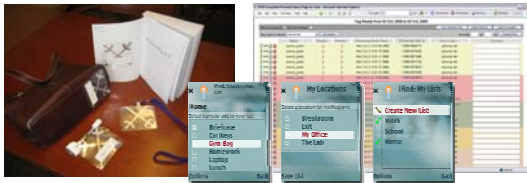
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Sensor Infrastructure: The RFID Ecosystem

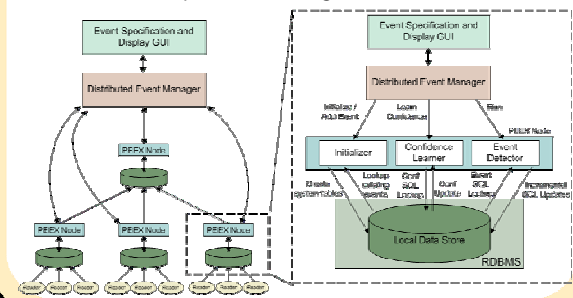
(<http://rfid.cs.washington.edu>)

- Building-wide RFID deployment
 - 90,000 sq. ft building
 - EPC Gen 2 Equipment
 - 100s of readers and antennas
 - 1000s of passive RFID tags
 - People and personal objects tagged
- Enables pervasive computing applications
 - RFID-based reminder systems
 - Context-aware communication
 - Visualizing activities in the building
 - Many other possibilities



Detecting Probabilistic Events

- Probabilistic, high-level events
 - Defined using a declarative query language
 - Composed of multiple *lower-level* events
 - Primitive events are RFID tag reads
 - All events can be uncertain
 - Event Specification GUI generates event defs.
- Probabilistic Event Extractor (PEEX)
 - Detects probabilistic high-level events
 - Handles imprecise and erroneous data
 - Distributed across network nodes
 - Detection pushed to “edges” of network



Collaborative, End-User Event Specification with SensorMap

- Visual specification of events using SensorMap
- End-user programming by demonstration
 - Playback of historical sensor data
 - “Circle” sensor data corresponding to an event
 - May use labeled places, groups, and items
- Sharing and collaboration by publishing events

Visualizing Events with SensorMap

- Display detected events as SensorMap overlays
 - Use special, composite icons to indicate events
 - Use “clouds” or “regions” to show aggregates
 - “Jump to” location of a detected event
- Show both real-time and historical events



SensorMap



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