Kiosks
and more kiosks

Intelligent Environments

- Pervasive computing deals with:
  - human-centric input modalities
  - hand-held devices
  - intelligent environments
- A small aspect of intelligent environments is a kiosk
  - commercial -- very big market
  - academic -- very few projects
What is a “kiosk”?

A stall set up in a public place where one can obtain information, e.g. tourist information. The information may be provided by a human or by a computer. In the latter case, the data may be stored locally (e.g. on CD-ROM) or accessed via a network using some kind of distributed information retrieval system such as Gopher or World-Wide Web.

What is a “Kiosk”

**Word History:** The word kiosk was originally taken into English from Turkish, in which its source kök meant “pavilion.” The open structures referred to by the Turkish word were used as summerhouses in Turkey and Persia. The first recorded use of kiosk in English (1625) refers to these Middle Eastern pavilions, which Europeans imitated in their own gardens and parks. In France and Belgium, where the Turkish word had also been borrowed, their word kiosque was applied to something lower on the scale, structures resembling these pavilions but used as places to sell newspapers or as bandstands. England borrowed this lowly structure from France and reborrowed the word, which is first recorded in 1865 with reference to a place where newspapers are sold.
**Commercial**

- Huge market in Kiosks (in $billions)
- Point of Sales (POS), without human salesperson
- Informational display
- Subtle (and not subtle) form of advertisement
- Replace human agent, e.g. guidance
- Whole focus on current customer interaction
- Real focus is on reducing cost of doing business
Usual Kiosk Features

- Users should
  - not be allowed to exit browser
  - have no access to os or other apps
  - cannot change settings
  - privacy must be protected
- After period of inactivity, kiosk resets
- A different mode of web browser
  - Mozilla, Opera, Explorer, Safari all have Kiosk modes
- Sounds like an information appliance

Academic

- Emphasis is on richer interaction
- Collaboration is the key concept
  - between people
  - between objects (physical and virtual)
  - between places
- Let’s look at some examples
IBM BlueBoard

Fast & Simple...

A BlueBoard is supposed to be fast. Badge in, see your information, badge out -- all in less time than it takes to just open your laptop. We want to be able to show your calendar in less than 5 seconds from the time you walk up.

Sharing...

Although we’re flooded in information, it’s often hard to share meaningful pieces of content. With BlueBoard acting as a go-between, it’s simple to share a drawing, a single slide, a URL or a note. Just show the item, and drag it to your friend’s personal-icon. When they badge-out, it’s sent to them automatically as email.

Details

• Year began: 2000
• 1.3 Meter Plasma Display (touchscreen)
• Badge reader (RFID)
• No keyboard or mouse
• Laptop PC hidden
• Thin client software
• Fast Personal Use
  • walk up, check calendar, walk away with 5 sec
• Small Group Collaborative Use

BlueBoard
Personal vs Communal Uses

- P-con: image of person representing that person’s content
- Personalize by linking content beforehand (at some web site)
- Share info:
  - drag-n-drop info to p-con
  - email gets sent when badge-out
- www.almaden.ibm.com/software/BlueBoard/index.shtml

Community Wall

- Ambient display give sense of community
- Work teams more distributed
- Content Selection
  - chose which 10 items to present
  - re-evaluate every 10 min
- Backstage rules
  - relevance of item at specific time
- User Interaction
  - touching item increases its space and value
  - touching item can cause action (email)
Dynamic Profile based on Context Sensing

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<th>Location-oriented</th>
<th>Infrared sensors</th>
<th>Image analysis</th>
<th>Sound/Speech analysis</th>
<th>Active badges</th>
<th>Pressure mats</th>
<th>PDAs</th>
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<td>Persons (#) in screen area</td>
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<thead>
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<th>Person-oriented</th>
<th>Face-orientation</th>
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<td>X</td>
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Table 2. Sensor types and situation data they can provide.

Notification Collage

Figure 1. The Notification Collage. Media elements are annotated. New items are positioned only left of the vertical bar.
Notification Collage

- Motivation
  - Aware of many things: people, events, stuff
  - Too much info in our environment
  - Info is static and dynamic
  - Relevance depends on time
  - Sometimes act on info when aware of it
  - Information awareness is a result of gossiping
  - People post stuff by dragging it to Collage
  - Potential extension:
    - only my friends see stuff I look at
    - their friends will see it, if they look at it also

iCom (MIT Media Lab)

- A multipoint awareness and communication portal for connecting remote social spaces
iCom

• Open 24 hours a day
• Background mode is low bandwidth
• Can transform into foreground, tele-meetings
• Screen projections sync’d at each site
  • nothing is recorded
• Bulletin board for messages
  • ordered by popularity and age

Dummbo

• Normal white board; no special training
• Everything captured (audio & writing)
• SMARTBoard is commercial product

Figure 1: (Left) The front of DUMMBO. Notice the lack of any buttons, computer screens, or cameras. (Right) Rear-view of DUMMBO. The computational power of the whiteboard is hidden under the board behind a curtain.
Dummbo (Georgia Tech)

![Image of Dummbo interface](image.png)

**Figure 2:** DUMMBO access interface. The user selects filter values corresponding to when, who, and where. DUMMBO then displays all days containing whiteboard activity. Selecting a day will highlight all the sessions recording in that day. Playback controls allow for live playback of the meeting.

A Wallable Macro Device (CRL -- DEC, COMPAQ, HP)

- Message Panel (on the wall)
  - audio/visual messages to visitors or members
- an elaborate info kiosk

![Diagram of Wallable Macro Device](diagram.png)
A Wallable Macro Device (CRL -- DEC, COMPAQ, HP)

Figure 3. Two views of the video sensor. On the left there are six kernels evenly spaced, while on the right only four. On the right is a view of an individual being detected. The white horizontal bar indicating the activity within the kernel itself.

Figure 4. Three example poses of the synthetic face created by FaceWorks (1) static, (2) rotated ½ view and (3) sitting and talking. This face is the principal feedback mechanism in the Wallable macro device.

Public Ambient Displays

AMBIENT DISPLAYS AND MOBILE DEVICES FOR THE CREATION OF SOCIAL ARCHITECTURAL SPACES

Supporting informal communication and social awareness in organisations

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Figure 16.13. Second version of activity-pattern (very low)

First, the better the atmosphere, the bigger the amount of light in the waving patterns. Second, a low activity level is represented as only a few light “tall” ascending, whereas a higher level of activity results in more light “tall” ascending.
Figure 3.2 A typical configuration for a media space node, with a video camera, microphone, video monitor and workstation.

Figure 3.14 Image captured from the WAVE link. Note the use of the small hand-held camera to show a close-up view of the problem.

Figure 3.12 Ariel lets construction engineers access the media space and a hypermedia annotation system via paper engineering drawings. The user selects the media space option from the control section or the paper engineering drawing (upper left). Ariel projects a menu and the user selects Glance with the graphics tablet pen, which establishes a three-second connection.
Large, remote displays

- Lots of big displays everywhere
- How can you get information from them?
  - remember, write it down, chisel in stone
- Can info be downloaded to handset?

Benefit of kiosks

- context aware -- know what you want
- limited functionality; makes interface easier
- dialog with kiosk
Making Contact

- Display has no obvious input
- But we have a phone!
- Choices:
  - sms message (what is the address?)
  - web page (what is the address?)
  - wifi or bluetooth (what is the address?)
- Addresses are long and cumbersome to enter

sms -> url -> web

- URL's are hard to enter
- Phone number can be displayed
  - send sms and get reply with url
  - click on url and get web page
  - interact with web page; no need for display
cut out the middleman

- sms message: phone -> tower -> server -> ...
  -> tower -> phone -> kiosk server
- wasted energy, information leak, price
- how can we do direct connection?
  - bluetooth but no app on phone
  -

Invisibility Cloak

- Personal phones should not be discoverable
  - but public devices can be -- phone can see kiosk
- What are default bluetooth functions on the phone?
  - headset & vcard & obex push
Get a foot in the door

• Who controls the dialog?
  • with speech -- human
  • with gestures -- human
  • with mouse & keyboard -- human
  • with handset -- just want

What is wrong with

• speech dialog with kiosk?
  • ok, can get information by hearing it or seeing it, but still want to record it.
  • so back to where we started
Solution

- Best is to get application onto phone
  - obex push python program!
  - oops, not all phones have python
- Need BT address
  - kiosk can act like headset, just to get btid
  - push vcard to kiosk
- Exploit when push is done
  - remember one button input

What to send

- obex push of data on the screen
- vcard, picture, vcalendar
- set of vcards which user can return for more info -- perhaps phone type
- data currently on screen or previously on?
  - learn overlapping window
  - modify next data based on requests.
Display grammar

• next view, as if hyperlink was clicked
• if no request: based on probability
• if request: know which link clicked
• if view already changed, slightly more complicated

Multi-user interaction

• One display, many users
• different links many be clicked
• default probability of hyperlinks
• modified by current probability of links