FIRST PERSON USER INTERFACES

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CHIFOO PORTLAND 2011

@LUKEW
ABSTRACTION

- User interfaces give you access to computing capabilities
- By abstracting away all the messy stuff
PUNCHED CARD INTERFACES

- Lived outside the computer
- Had specific formats that needed to be learned
- Had to be punched by hand or on a key punch machine
- Had to be fed into a computer
- Output was delivered on paper
PUNCHED CARD INTERFACES
## LAYERS OF ABSTRACTION

<table>
<thead>
<tr>
<th>INPUT</th>
<th>OUTPUT</th>
</tr>
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<tbody>
<tr>
<td>Punched Cards Interfaces</td>
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COMMAND LINE INTERFACES

• Input typed directly on computer
• Required specific commands & syntax
• Objects and actions hidden behind cryptic commands
-o
  Set the output file, if appropriate
-i
  Add an input file.
-stdin
  Read input from standard input
-stdout
  Send result to standard output
-change-id
  Change the file’s /ID tag
-keep-version
  Don’t change the version number
-l
  Linearize output files where possible
-merge
  Merge a number of files into one
-retain-numbering
  Don’t renumber pages when merging
-remove-duplicate-fonts
  Remove duplicate fonts when merging
-split
  Split a file into individual pages
-chunk
  Set chunk size for -split (default 1)
-split Bookmarks
  Split a file at bookmark boundaries at a given level
-scale-page
  -scale-page "sx sy" scales by (sx, sy).
-shift
  -shift "dx dy" shifts the chosen pages by (dx, dy).
-rotate
  Set rotation of pages to 0, 90, 180, 270
-rotateby
  Rotate pages by 90, 180 or 270 degrees
-rotate-contents
  Rotate contents of pages
-upright
  Make pages upright
-hflip
  Flip pages horizontally
-vflip
  Flip pages vertically
-crop
  Crop specified pages
-remove-crop
  Remove cropping on specified pages
-mediabox
  Set media box on specified pages
-encrypt
  Encrypt a document
-decrypt
  Decrypt a file
-no-edit
  No edits
-no-print
  No printing
-no-copy
  No copying
-no-annot
  No annotations
-no-forms
  No forms
-no-extract
  No extracting
-no-assemble
  No assembling
-no-hq-print
  No high quality printing
-no-encrypt-metadata
  Don’t encrypt metadata (AES only)
-decompress
  Decompress
-compress
  Compress with FlateDecode. Leaves metadata alone.
-list-bookmarks
  List Bookmarks
-remove-bookmarks
  Remove bookmarks from a file
-add-bookmarks
  Add bookmarks from the given file
-presentation
  Make a presentation
-trans
  Set the transition method for -presentation
-duration
  Set the display duration for -presentation
-vertical
  Set dimension for Split and Blinds styles
-outward
  Set direction for Split and Box presentation styles
./bagcheck bag additem name='toast'
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GRAPHICAL USER INTERFACES

• Made objects and applications visible
• Enabled manipulation through icons, controls, and mouse
• Resulted in lots of time interacting with UI components
# LAYERS OF ABSTRACTION

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NATURAL USER INTERFACES

• The content itself serves as the interface
• Interact with guessable, physical, and realistic gestures
• Make use of skills learned through a lifetime of living
www.lukew.com/touch
LAYERS OF ABSTRACTION

INPUT

Punched Cards Interfaces
Command Line Interfaces
Graphical User Interfaces
Natural User Interfaces

OUTPUT
FIRST PERSON USER INTERFACES

Source: AcrossAir
LAYERS OF ABSTRACTION

INPUT

- Punched Cards Interfaces
- Command Line Interfaces
- Graphical User Interfaces
- Natural User Interfaces
- First Person User Interfaces

OUTPUT
FIRST PERSON USER INTERFACES

Allow people to digitally interact with the real world as they are currently experiencing it.

Automatically get relevant output based on where you are, and who or what is near you.

Turn objects, locations, and people into networked, interactive elements.
Location Detection

What's nearby?

Krispy Kreme Doughnuts
2146 Leghorn St

Lee's Comics
1020 N Rengstorff Ave # F

Pet Club Mountain View
1010 Rengstorff Ave

OfficeMax - Mountain View
1030 North Rengstorff Avenue

Perfect Studio
1040 N Rengstorff Ave # E
# Location Systems

<table>
<thead>
<tr>
<th></th>
<th>Accuracy</th>
<th>Positioning Time</th>
<th>Battery Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPS</td>
<td>10m</td>
<td>2-10 minutes (only outdoors)</td>
<td>5-6 hours on most phones</td>
</tr>
<tr>
<td>WiFi</td>
<td>50m (improves with density)</td>
<td>Almost instant (server connect &amp; lookup)</td>
<td>No additional effect</td>
</tr>
<tr>
<td>Cell tower triangulation</td>
<td>100-1400m (based on density)</td>
<td>Almost instant (server connect &amp; lookup)</td>
<td>Negligible</td>
</tr>
<tr>
<td>Single Cell Tower</td>
<td>500-2500m (based on density)</td>
<td>Almost instant (server connect &amp; lookup)</td>
<td>Negligible</td>
</tr>
<tr>
<td>IP</td>
<td>Country: 99%</td>
<td>Almost instant (server connect &amp; lookup)</td>
<td>Negligible</td>
</tr>
<tr>
<td></td>
<td>City: 46% US, 53% Intl</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ZIP: 0%</td>
<td></td>
<td></td>
</tr>
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</table>

Smartphones: hybrid of GPS, Wifi, and cell tower triangulation
Laptops/desktops: WiFi, IP, rarely GPS
Sensor Capabilities

- Location detection: GPS, WiFi, cell towers
- Orientation: direction from a digital compass
- Device positioning & motion: from an accelerometer
- Audio: input from a microphone; output to speaker
- Video & image: capture/input from a camera
- Device connections: through Bluetooth between devices
- Proximity: device closeness to physical objects
- Ambient Light: light/dark environment awareness
- RFID reader: identify & track objects with broadcasted identifiers
- Multi-touch sensors
- Haptic feedback: “feel” different surfaces on a screen
- Biometrics: retinal, fingerprint, etc.
- Push: real-time notifications “instant” to user
FIRST PERSON USER INTERFACES

• Interaction through a set of always-on sensors
• Instant, relevant output based on your position
• Or based on who or what is near you

Source: AcrossAir
FIRST PERSON USER INTERFACES

1. Navigate the space around you
2. Augment your immediate surroundings
3. Interact with nearby objects, locations, or people
FIRST PERSON USER INTERFACES

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TomTom Navigation System
TomTom Navigation System
FIRST PERSON USER INTERFACES

1. Navigate the space around you
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LOOKING UP

LOOKING DOWN

LOOKING AHEAD
Augmented Outdoors

Aiguille de Plovezan
alt: 2295m, 16km away

Aiguille de Prainan
alt: 1878m, 17km away

Mont Blanc
alt: 4807m, 39km away

Les Grands
alt: 4208m

45° 29' 38" N / 6° 44' 9" E (±17m)
Alt: 2764m (±23m)
1' (±10')
When discovered by users boosted their sustained traffic by 40 to 50 percent.

“It was sort of beyond our expectations. We had no idea.”

Yelp CEO,
Jeremy Stoppelman
**IBM Seer at Wimbeldon**

- **DATA WINDOW**
  - Taxi Stand – North
  - Distance 62m
  - For journeys heading north, there is a taxi rank in Church Road where a shuttle service back to local stations also operates.
  - Updated 2 mins ago: Very busy, lots of people trying to get home. Taxi sharing encouraged plus you get to meet new people.
  - Get me there

- **MARKERS**

- **OVERVIEW & ORIENTATION**
Corrected OCR text: "Krimmler Wasserfälle
91.5 km. The Krimmler Wasserfälle, with a total height of 380 meters (1,247 feet), is the second highest waterfall in Austria. The falls are formed ..."
Marker Overload

OVERVIEW & ORIENTATION

MARKERS
Layar Browser

- **FIXED LOCATION**
- **SPATIAL GRID**
- **TRANSPARENT UI**
- **LOCK WINDOW**
Layar Browser

OVERVIEW & ORIENTATION

MARKERS

FIXED LOCATION

TRANSPARENT UI
More Approaches

LOCK POI

Source: Augmented Planet
Usage Curve

Wearables | Smartphones & Tablets | Laptops | Desktops
---|---|---|---
Emergent | Growth | Mature | Declining
Usage Curve

- First Person Interfaces
  - Emergent
- Natural User Interfaces
  - Growth
- Graphical User Interfaces
  - Mature
- Command Line Interfaces
  - Declining
1. Navigate the space around you
2. Augment your immediate surroundings
3. Interact with nearby objects, locations, or people
Red Laser Barcode Scanner

Scans:
- UPC (8, 12 digits)
- EAN (13 digits)

Hold still for scan.

Barcode must be upright. Avoid glare and shadows.

Powered by Occipital

AT&T WiFi 5:13 PM

Scans
Results

Designing Web Interfaces: Principles and Patterns for Rich Interactions
From $17.10 online

Google Search Results

Designing Web Interfaces $23.21
www.betterworldbooks.com

Designing Web Interfaces:... $25.47
www.valorebooks.com

Designing Web Interfaces:... $26.50
www.alibris.com

Designing Web Interfaces:... $28.99
www.frys.com

Designing Web Interfaces:... $31.18
www.overstock.com

Designing Web Interfaces:... $31.48
www.alibris.com

Designing Web Interfaces:... $33.43
ShopSavy on iPhone

Designing Web Interfaces: Prin...

- Web (25) $17.10
- Local (7) $35.99

Reviews

Map

Local

San Jose
Cupertino
Campbell
Saratoga
Los Gatos
Shop Savvy on Android
Amazon Flow on iPhone
Google maps

We're a Favorite place on Google

QR Code Input
Images as Input

Kasa Indian Restaurant - Indian Food Delivery
4001 18th Street
San Francisco, CA 94114
www.kasaindian.com - web site
14 reviews

"Kasa was a nice take on Indian 'fast food'." ...
"San Francisco likes Indian food." ...
"The portions were very generous and tasted really good." ...
"And besides, who needs ambiance with an idea this good?" ...
"I'm a little obsessed with Kasa...it's that good!" ...
"I am hooked!"
insiderpages.com, citysearch.com

(415) 621-6940
Map »

Details
Hours Of Operation: Monday: 11:00AM - 10:00PM,
Tuesday: 11:00AM - 10:00PM, Wednesday:

Cancel

5:10 PM
AT&T
Google Web Images Local more ▼
Google Goggles

Ihr Artikel

Schmandtörtchen mit Holunderragout

German (auto) = English

Sour cream cake with elderberry sauce
Images as Input
Images as Input

CHASE

PNC

charles SCHWAB

USAA

STATE FARM INSURANCE

Bank

Back

Log Out

Instructions for Front of Check

CHECK PAYABLE
- The check should be made payable to the account holder or trust

PHOTO TIPS
- Place the check in a well-lit area on a dark background
- Make sure the four corners of the check are within the blue box
- Align the top of the check with the top of the box
- Avoid shadows on the check

Cancel

Next
AWKWARD INTERACTIONS

1. Small screens
2. Handheld positioning
3. Scanning for information
SMALL SCREEN, BIG WORLD
When information flows freely, reputation, more than reciprocity, becomes the basis for trust.

As a strategic weapon, time is the equivalent of money, productivity, quality, even innovation.

When brands become business systems, brand management becomes far too important to leave to the marketing department.

The winning organization of the future will look more like a collection of jazz ensembles than a symphony orchestra.

Most of our organizations today derive from a model whose original purpose was to control creativity.

Rather than being an obstacle, uncertainty is the very engine of transformation in a business, a continuous source of new opportunities.

IP assets lack clear property lines. Every bit of intellectual property you can own comes with connections to other valuable innovations.
Nerd.
Found.
iPhone with an RFID/NFC reader
Link your token with your Facebook account

Enter number on back of Token:

Enter Token number...

Link Token
Looking Ahead
FIRST PERSON USER INTERFACES

Further reduce abstraction by allowing people to interact digitally with the real world as they are currently experiencing it.

1. Navigate the space around you
2. Augment your immediate surroundings
3. Interact with nearby objects, locations, or people

NEED DESIGN HELP
MOBILE FIRST

• @lukew
• www.lukew.com

Mobile First!

• abookapart.com