User Interaction: Ubiquitous Computing

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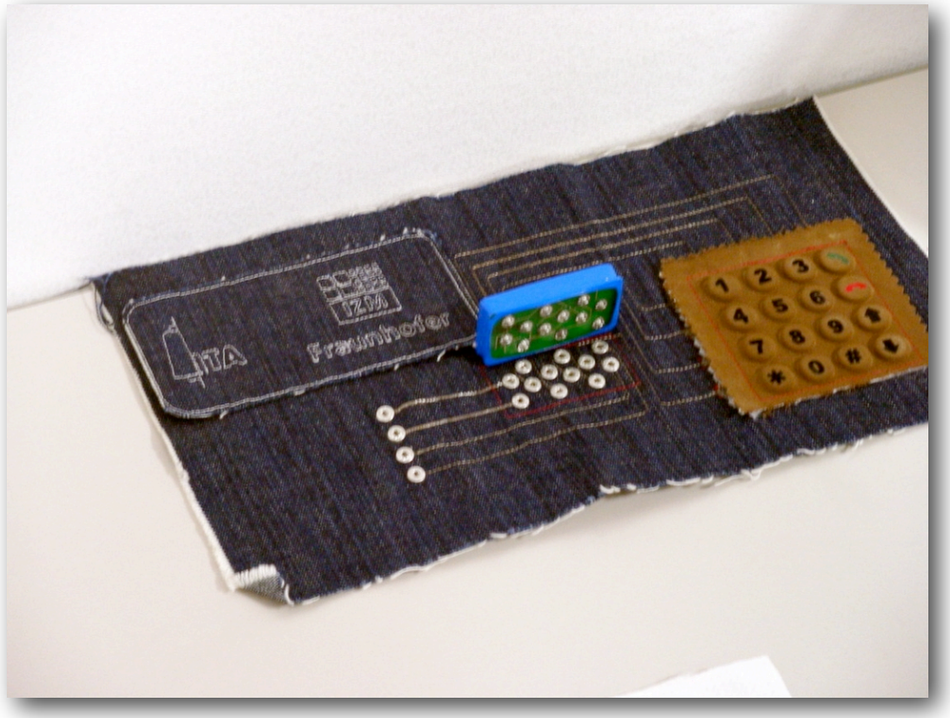
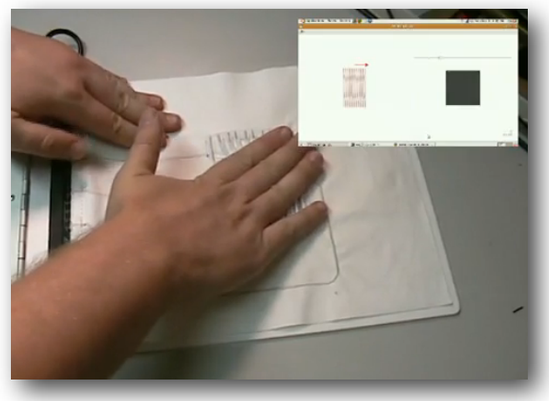
INF 133 Fall 2011

Technology: Different inputs





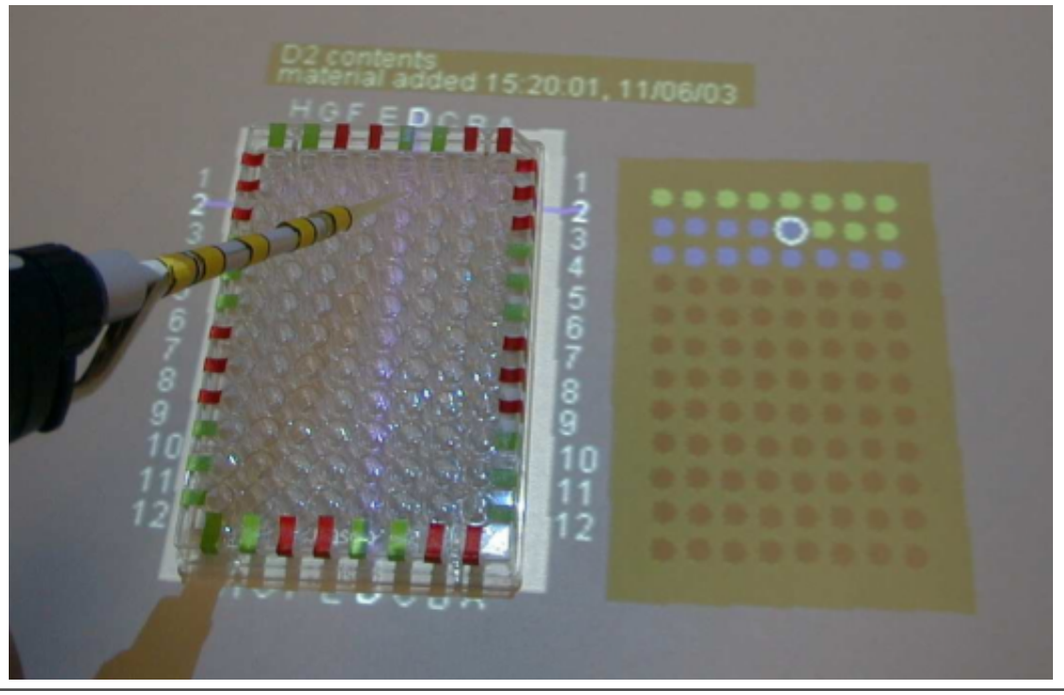
- Textile Interface Swatchbook
  - http://www.youtube.com/watch?v=NKWWa6BvUts
  - http://www.youtube.com/watch?v=Valtk6pXiHY

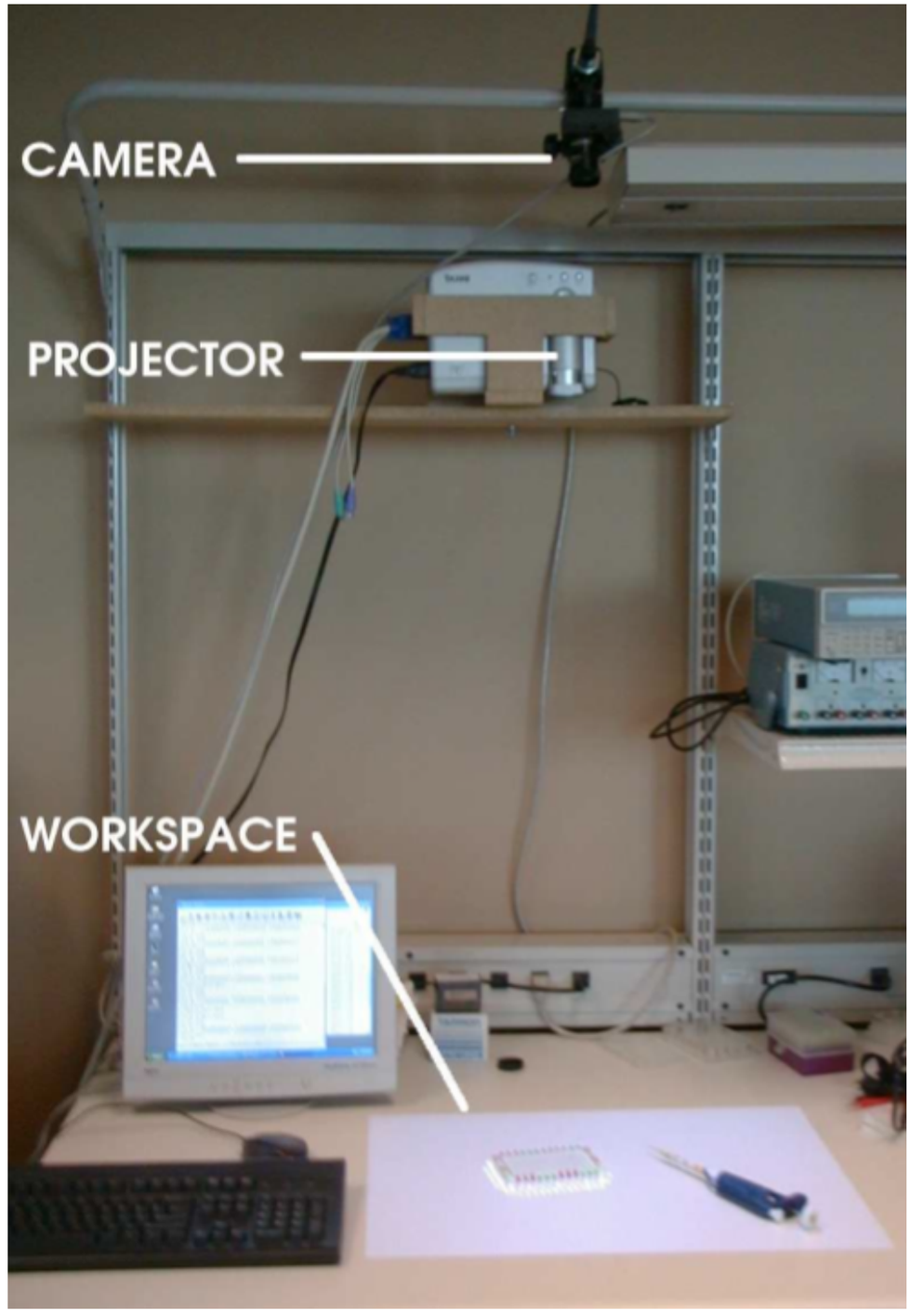
Technology: Different outputs

- More than eye-grabbing raster displays
  - Ambient: use features of the physical environment to signal information
  - Peripheral: designed to be in the background
- Examples:
  - Dangling String
  - Osaka Ferris Wheel
    - image

Technology: Merging Physical and Digital Worlds

- How can we remove the barrier?
  - Actions on physical objects have meaning electronically, and vice versa
  - Output from electronic world superimposed on physical world





Microbiology Tray and Pipette Tracking as a Proactive Tangible User Interface, Hile et.al.

Application Themes

- Context-aware computing
  - Sensed phenomena facilitate easier interaction
- Automated capture and access
  - Live experiences stored for future access
- Toward continuous interaction
  - Everyday activities have no clear begin-end conditions

New Opportunities for Theory

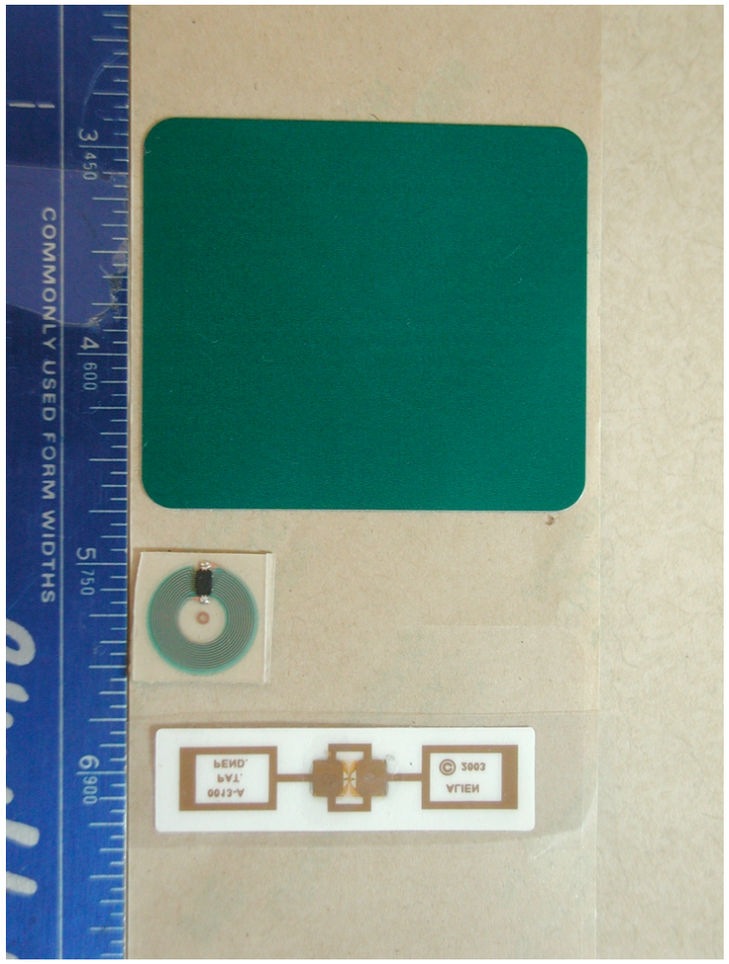
- Knowledge in the world
  - Ubicomp places more emphasis on the physical world
- Activity theory
  - Goals and actions fluidly adjust to physical state of world
- Situated action and distributed cognition
  - Emphasizes improvisational/opportunistic behavior versus planned actions
- Ethnography
  - Deep descriptive understanding of activities in context

Simultaneous Multi-Scale Input and Output

- Screens
  - Of many sizes
- Distributed in space, but coordinated

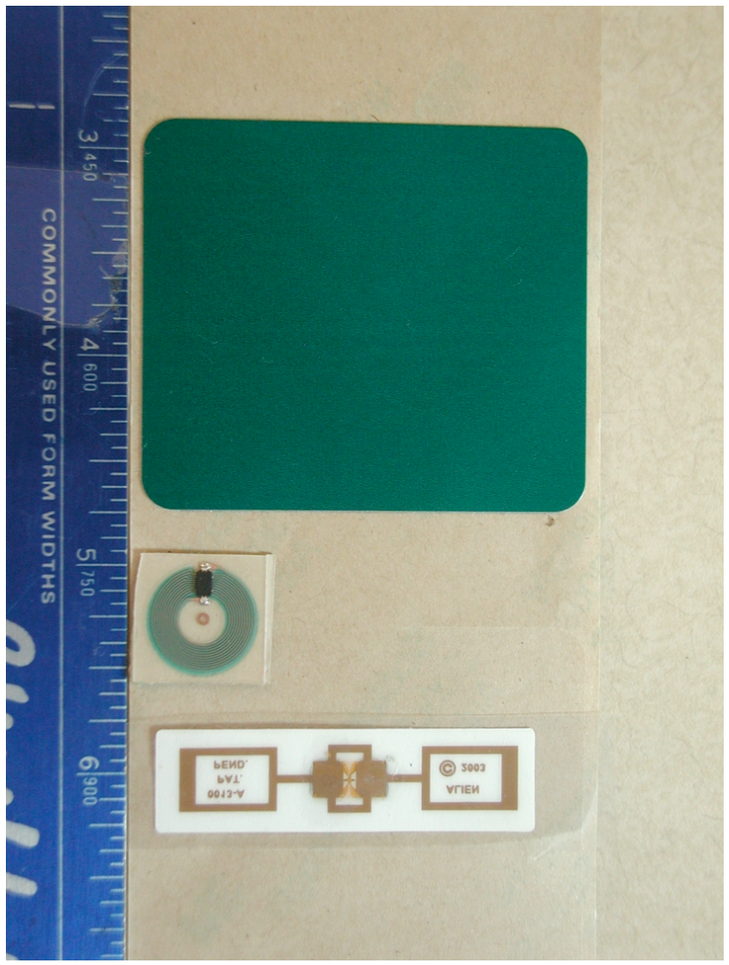
- Nokia Morph Concept
  - http://www.youtube.com/watch?v=IX-gTobCJHs

RFID



- Radio Frequency IDentification tags
  - are small, durable, cheap
  - have no batteries
  - are designed to replace barcodes
  - GUID

RFID



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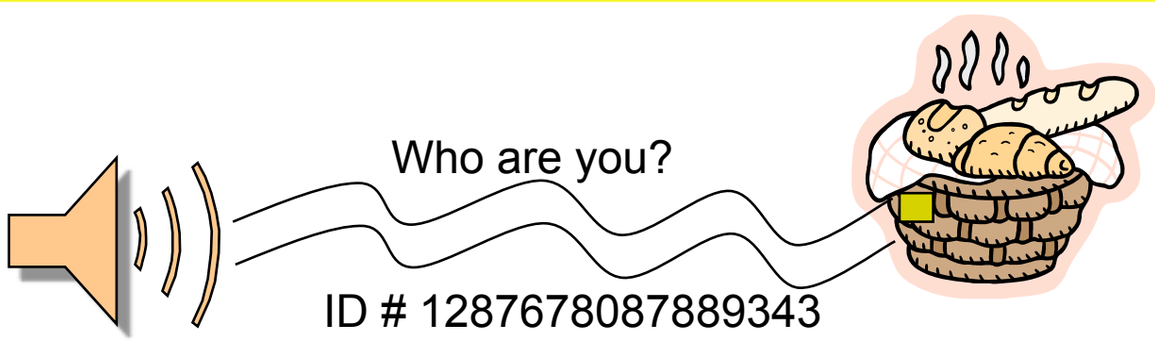
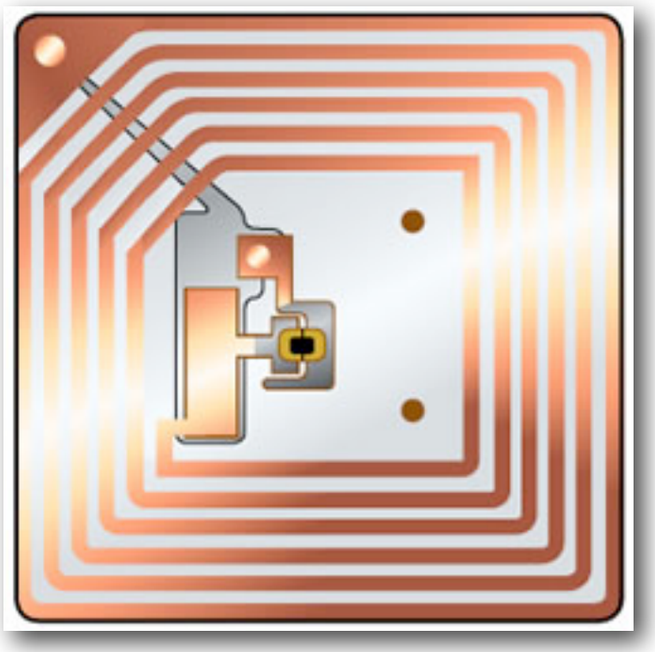


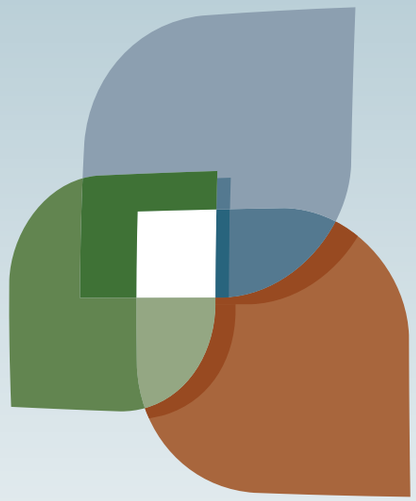
RFID

Large
Fred Meyer
grade AA
Eighteen
Grade AA
Large
Eggs
Grade AA
Large
18 Eggs



Conclusion

- The biggest challenges for technology engineering in UBICOMP:
  - Creating reusable libraries
  - Creating reusable patterns
  - Creating reusable infrastructure
- That work in more than one deployment



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