

FIRST PERSON USER INTERFACES

LUKE WROBLEWSKI
CHIFOO PORTLAND 2011





ABSTRACTION

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

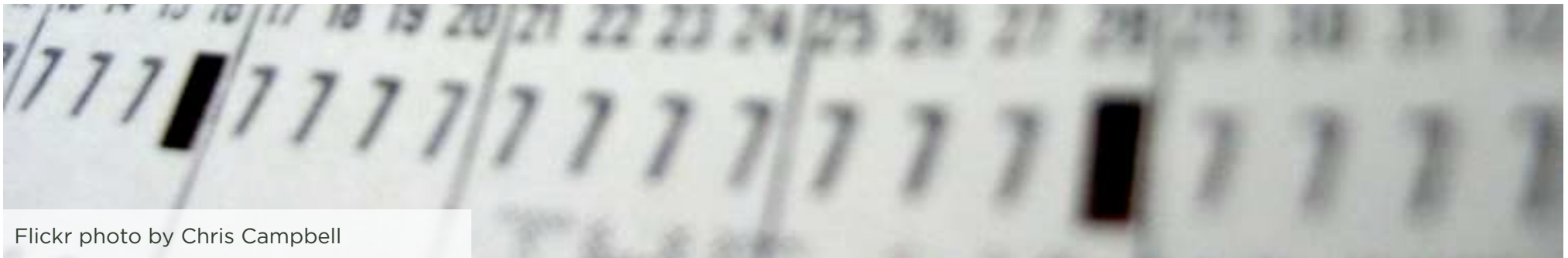


Flickr photo by nhburdick



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

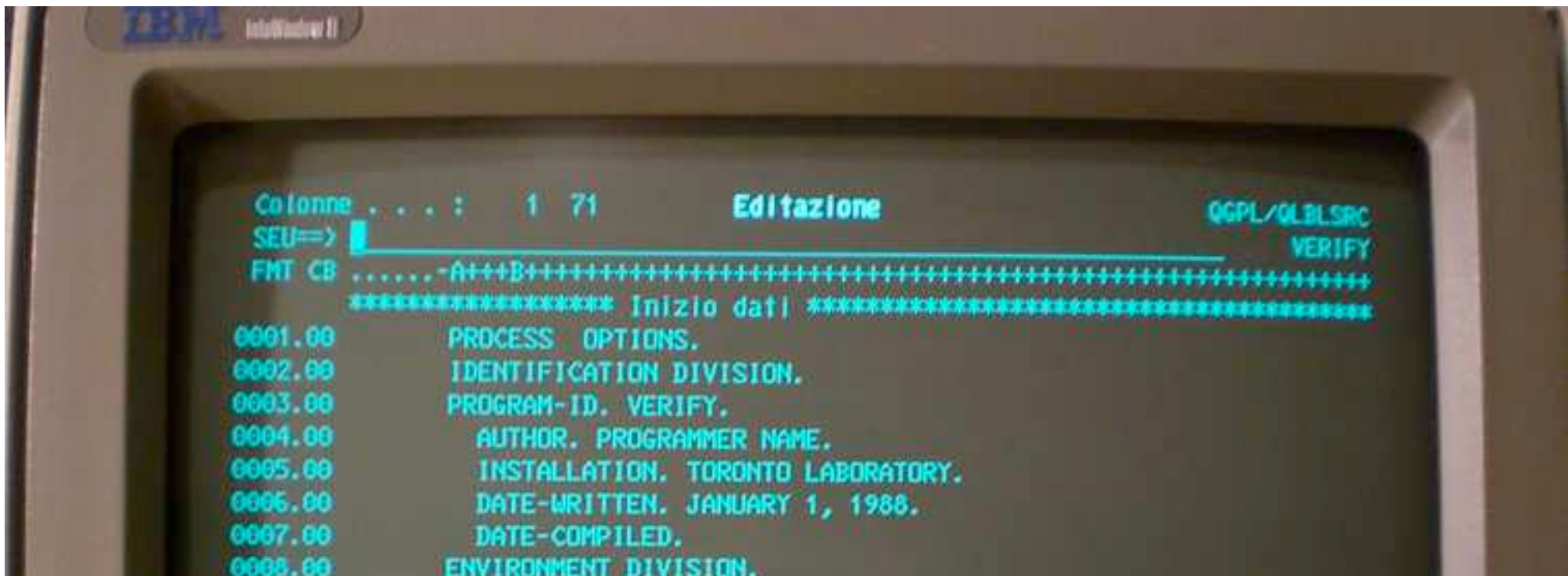


LAYERS OF ABSTRACTION

INPUT

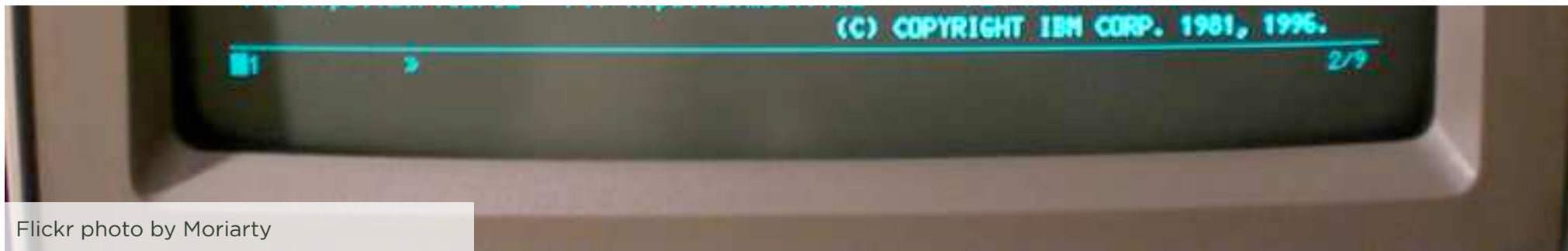
OUTPUT

Punched Cards Interfaces



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

```
Terminal — bash — 70x60
Last login: Wed Oct 12 13:21:17 on ttys000
LukeVi7:~ lukev$ 
bagid      ;
itemid     }geditem
Additem
LukeVi7:~ lukev$ item
bag dislike
bag composite
bag createbag
bag deletebag
bag deletcommentonbag
bag deletcommentonbaggeditem
bag editbag
bag editcommentonbag
bag editcommentonbaggeditem
bag edititem
bag featured
bag feed
bag following
bag get
bag lookup
bag lookupbagcomment
bag lookupbaggeditemcomment
bag lookupitem
bag moveitem
bag newbags
bag recent
bag removeitem
bag search
bag searchbags
bag set
bag setcomposite
bag share
bag similarbags
bag suggestitems
bag unlikebaggeditem
bag unmerge
LukeVi7:~ lukev$
```

`./bagcheck bag additem name='toast'`

LAYERS OF ABSTRACTION

INPUT

OUTPUT

Punched Cards Interfaces

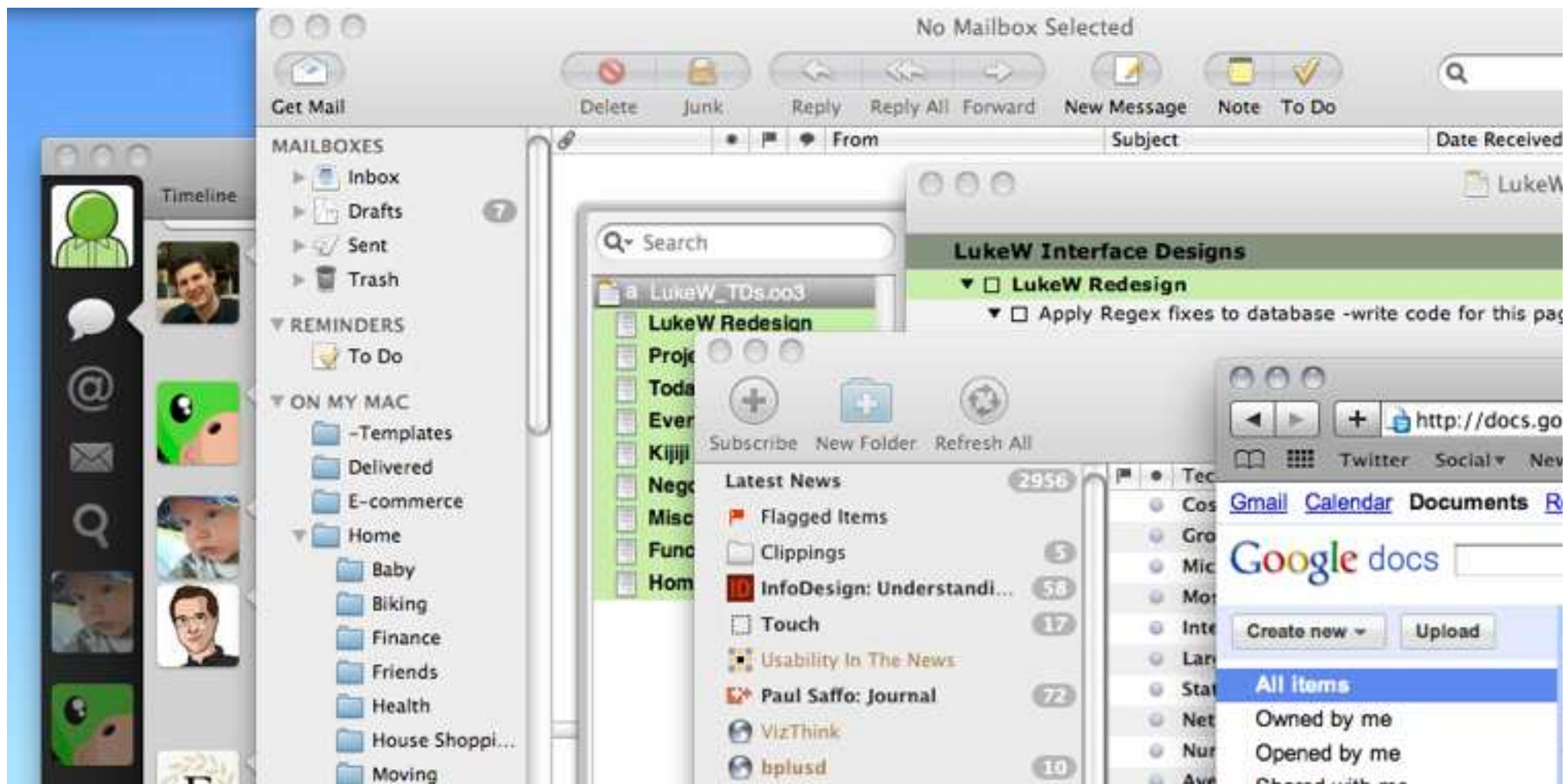
Command Line Interfaces



GRAPHICAL USER INTERFACES

- Made objects and applications visible
- Enabled manipulation through icons, controls, and mouse
- Resulted in lots of time interacting with UI components

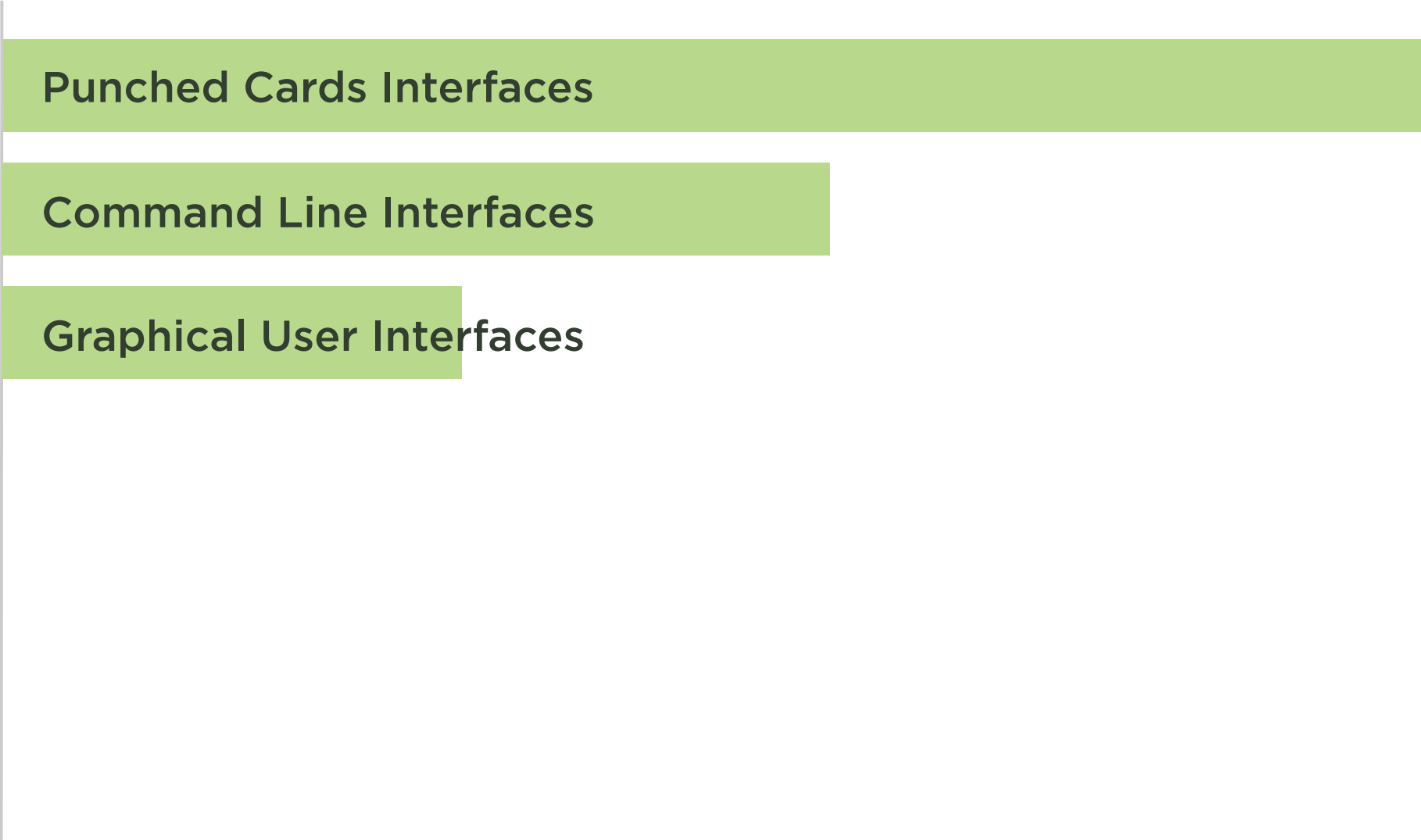




LAYERS OF ABSTRACTION

INPUT

OUTPUT



Punched Cards Interfaces

Command Line Interfaces

Graphical 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



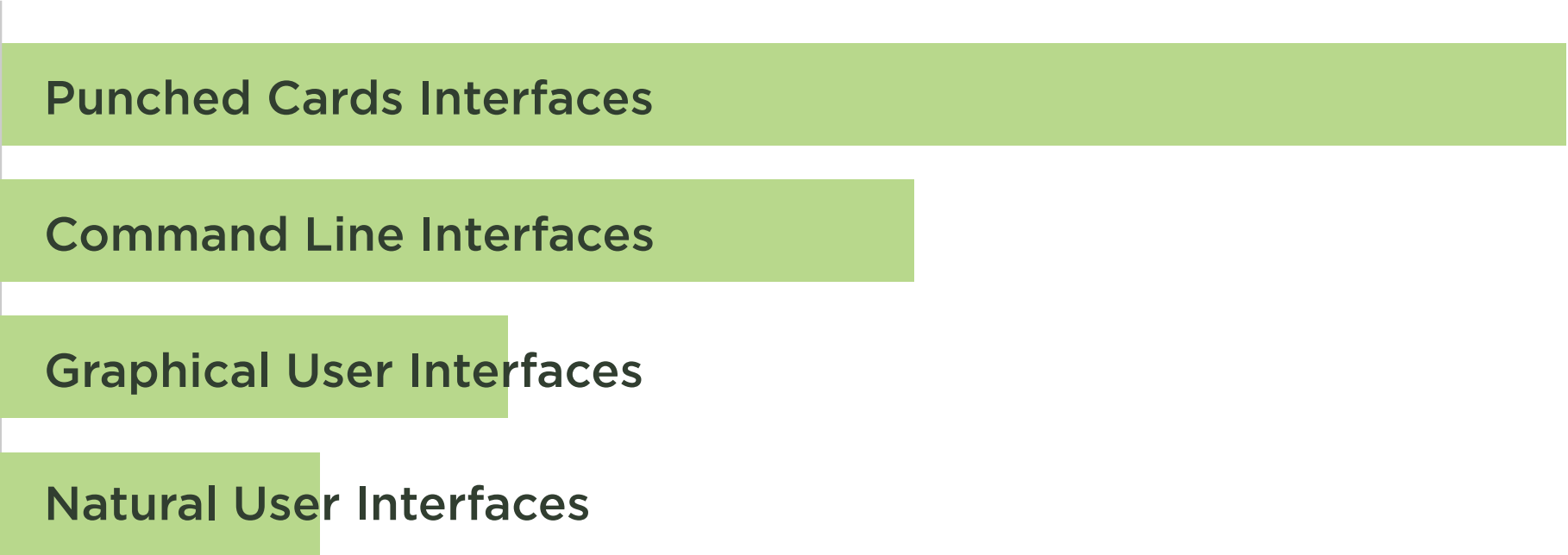




LAYERS OF ABSTRACTION

INPUT

OUTPUT



Punched Cards Interfaces

The diagram consists of four horizontal green bars of decreasing length, stacked vertically. Each bar contains text representing a layer of abstraction. The bars are enclosed within a frame defined by vertical lines on the left and right, and horizontal lines at the top and bottom.

Command Line Interfaces

Graphical User Interfaces

Natural User Interfaces



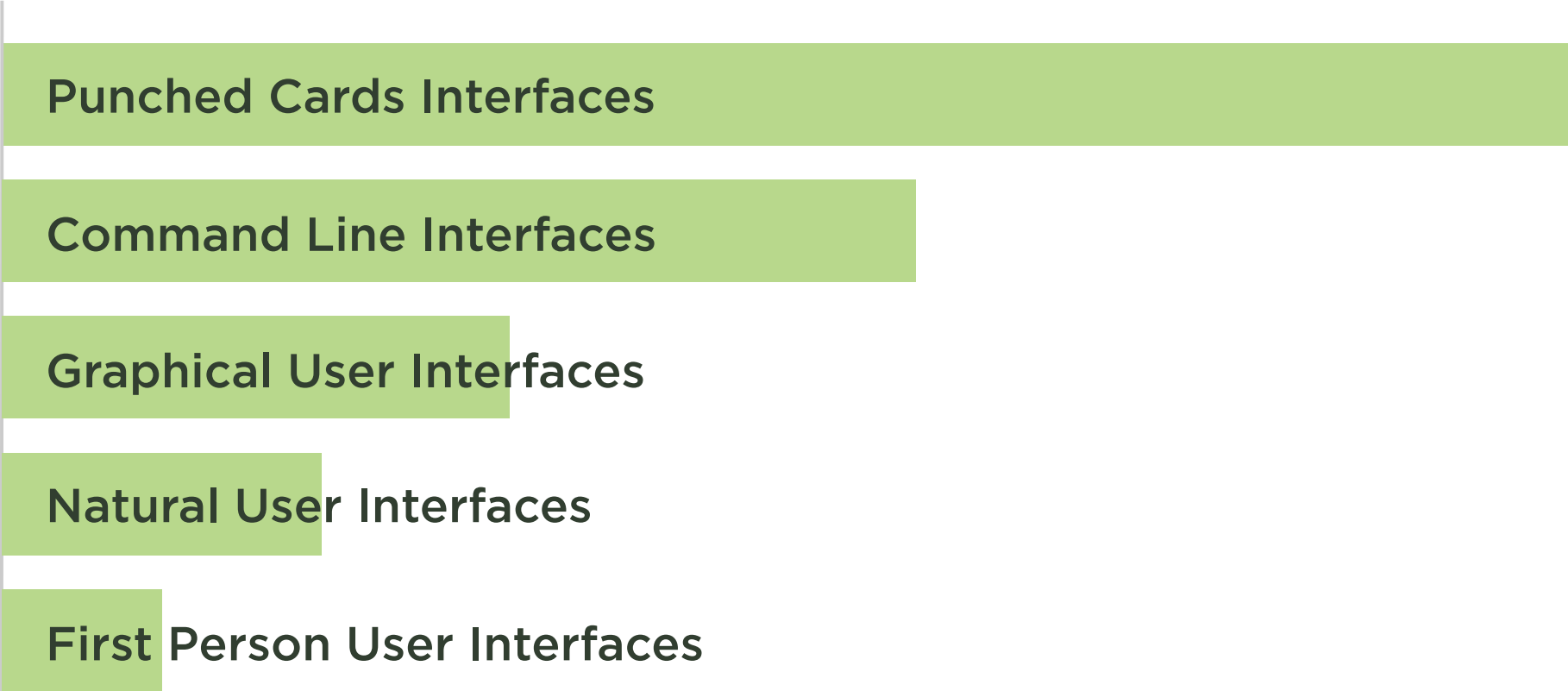
FIRST PERSON USER INTERFACES



LAYERS OF ABSTRACTION

INPUT

OUTPUT



Punched Cards Interfaces

The diagram consists of five horizontal green bars of decreasing width, stacked vertically. Each bar contains text representing a layer of abstraction. The bars are bounded by vertical lines on the left and right, and horizontal lines at the top and bottom. The text is in a bold, dark green font.

Command Line Interfaces

Graphical User Interfaces

Natural User Interfaces

First Person User Interfaces

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



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

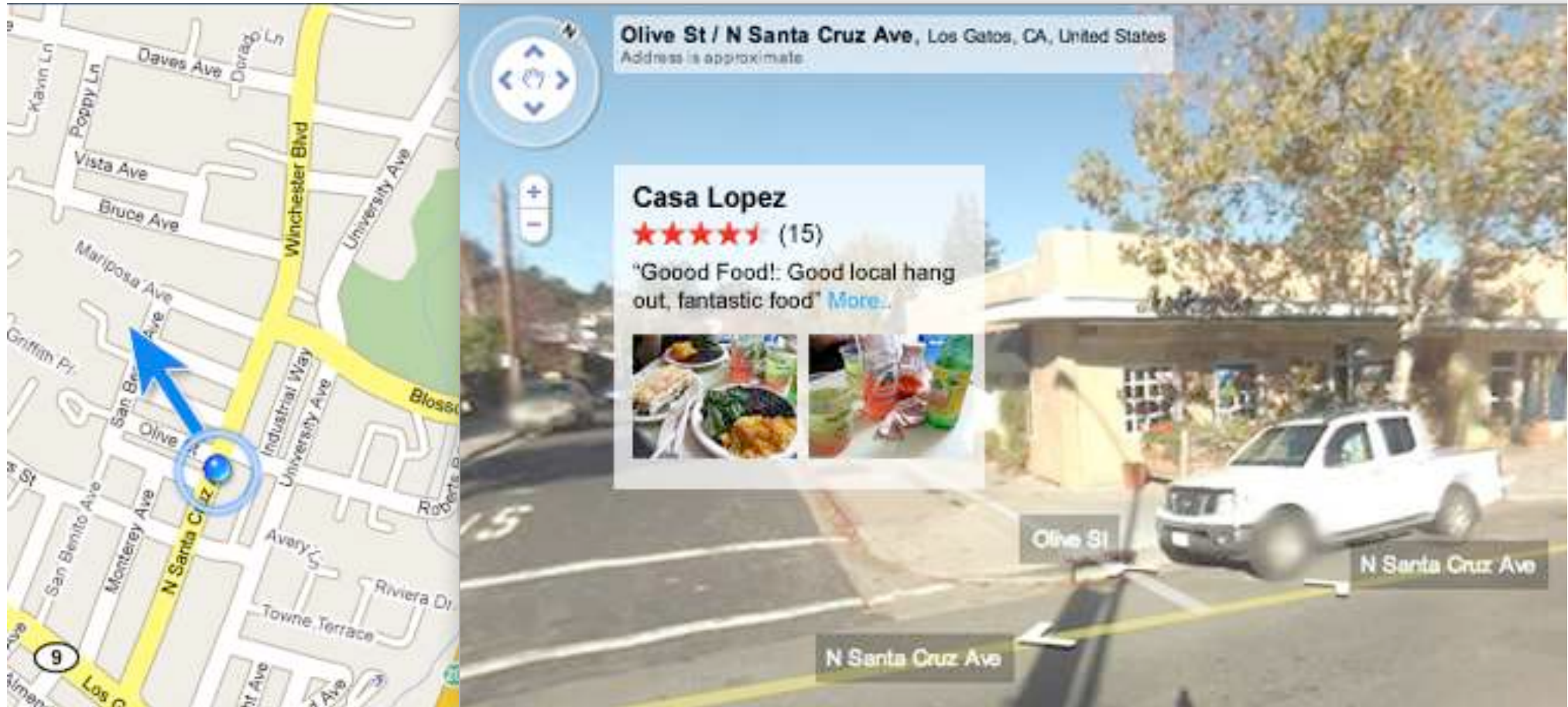
Perfect Studio
1040 N Rengstorff Ave # E

Location Systems

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

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

Location & Orientation Detection



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



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

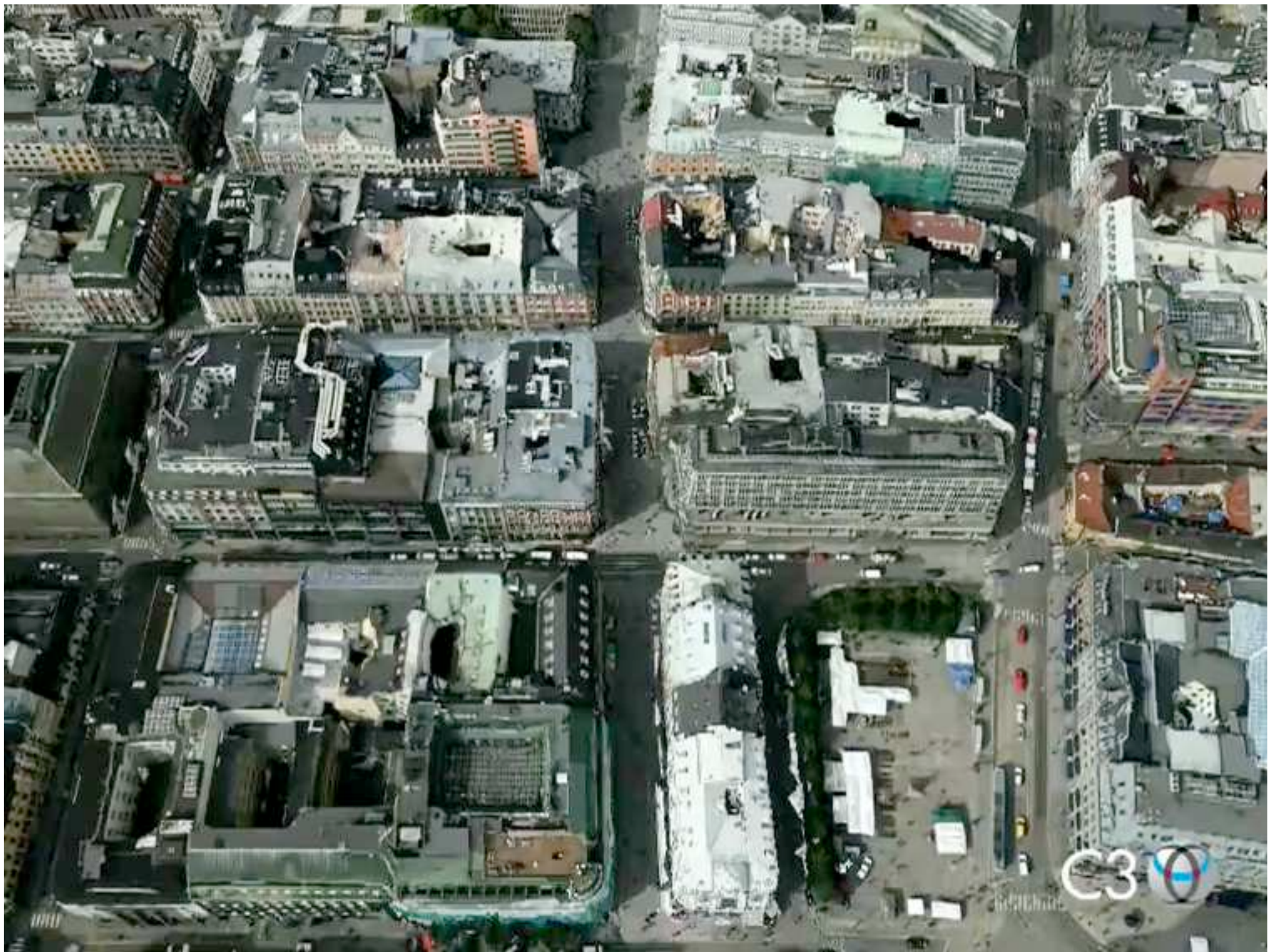
1. Navigate the space around you
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TomTom Navigation System









FIRST PERSON USER INTERFACES

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Tube map



Key to lines 1 Check before you travel

Line	Notes
Northern Line	Clayton, Garsington, Basing Valley
Bakerloo Line	Clayton, Garsington, Basing Valley
Circle Line	Clayton, Garsington, Basing Valley
District Line	Clayton, Garsington, Basing Valley
Great Northern Line	Clayton, Garsington, Basing Valley
Victoria Line	Clayton, Garsington, Basing Valley
Docklands Light Railway (DLR)	Clayton, Garsington, Basing Valley
London Overground	Clayton, Garsington, Basing Valley
Other Lines	Clayton, Garsington, Basing Valley







LOOKING UP



LOOKING DOWN



LOOKING AHEAD





When discovered by users
boosted their sustained traffic
by 40 to 50 percent.

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

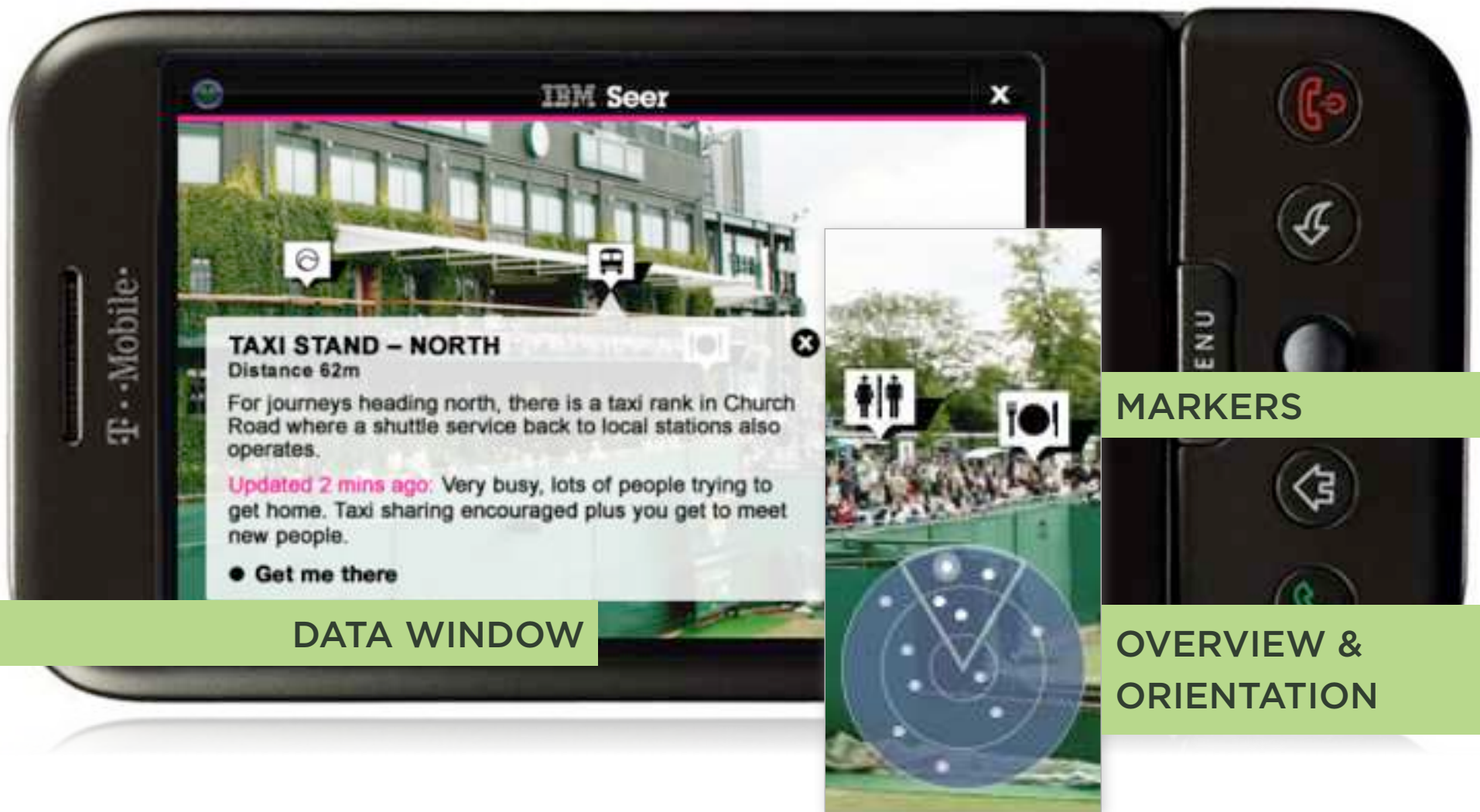
Yelp CEO,
Jeremy Stoppelman

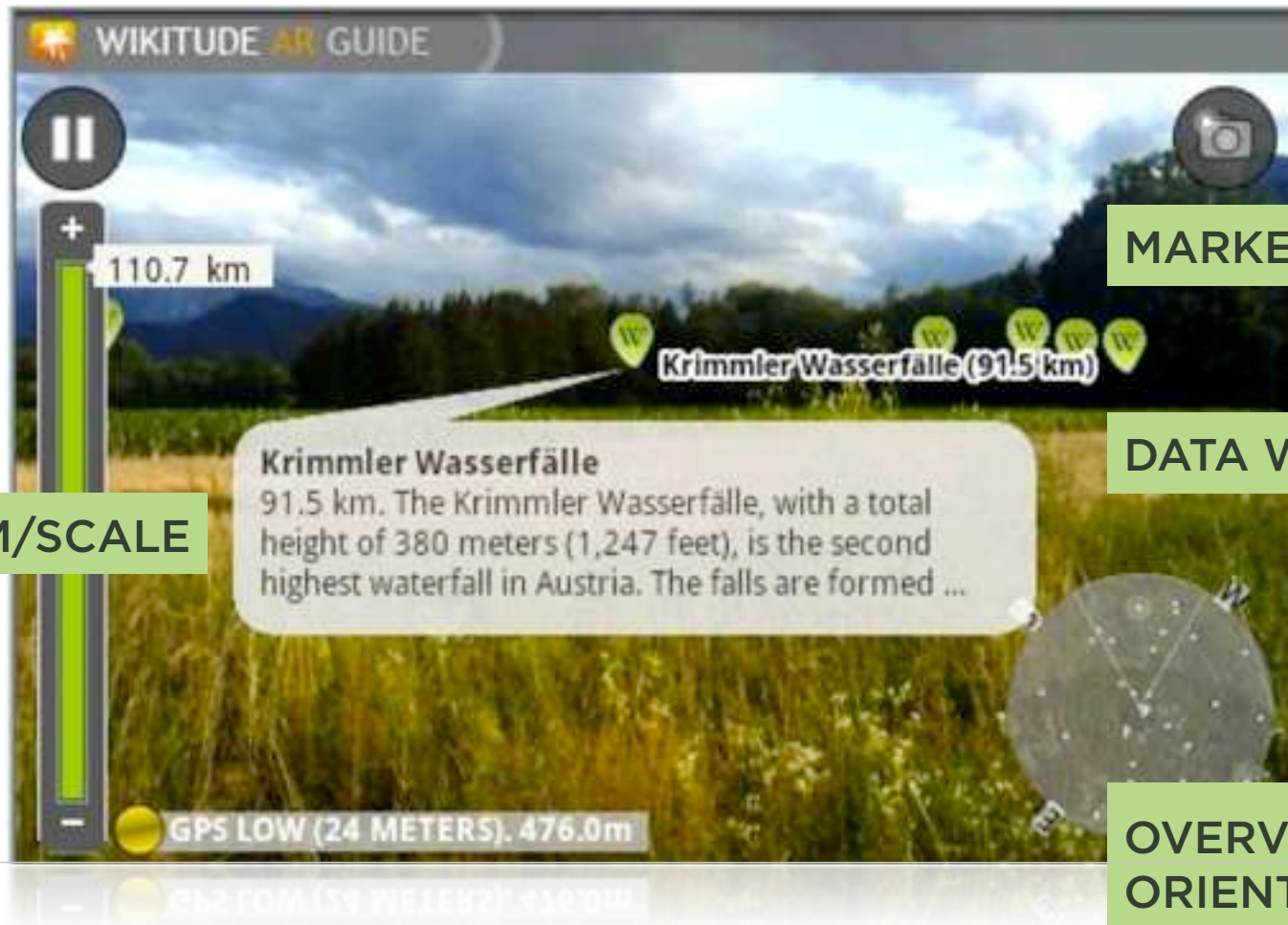


OVERVIEW &
ORIENTATION

MARKERS

DATA WINDOW





ZOOM/SCALE

MARKERS

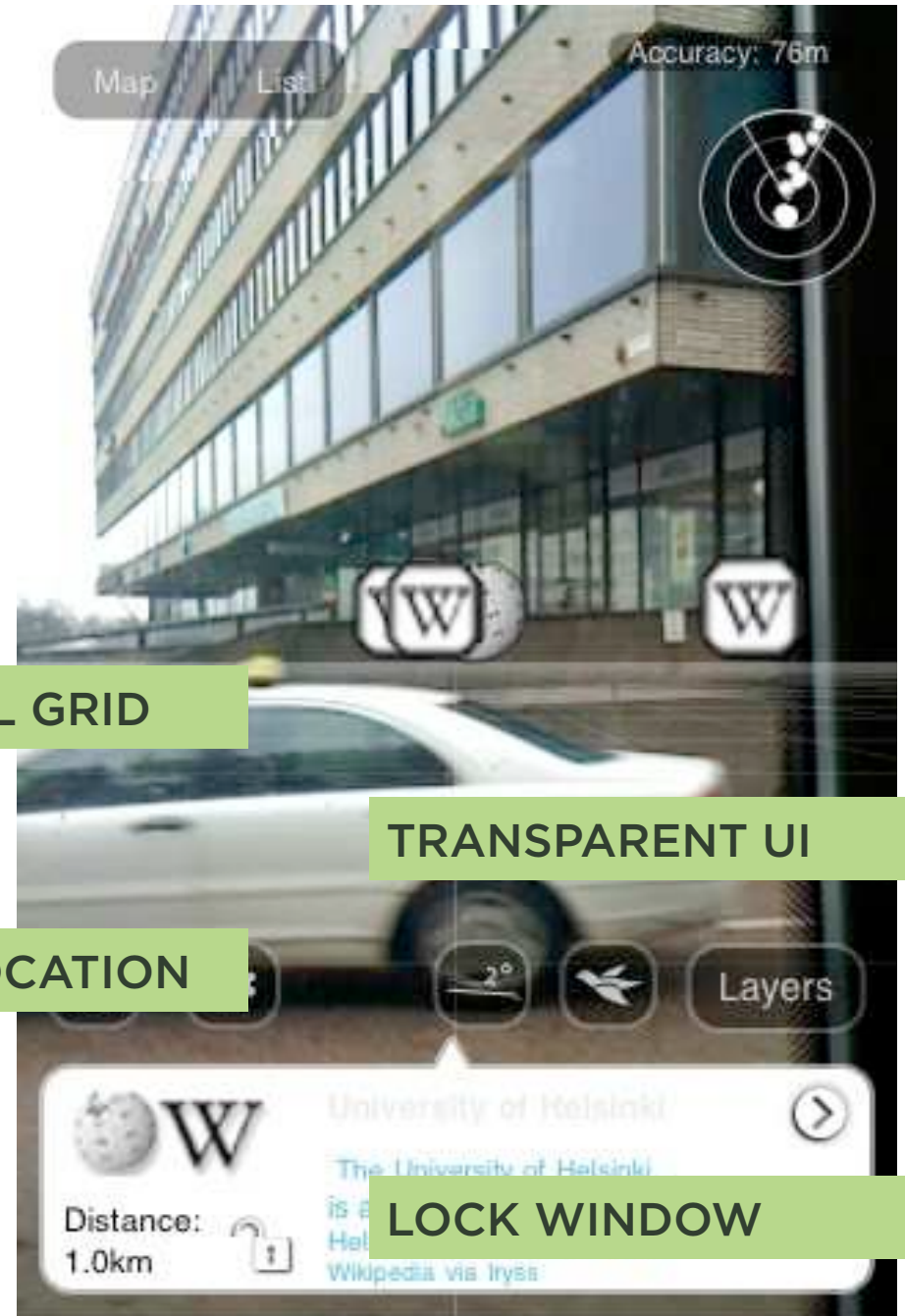
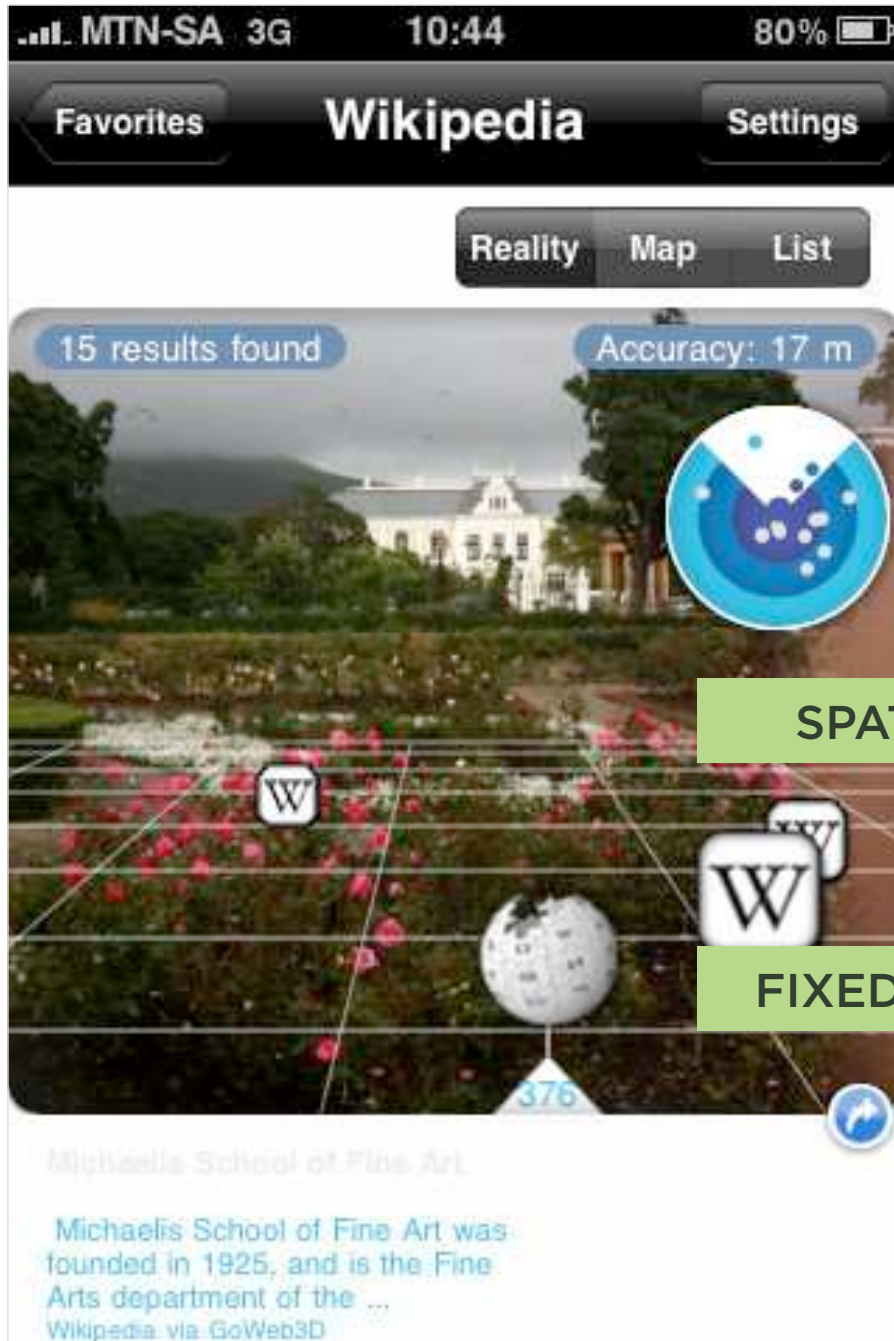
DATA WINDOW

OVERVIEW &
ORIENTATION



OVERVIEW &
ORIENTATION

MARKERS





OVERVIEW &
ORIENTATION

MARKERS

FIXED LOCATION

TRANSPARENT UI

More Approaches

LOCK POI

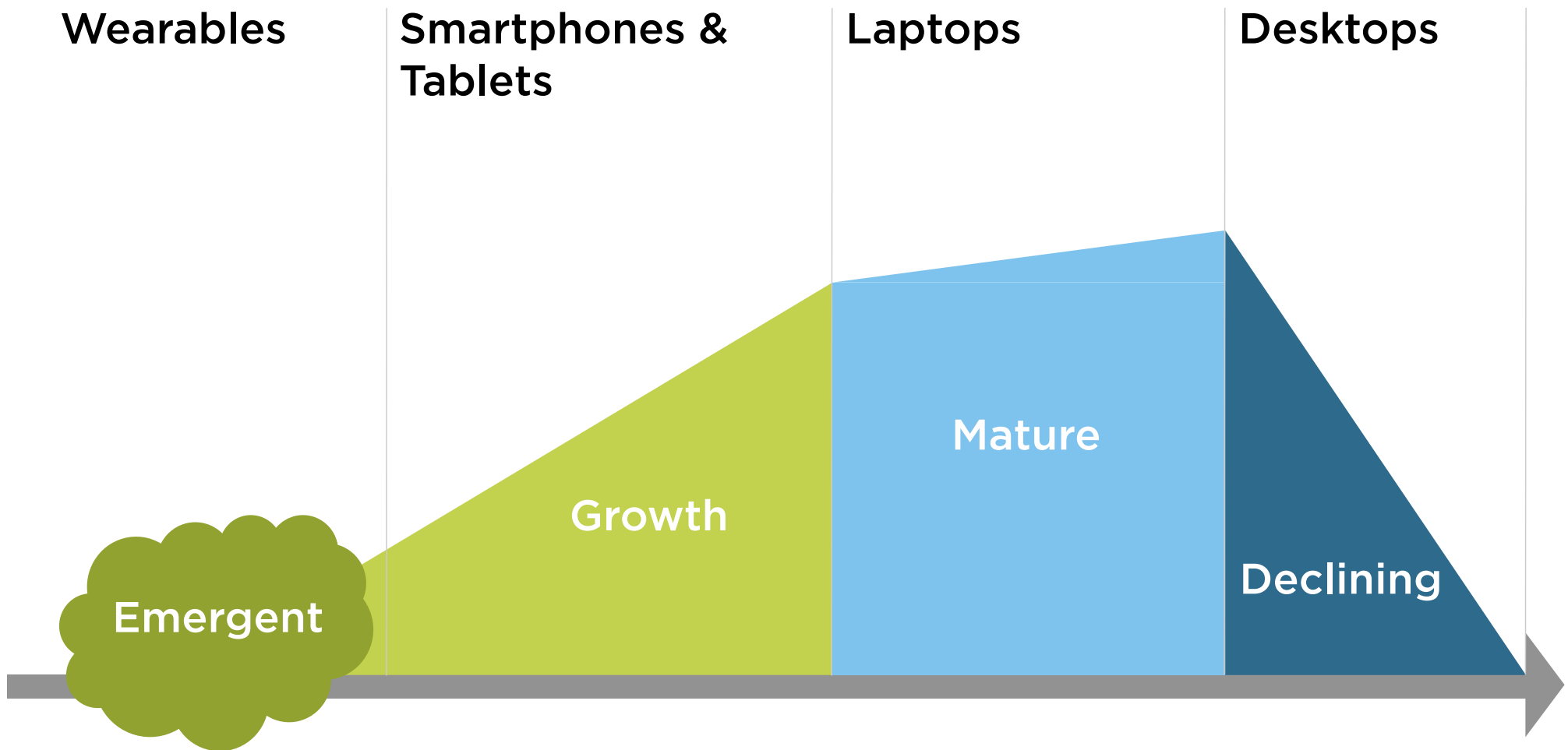
Onur Kebab & American Pizza
691 m
020 8551 9653

CALL

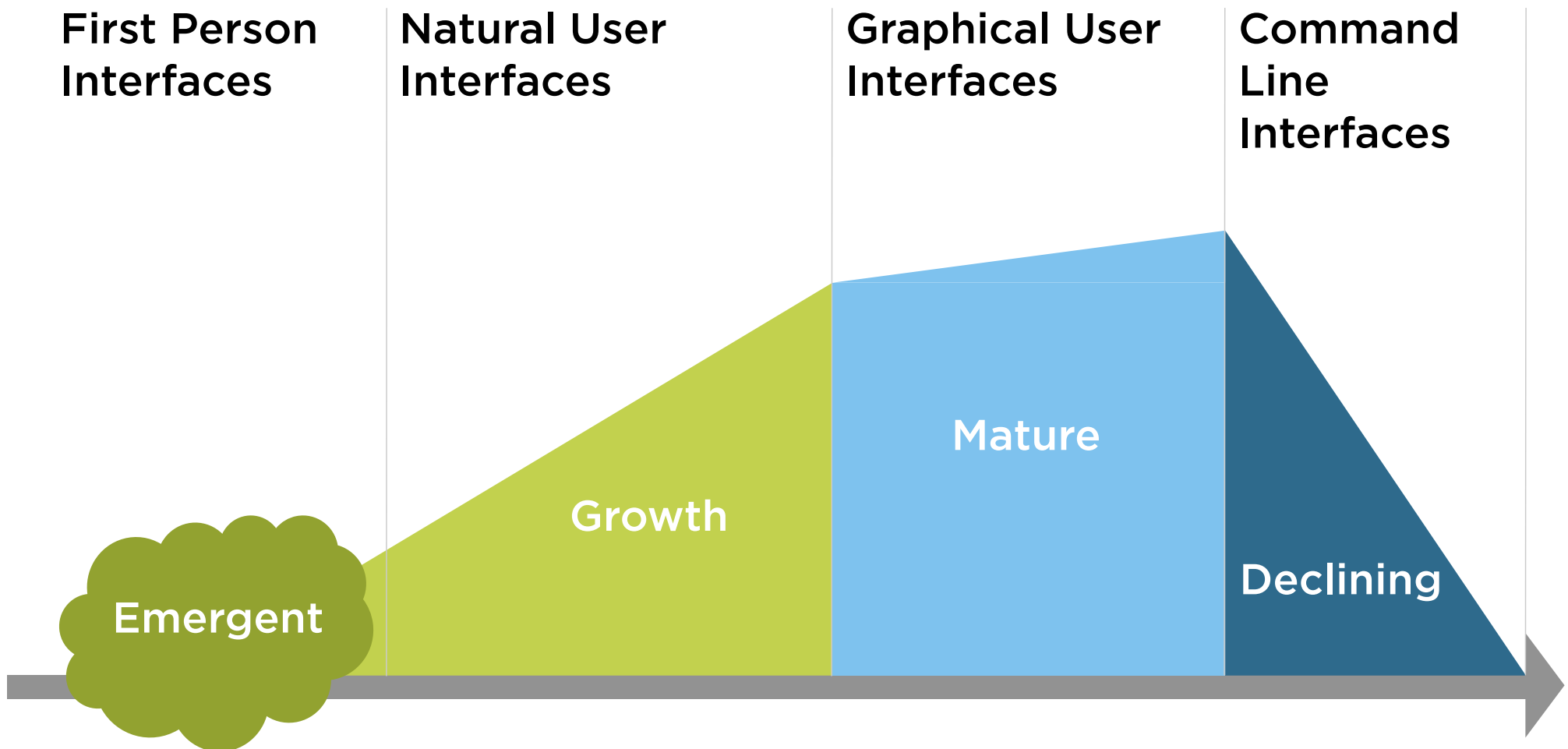
Source: Augmented Planet



Usage Curve



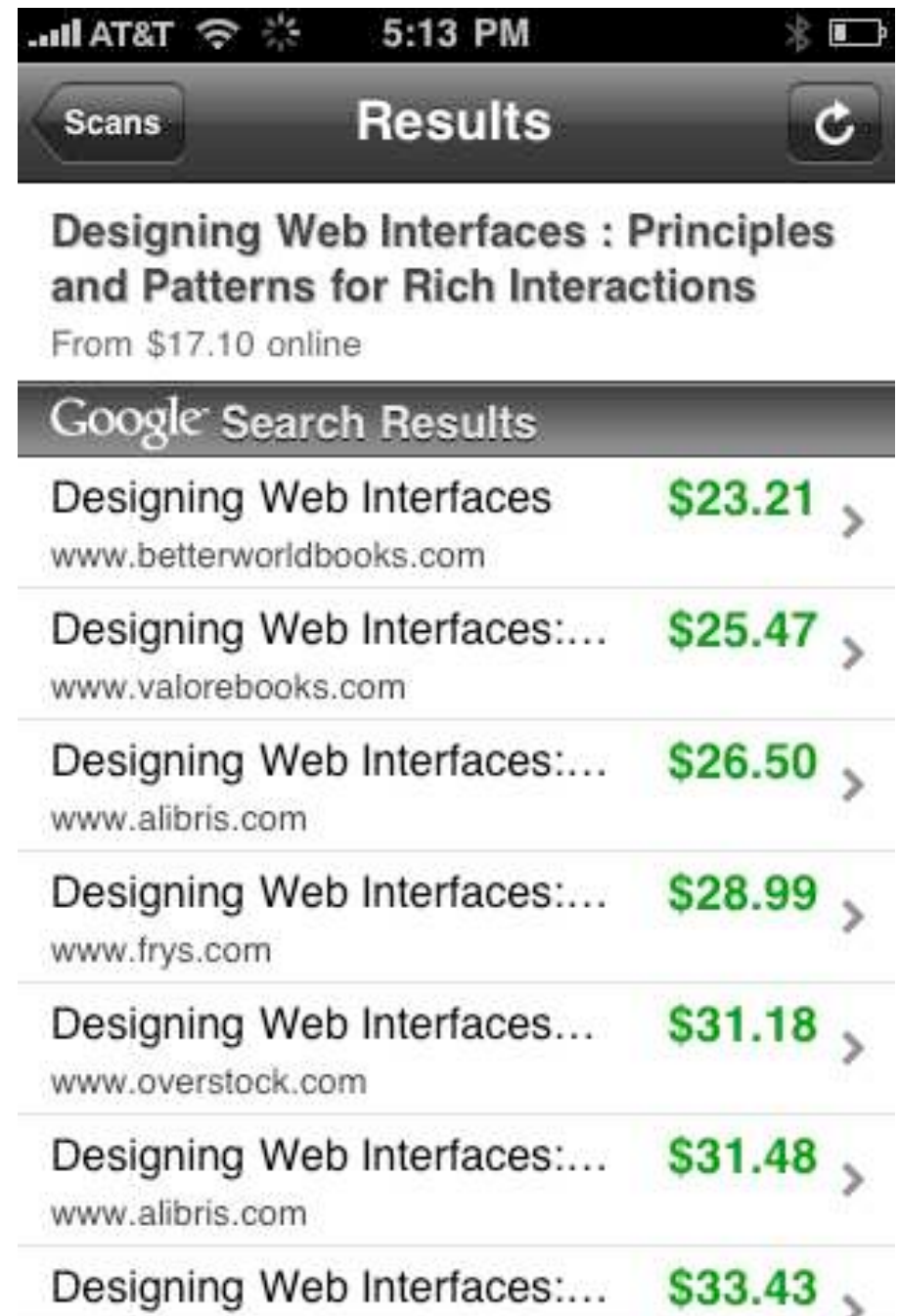
Usage Curve



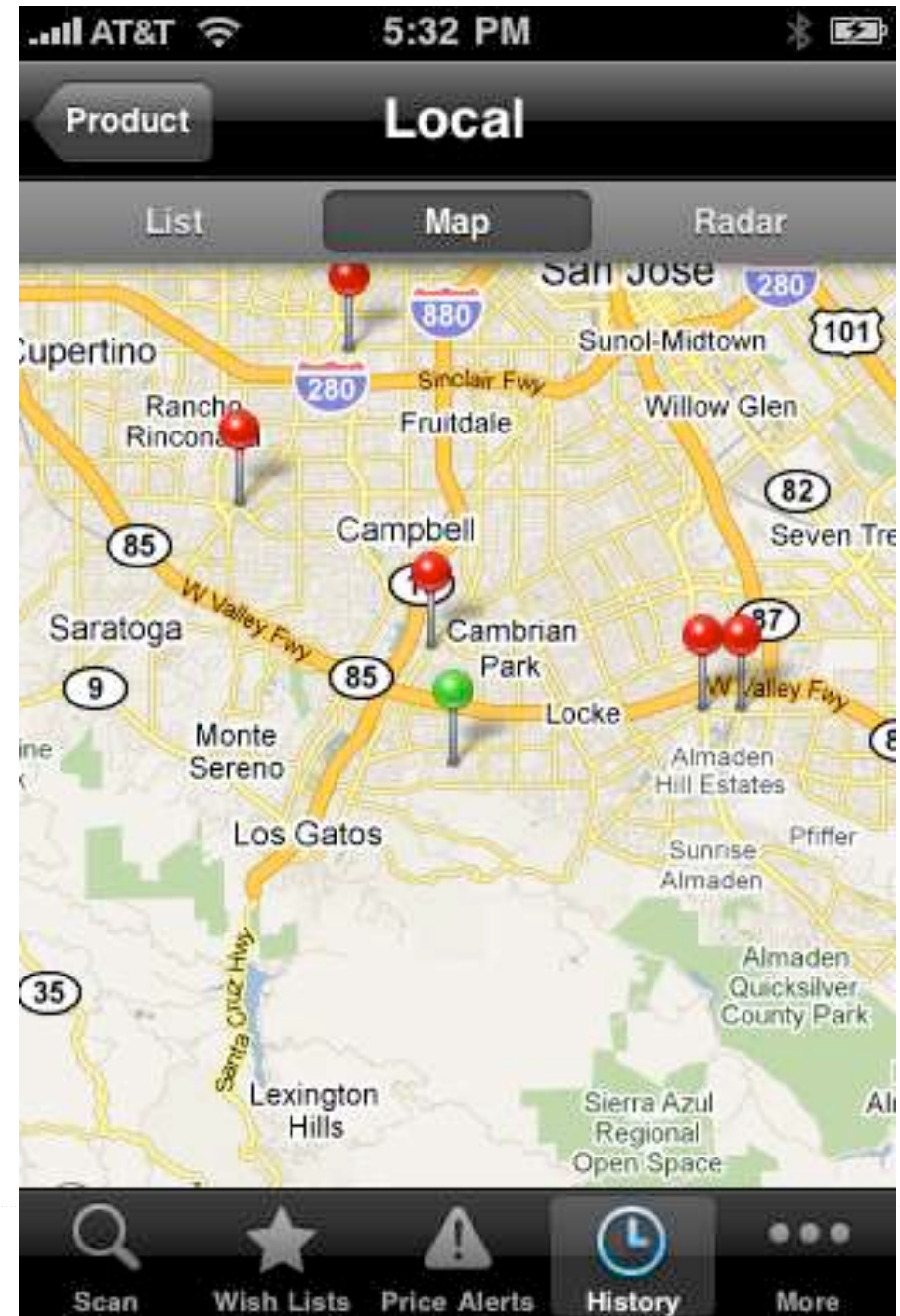
FIRST PERSON USER INTERFACES

1. Navigate the space around you
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Red Laser Barcode Scanner



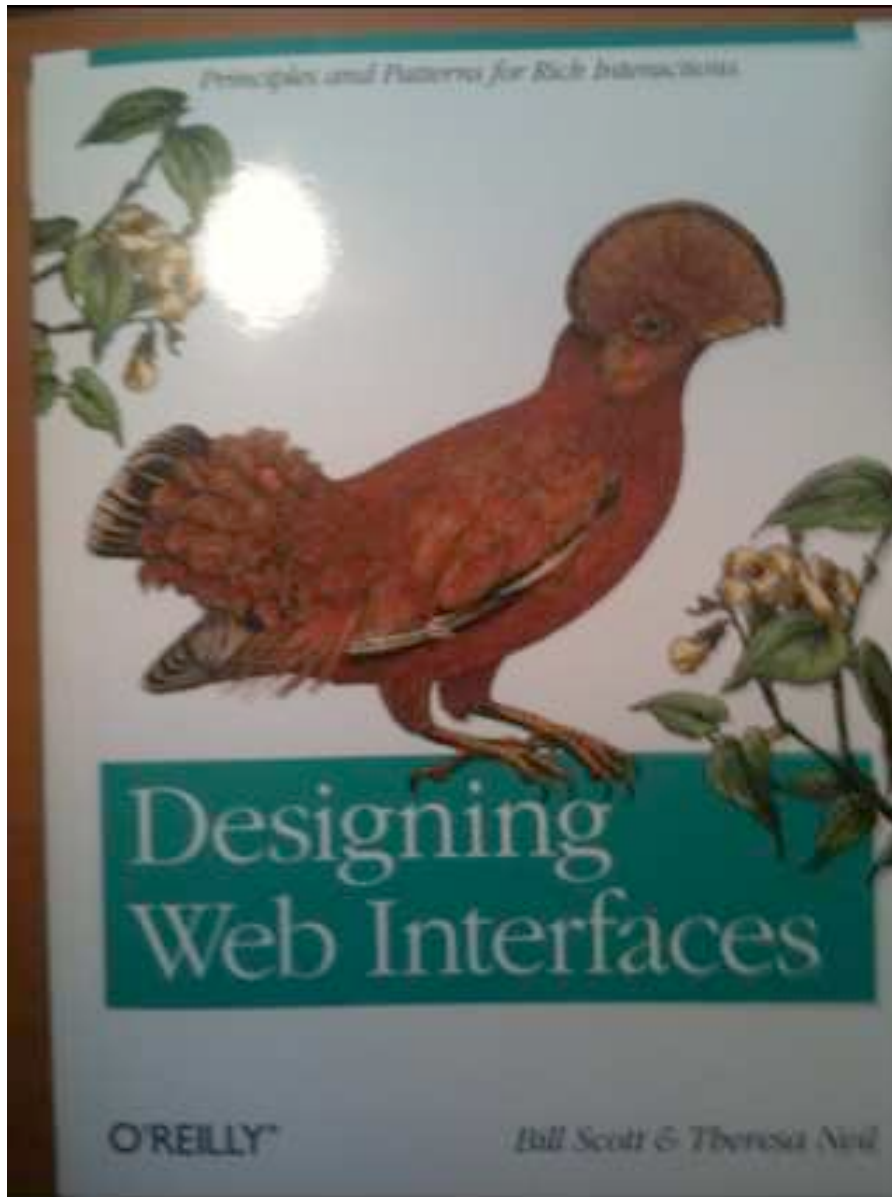
ShopSavy on iPhone



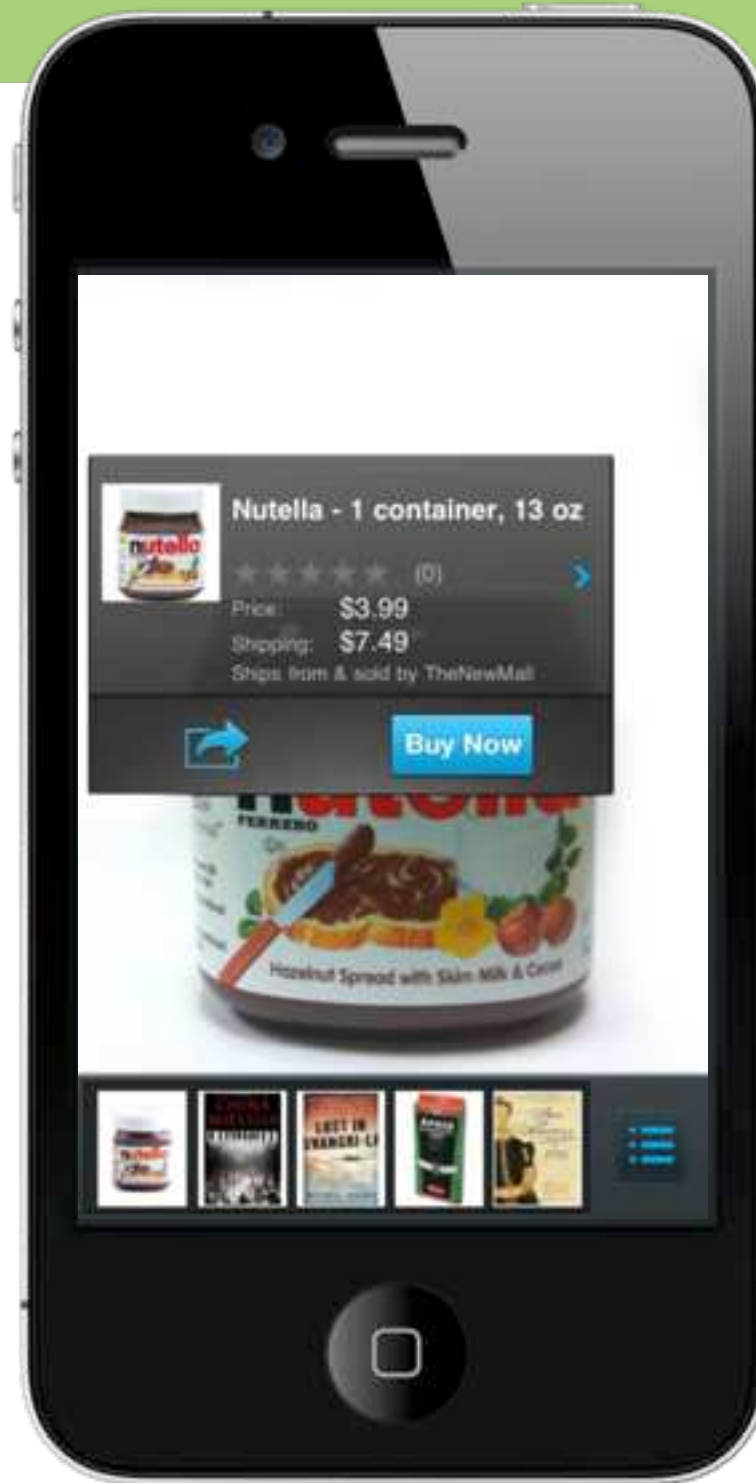
Shop Savvy on Android



SnapTell on iPhone



Amazon Flow on iPhone







AT&T 5:10 PM

Google Web Images Local more

☆
Kasa Indian Restaurant - Indian Food Delivery

4001 18th Street
San Francisco, CA 94114
www.kasa indian.com - [web site](#)
★★★★☆ [14 reviews](#)

KASA
INDIAN EATERY

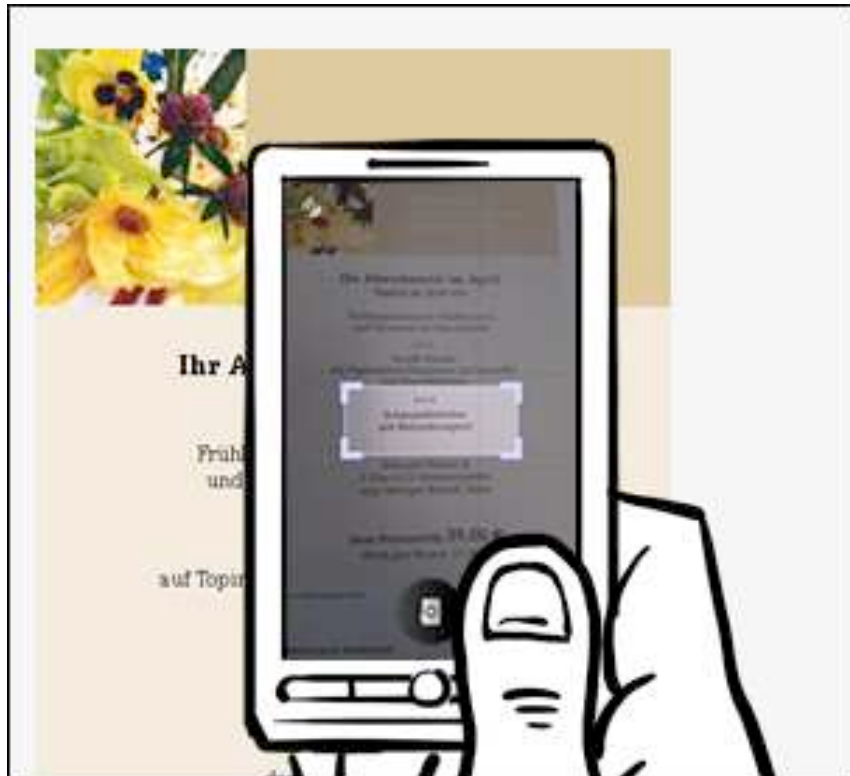
"Kasa was a nice take on Indian 'fast food'." ...
"San Francisco likes Indian food." ... "The portions were very generous and tasted really good." ...
"And besides, who needs ambiance with an idea this good?" ... "I'm a little obsessed with Kasa...it's that good!" ... "I am hooked!"
[insiderpages.com](#),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

(415) 621-6940 Map »

Details

Hours Of Operation: Monday: 11:00AM - 10:00PM, Tuesday: 11:00AM - 10:00PM, Wednesday: 11:00AM - 10:00PM, Thursday: 11:00AM - 10:00PM, Friday: 11:00AM - 10:00PM, Saturday: 11:00AM - 10:00PM, Sunday: 11:00AM - 10:00PM

Navigation icons: back, forward, home, search, and a tab indicator showing 6 tabs.





Word Lens -- iPhone App

QuestVisual.com

Images as Input



Images as Input





AWKWARD INTERACTIONS

1. Small screens
2. Handheld positioning
3. Scanning for information

SMALL SCREEN, BIG WORLD



Flickr photo by Nokia Point & Find



SCAN TO CHECKOUT

Nokia Point & Find

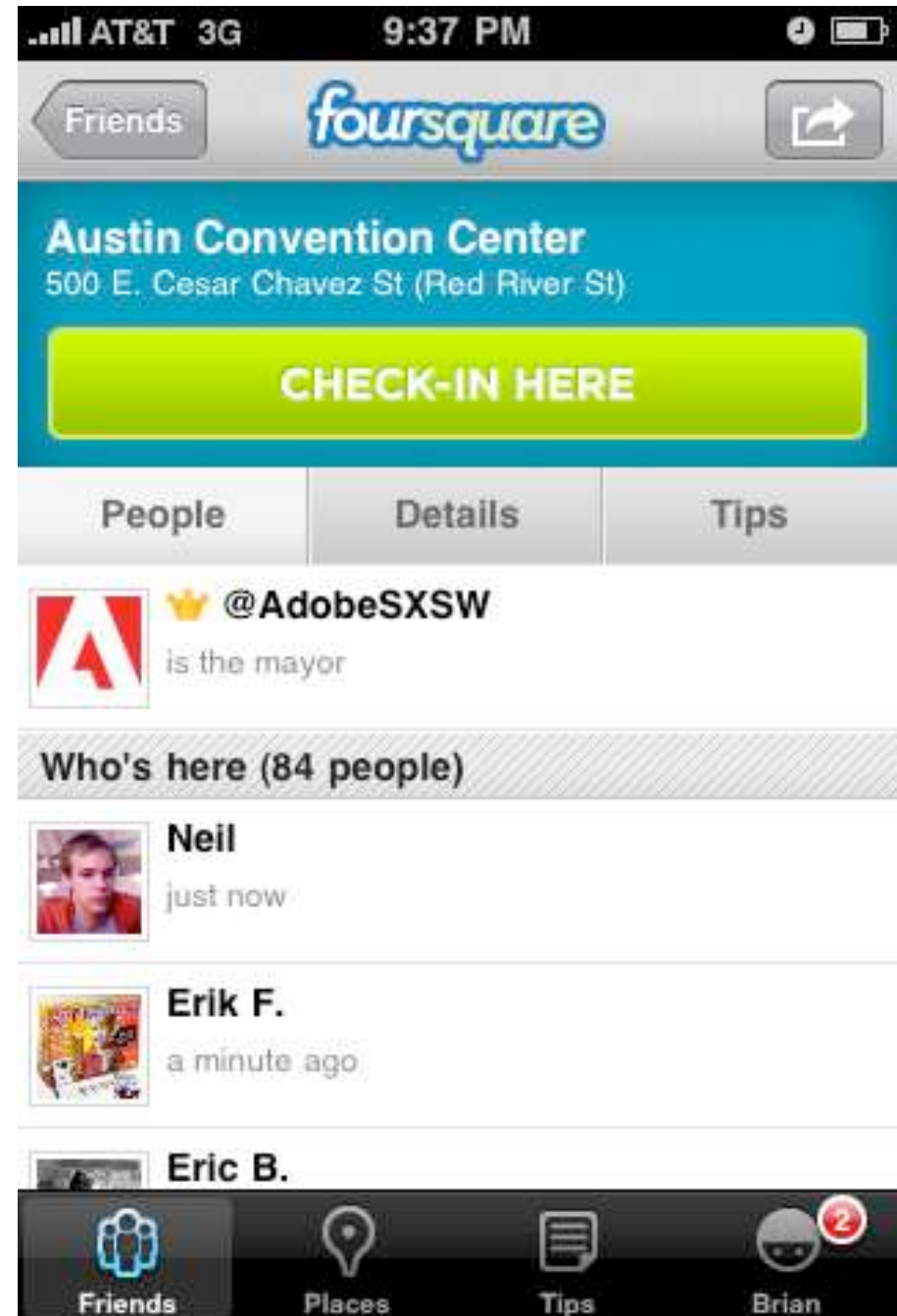
**Nerd.
Found.**



iPhone with
an RFID/NFC
reader



Location Check-in

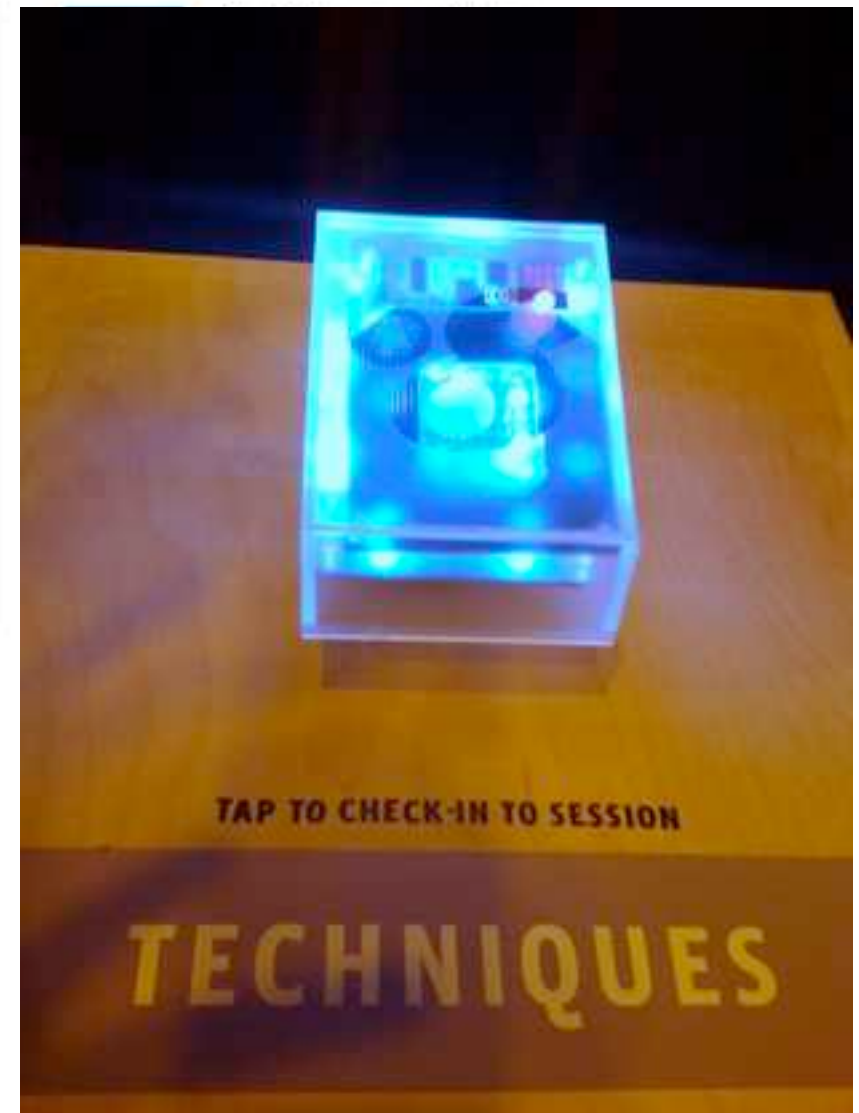


Link your token with your Facebook account



Enter number on back of Token:

[Link Token](#)





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Looking Ahead

Solar cell module

Electrical interconnects

Biosensor module

Sensor readout and control circuit



Energy-storage module

Semitransparent display and microlens array

Telecommunication and power reception antenna

Display control circuit

Radio and power conversion circuit

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