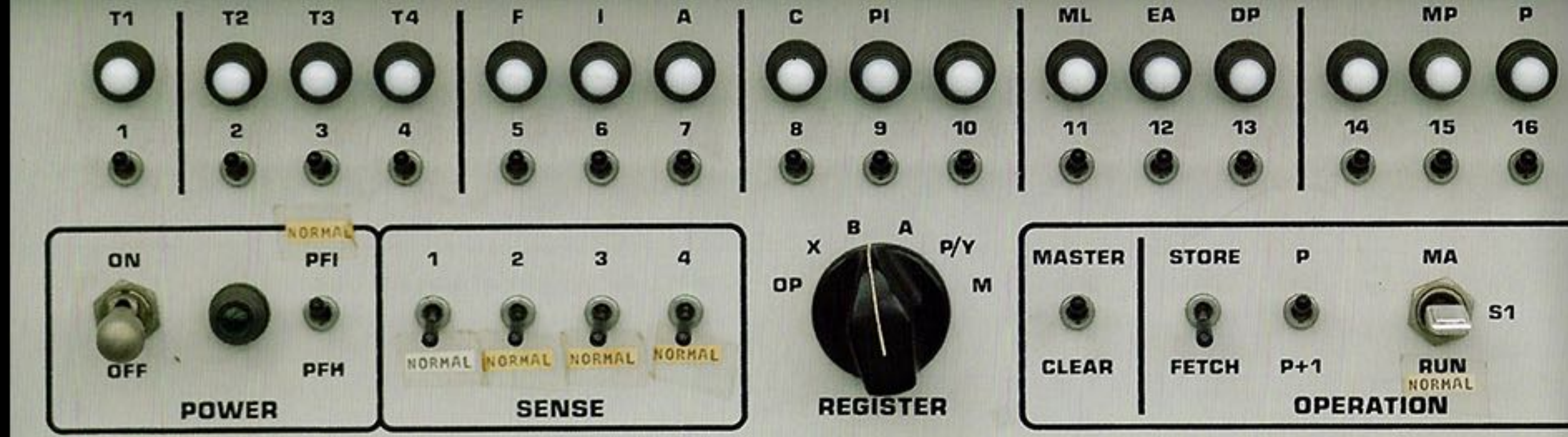


CS160

USER INTERFACE DESIGN

FALL 2018



AFFORDANCE, CONTEXTUAL INQUIRY, AND CONCEPTUAL MODELS

12 SEP 2018

ERIC PAULOS

www.paulos.net

UNIVERSITY OF CALIFORNIA



Berkeley

ANNOUNCEMENTS

Drop Deadline **TODAY**

Homework Extensions

DSP Requests

FEED 01 — Due Monday

PROG 02

PROG 02A — Due 19 SEP

PROG 02B — Due 5 OCT

Required Class — 24 SEP

GROUPS ASSIGNED NEXT WEEK

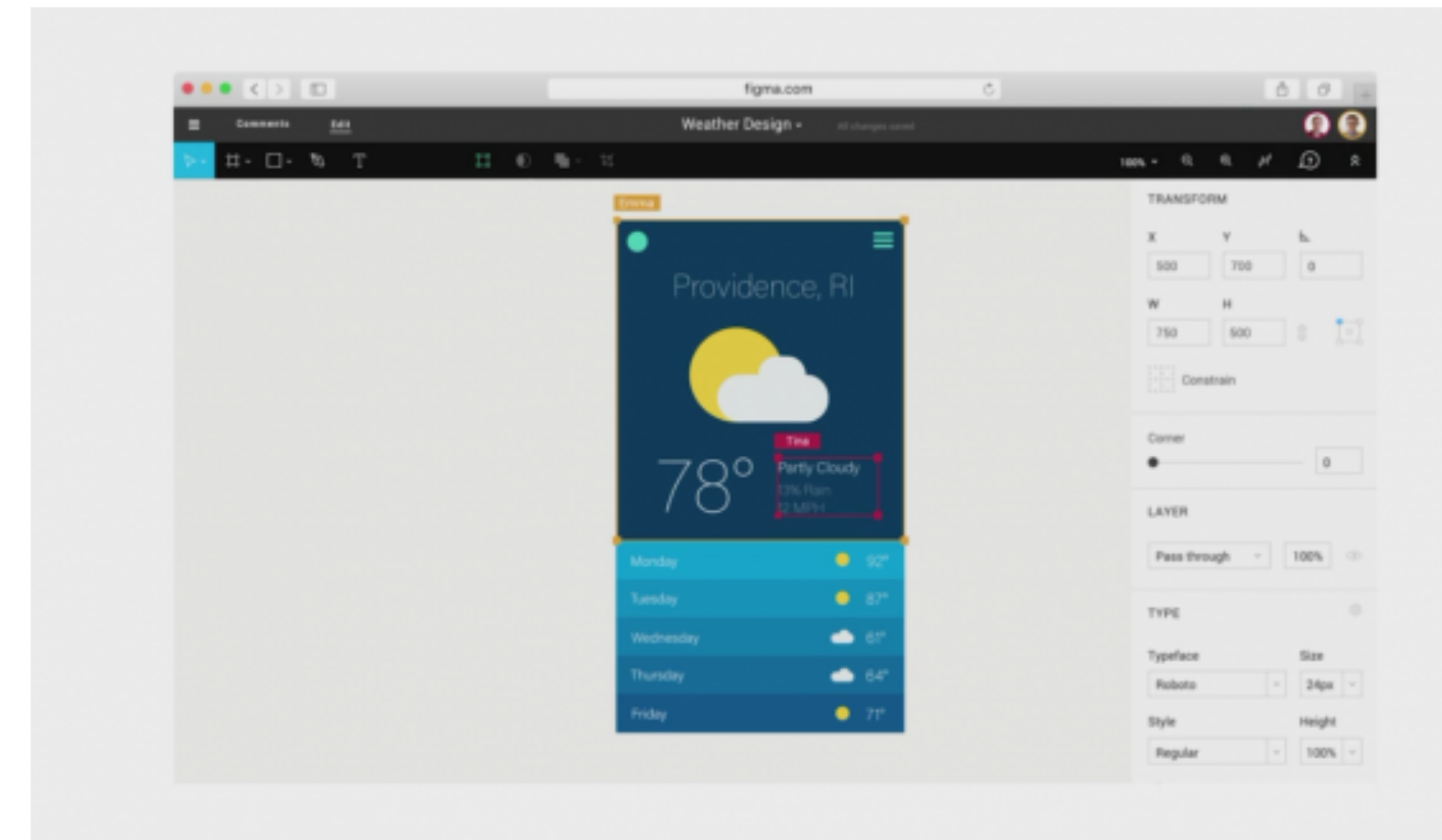
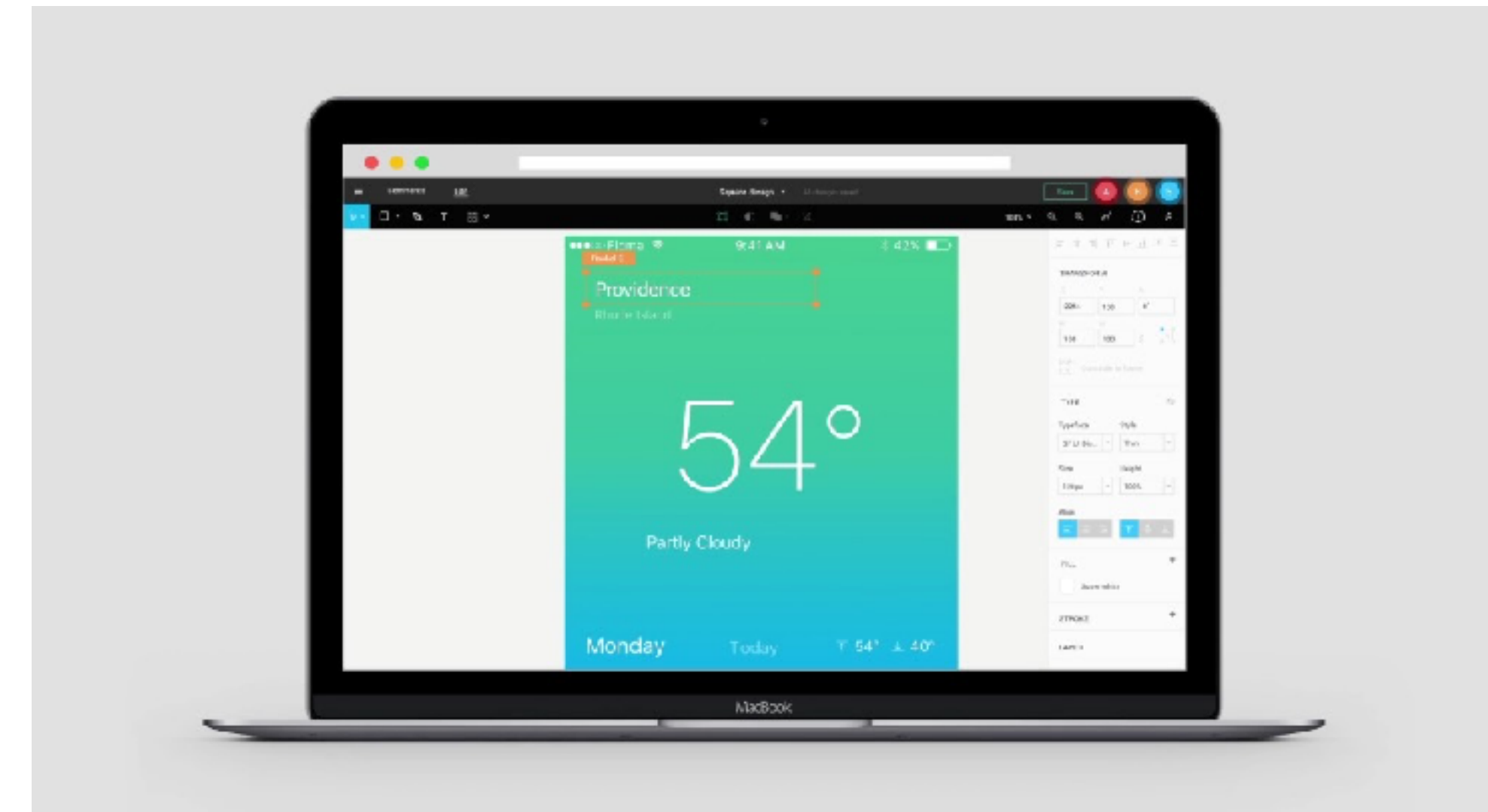
Special Office Hour TODAY 5–6pm in 210B Jacobs

FIGMA

Figma Aims To Be A GitHub For Designers

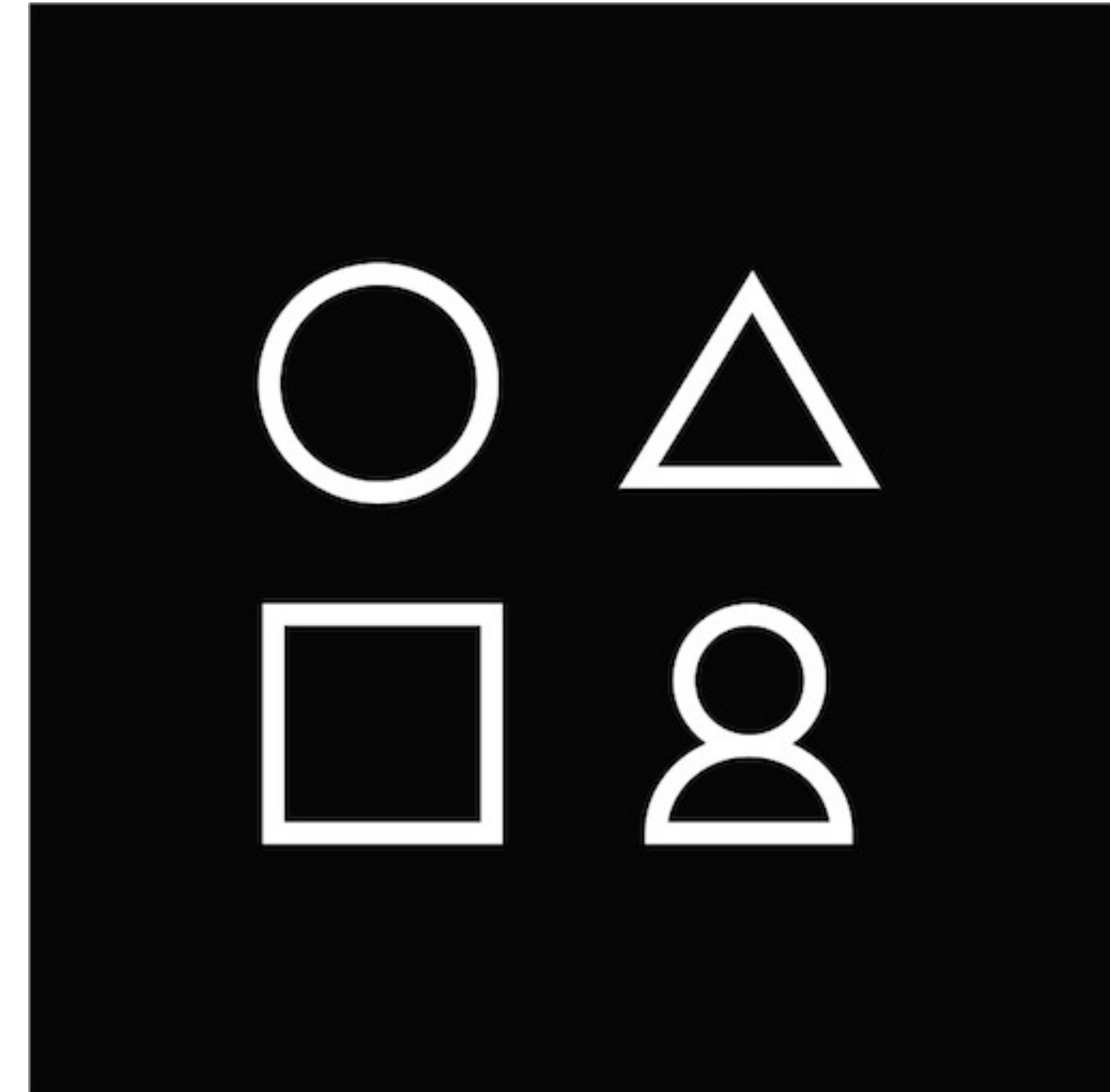
Figma is the first professional-grade, online tool created specifically for interface design. Built entirely in the browser, Figma enables the entire team's design process to happen in one online tool

FIGMA IS AN ONLINE COLLABORATIVE TOOL FOR INTERFACE DESIGNERS

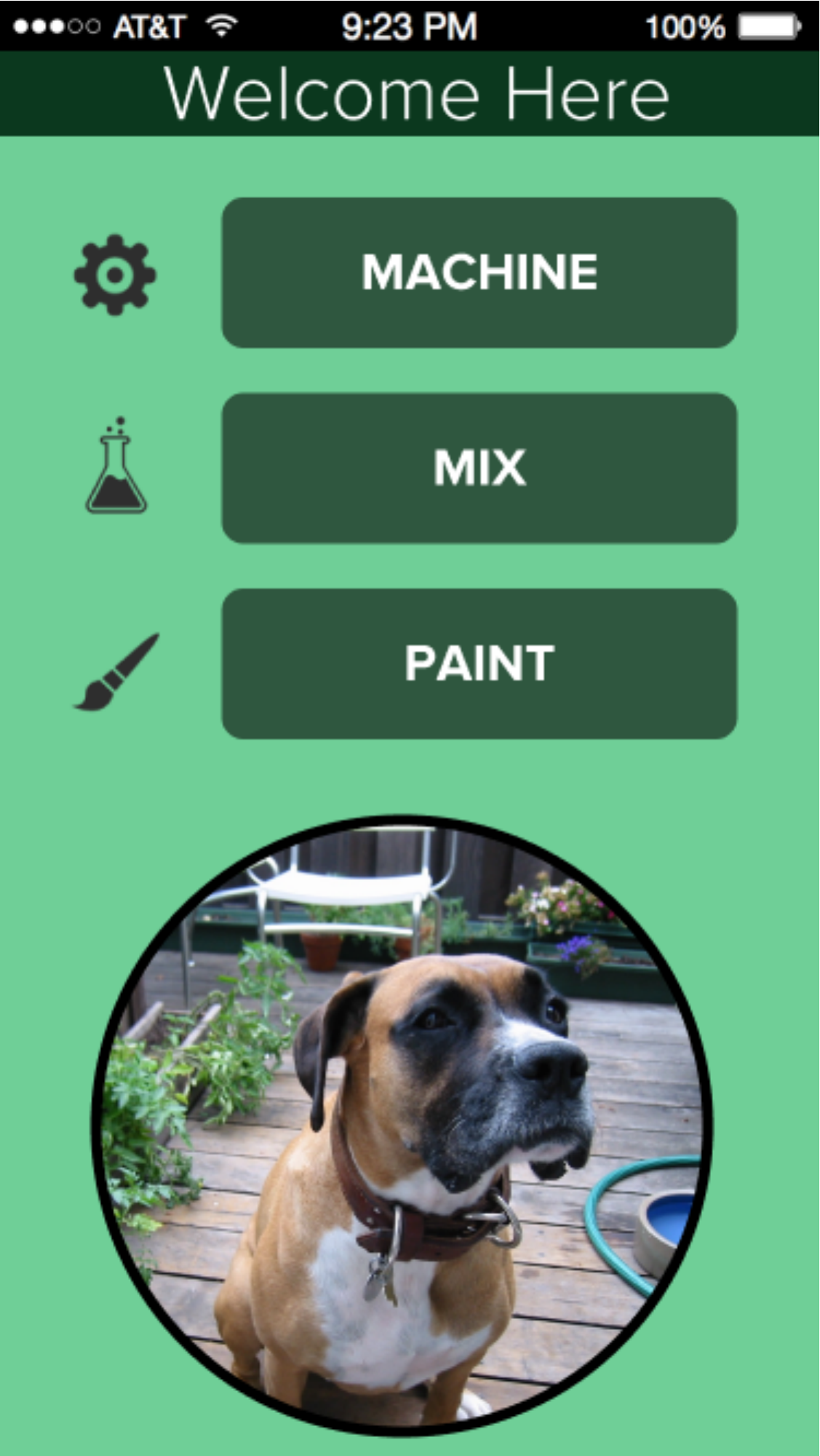


FIGMA

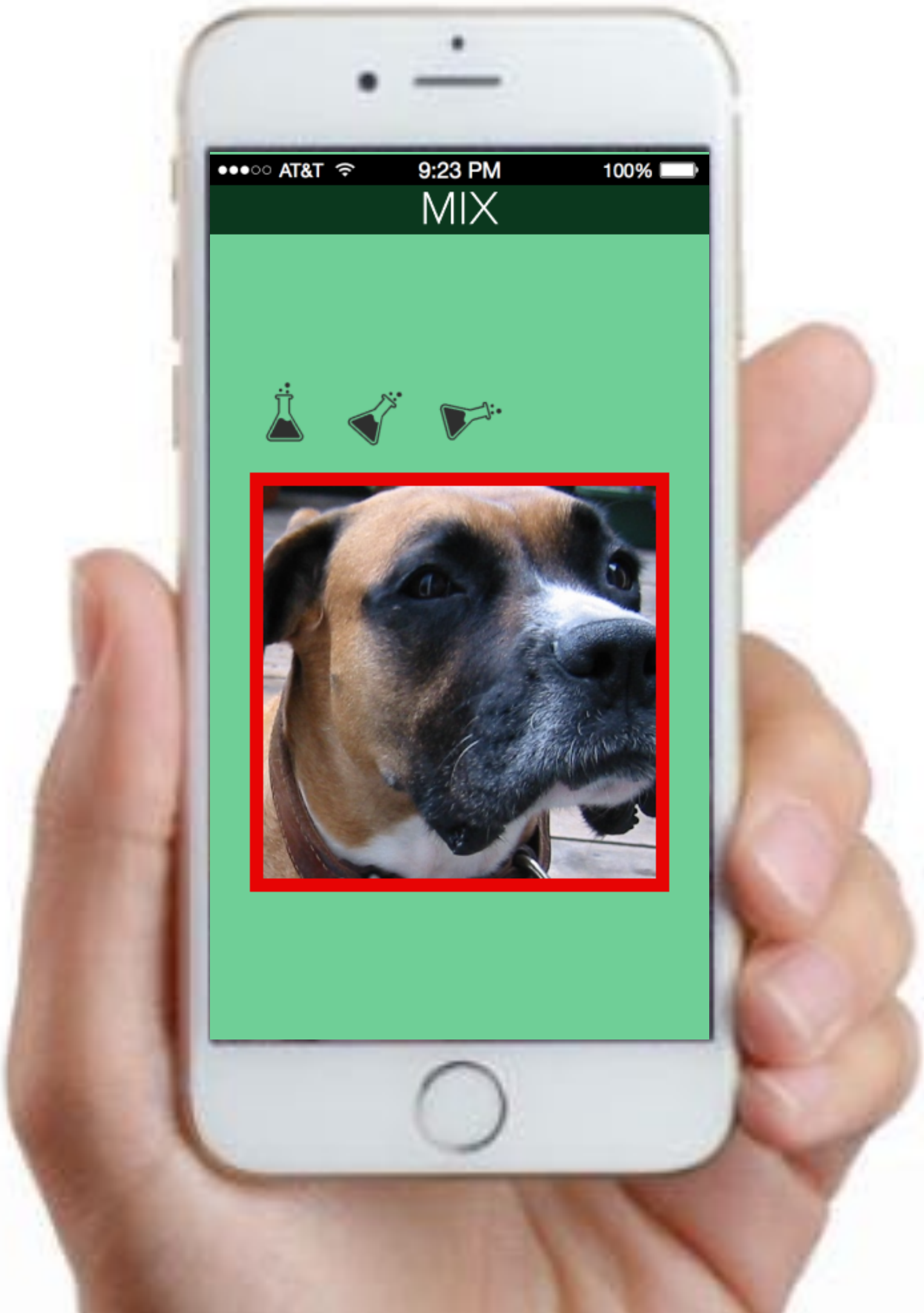
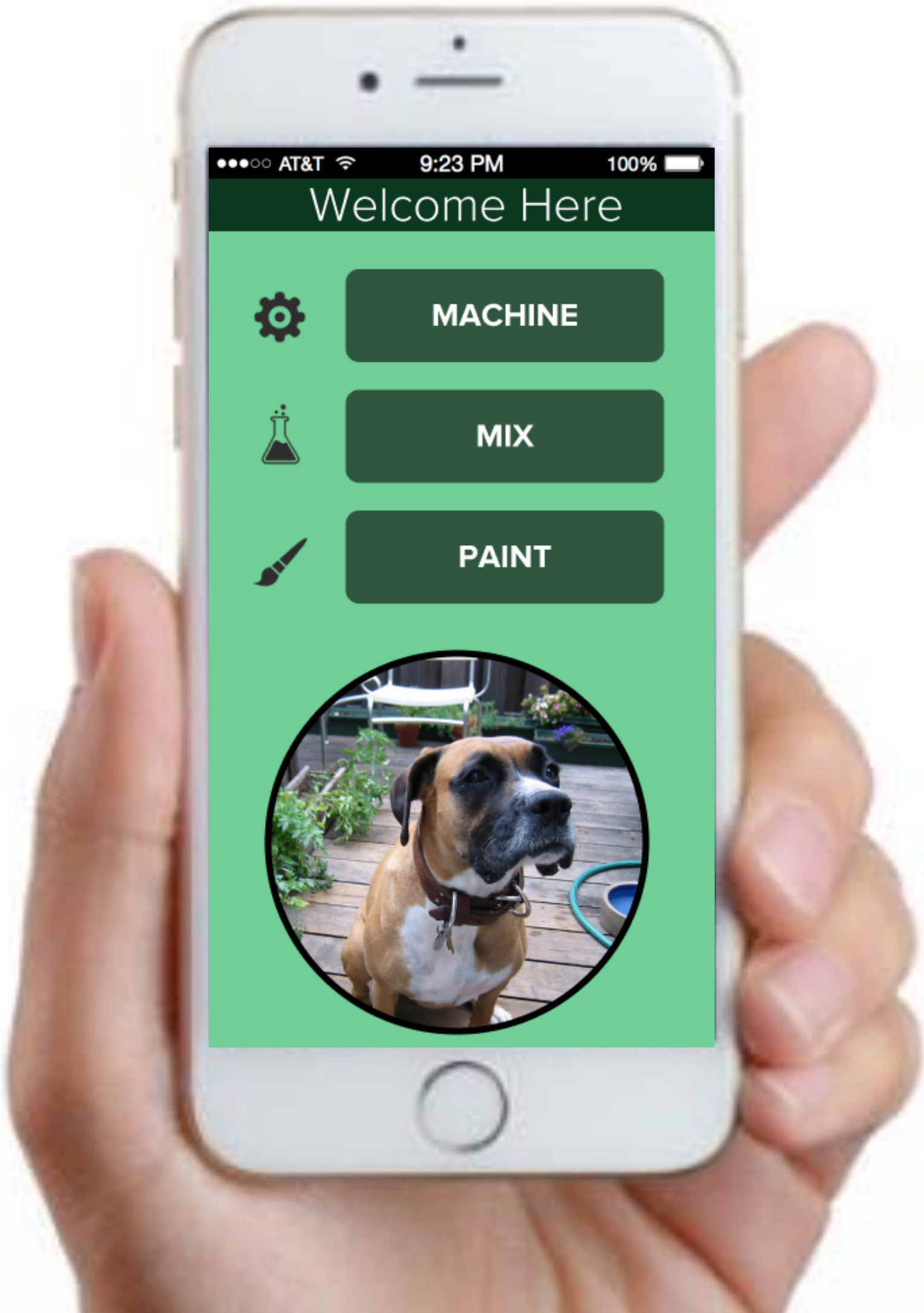
Figma is a collaborative interface design tool. The goal of Figma is to combine the power of legacy programs like Illustrator with the collaborative flexibility of web apps like Google Docs. You can do vector-based UI design, editing, commenting, sharing, and storing all in one place -- in the browser. When you connect Figma to Slack, you are able to create a shared team space and maintain a directory of team files that is constantly up-to-date, with version history for every file.



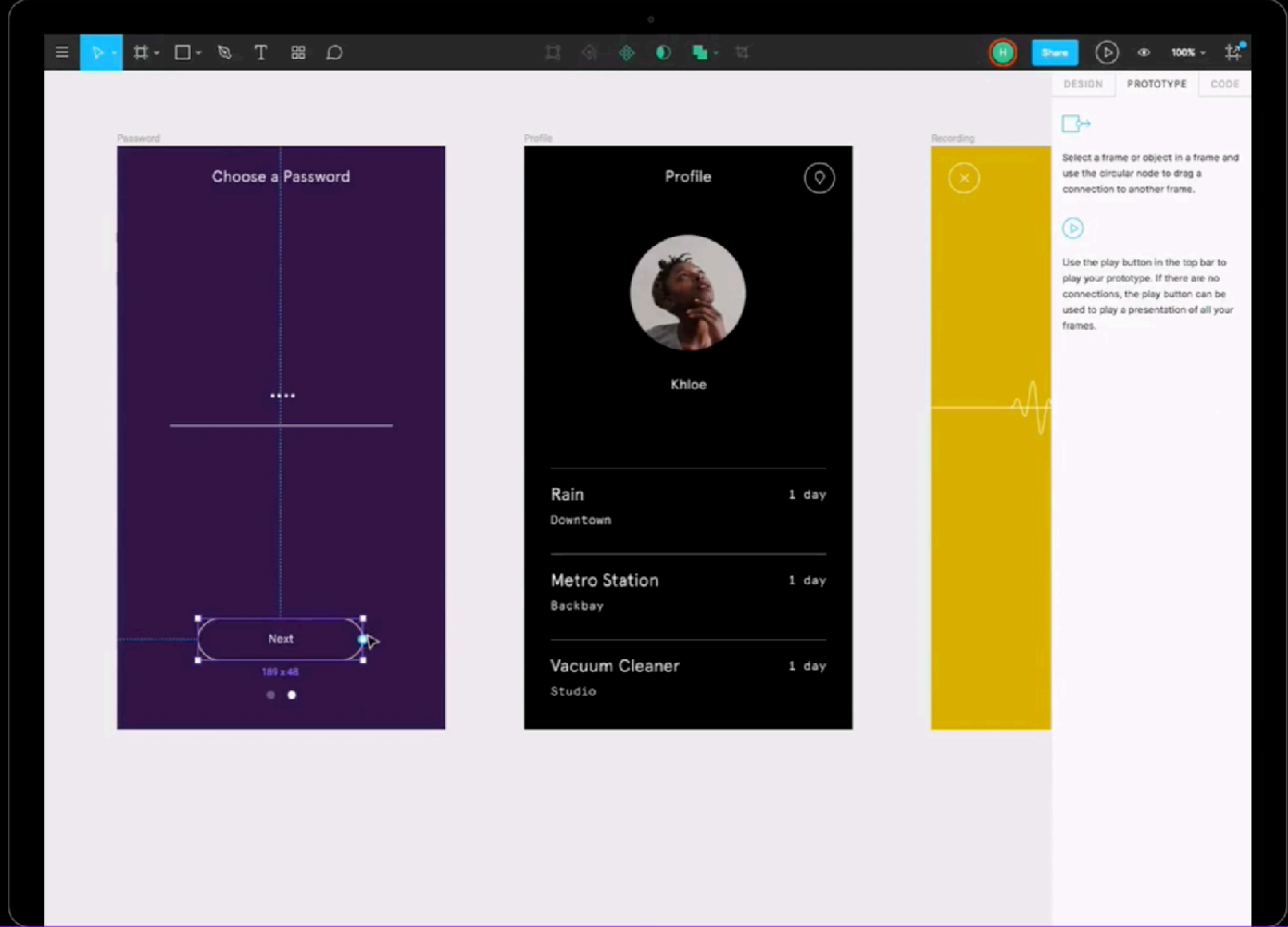
FIGMA WIREFRAMES



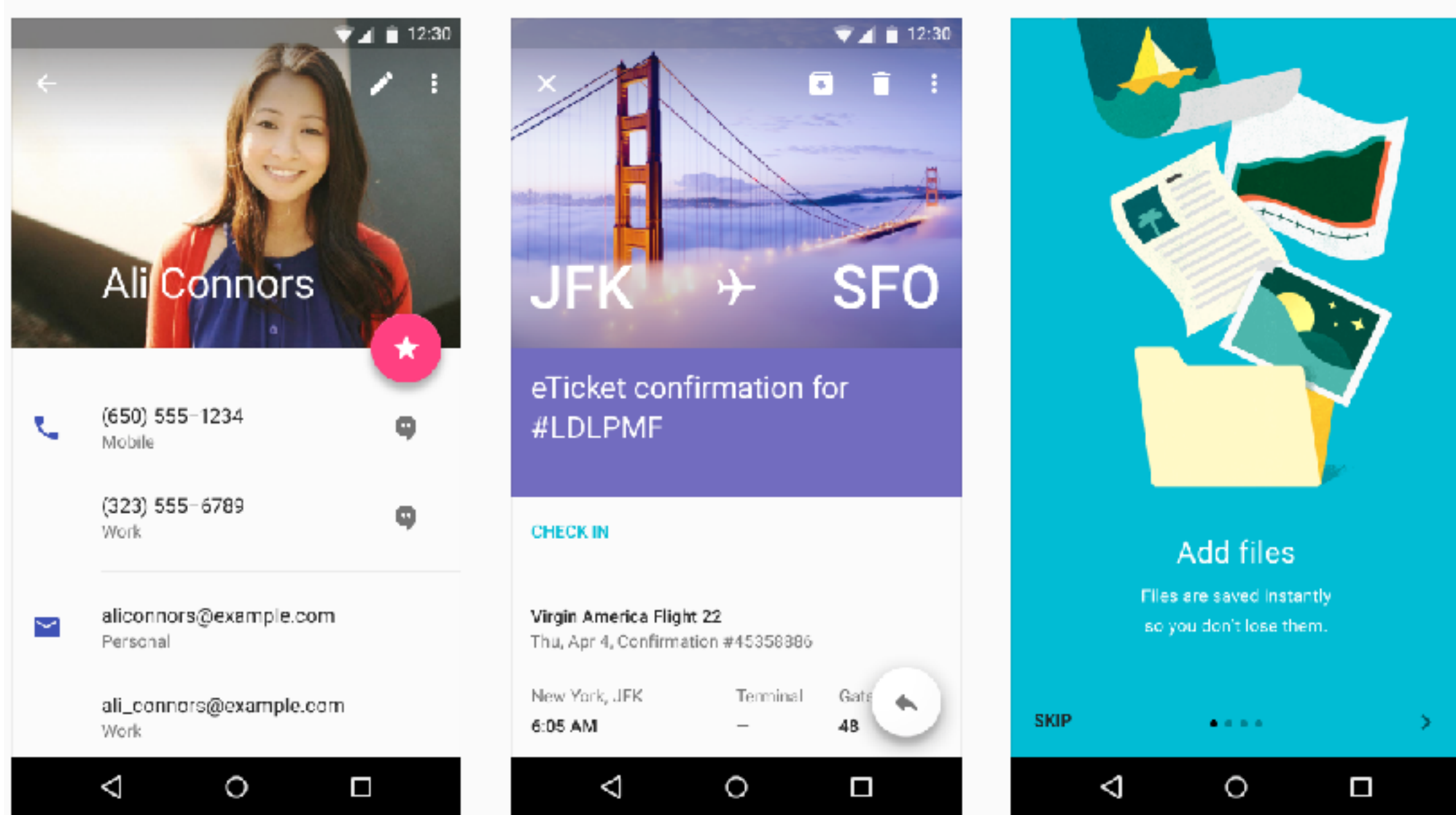
FIGMA MOCKUPS



FIGMA

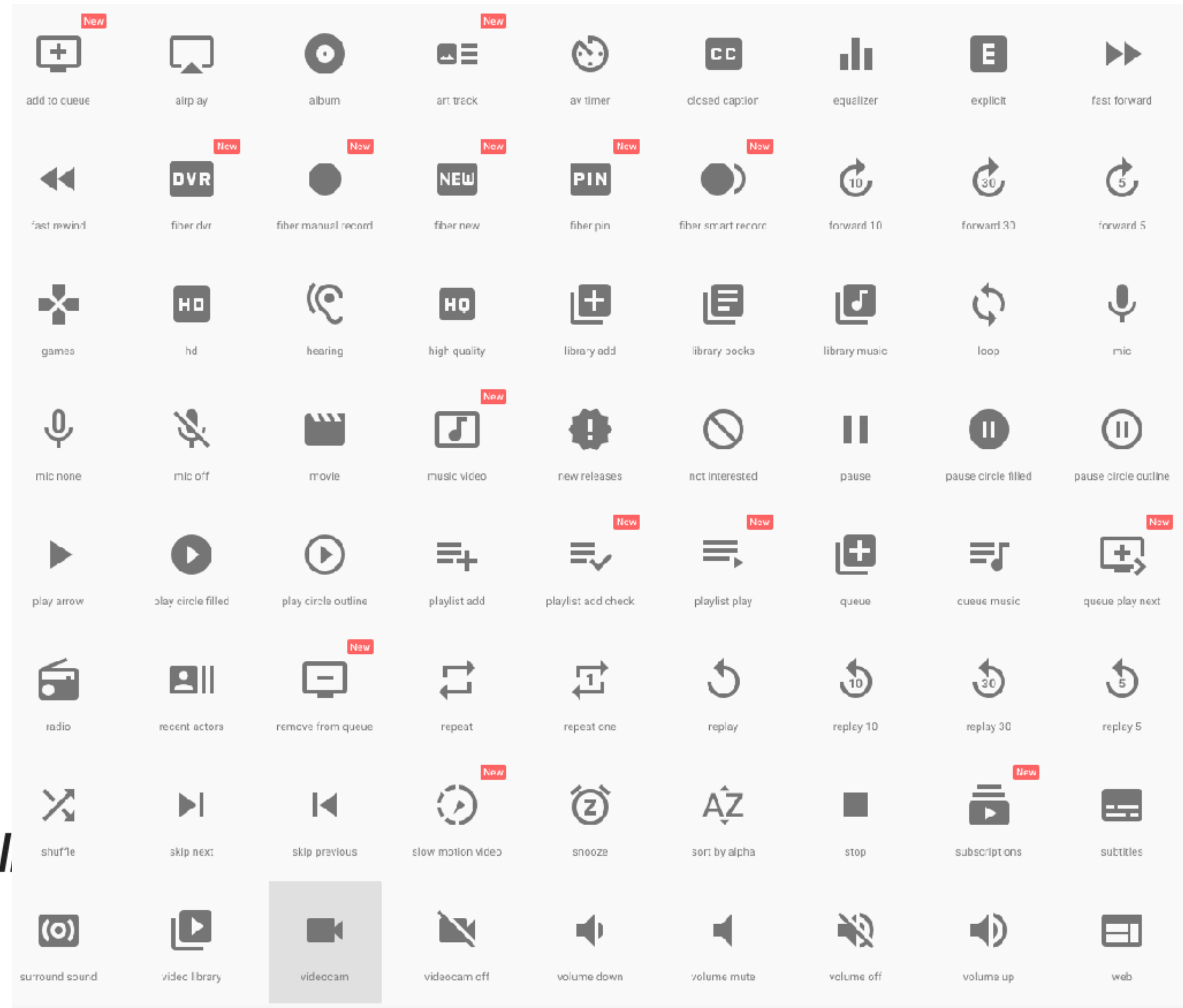


GOOGLE MATERIAL DESIGN



One hundred percent cotton bond BOLD ITALIC
Quasiparticles BOLD
 It became the non-relativistic limit of quantum field theory CONDENSED
PAPERCRAFT LIGHT ITALIC
Probabilistic wave - particle wavefunction orbital path MEDIUM ITALIC
ENTANGLED BLACK
 Cardstock 80lb ultra-bright orange MEDIUM
 STATIONERY THIN
 POSITION, MOMENTUM & SPIN CONDENSED LIGHT

Roboto Bold
Roboto Black
Roboto Thin Italic
Roboto Light Italic
Roboto Italic
Roboto Medium Italic
Roboto Bold Italic
Roboto Black Italic



PROG 02: REPRESENT!

Democrat, Republican, Independent, Fake News, Anonymous Op-Ed, Kavanaugh, Mueller, #MeToo, House, Senate, Debates, Issues!
How can we find the signal in all the noise and hype as we approach the 2018 US Midterm Election?

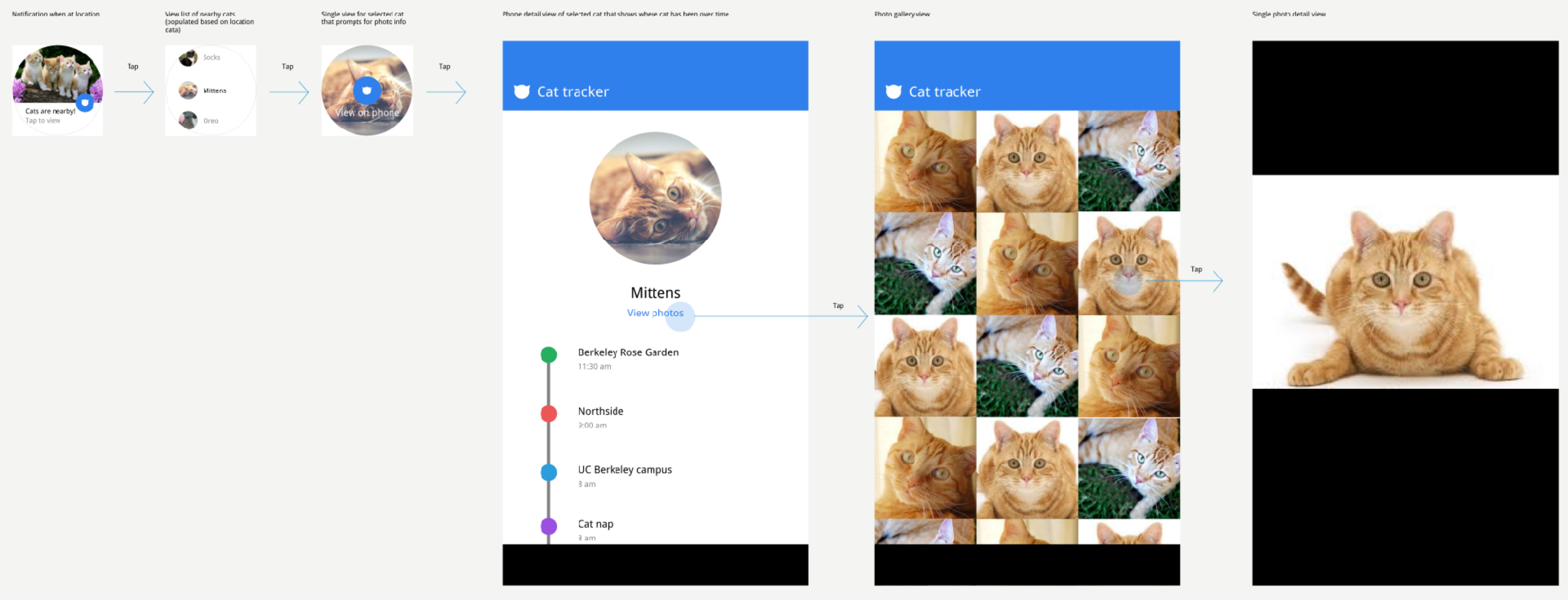
You have been tasked to help design a groundbreaking mobile application to deliver facts to voters on the go.

This is a two phase assignment. As such it is staged across two different deliverables. In brief, the first phase will allow you to explore a broad design space for your application, delivering your design as wireframes. The second phase moves from these wireframes to actual code that interfaces relevant APIs.

PHASE A - DUE 19 SEP @ 10:30AM (10 DAYS)

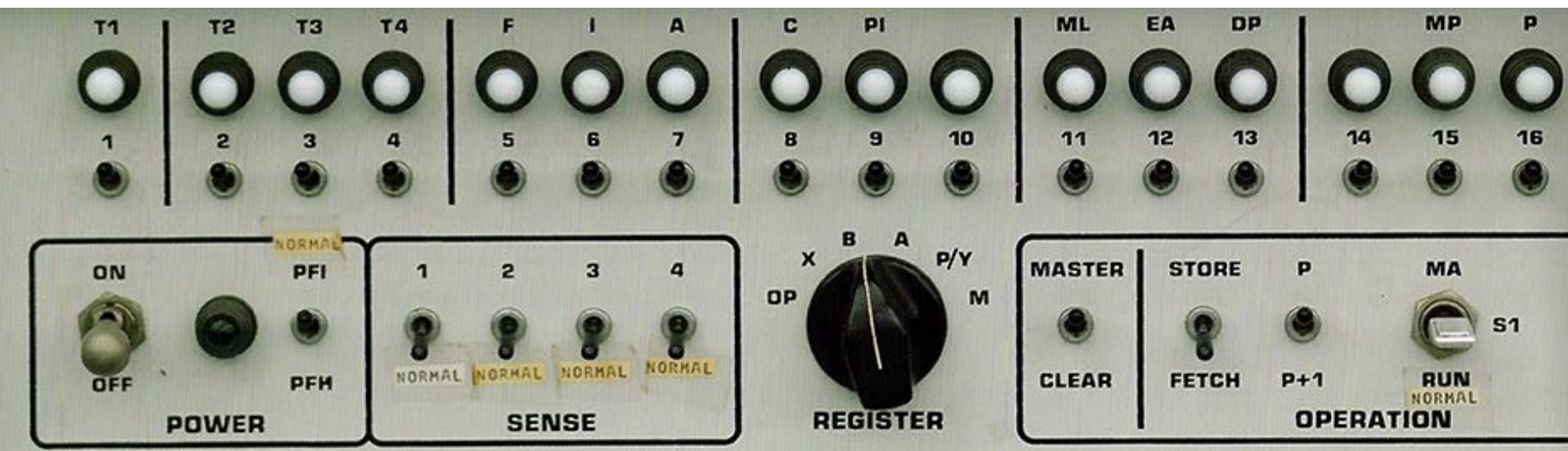
In the first phase of this assignment, you will need to generate **wireframes** for each of the screens you will need. These should be at a reasonable fidelity that we can get a sense of your visual design choices and interaction flow. You are not locked into this exact design: if you later decide to make some changes to your design, that's ok.

We want you to use Figma to quickly layout your design as you envision it now based on the description and your design ideas. The election is approaching fast and there is, unfortunately, less time than usual to iterate. Therefore, you should start to make some initial design considerations for your app in terms of text, images, colors, background, layout, etc. While you will want to start sketching with pen and paper, what you deliver to the client (i.e. us), should be somewhere between a low-fidelity mock up and a high-fidelity design. Basically, not just boxes, but clear design choices on some of the other visual and interaction design elements.



PHASE B - DUE 5 OCT @ 11:59PM (17 DAYS)

In the second phase you will code the wireframes from Phase A into **functional Android code**. Implement the code to render the screens you designed in Phase A. They may not be exactly the same visually but they should be reasonable approximations. You will also add code to properly interface with **APIs** that will bring the application to life with real live data. This includes the ability to lookup the members of congress based on zip code or the phone's current location, the committees they serve on, the bills the sponsor, etc.



CONTEXTUAL INQUIRY

GOALS

Method:

“Go where the customer works, observe the customer as she works, and talk to the customer about their work” [Karen Holtzblatt]

Goals:

Get inside the user's head

See their tasks the way they do

A middle ground between pure observation and pure interview

GUIDELINE: MASTER-APPRENTICE MODEL

Allows user to teach us what they do

- Skill knowledge is usually tacit (can't put it in books)
- Sometimes literal apprenticeship is best



PRINCIPLES OF CONTEXTUAL INQUIRY

Context

Partnership

Interpretation

Focus

PRINCIPLES: CONTEXT

Go where the work is:

Conduct inquiry in a normal work environment

People summarize, but we want details

Keep it concrete when people start to abstract

“We usually get reports by email”, ask “Can I see one?”

Look for skipped steps, ask user to fill them in.

PRINCIPLES: PARTNERSHIP

Master / Apprentice + intermittent probing

Alternative models (what's wrong with them?)

Interviewer / Interviewee

Expert / Novice

Guest / Host

WHY NOT JUST INTERVIEW FOLKS?





OXO

EXAMPLE: PAPER FLIGHT STRIPS



EXAMPLE: PAPER FLIGHT STRIPS

AFR 1117<1024> 240 ~~260~~ ~~250~~ R20
 air france TERNI CHW CLARA GIRKØ SØXMU LIX
 EA32 450 LEMD LFPG 330 41 12 12 12 12 12
 8548 MERUE 1735 PERØT
 MOD 1224 TP

Paris (Athle Mone), France: en route control center

SWR 658 <3020>	290	290	MEN	GAI	TON	SØVAR	ZZA	H1
swissair								
EA32 440 LSZH LEMD			06	15	10	30	40	10
330								04
5602			10	10	10	10	10	97
1759 ZA								

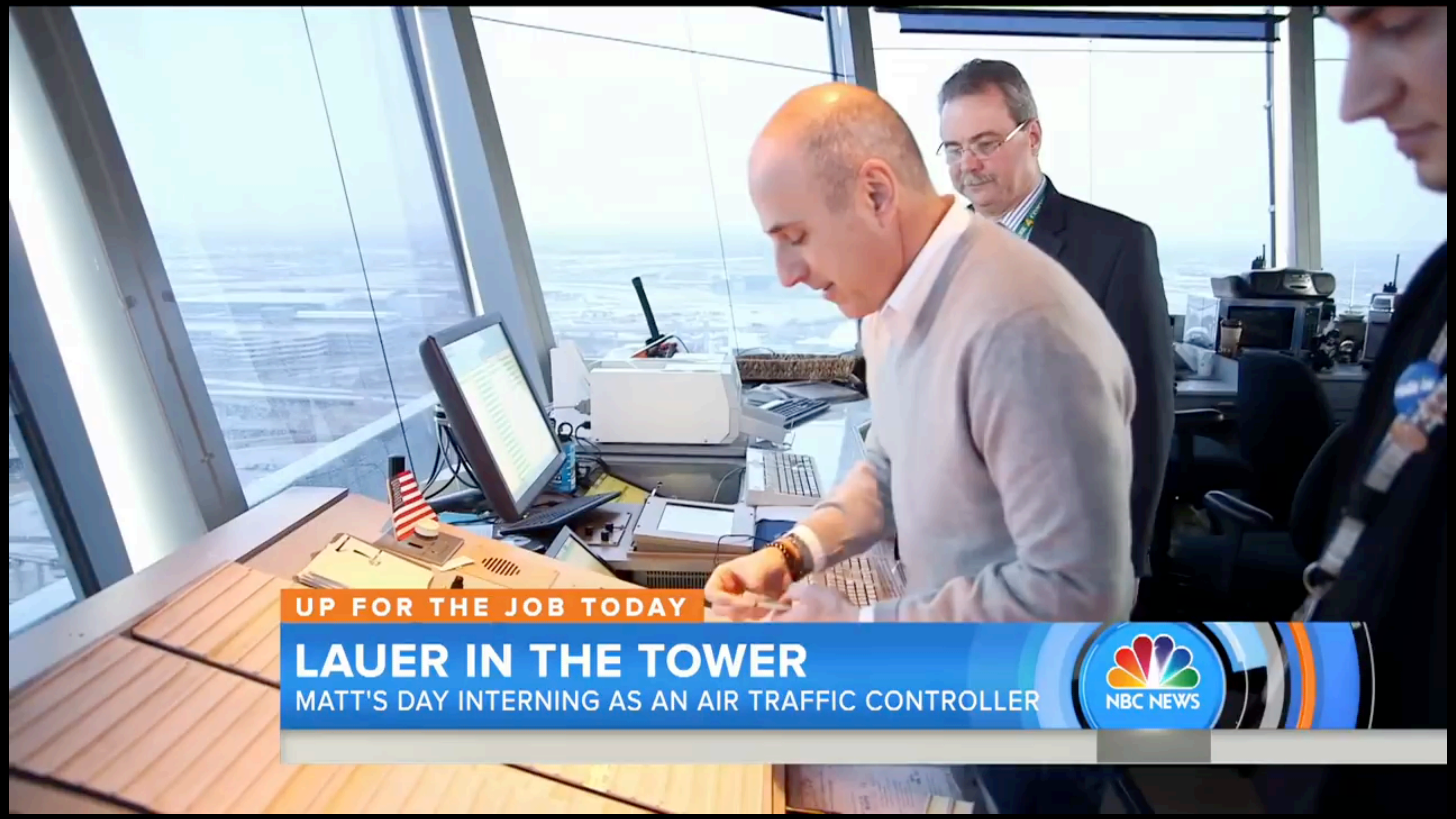
Bordeaux, France: en route control center

CØR	873F	KLH331	230LEX	17:44:35
1747-CT	EHAM	831 390 LFPG	CØ172	

Maastricht, the Netherlands: en route control center

7347	VLA	240	FK70	DMA206	400R	NEP	VLA	AM
01L R100			EHAM	-NH	EGNX	1818	1808	1802

Amsterdam, the Netherlands: en route control center



UP FOR THE JOB TODAY

LAUER IN THE TOWER

MATT'S DAY INTERNING AS AN AIR TRAFFIC CONTROLLER



PRINCIPLES: PARTNERSHIP

Stick with master-apprentice; avoid other models, i.e.

Avoid interviewer/interviewee

Above all, don't "teach"!

Partnership allows more apprentice interaction

OK to be a designer and interrupt!

... but go back "in role" afterwards.

Alternate watching & probing (withdrawal & return)

PRINCIPLES: FOCUS

You need data about specific tasks

Steer conversation to stay on useful topics

Respect “intrapersonal triggers”
(flags to change focus/understanding)

“Why would they do that?”

Admit your ignorance

THOUGHTS ON INQUIRIES

Establish rapport before diving in

Use recording technologies

Notebooks, tape recorders, still & video cameras

Master/apprentice can be hard

Staying in role – it's a lot like acting

Don't correct! Its not a lesson!

It's hard not designing on the fly

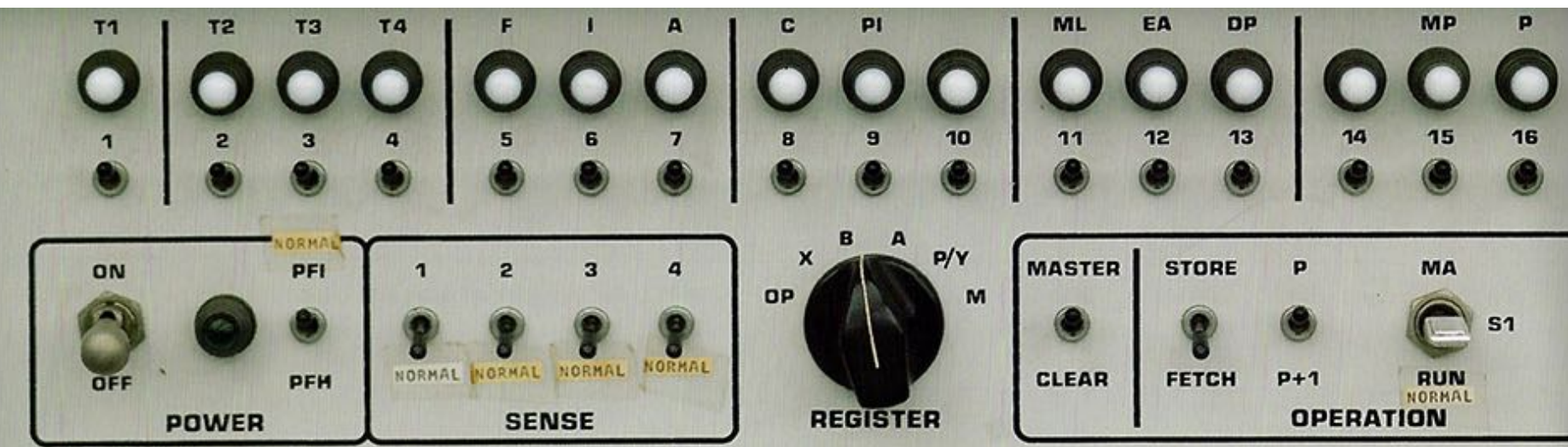
SUMMARY

Contextual inquiry

Helps answer the task analysis questions

Hybrid between interview and observation

Use **master-apprentice model** to get them to teach you



AFFORDANCE

AFFORDANCE

“... the term **affordance** refers to the perceived and actual properties of the thing, primarily those fundamental properties that determine just how the thing could possibly be used.”

Some affordances obvious

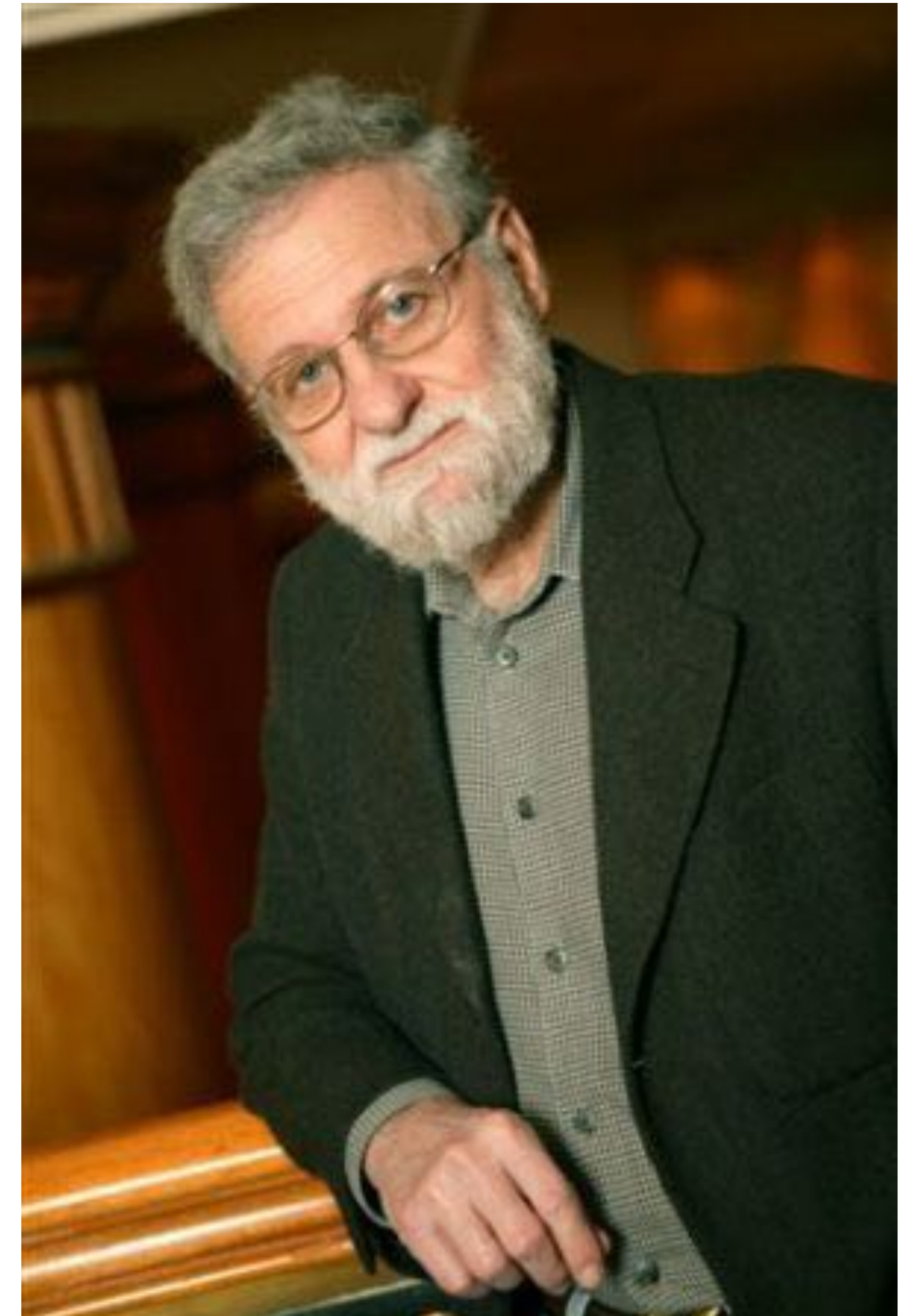
Knobs afford turning

Buttons afford pushing

Glass can be seen through

Some affordances learned

Glass breaks easily



The Design of Everyday Things
Don Norman

AFFORDANCES

Clues about how object/interface works



AFFORDANCES

Clues about how object/interface works



Affordances

holes for insertion of fingers

blades for cutting

Implications clear for how operating parts work

DOOR HANDLES

Affordances suggest how to use the object



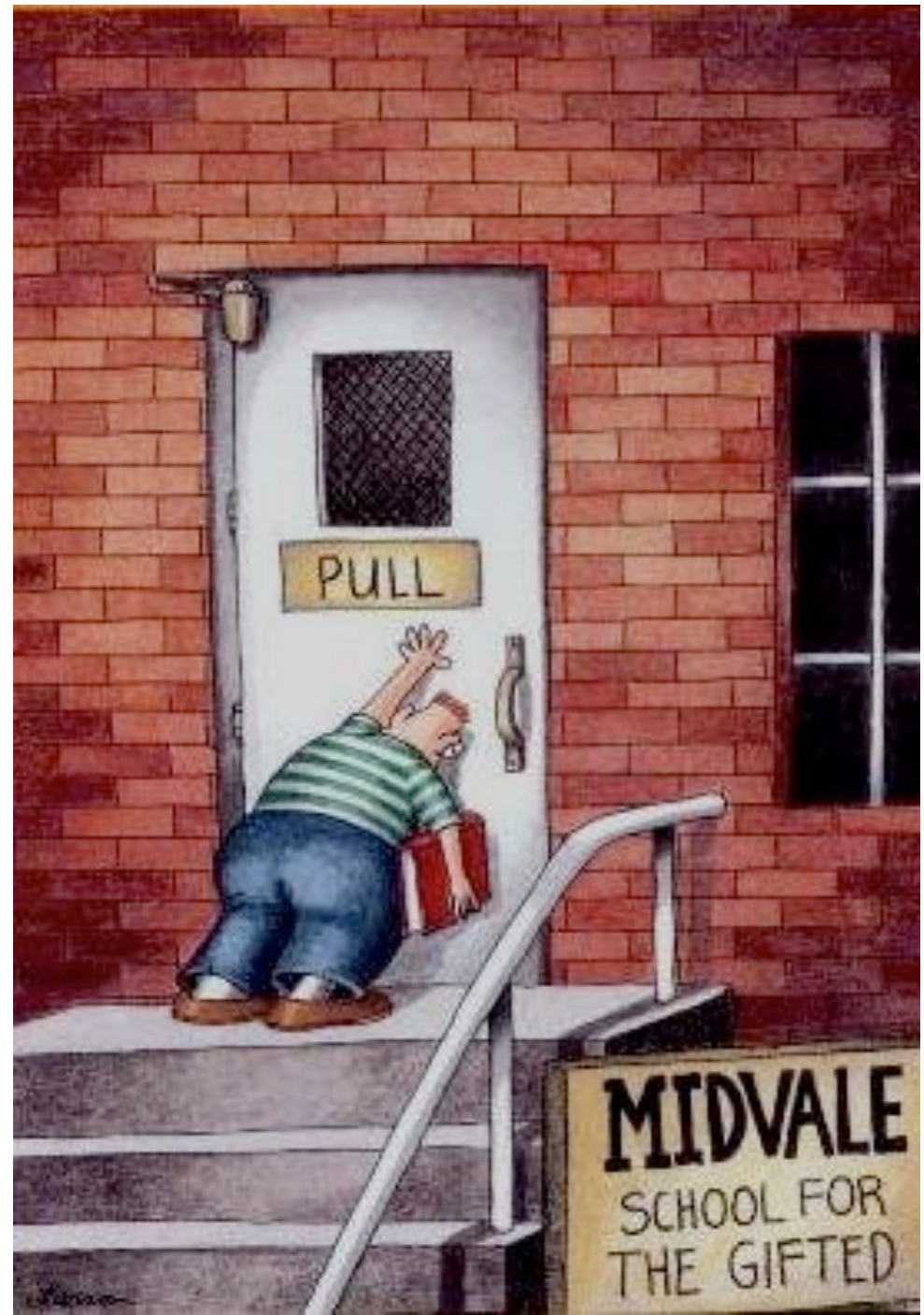
DOOR HANDLES

Affordances suggest how to use the object



DOOR HANDLES

Affordances suggest how to use the object





CULTURAL DEPENDENCIES

Affordances suggest how to use the object

Can be dependent on the

Experience

Knowledge

Culture

Switches (US down=off, UK down=on)

red = danger, green = go

Can make an action easy/difficult



PERCEIVED AFFORDANCES

Affordances suggest how to use the object

Can be dependent on the

Experience

Knowledge

Culture of the actor

Can make an action easy/difficult

Affordances may be *perceived* without actually existing



HELLO, COMPUTER

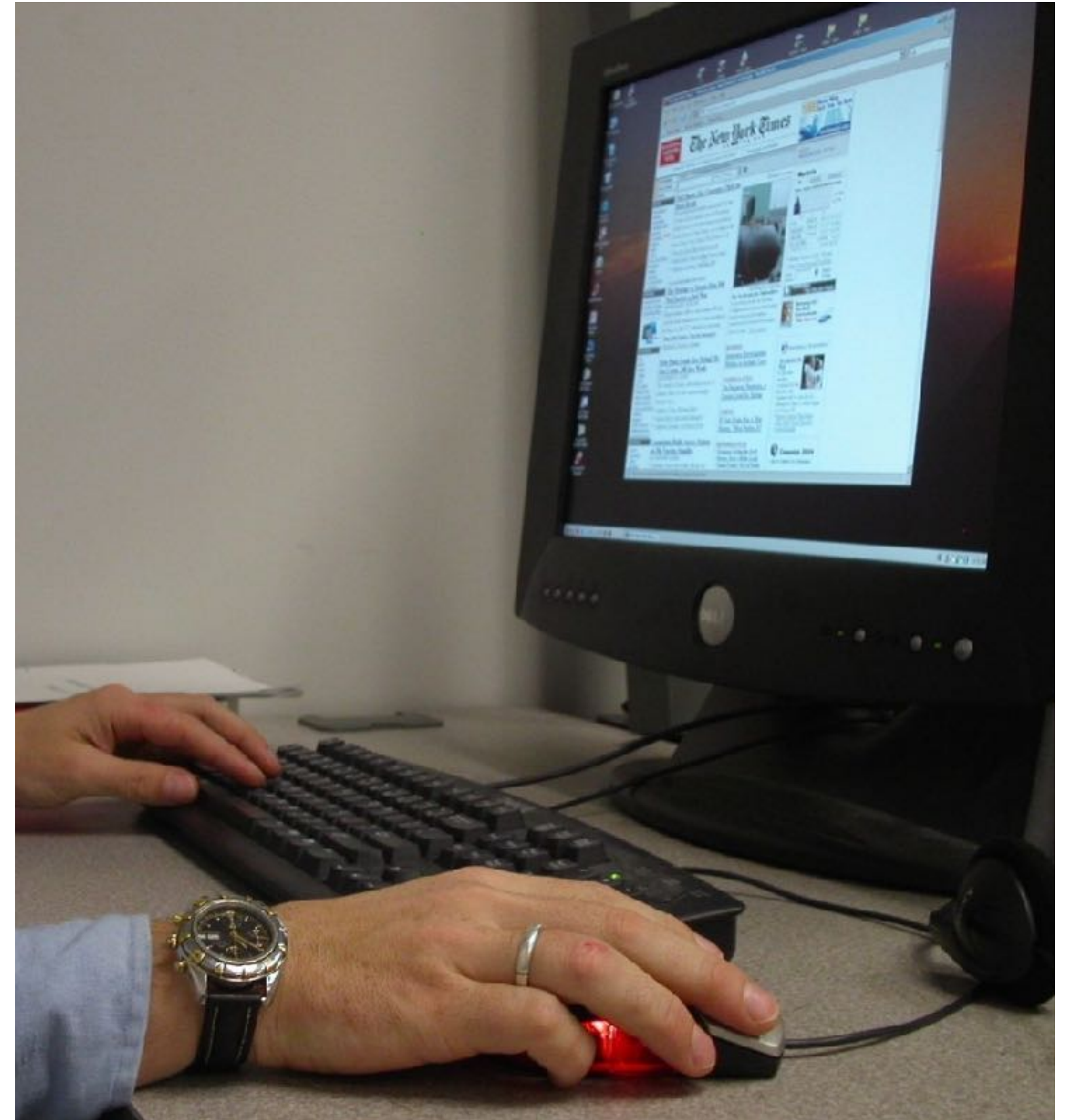


SCREEN-BASED INTERFACES

Physical affordances

Screen, pointing device, physical buttons, keyboard

These afford touching, pointing, clicking on every pixel



SCREEN-BASED INTERFACES

Physical affordances of screens are often unused

Screen affords touching, but many screens are *not* touch sensitive







PASSES/FARECARDS

Find Your Fare Below		Buy Your Fare		Board Your Train	
Regular Fares	Purchase	One-Way	Round Trip	SmartKey Card	Additional Remarks
<p>Regular Fares: \$1.00 - \$2.00 (Example)</p> <p>Reduced Fares: \$0.50 - \$1.00 (Example)</p>	<p>SmartKey Card: \$1.00 (Example)</p> <p>SmartKey Card: \$1.00 (Example)</p>	<p>One-Way: \$1.00 (Example)</p> <p>Round Trip: \$2.00 (Example)</p>	<p>SmartKey Card: \$1.00 (Example)</p> <p>SmartKey Card: \$1.00 (Example)</p>	<p>SmartKey Card: \$1.00 (Example)</p> <p>SmartKey Card: \$1.00 (Example)</p>	<p>Additional Remarks: \$1.00 (Example)</p> <p>Additional Remarks: \$1.00 (Example)</p>

IN SERVICE

One-Way Fares and Travel Times from this Station

Station	Line	Distance	Fare	Travel Time
Station A	Line 1	1.0	\$1.00	5 min
Station B	Line 2	2.0	\$2.00	10 min
Station C	Line 3	3.0	\$3.00	15 min

SELECT PURCHASE

1

- PASS
 - SINGLE FARE
 - MULTIPLE FARE

MAXIMUM CHANGE: \$5.00

CANCEL

COINS
5, 10, 25c

PRESS +
TO ADD VALUE

AUDIO

TO PAY WITH BANK OR CREDIT CARD

BILLS
\$1, 5, 10, 20

PUSH TO
RETURN

PRESS -
TO DEDUCT VALUE

ENTER PIN
TAKE RECEIPT

2

INSERT PAYMENT

SmartKey TARGET

INSERT HERE

TRADE-IN
FARECARD

TO INCREASE
SMARTKEY VALUE

Touch **SMARTKEY** to Target, then use the "A", "B" and "C" keys to make desired selections.

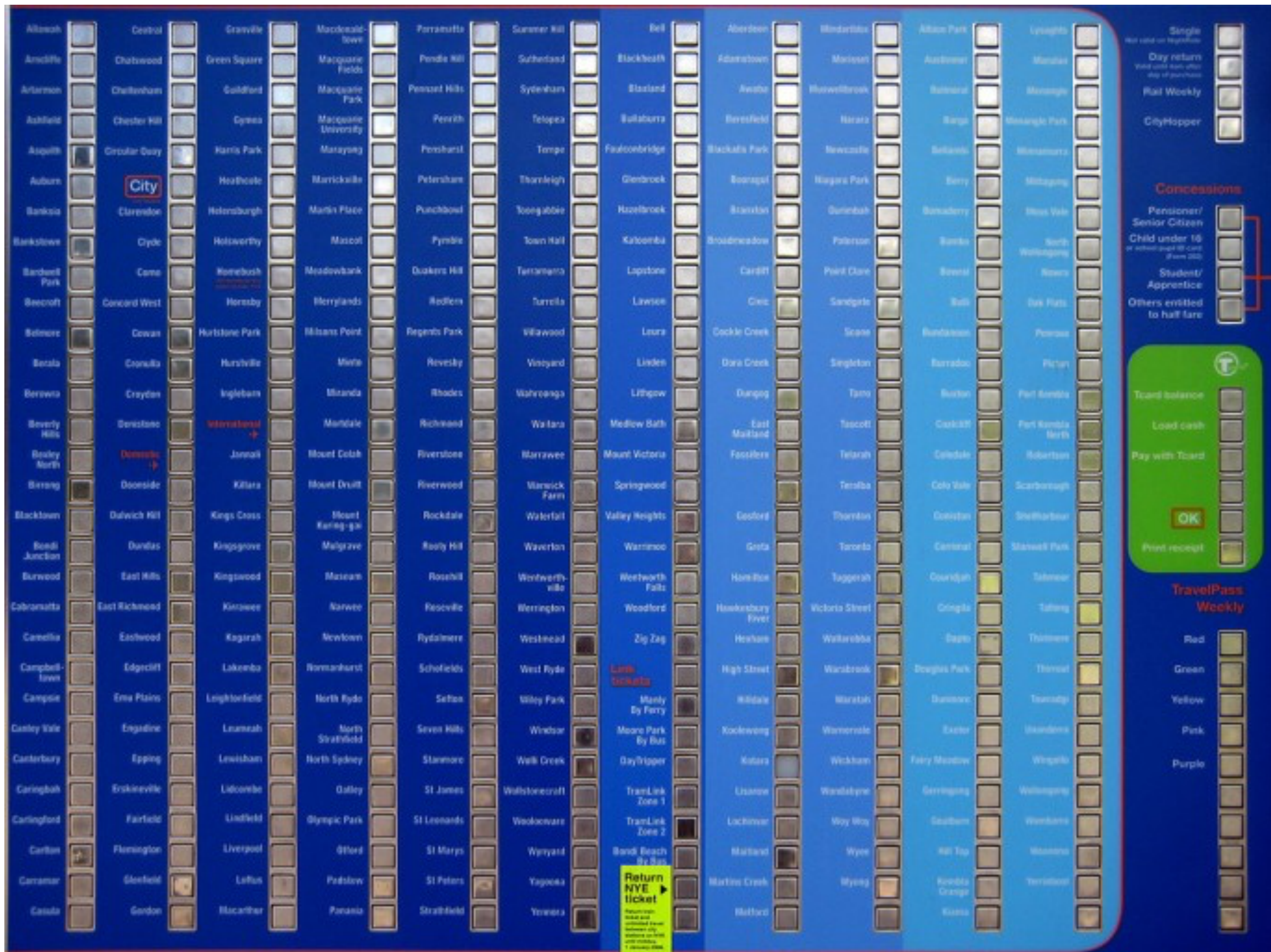
Re-touch **SMARTKEY** to complete transaction.

3

TAKE PASS/FARECARDS

COIN RETURN





City

International

Domestic

Link Tickets

Return NYE ticket

Single
Day return
Rail Weekly
CityHopper

Concessions

Pensioner/
Senior Citizen
Child under 16
Student/
Apprentice
Others entitled
to half fare

Transit

To card balance

Load cash

Pay with Trans

OK

Print receipt

TravelPass Weekly

Red
Green
Yellow
Pink
Purple

Welcome to BART

Insert your ticket at
any time



Choose your
Destination



Add value to
ticket



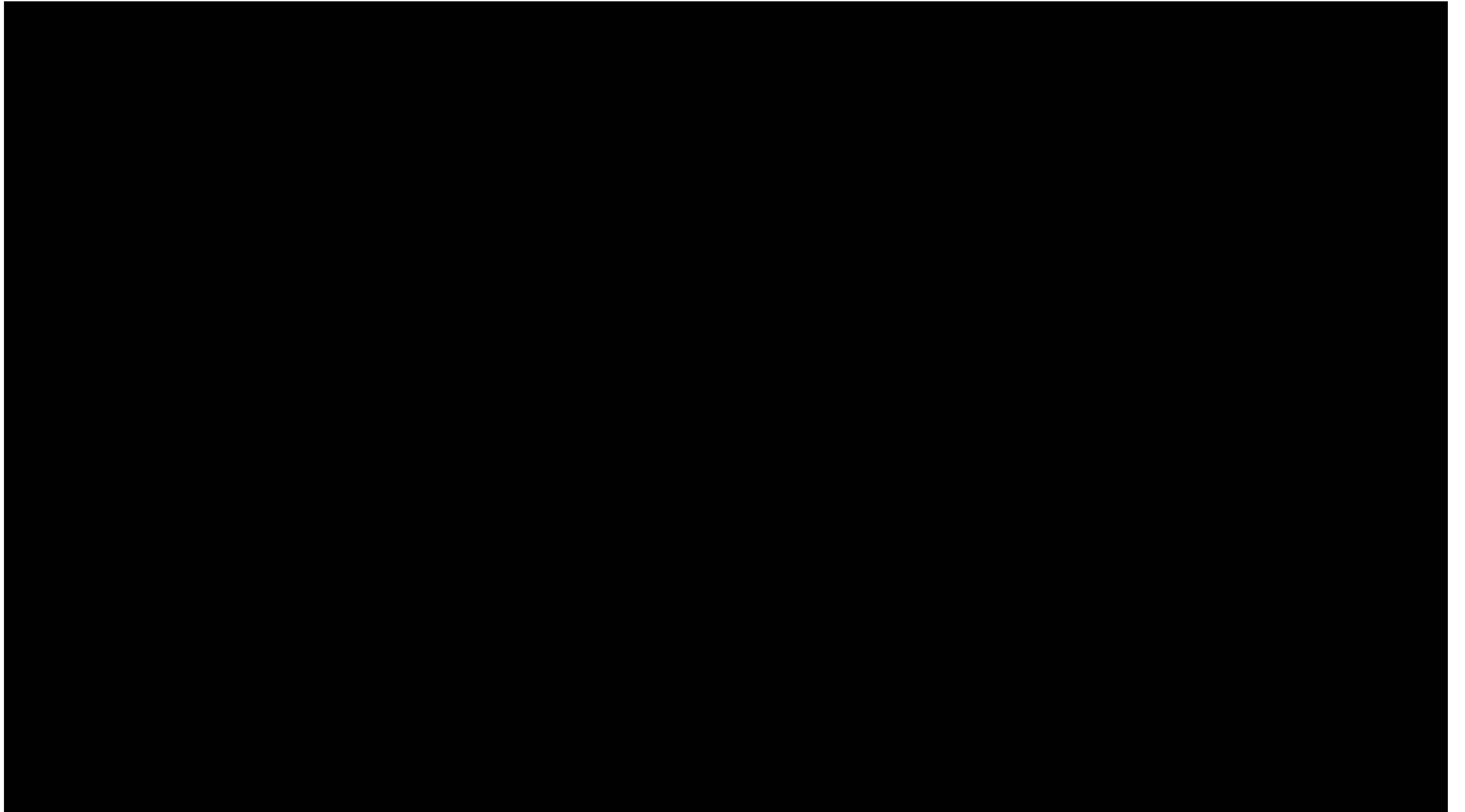
Buy a BART
Plus Pass
(\$28 minimum)



Oslo's Flytoget

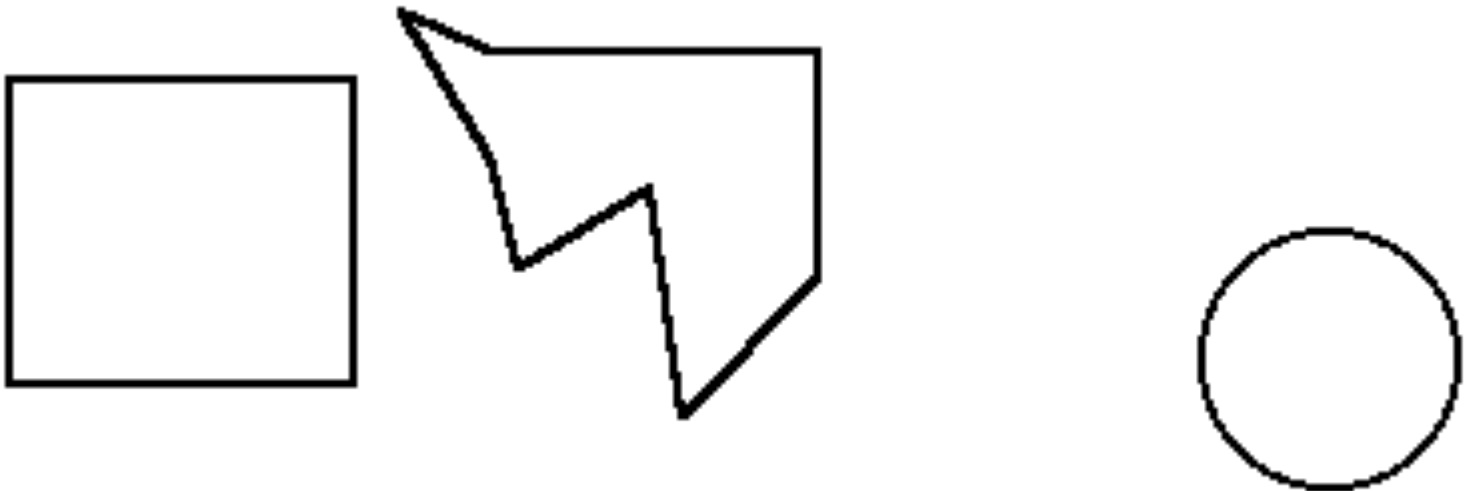


“A MAGAZINE IS AN IPAD THAT DOESN'T WORK...”



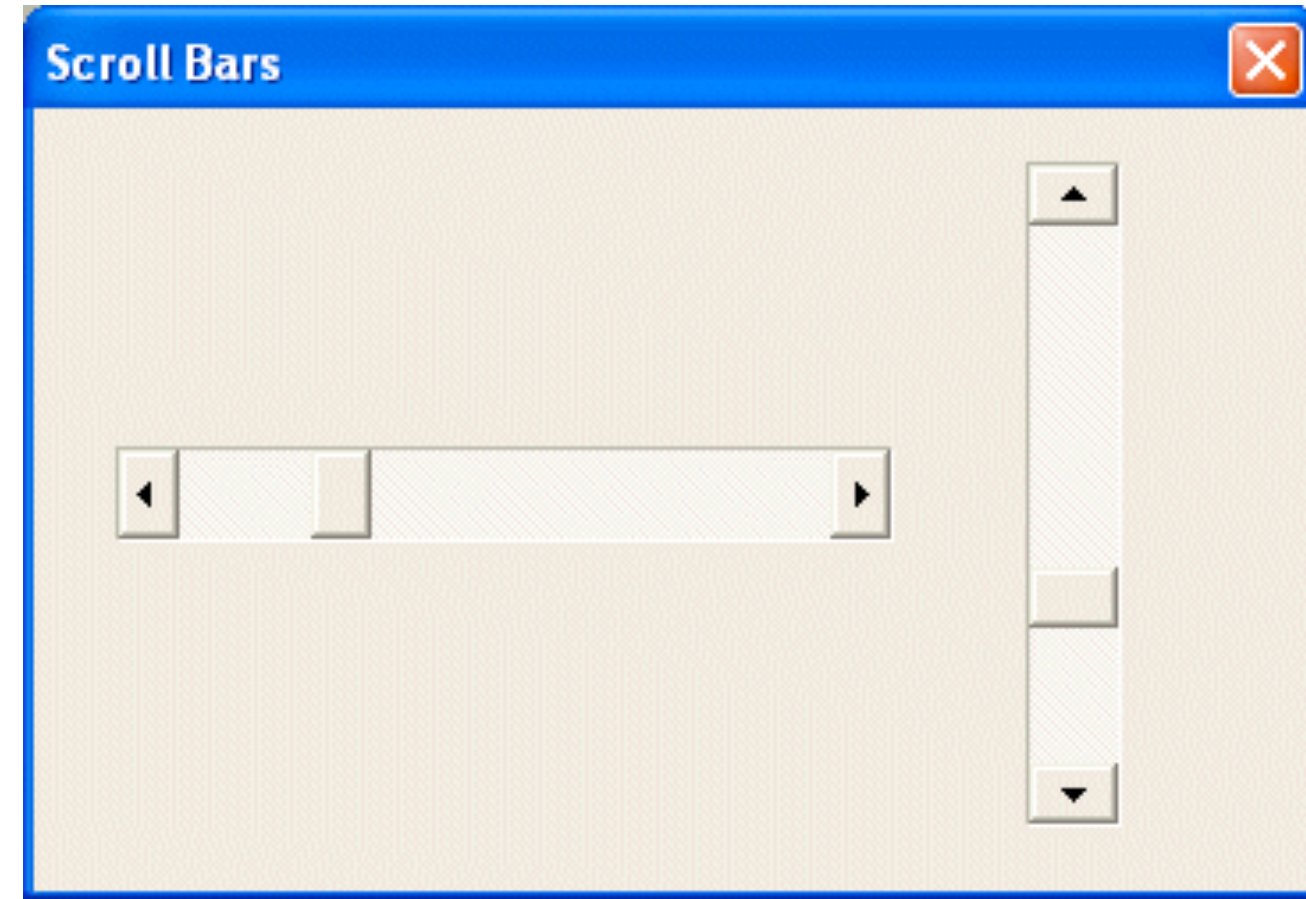
DESIGNER CONTROLS PERCEIVED AFFORDANCES

What are the affordances of these graphical objects?



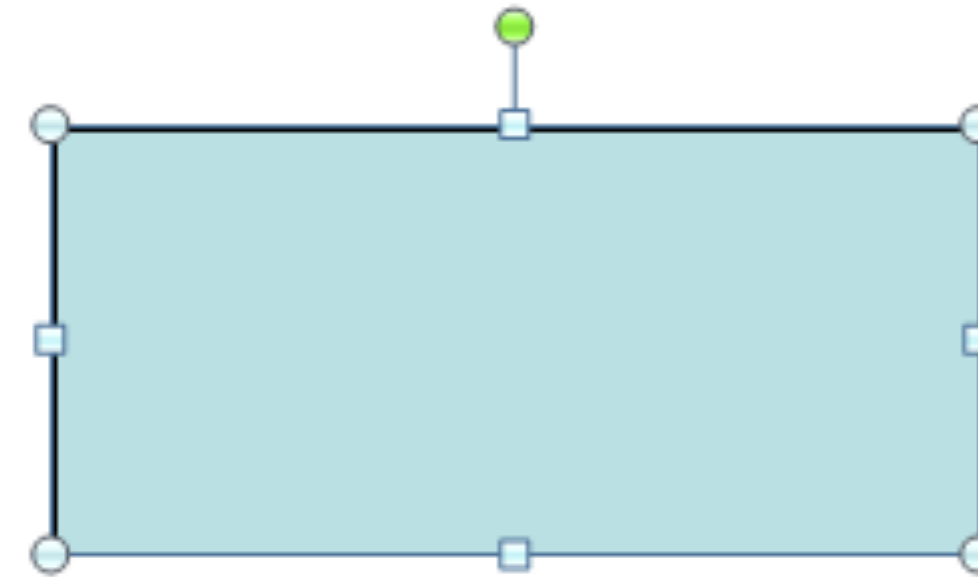
Graphic design emphasizes affordances
Helps user recognize objects as buttons

SCROLLBAR AFFORDANCES?

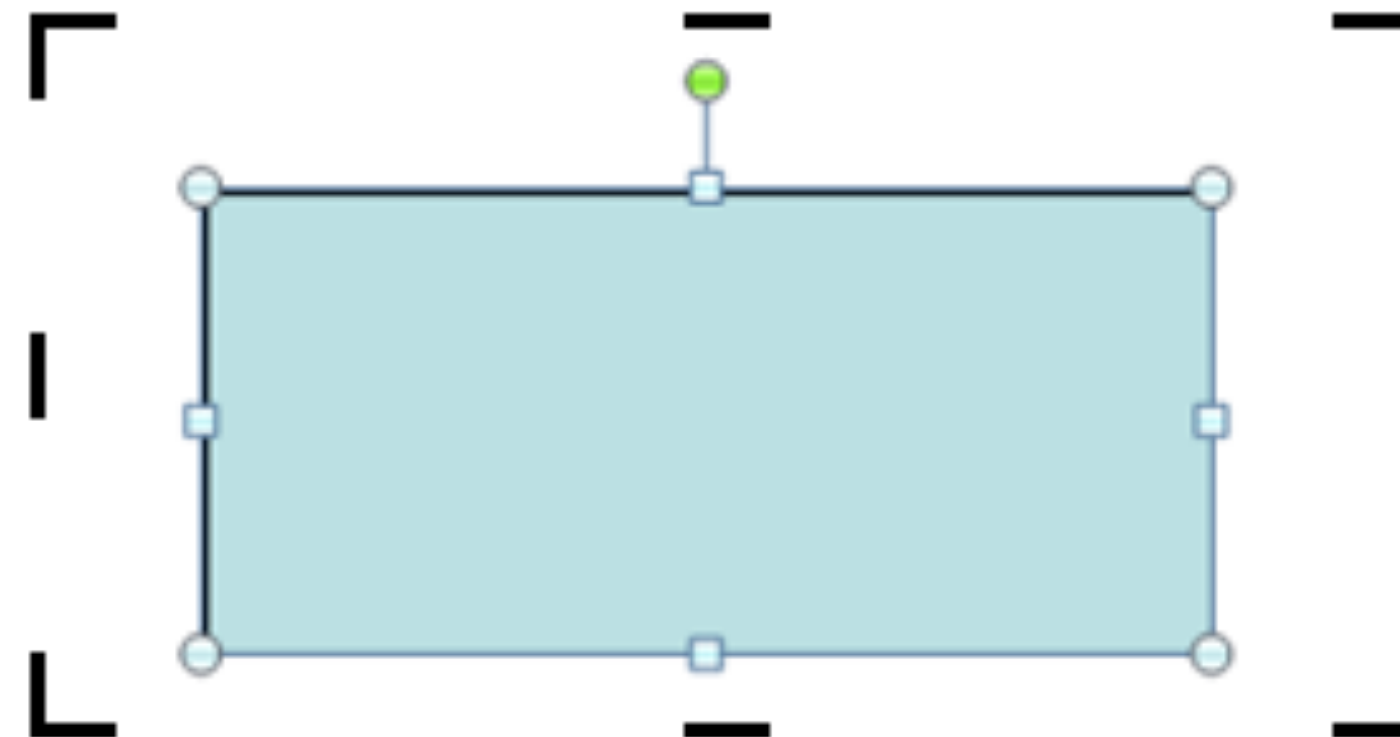


Well-designed widgets have clear affordances

e.g. resize handles:



crop handles:



motion arrows

IPHONE LOCK SCREEN 2007 — 2016





Affordance:....

Visibility:....

Mapping:....

Mental Model:....

Feedback:....



CUSTOM FUNCTIONS



POPCORN



BEVERAGE



REHEAT



SNACKS



BAKED POTATO



FRESH VEG.



FROZEN VEG.



TIME COOK



TIME DEFROST



AUTO DEFROST

GUIDE BEHIND DOOR

1

EXPRESS COOK

2

EXPRESS COOK

3

EXPRESS COOK

4

EXPRESS COOK

5

EXPRESS COOK

6

EXPRESS COOK



START

7

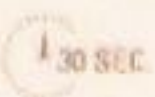
8

9



POWER
LEVEL

0



CLEAR
OFF

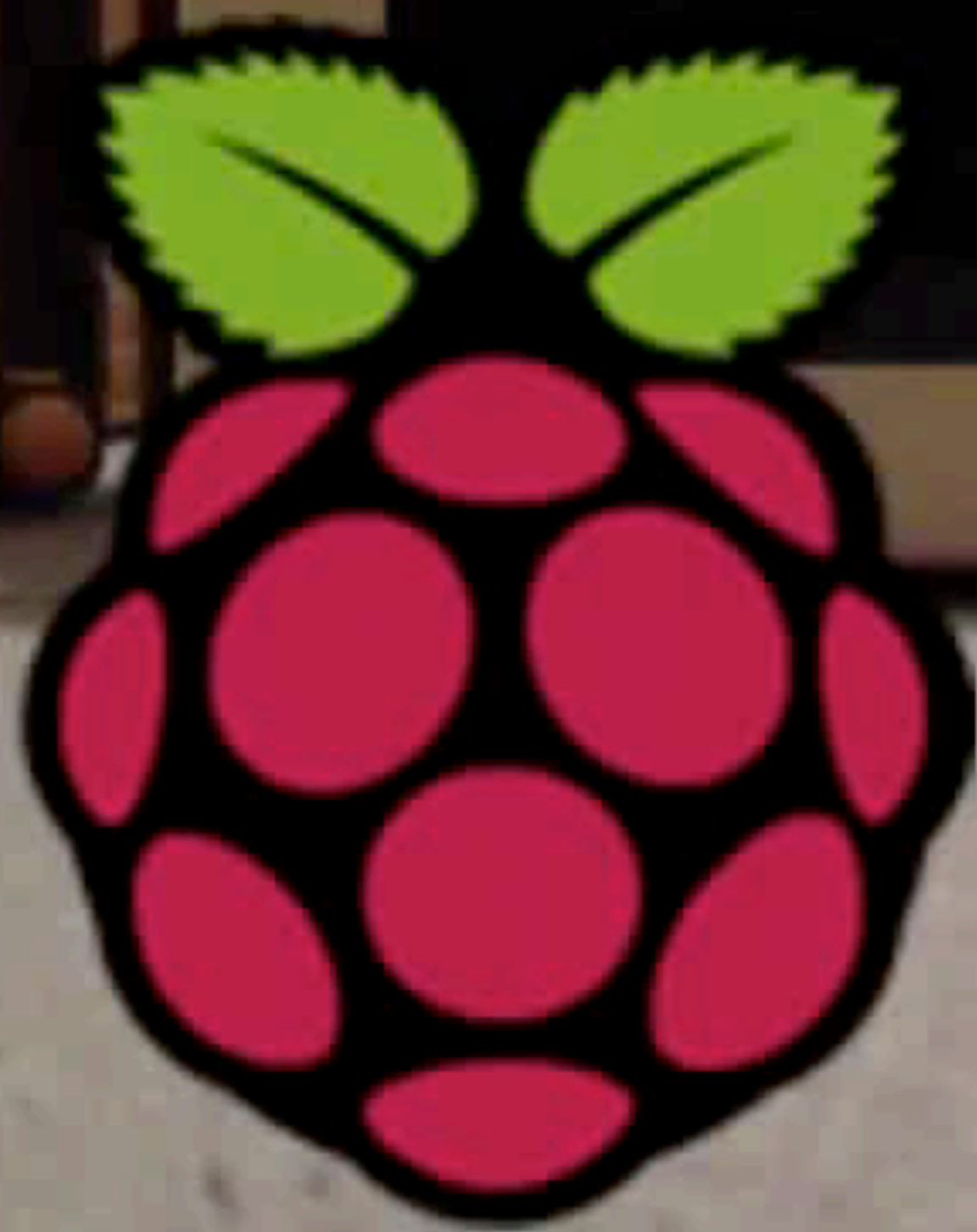


TIMER

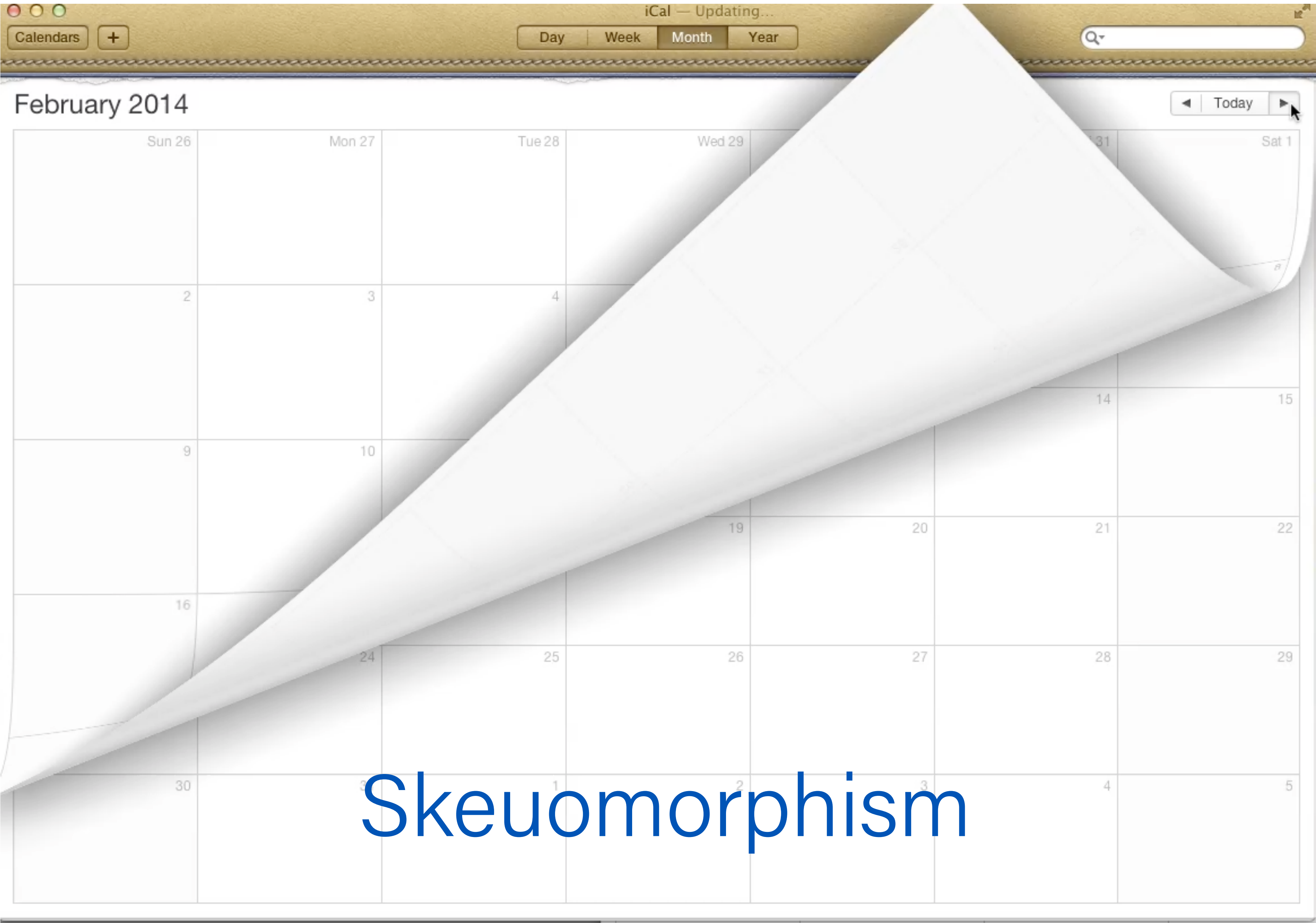


CLOCK

Raspberry Pi Powered Microwave







Skeuomorphism

SKEUOMORPHS

A skeuomorph is a physical ornament or design on an object copied from a form of the object when made from another material or by other techniques.

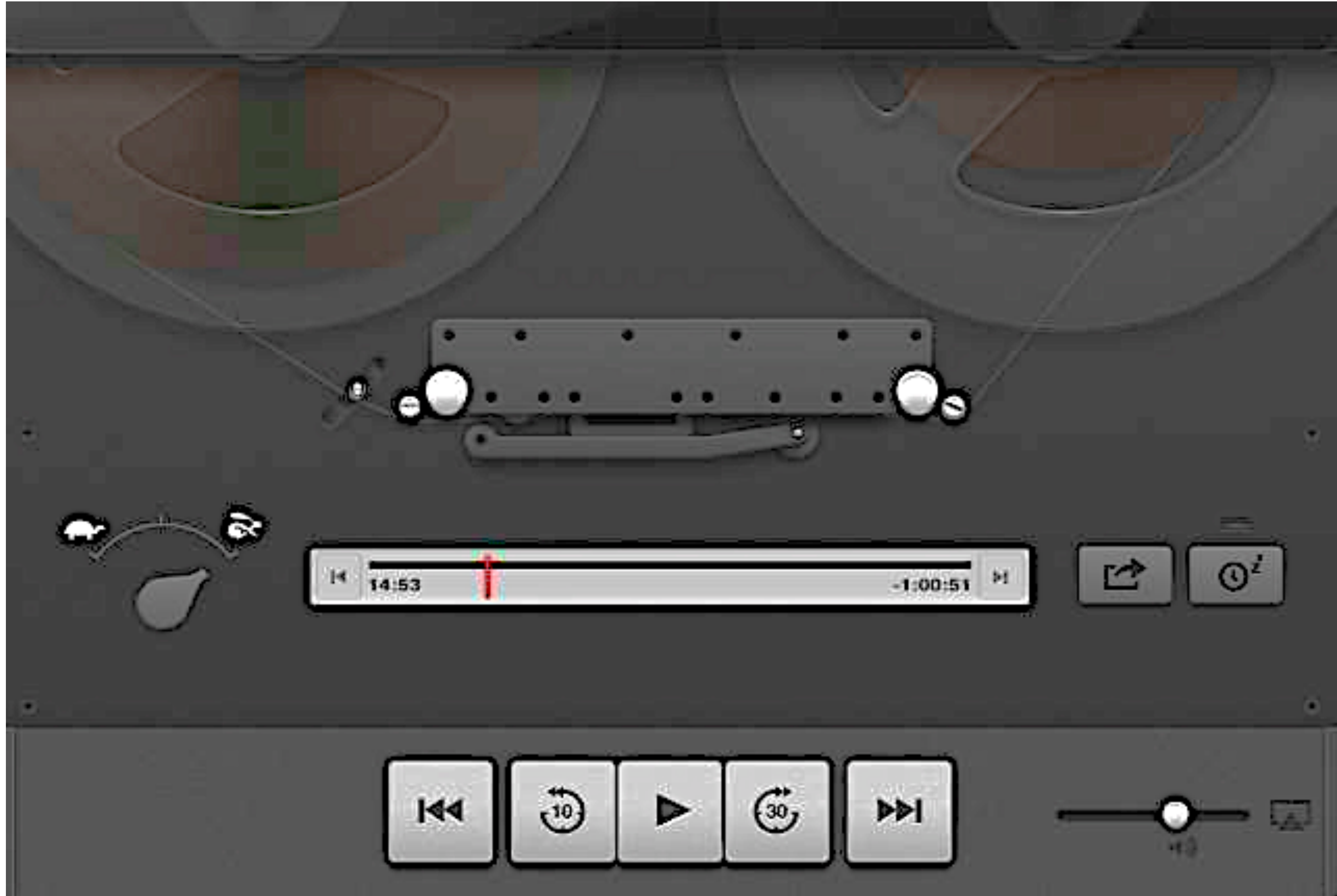
Skeuomorphs are deliberately employed to make the new look comfortably old and familiar, or are simply habits too deeply ingrained to wash away.







Hanx Writer (2014)



Apple Podcast application





HISTORY

Examples of Skeuomorphic UIs

DEFINITION

Types in Web Design

RealGD

Cons

Pros

Familiarly

UI Aberration

MISLEADING BEHAVIOR

WELL-SELLING

LACK OF UNIVERSALITY

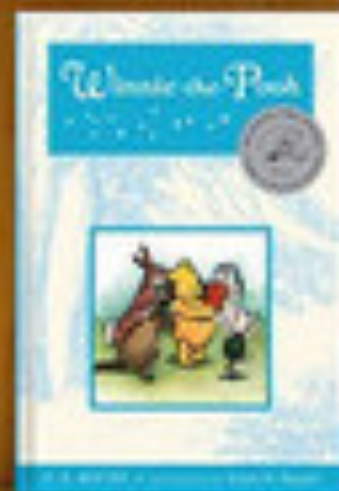
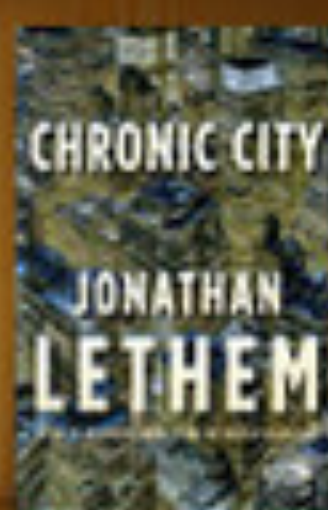
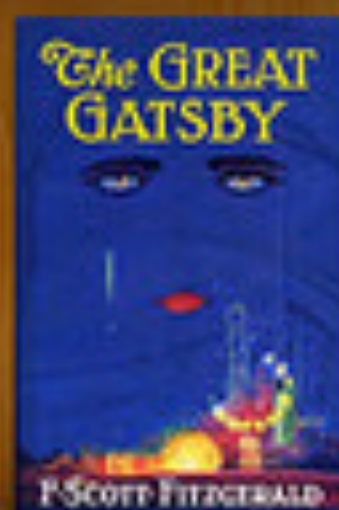
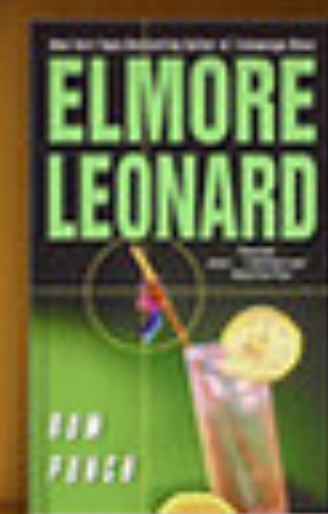
Master TV

Store

iBooks



Edit



Settings

Game Center

Camera

Photo Booth

FaceTime

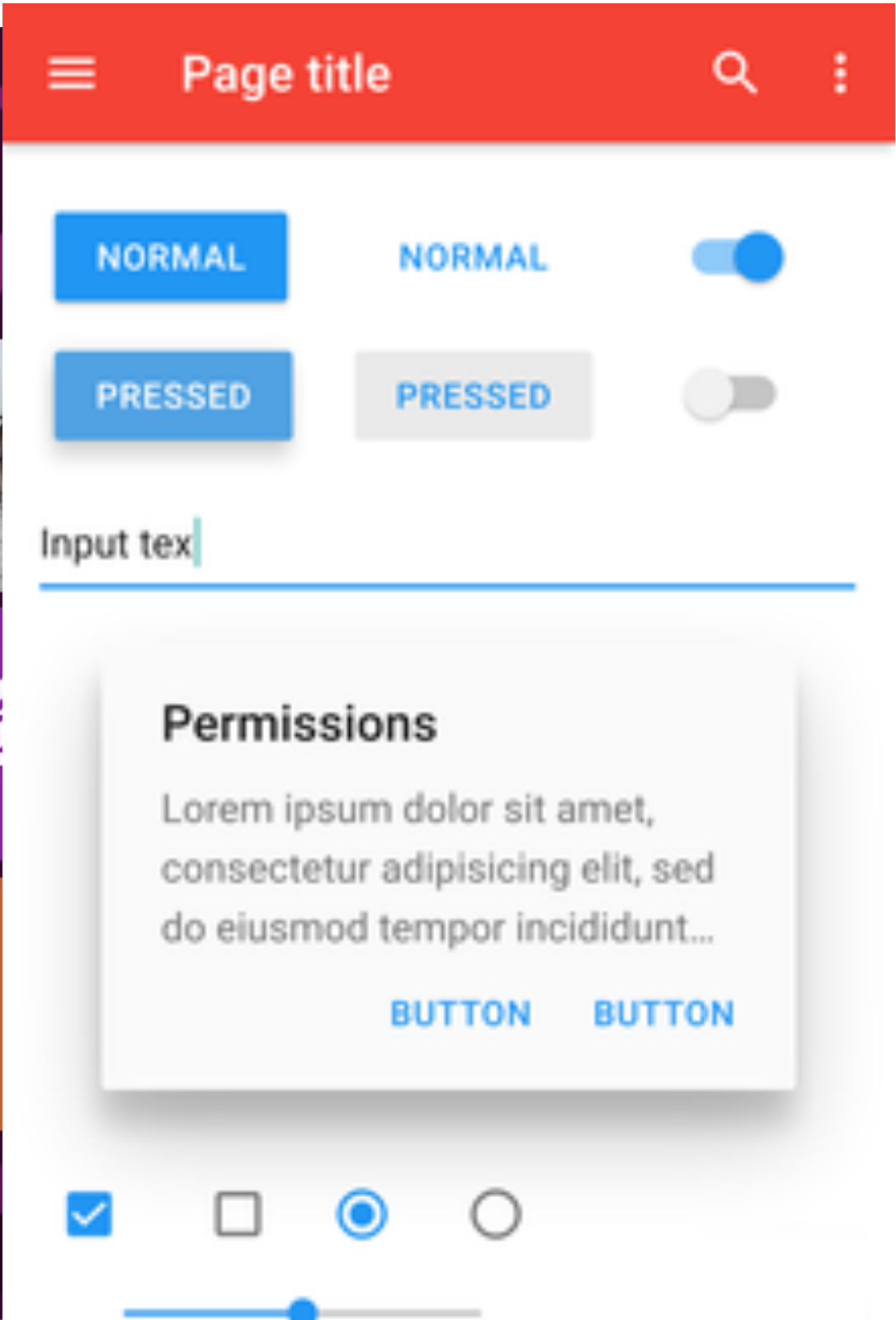


Newsstand

Store



FLAT UI DESIGN



Flight | Hotel | Car | Vacation

Round Trip One Way [Multiple Destinations](#)

From: (city or airport) To: (city or airport)

Search Nearby Airports
 Find Lower Fare +/- 3 Days

Search Specific Dates My Dates are Flexible

Depart Date: Time:

Return Date: Time:

Adults: Children

Offer Code (optional):

Cabin:

Search By:
 Price Schedule Award Travel

Nonstop Flights Only

[Advanced Search](#)
Children, Country of Purchase...



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MileagePlus Sign In

MileagePlus number: PIN/Password:

Remember Me [Forgot PIN?](#)


Change or View Reservations

Find a Reservation by Confirmation Number

Reservation Type: Flight Car

Confirmation: Last Name:

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Welcome to the new united.com

MileagePlus:
Sign in or join



Book travel



Flight

Hotel

Car

Cruise

Vacation

Round trip One way [Multi-city](#) [Recent searches](#)

From*

To*

My dates are flexible

Depart date*



Return date*



1 adult



Economy



Search for award travel

Nonstop

[Changed bag rules and optional services](#)

[All search options](#)

Search

Flight status



Check-in

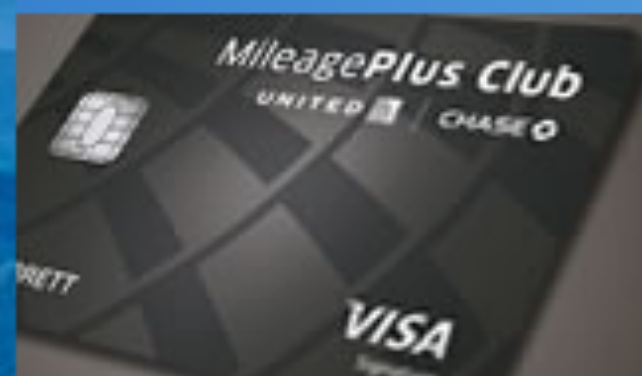


My trips



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