

MAD

Mobile Application Design

Mobile is different

- Smartphones and desktop computers are very different
 - One might be tempted to think of mobile devices as underpowered versions of 'real' computers
- Smartphones are actually more powerful than desktops in many ways
 - Designing for mobile is very different
 - Many more options

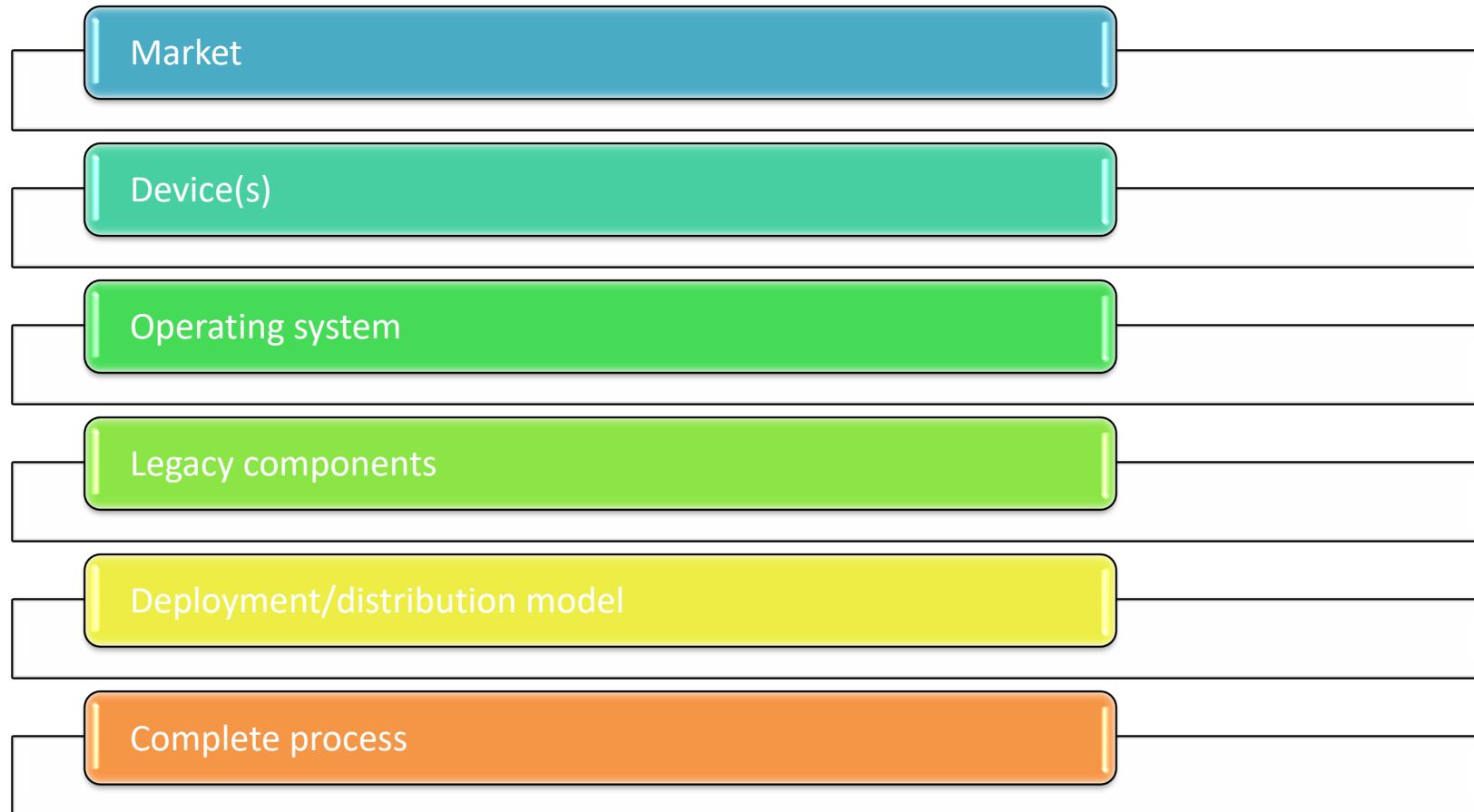
Mobile app design

- A mobile app should do one thing and do it well
- A mobile app should be as simple as possible, but no simpler
- Further constraints
 - Standards compliance
 - Usability design
 - Minimalist design
 - Different versions (families of applications)

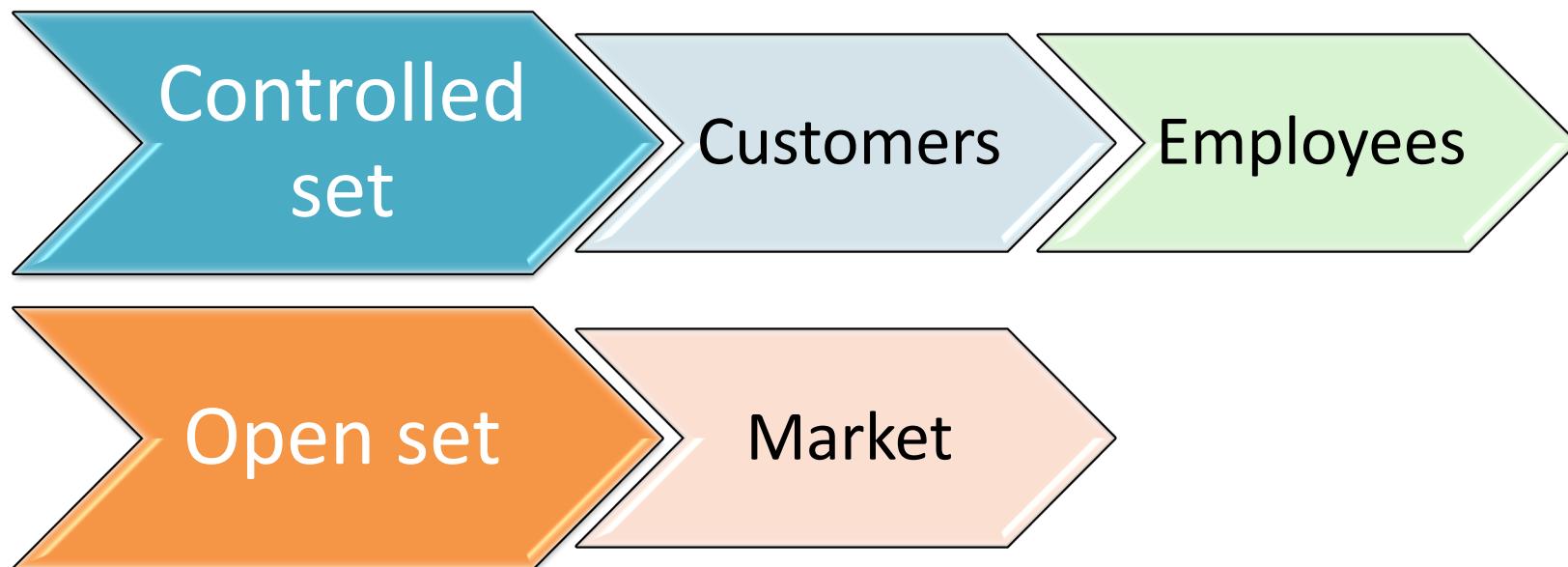


**THINK “FAST FOOD” –
SIMPLE, CHEAP AND
ADDICTING.**

Some key choices



What is the target?



Devices (I)

- > 1000 Android devices



Devices (II)



Version	Code name	Release date	API level	Runtime	Distribution
9.0	Pie	August 6, 2018	28	ART	N/A
8.1	Oreo	December 5, 2017	27	ART	3.2%
8.0		August 21, 2017	26	ART	11.4%
7.1	Nougat	October 4, 2016	25	ART	10.5%
7.0		August 22, 2016	24	ART	20.3%
6.0	Marshmallow	October 5, 2015	23	ART	22.7%
5.1	Lollipop	March 9, 2015	22	ART	15.4%
5.0		November 3, 2014	21	ART 2.1.0	3.8%
4.4	KitKat	October 31, 2013	19	Dalvik (and ART 1.6.0)	8.6%
4.3	Jelly Bean	July 24, 2013	18	Dalvik	0.5%
4.2		November 13, 2012	17	Dalvik	1.8%
4.1		July 9, 2012	16	Dalvik	1.2%
4.0	Ice Cream Sandwich	October 19, 2011	15	Dalvik	0.3%
2.3	Gingerbread	February 9, 2011	10	Dalvik 1.4.0	0.3%

This chart provides breakdowns of Android versions, based on devices accessing the Google Play Store in a seven-day period ending on August 31, 2018.

Different operating systems



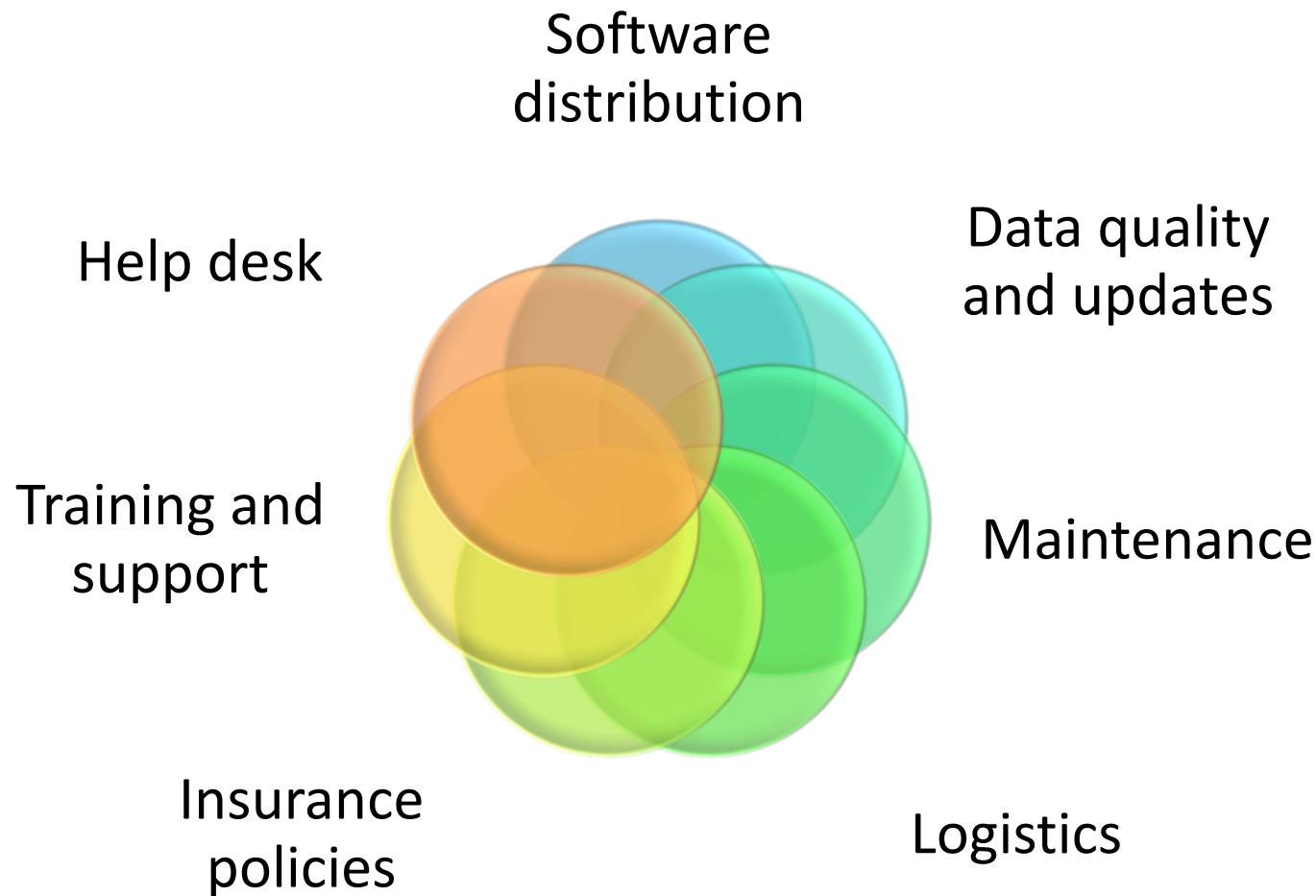
Legacy components

- Where do we came from?
- Where do we want to go?
- What assets do we want to keep?
- Which systems are we supposed to integrate?

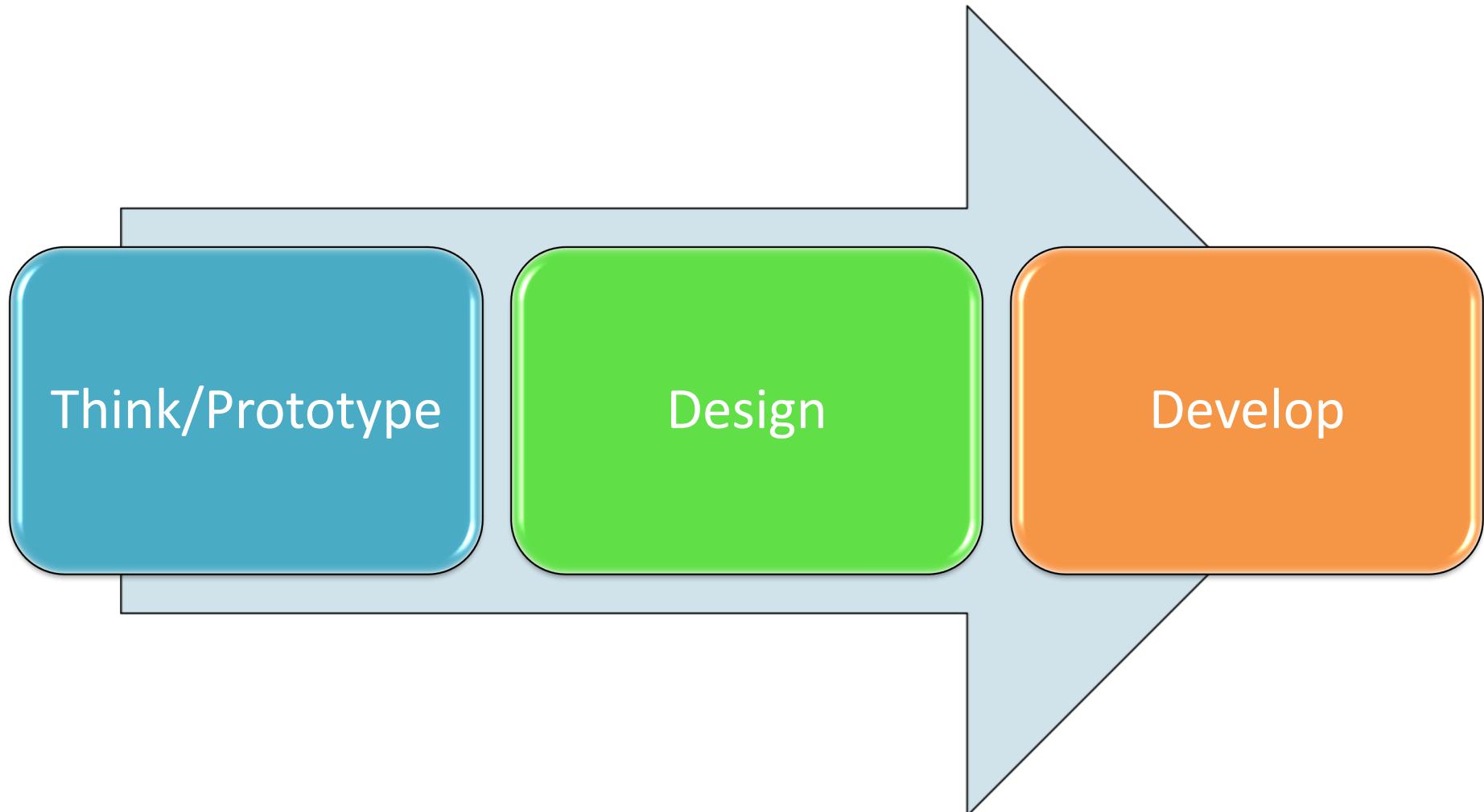
Deployment model

- Custom systems
- Closed world
 - Centralized distribution
 - Dedicated sites
- Market place

Complete process



Main development activities



Some key characteristics

- Mixed teams
- Sketches and prototyping
- Designers and not just computer scientists

How to start

- Mobile mindset
 - Focused, unique, charming, user-centered
- Different classes of users
 - Clearly identify your target(s): bored, busy, lost
- First impression is key
 - Limited/No help text
 - Characteristic and intriguing look and feel
 - Just a few seconds and the app...

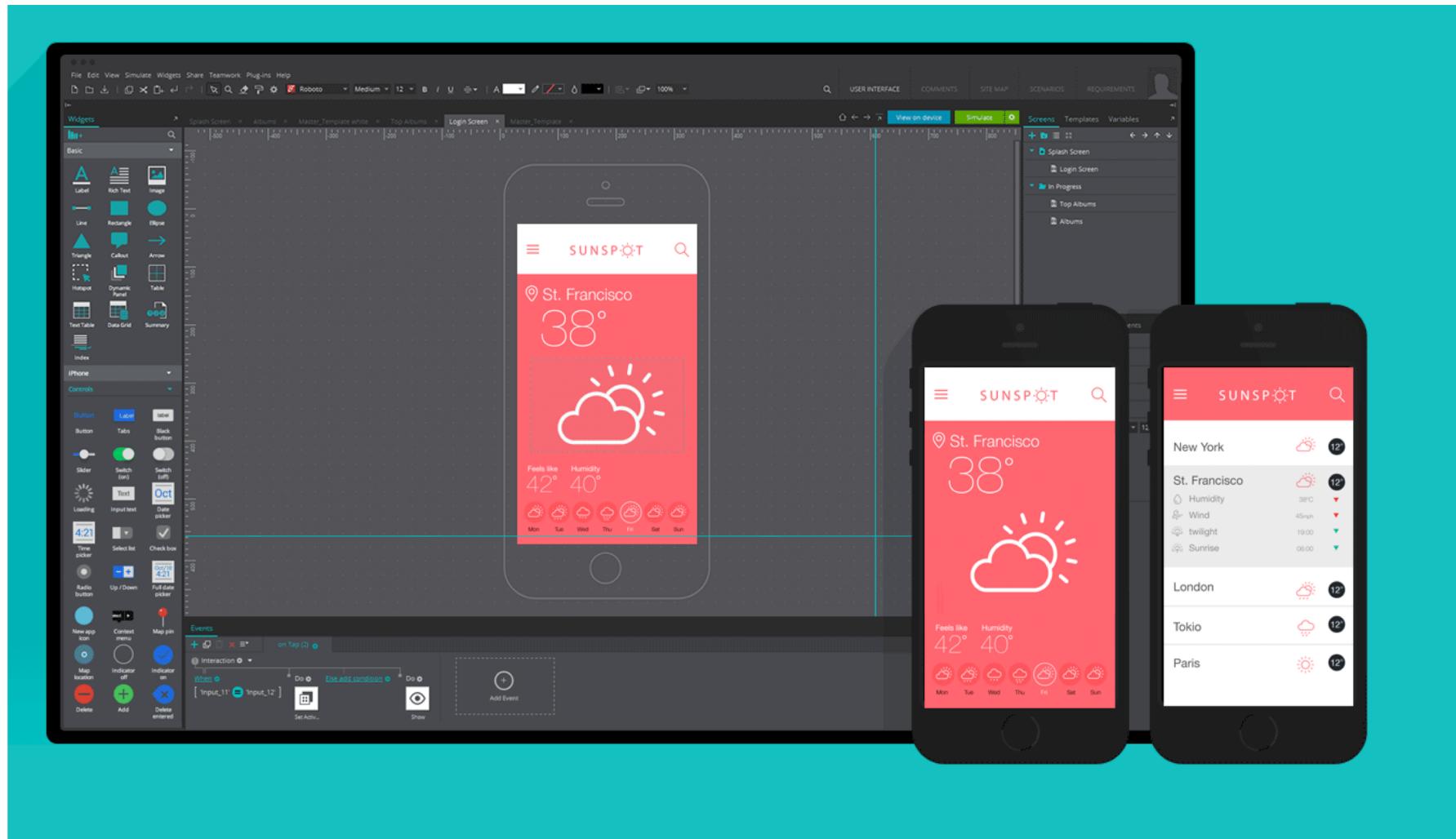
Be bold

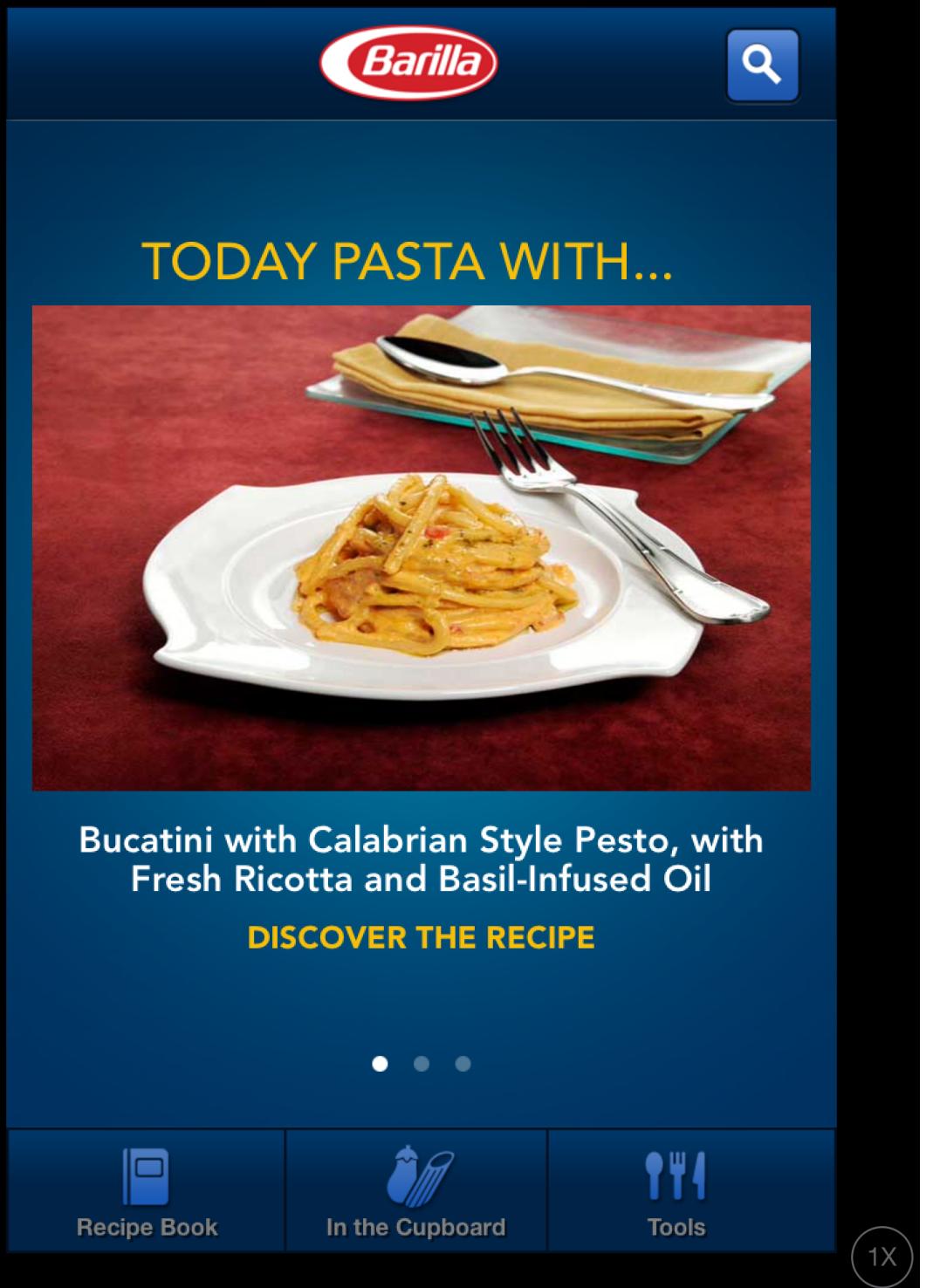
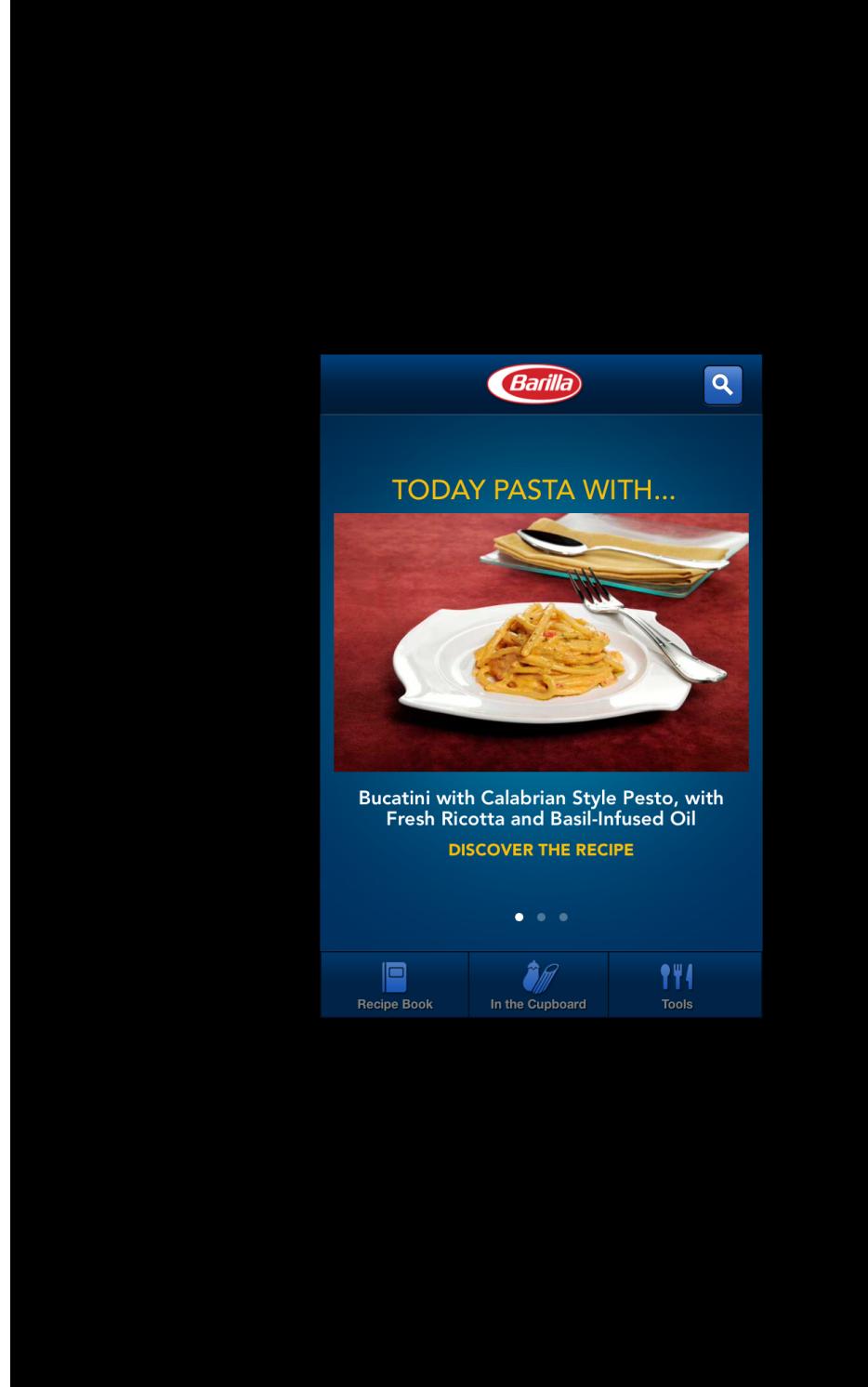
- Users are captured by unique design
- Users get tired of seeing the same old thing
- Do not use Android/Apple-supplied UI elements as a always-good solution
 - They are starting to look dated

Sketching



Something a bit more complete ...





●●●● TIM ⌂ 14:17 82% 🔋

Pronto Treno

Tickets Purchase

FIND YOUR JOURNEY

From Milano Centrale >

To Roma Termini >

Round-trip Outward Round-trip

WHEN DO YOU WANT TO LEAVE?

Date 10/16/14, 14:16 >

PASSENGERS (MAX 5)

Adults 1 >

Children 0 >

Search

Roma Termini

Departure Arrival

Tickets Purchase My Journeys Train Status



Search & Buy



From



To

18 Jul 2017, 21:58

O/R

Return Date and time



Adults n°

1

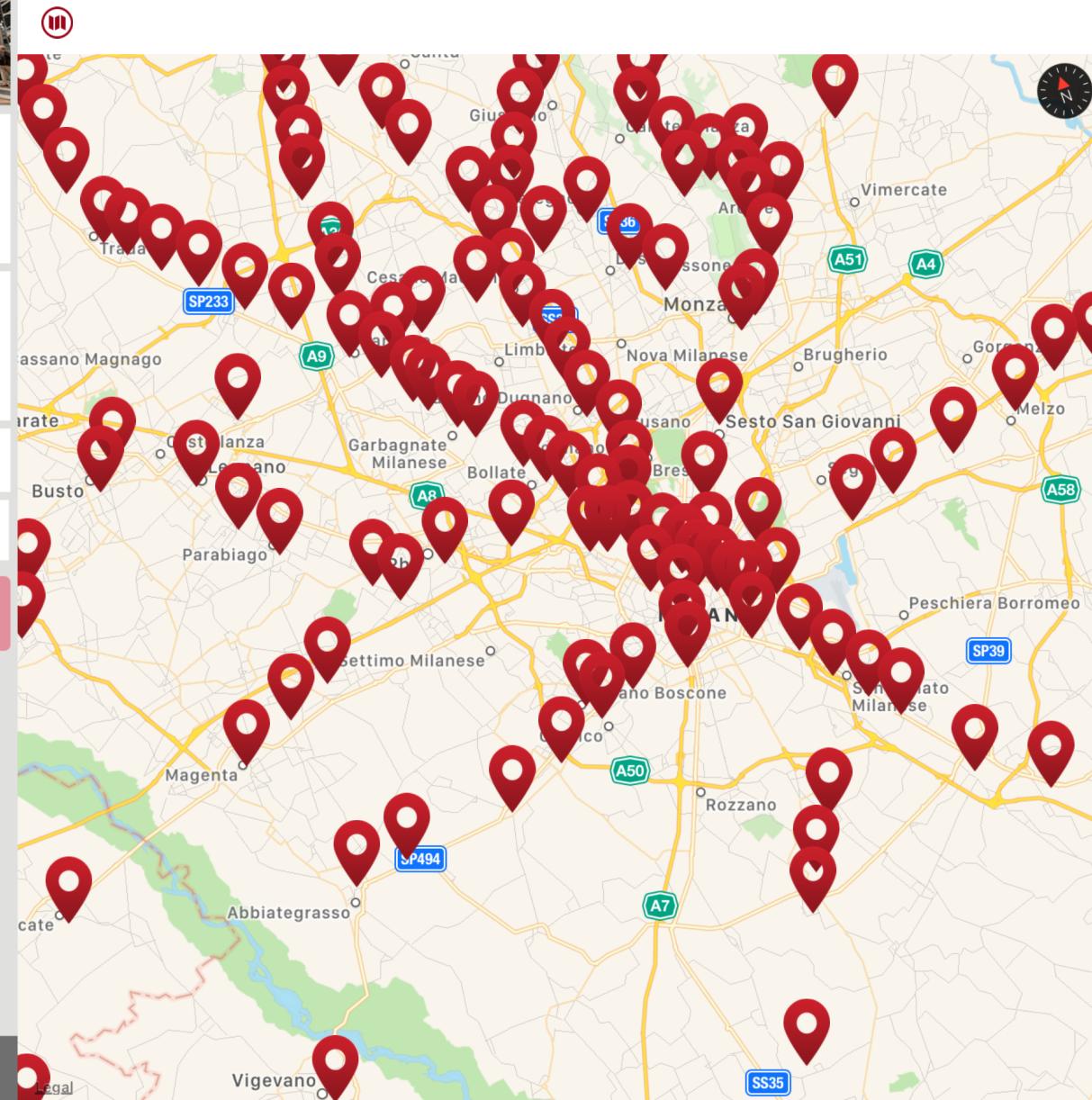
Children n°

0

Search

Main Solutions ▾

Search



Last searches



How many features

- Users do not spend time discovering features
- Users do not complain about “advanced” features
 - More features imply more apps
- Users complain about features that do not work

Android design principles

- Enchant me
 - Delight me in surprising ways
 - Real objects are more fun than buttons and menus
 - Let me make it mine
- Simply my life
 - Keep it brief
 - Pictures are faster than words
 - Decide for me but let me have the final say
 - I should always know where I am

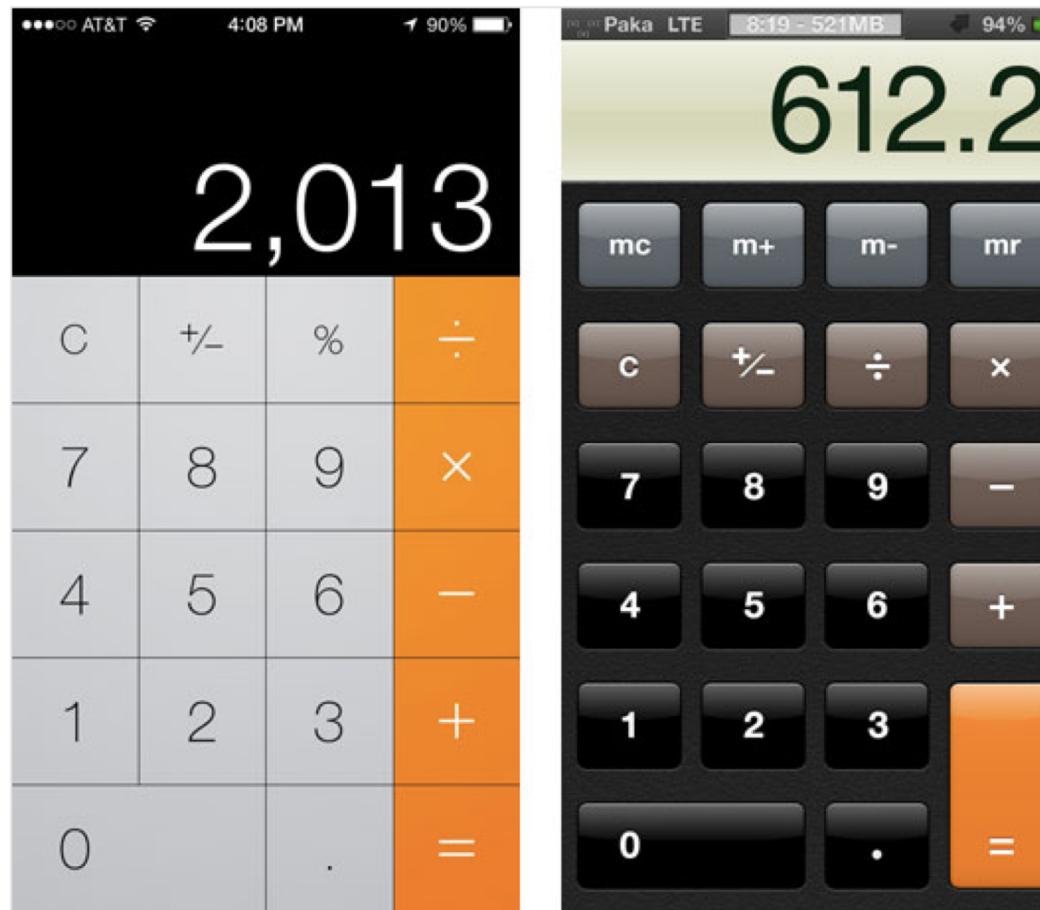
Further iOS design suggestions

- Use Layout to Communicate
- Avoid asking people to supply setup information
 - Focus on the needs of 80% of your users
- Launch in the device's current orientation
- When your app restarts, restore its state so users can continue where they left off
- An iOS app never displays a Close or Quit option
 - Never quit an iOS app programmatically

Final suggestions

- Single and appropriate navigation model
- Minimal user inputs (through the proper means)
 - Auto-correct can be so frustrating
- Gestures are not really standardized
 - They are nice to have, but not mandatory
- Support orientations
 - Be consistent and exploit orientation locks
- Communications
 - Provide polite feedback, modal alerts, confirmations
- Postpone sign up

Flat design



skeuomorphic design

- If your app looks outdated, users will note that

Flat design

- Not boring
- Ornamental elements are viewed as unnecessary clutter
- Bright, contrasting colors make illustrations and buttons pop from backgrounds
- Minimalistic nature



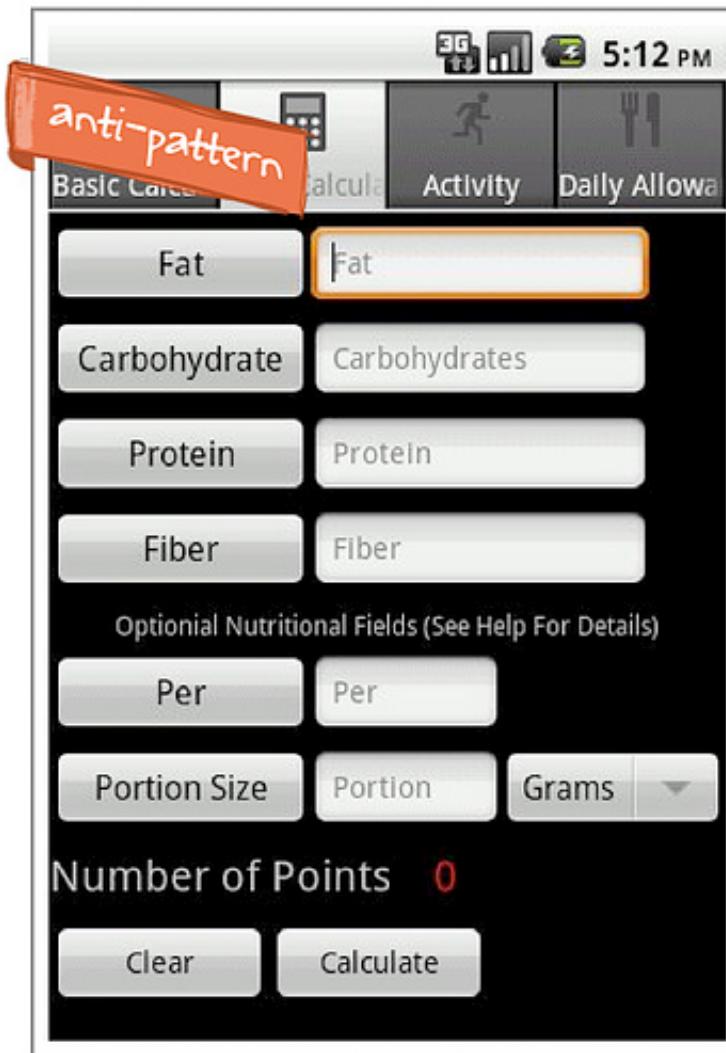
Consistent layout

- Can be very “expensive”
- Extremely important
- Design libraries exist to help decide which layout is the best for a particular problem

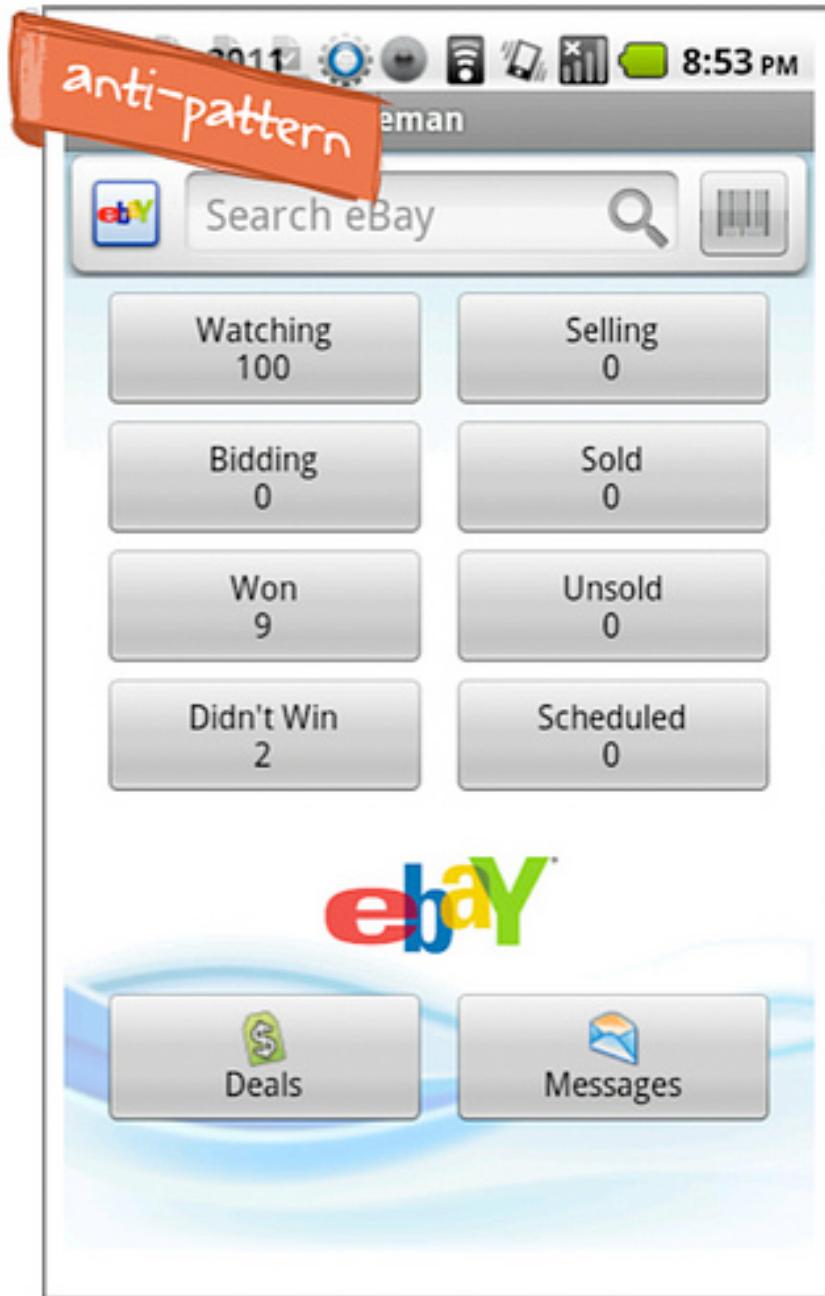
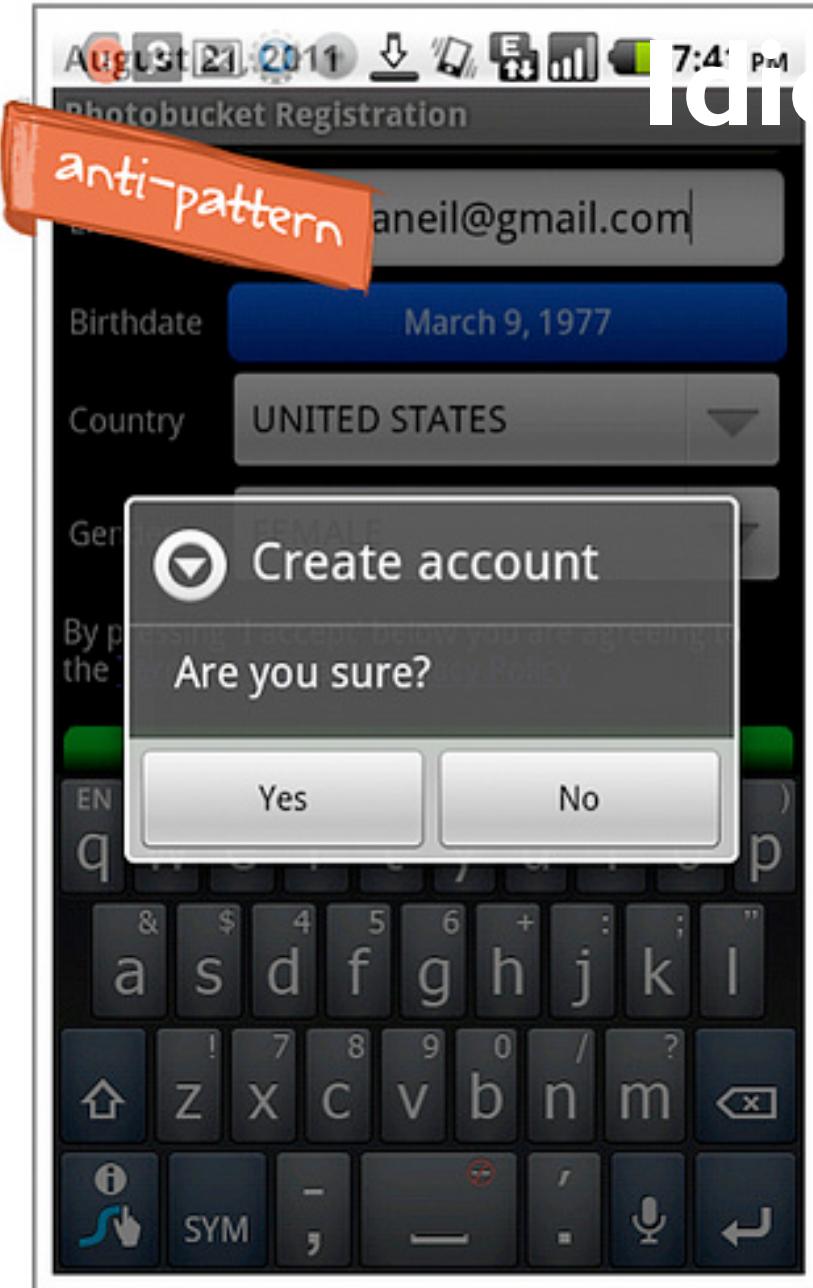
Anti-patterns

- Metaphor mismatch
 - Control, icon, or mental model mismatch
- Idiot boxes
- Too many chart elements
- Oceans of buttons

Avoid PCisms

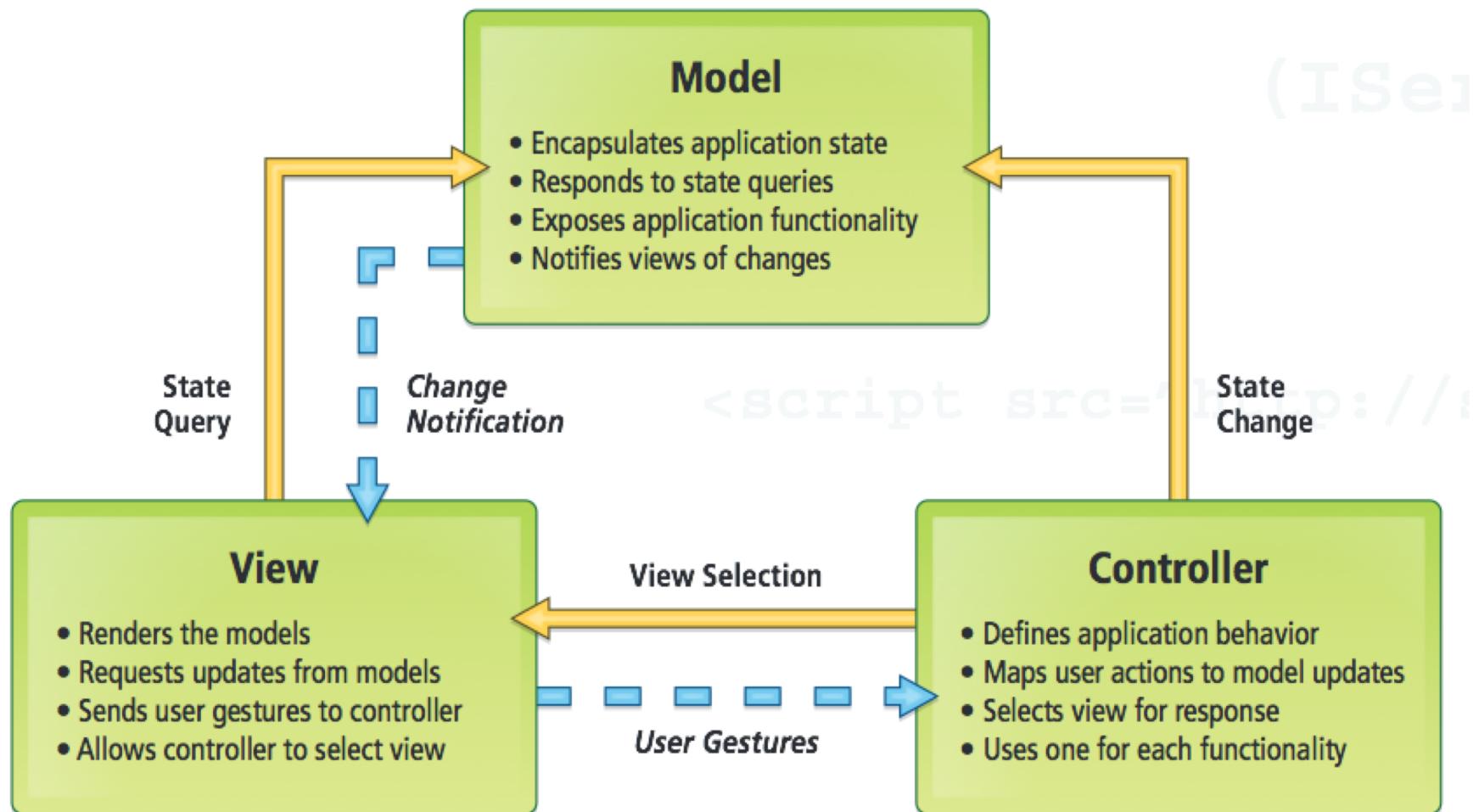


Images courtesy of Mobile Design Pattern Gallery by Theresa Neil



Development options

Model-View-Controller



Web-based solution

The screenshot shows the Booking.com homepage. At the top, there's a search bar with placeholder text "Trovare offerte per tutte le stagioni" and a yellow button labeled "Cerca". Below the search bar, there are several promotional banners:

- Luciano, che bello rivederti!**: A message for returning users with a discount offer.
- Nuove offerte aggiunte di giorno in giorno. Per tutte le tasche!**: Offers for budget-conscious travelers.
- 1.121.654 strutture in tutto il mondo**: Information about the number of accommodations worldwide.
- .genius**: A Genius service banner.
- Sconto Genius: 10% in meno sul tuo prossimo viaggio!**: Genius discount offer.
- Modifica la tua prenotazione quando vuoi**: Information about flexible booking options.
- 111.500.000 recensioni di cui puoi fidarti**: Information about the number of reviews.
- Siamo qui per aiutarti, tutti i giorni 24 ore su 24**: Information about 24/7 customer support.

On the right side, there are sections for "Gestione 'no stress' (e no cost!) dei viaggi di lavoro" and "Stai ancora organizzando un viaggio in questa destinazione?". It features cards for destinations like Sillian, Essaouira, and Fez, each with a photo and a brief description of what to visit.

Real app

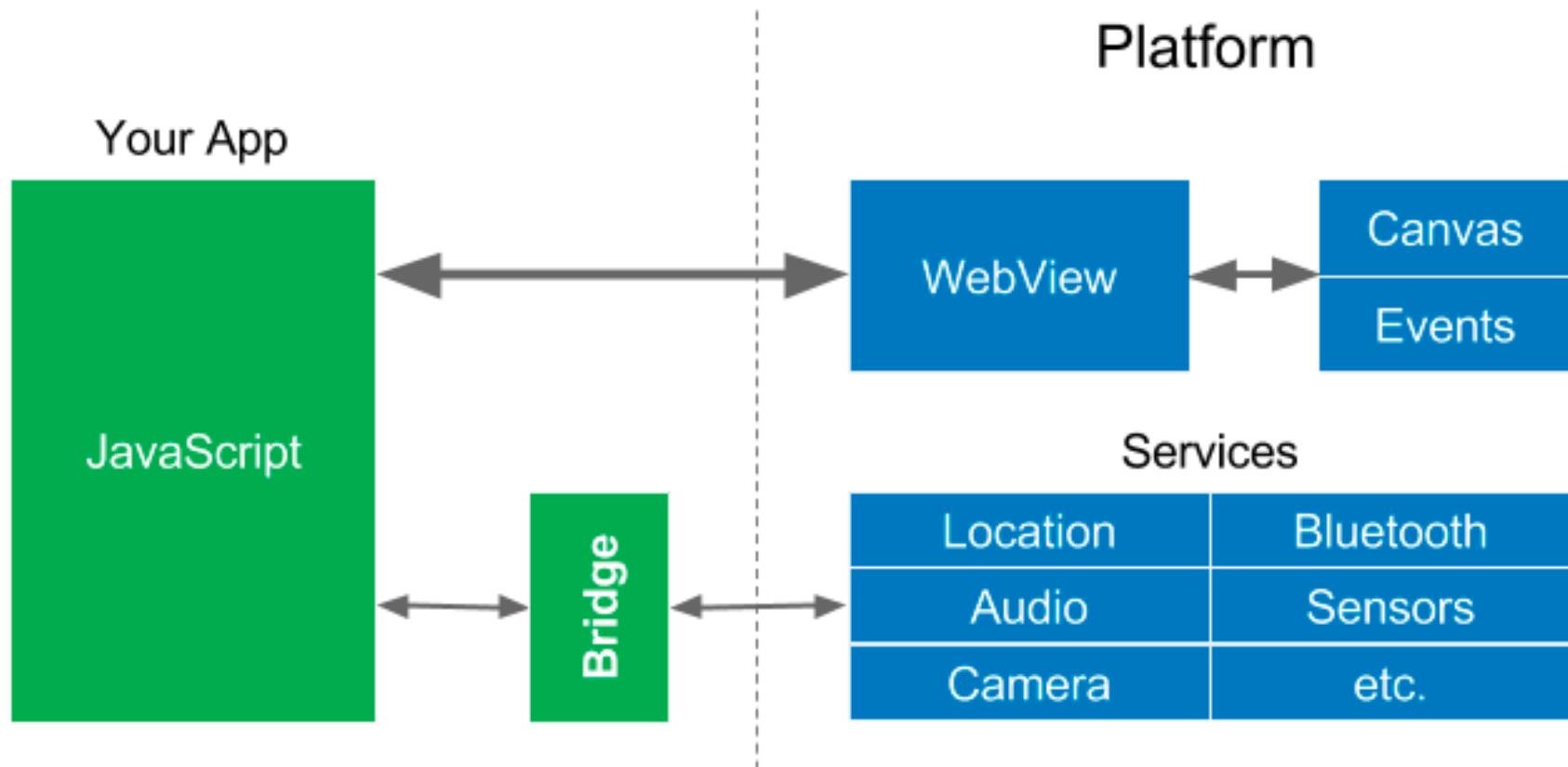
The image shows a screenshot of the Booking.com mobile application. At the top, there is a search bar with the placeholder "Search Hotels, apartments, villas and more...". Below the search bar, there are fields for "Check-in Date" (11 Wednesday January) and "Check-out Date" (12 Thursday January), followed by room and guest selection (1 ROOM, 2 ADULTS, 0 CHILDREN). There is also a "Travel Purpose" section with options for Work or Leisure. A large blue "Search" button is located at the bottom of this form.

The main content area features a large, blurred background image of a grand staircase and fountain, likely the Spanish Steps in Rome. To the right of the image, there is a promotional banner with a checkmark icon and the text "Book now, pay when you stay! With FREE cancellation on most rooms".

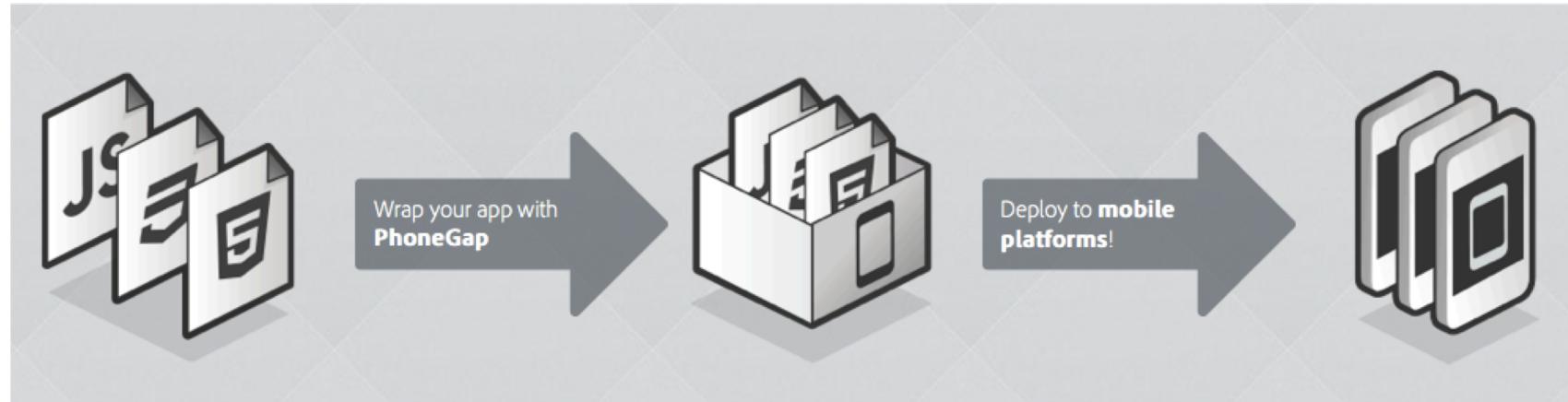
Below the main search area, there is a "Top Destinations" section with eight cards, each showing a city's name, its country, and the number of available hotels. The cities listed are:

City	Country	Hotels
Roma	Italy	8.060 hotels
Milan	Italy	2.479 hotels
Paris	France	2.697 hotels
London	United Kingdom	1.724 hotels
Barcelona	Spain	2.205 hotels
Florence	Italy	

Webview-based solutions

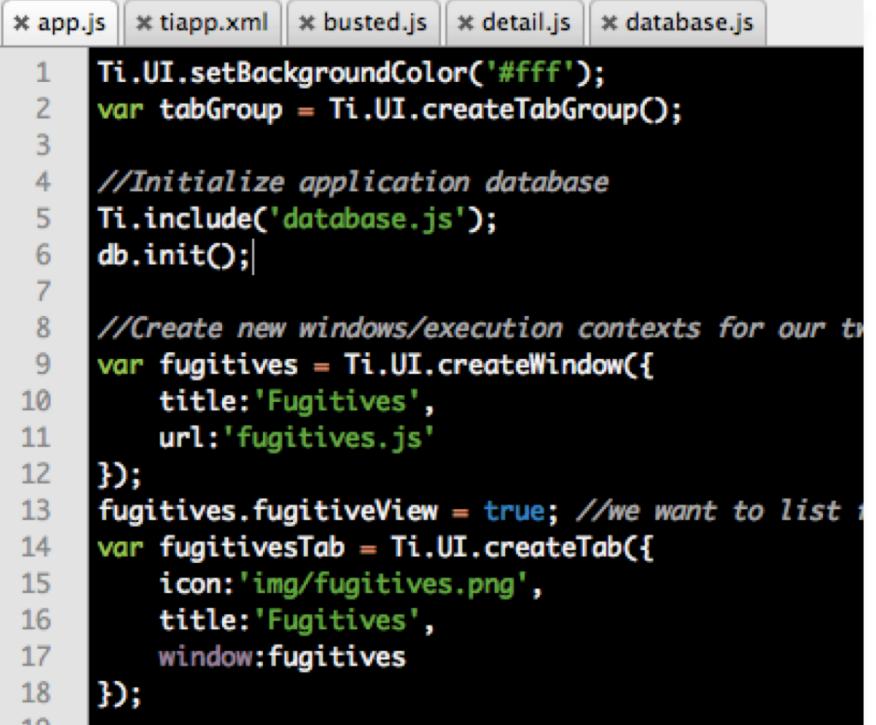


Hybrid solution (PhoneGap)



Interpreted Solution (Titanium)

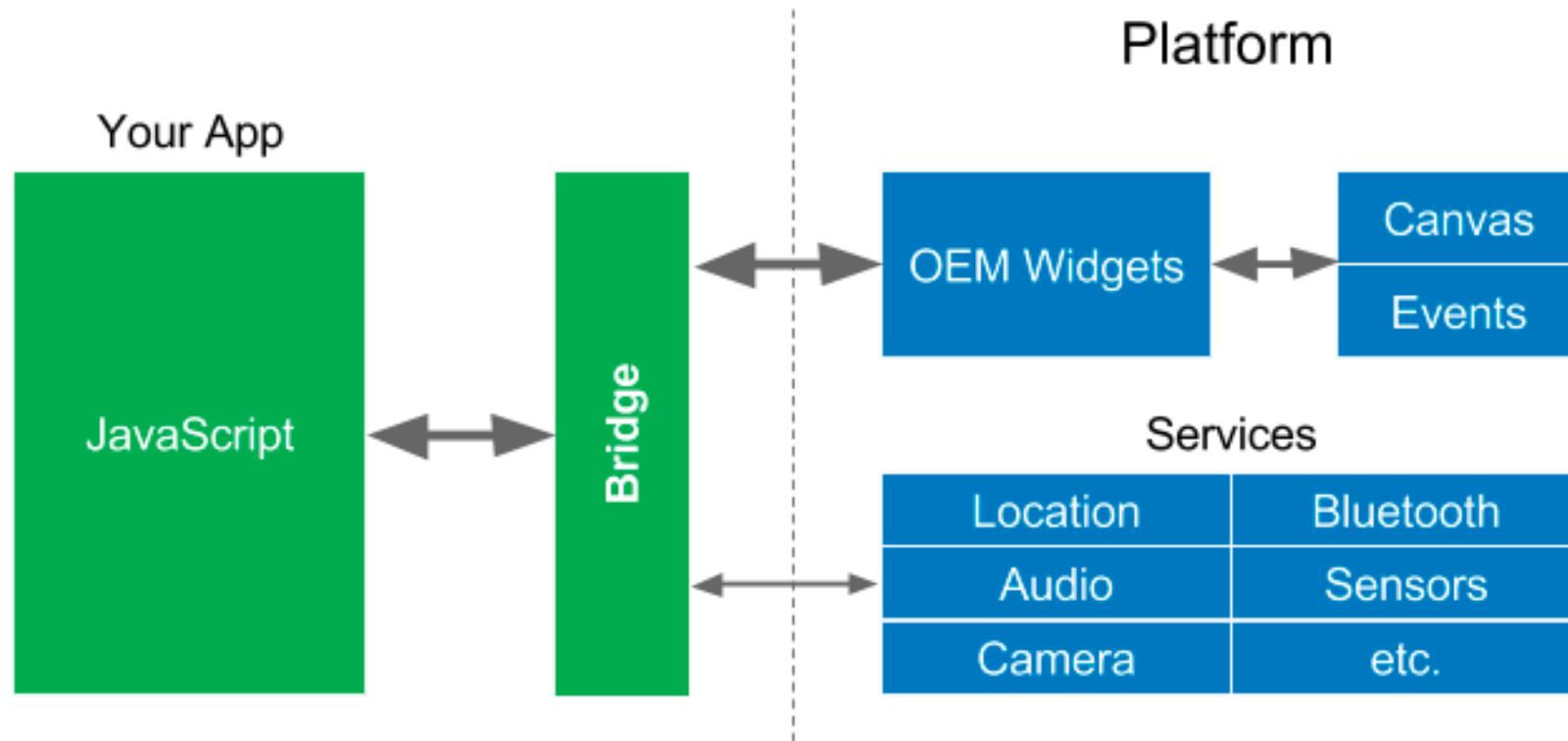
- A Titanium application is a JavaScript program
- Alloy framework
- Appcelerator Platform extends
 - Entire lifecycle of the application with debugging, testing, deployment, crash monitoring and analytic data collection



The screenshot shows a code editor window with several tabs at the top: app.js, tiapp.xml, busted.js, detail.js, and database.js. The app.js tab is active and displays the following JavaScript code:

```
1 Ti.UI.setBackgroundColor('#fff');
2 var tabGroup = Ti.UI.createTabGroup();
3
4 //Initialize application database
5 Ti.include('database.js');
6 db.init();
7
8 //Create new windows/execution contexts for our tabs
9 var fugitives = Ti.UI.createWindow({
10   title:'Fugitives',
11   url:'fugitives.js'
12 });
13 fugitives.fugitiveView = true; //we want to list fugitives
14 var fugitivesTab = Ti.UI.createTab({
15   icon:'img/fugitives.png',
16   title:'Fugitives',
17   window:fugitives
18 });
19
```

Solutions based on reactive views



Interpreted Solutions

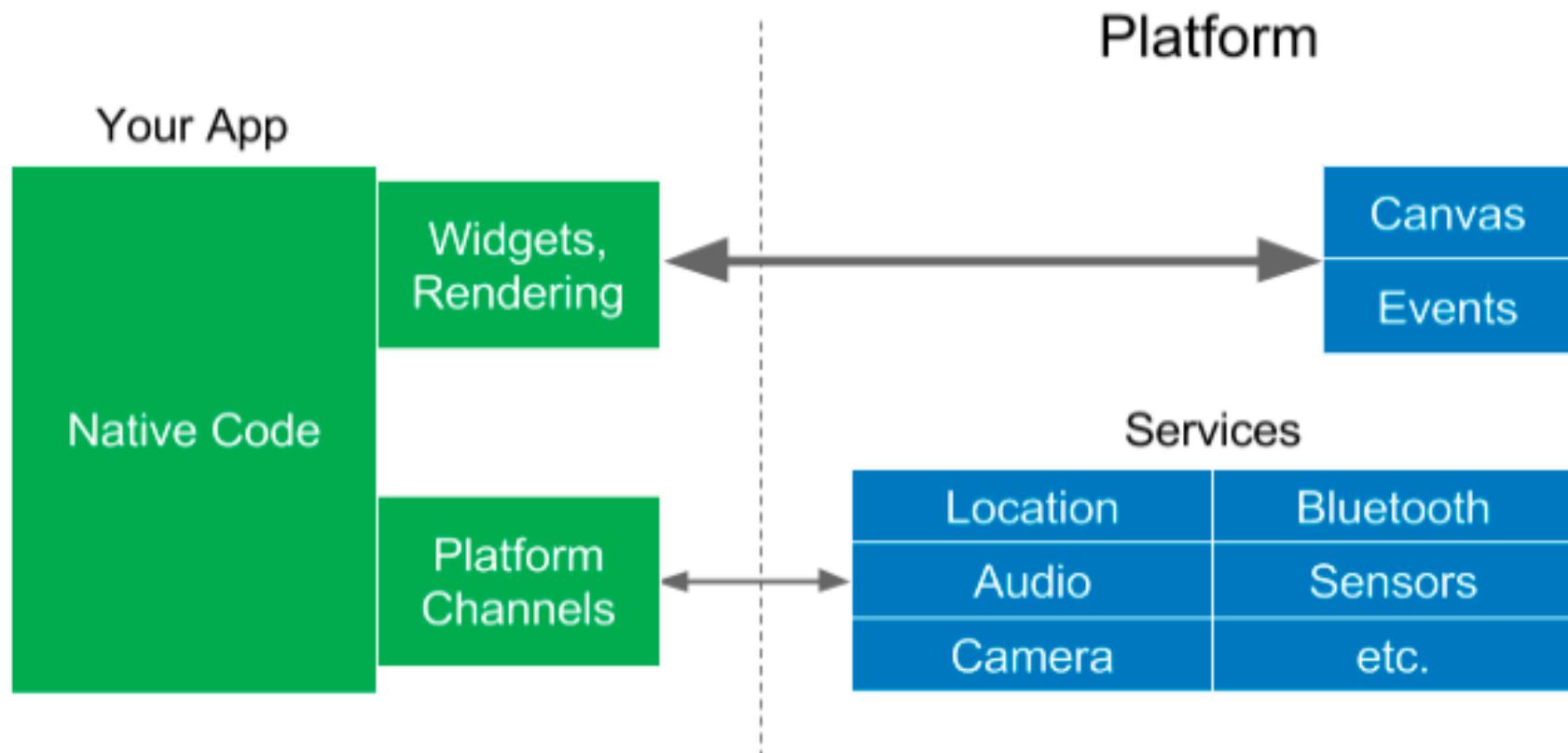
React Native

- Native mobile apps using JavaScript and React
- Uses the same fundamental UI building blocks as regular iOS and Android apps
- UI building blocks put together using JavaScript and React
- Pushed by Facebook

NativeScript

- Native mobile apps with Angular, TypeScript or JavaScript
- Use web skills, like Angular and CSS
- Native UI and performance on iOS and Android
- Hundreds of NativeScript plugins

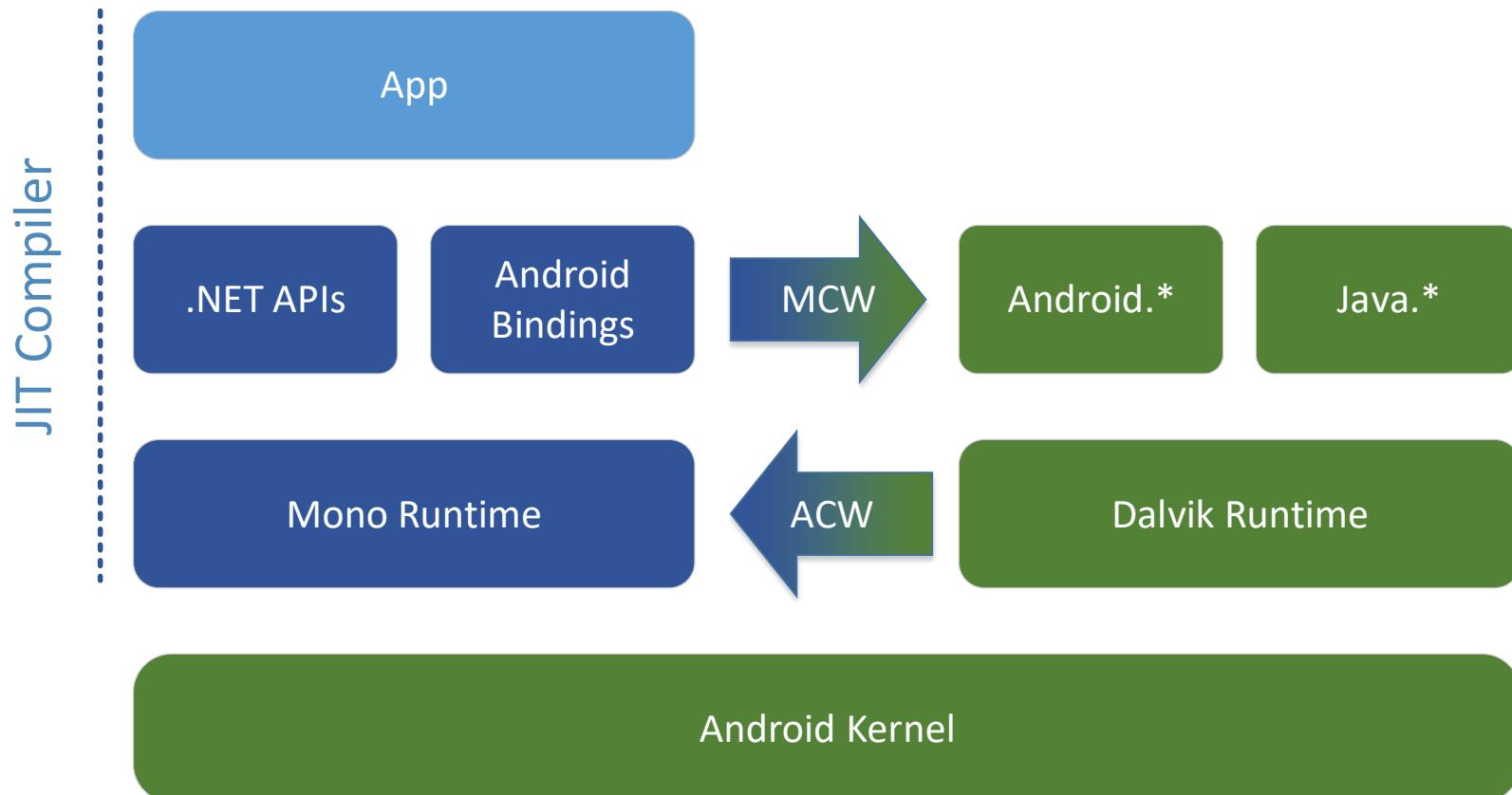
Flutter



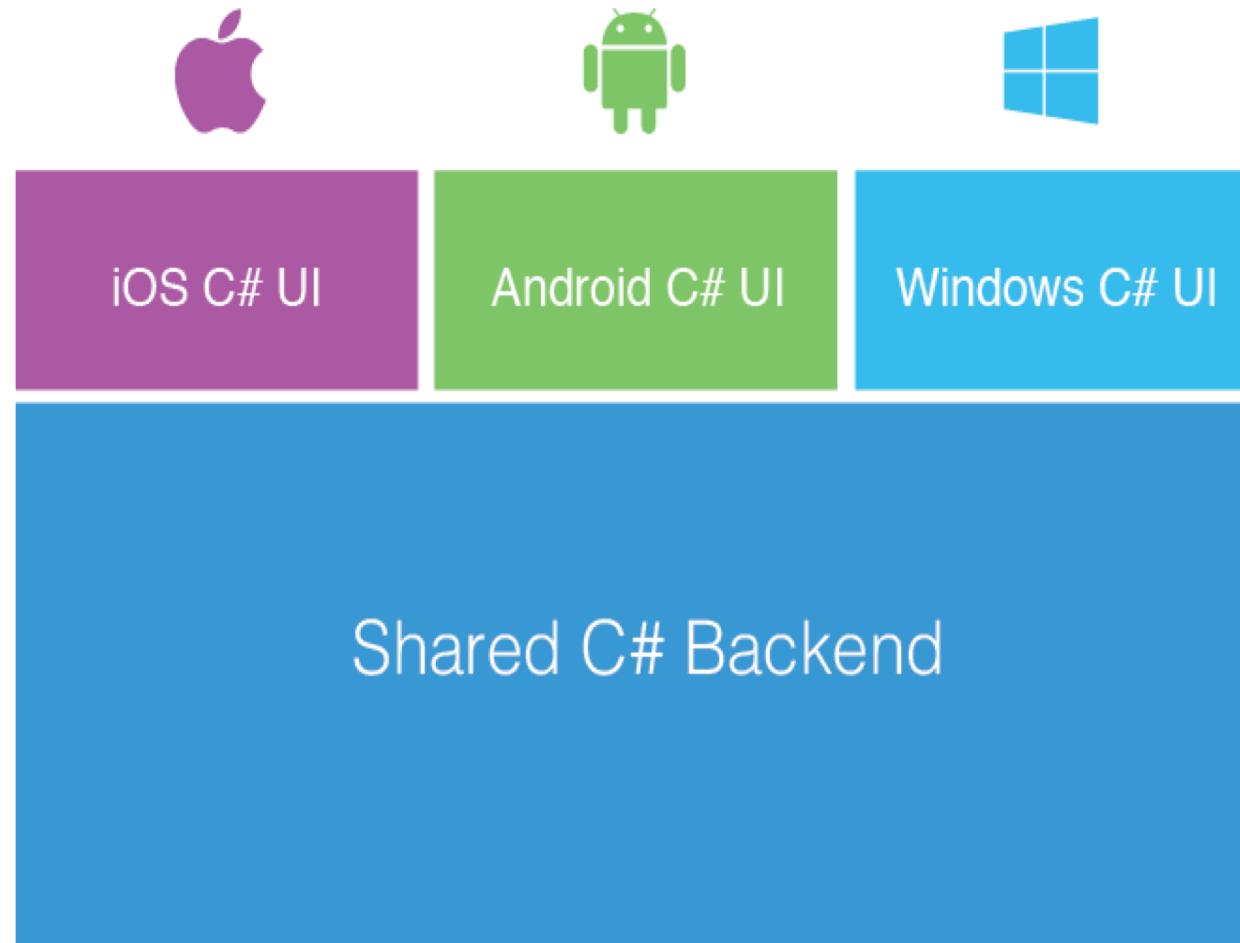
Flutter

- Flutter is a mobile app SDK, complete with framework, engine, widgets, and tools
- Gives developers easy and productive way to build and deploy beautiful apps
- Also used for Fuchsia
- Dart (Flutter's language) can be used to build web and server applications as well
 - Learn Dart once, develop for five platforms

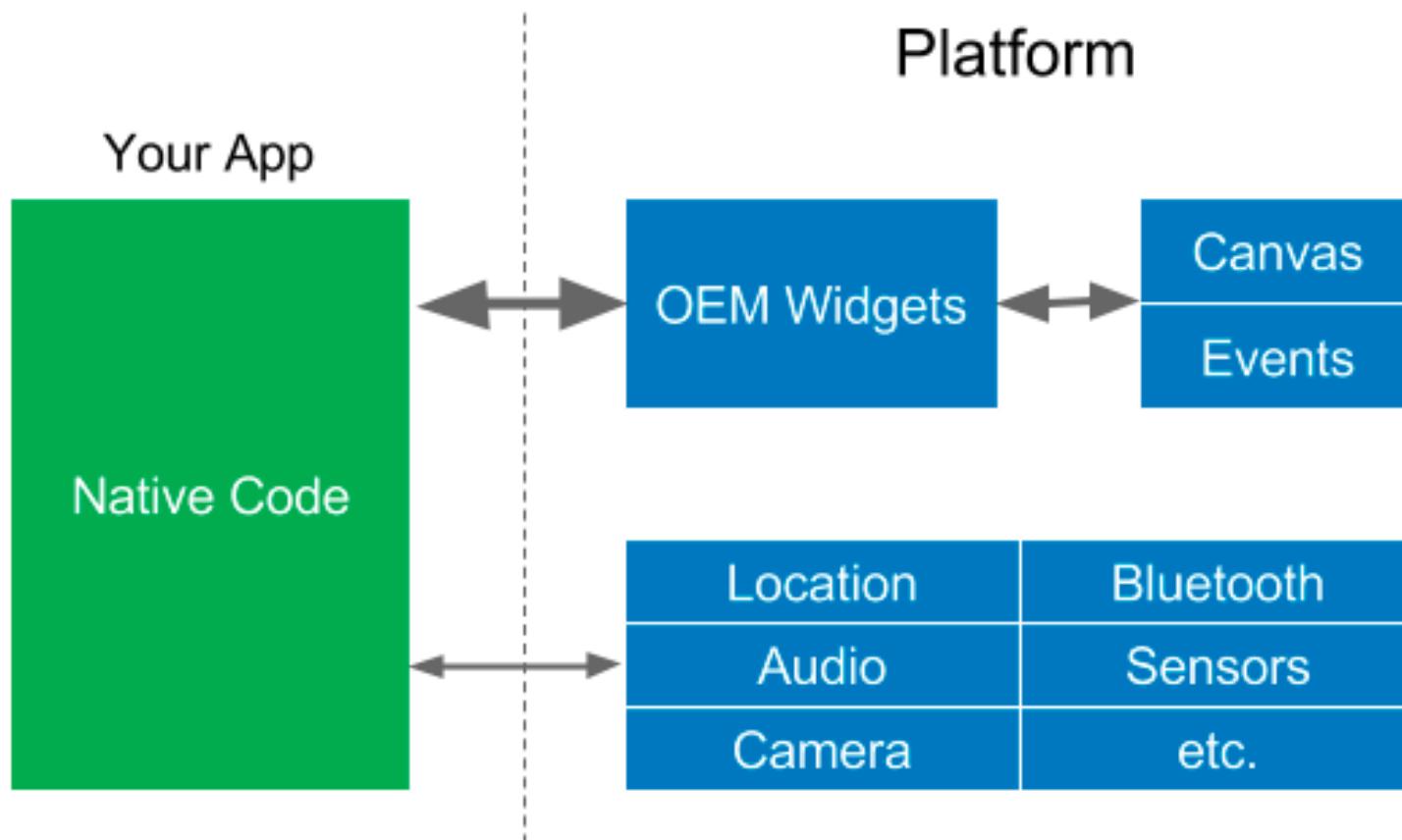
Cross-compiled solutions



Cross-compiled solution (Xamarin)



Native solution



Native solution

