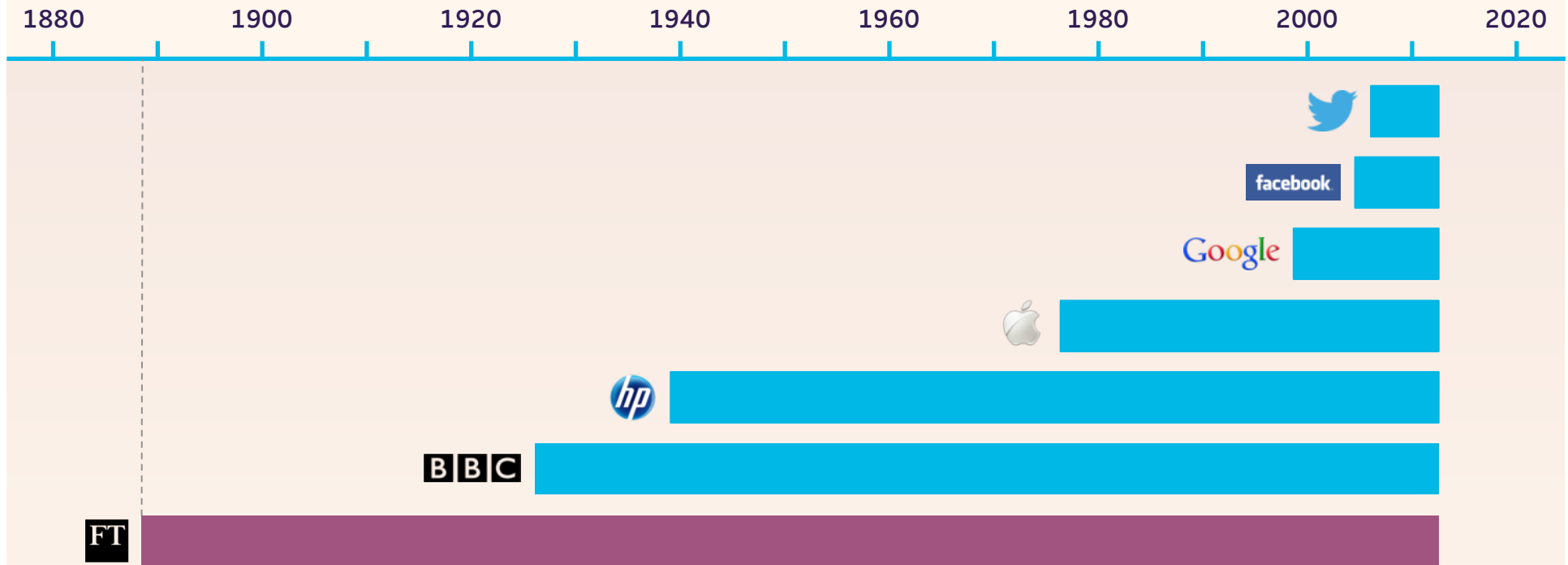




The FT Web App: Coding responsively

Dr Robert Shilston (rob@labs.ft.com)
Director, FT Labs (@ftlabs)

Historical comparison



FT WEEKEND

FINANCIAL TIMES | Saturday May 16 / Sunday May 17 2009 | £2.50

READER OFFER
Win a theatre trip to London and New York
 Turn to Page 9 for details of how to enter

HOW TO SPEND IT
Magazine travel special
 Destinations to dream about



Inside
 Simon Schama on America's phobia of banks
Life & Arts
 Cover Story

Can't sell? Should you swap instead?
House & Home
 Cover Story

Tom Stoppard on revisiting a Chekhov classic
Life & Arts
 Page 7

News Briefing

Vodafone tightens its focus on slashing costs

Vodafone is set to use its full-year results next week to announce an acceleration of its £100 cost-cutting programme as it grapples with competitive and economic pressures in

Square deal Fame for an hour on London landmark



Artist Antony Gormley sits in Trafalgar Square with some of the people who will stand on the empty fourth plinth in the London landmark public space as part of a project conceived in a portrait of the UK in 2009. The project will see a different person occupy the plinth every hour of the day from July 6 to October 14.

Low interest rates hit savers

FT lists 50 worst 'near-zero' offenders

An investigation into bank advertising that would cover such accounts.

In one example, the "Sovereign 30" account offered by Cetero, a private bank, pays zero interest on balances up to £100,000. It reported first-quarter losses of £1.5m after suffering £4.5m of losses in the year ended March 31. The bank's chief executive, Mr. King, said the bank had been "hit hard" by the downturn in the property market.

big cuts in official interest rates. Some banks and building societies will offer bonus rates of as much as 2.75 per cent, but such rates are likely to be short-lived.

reduced significantly more than cuts in the base rate. The FICSB watchdog said: "Whether the notifications are received on the call to action or otherwise on Tuesday."

While institutional investors are resigned to a cut, retail shareholders, who make up 11 per cent of the shareholder base, are likely to be unhappy to see their M&S payouts slashed on the day of the AGM.

Investors face cut in M&S dividend

By Elizabeth Wigby, Andrea Falsted and Kate Burgess

Investors are bracing for Marks and Spencer to cut its dividend next week, with some analysts expecting the retailer to reduce its full-year pay-out by as much as half.

Morgan Stanley, the house broker, expects the full-year pay-out to be halved from £2.5p last year to 11.3p this time, ending an eight-year run of increased dividends. Others are pencilling in a reduction of 20-30 per cent.

People close to the retailer acknowledged that the level of dividend paid last year, when M&S broke the 11th profit mark, was no longer sustainable, given that the retailer was expected to reveal a fall of 40 per cent in pre-tax profits for the year to March after a year of trading.

One person familiar with discussions over the dividend said it might be more prudent to cut now than to be forced to cut in a few months' time if the hoped-for "green shoots" of recovery did not emerge. The board will meet on Monday and announce the outcome on Tuesday.

While institutional investors are resigned to a cut, retail shareholders, who make up 11 per cent of the shareholder base, are likely to be unhappy to see their M&S payouts slashed on the day of the AGM.

2009 | £2.50



of the UK
 s are
 r sale

residential prop-
 has dropped
 months as full-
 sellers from

the agent, said
 8 per cent drop
 of residential
 ing flats, for
 year.

which rate
 agents, said
 10m by 40 per
 of. Data from
 of Char-
 shown that
 repetitive on
 has not fallen
 war to March

increase in
 not sales had
 wanted the lack of property

Simon Rubenstein, chief econo-
 mist at the Rics, said: "The
 worrying thing is that there is so
 little good quality stock that

Mandelson's prize
 Ann-Britt
 Churchill
 and
 Baroness

Newsprint

Works offline

Portable

Long battery life

Can be read in bright sunlight

Cheap

Ubiquity

Bookmarking

Sharing

Fast start up

Clipping/saving

~~Can be read in the dark~~

~~Updates in real time~~

~~Electronic delivery~~

~~Search~~

~~Personalisation~~

~~Deep linking~~

‘Traditional’ web

~~Works offline~~

~~Portable~~

~~Long battery life~~

~~Can be read in bright sunlight~~

~~Cheap~~

~~Ubiquity~~

Bookmarking

Sharing

~~Fast start up~~

Clipping/saving

Can be read in the dark

Updates in real time

Electronic delivery

Search

Personalisation

Deep linking

Apps

Works offline

Portable

~~Long battery life~~

~~Can be read in bright sunlight~~

~~Cheap~~

~~Ubiquity~~

~~Bookmarking~~

~~Sharing~~

Fast start up

~~Clipping/saving~~

Can be read in the dark

Updates in real time

Electronic delivery

~~Search~~

Personalisation

~~Deep linking~~

HTML5 is **not** a 'mobile thing'.
It's **not an alternative** to native
apps.

It's a way of making **better**
websites.



Welcome back to the web

The FT web app provides a touch optimised user experience without native code.

Sometimes it's

what we've done

But we've learned a lot, so to be honest sometimes it's

**what we would do if we did it
again.**

Agenda

- Coding responsively
 - Layout and interactions
 - Connection state
 - OS
- Development process
 - Branching and feature flags
 - Testing and deployment

But first, let's consider:

What is an app?

What is an 'app'?

- Built for a single platform
- In an app store
- Written in native code
- Built for mobile
- Designed for touch interaction

NO THANKS

What an 'app' is to us:

app (n). a distributed computer software application designed for optimal use on specific **screen sizes** and with particular **interface technologies**,

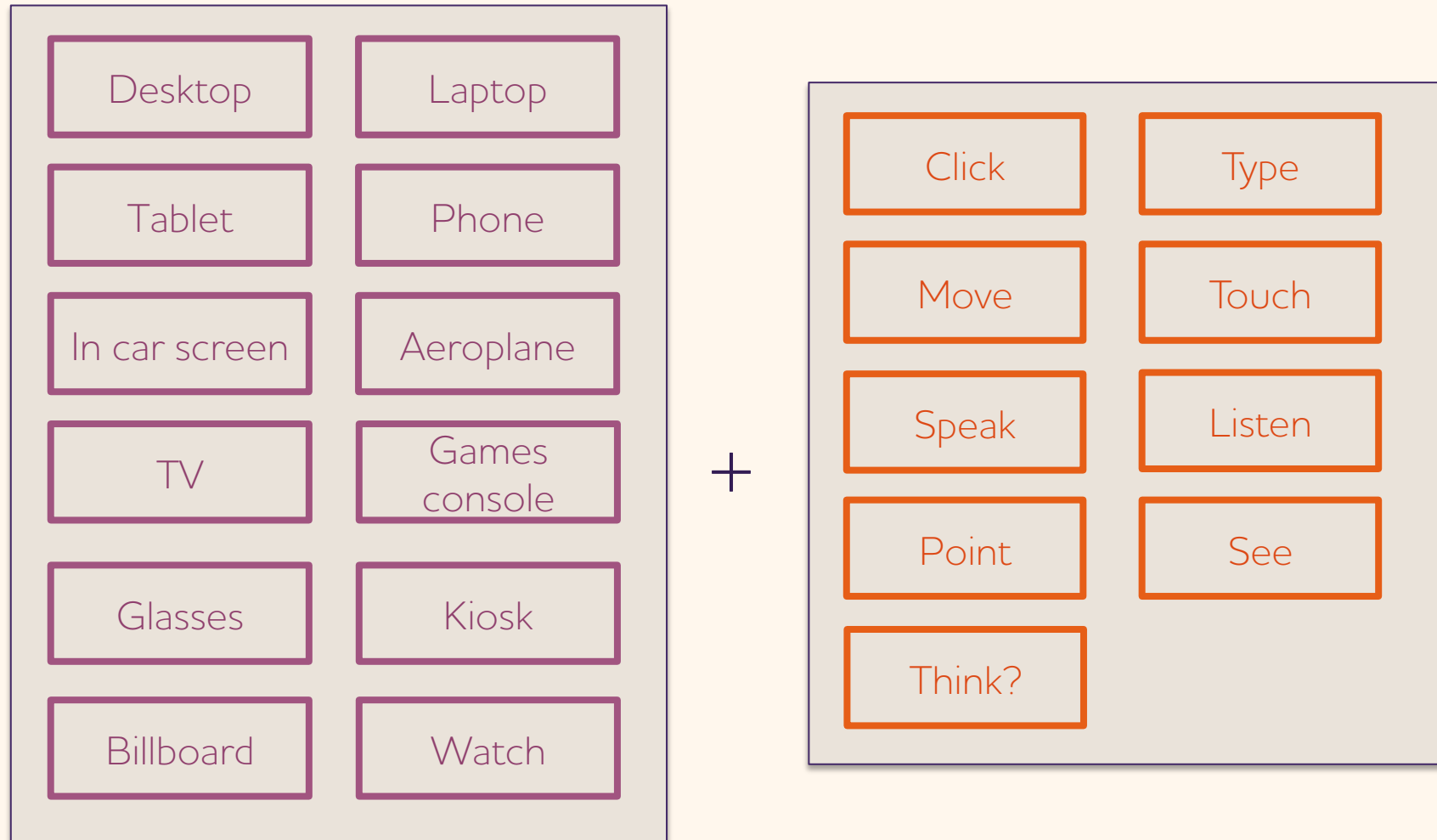
So let's start:

Why code responsively?

New devices



How an app might run



Layout and interactions

- Screen size
 - Not the same as resolution
- Instant touch feedback
- Click and mouse hover effects
- Keyboard shortcuts
- Reading experience
 - Easier to read narrow columns
 - Paragraph leading and guttering

Fastclick

- Speed up touch interactions
- Eliminates 300ms lag

```
<script src='fastclick.js'></script>
```

```
window.addEventListener('load', function() {  
    new FastClick(document.body);  
}, false);
```

Scroller

Fork me on GitHub



Flowed columns

8:40 AM Friday

Weber named next UBS chairman

By Haig Simonian in Zurich

Axel Weber is to be the next chairman of UBS, resolving succession issues at the Swiss banking group and removing any possibility the former Bundesbank president might take a top executive role at Deutsche Bank.

Mr Weber, who will receive a one off "golden hello" of SFr2m (\$2.4m) along with 200,000 UBS shares which he will be prevented from selling for a year, was once tipped as the likely successor to Jean-Claude Trichet at the European Central Bank.

Kaspar Villiger, a former Swiss finance minister and current UBS chairman who stepped in to restore stability to the bank after the ravages of the credit crisis, has regularly stressed his awareness of succession issues.

Apart from a successor to the chairman, who is aged 70, the board has also acknowledged the need to plan ahead for



	LAST	TODAY'S CHANGE	1 MONTH CHANGE
Deutsche Bank ... As of Jul 01 2011 1...	41.98	+1.33	+2.28%
	EUR	+3.26%	
UBS AG As of Jul 01 2011 1...	15.69	+0.36	-4.21%
	CHF	+2.35%	

a successor to Oswald Grübel, the former veteran Credit Suisse chief executive who came out of retirement to take the same job at UBS. The bank made no mention of Mr Grübel, aged 67, but it has been widely assumed in Switzerland that resolution of Mr Villiger's succession would be followed by that of the chief executive.

Mr Weber will receive a base salary, UBS shares and benefits in kind. As deputy chairman, he will receive SFr1.5m a year, and 150,000 UBS shares, blocked for four years. On becoming chairman, his annual pay will rise to SFr2m and the share entitlement to 200,000.

By comparison, when Mr Villiger was appointed chairman, while the bank was still heavily in loss, he emphasised he would take the standard SFr850,000 salary of a Swiss cabinet minister. Since then, his pay and benefits have edged up to almost SFr1.5m.

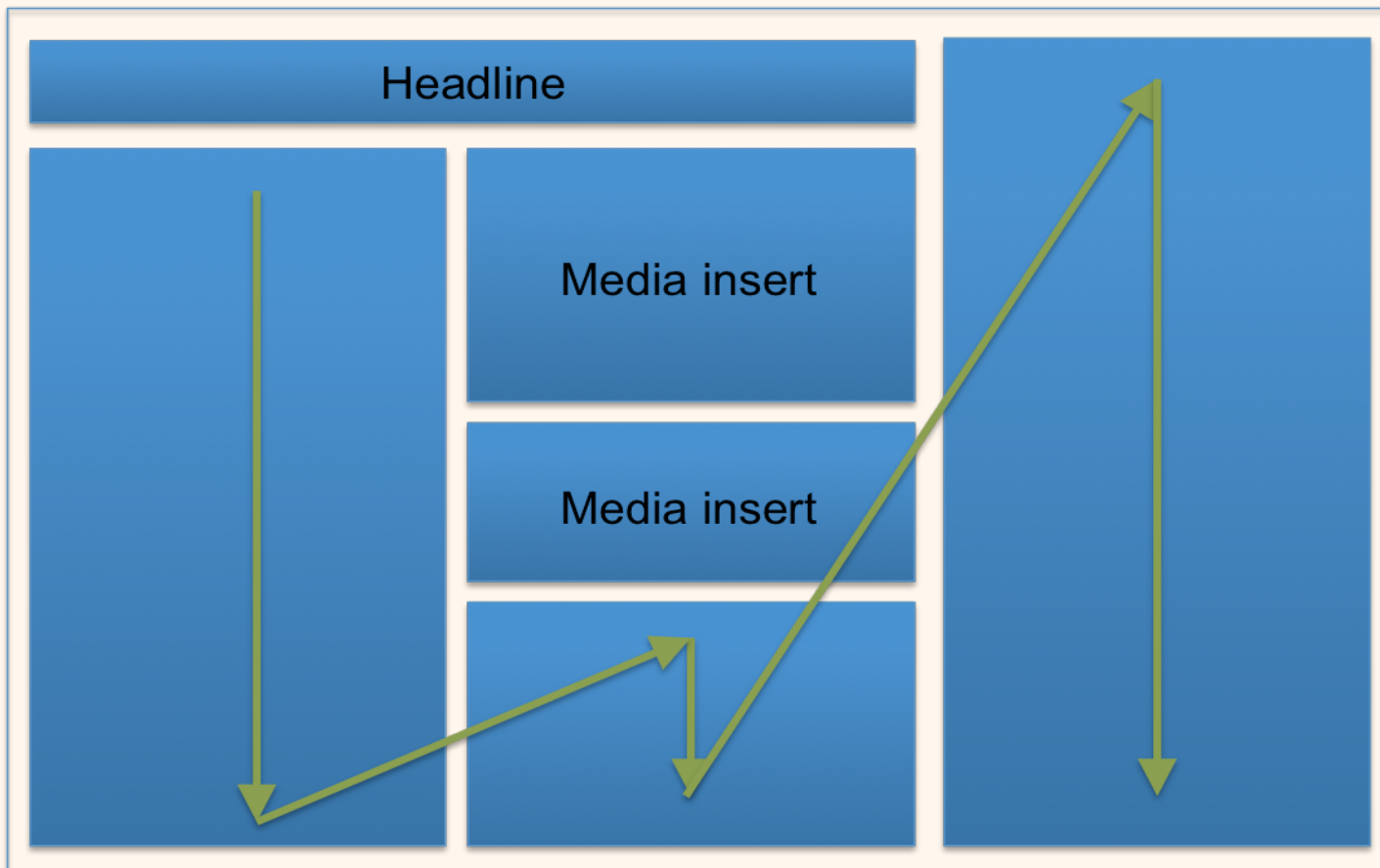
"With Axel Weber's nomination, I am pleased that I can present a board member and future chairman who is an internationally renowned personality with an outstanding reputation", said Mr Villiger.

"He has extremely broad expertise in international finance and banking as well as strong leadership experience. His appointment will guarantee a smooth leadership transition and stability."

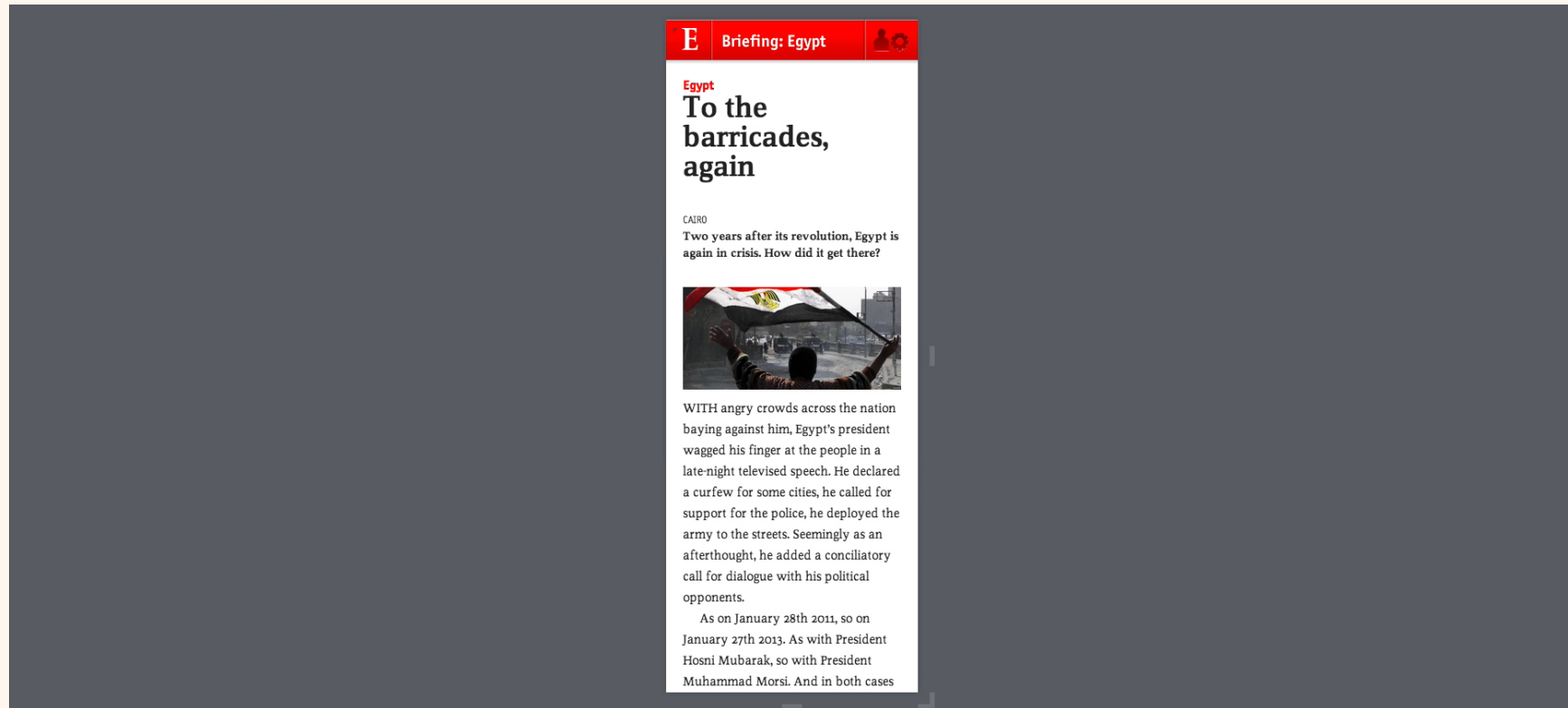
Dirk Becker, an analyst at Kepler Capital Markets, said the appointment of Mr Weber would bring the Swiss bank

Flowed columns

Fork me on GitHub



Reflowing



Resizing

E Briefing: Egypt

The Economist February 2nd 2013



Egypt

To the barricades, again

CAIRO

Two years after its revolution, Egypt is again in crisis. How did it get there?

WITH angry crowds across the nation baying against him, Egypt's president wagged his finger at the people in a late-night televised speech. He declared a curfew for some cities, he called for support for the police, he deployed the army to the streets. Seemingly as an afterthought, he added a conciliatory call for dialogue with his political opponents.

As on January 28th 2011, so on January 27th 2013. As with President Hosni Mubarak, so with President Muhammad Morsi. And in both cases to little effect. After both televised

addresses vast throngs gleefully defied the curfew, freshly deployed soldiers ignored the revellers and the head of the army warned of a collapsing state, prompting rumours of an imminent coup. Opposition leaders demanded a government of national unity. Ordinary citizens braced for the unknown.

The drama that has been unfolding since January 25th, the anniversary of the beginning of the uprising which toppled Mr Mubarak two years ago, would have looked peculiarly familiar even without the eerily precise coincidence of the dates. Some are tempted to see the similarities carried through to the outcome, hoping that Mr Morsi, a stalwart of the Muslim Brotherhood and Egypt's first freely elected president, will soon fall too. "It is amazing how history accelerates," was the catty remark of a prominent defector from the Brotherhood. "Morsi

has got to the point Mubarak reached after 30 years in just six months."

Forbidding ways of custom
But though the situation may seem similar, the country itself has changed a great deal since what was at the time seen as a revolution (many shy from the term today). Egypt's economy has foundered dangerously in the absence of firm government policy. Politics has polarised between an ostensibly empowered Islamist camp and a disgruntled, alienated or outright hostile minority that includes much of the educated, urban elite. Amid this mess, fearful for the future and dispirited by haggling politicians, most Egyptians have little appetite for another big upheaval. The army, which stepped in to shunt Mr Mubarak aside and then lingered too long, is reluctant to dirty its hands again.

The young hotheads at the

heart of today's protests might like nothing more than to see Mr Morsi forced into an ignominious, Mubarak-like exit. But the broader demand is for him to change, not to go—to act more like a leader for all Egyptians and less like a front man for the Muslim Brotherhood. The Brotherhood has shed much of the appeal that won it various recent elections and tentatively protected it against doubts, not least among foreign powers, about Islamist rule. At home its cult of secrecy, hazy pan-Islamic agenda and sense that it rules by entitlement now provoke suspicion and resentment even among many fellow Islamists.

Whatever its specific focus, the mounting unrest presents an increasingly dangerous challenge to Egypt's battered and creaking state. There would have been protests to mark the anniversary anyway, but the sentencing to death of 21 football fans from Port Said on



January 26th wound them up to a new level of intensity. Football fans have been among the most eager activists; the judgment on the fans from Port Said, who were held responsible for the deaths of 72 people at a game in Cairo last year, sent a crowd swarming to the prison where they were kept. Panicked police opened fire, killing 30 people. They fired again at the mass funeral of those victims, killing yet more. The mix of seemingly twisted justice—the people of

Port Said think their fans are being scapegoated—brutally unaccountable police and haughty disdain for working-class provincials revived precisely the rage that fuelled revolution two years ago.

Rioters have disrupted trains and traffic. Arsonists have attacked buildings used by the government and the Brotherhood. Three big cities on the Suez Canal, Egypt's prime strategic asset, are in a state of defiant, if largely peaceful,

insurrection. Radical Islamists and secularists accuse each other of forming armed militias, an ominous development.

The country is sending Mr Morsi a loud message about the need for political inclusiveness. The question is whether Mr Morsi and the Brothers are listening.

Two years, two stories

When Egyptians of all classes and persuasions united against their dictator of three decades in

Connection state

Or why **online** and **offline** events should not be trusted to answer the question 'are we online?'

navigator.onLine

Are you online if?

- You've got wifi signal?
- You've got 3G signal?
- If DNS resolves?

If Twitter loads?

- Will my site?
- Will Facebook?

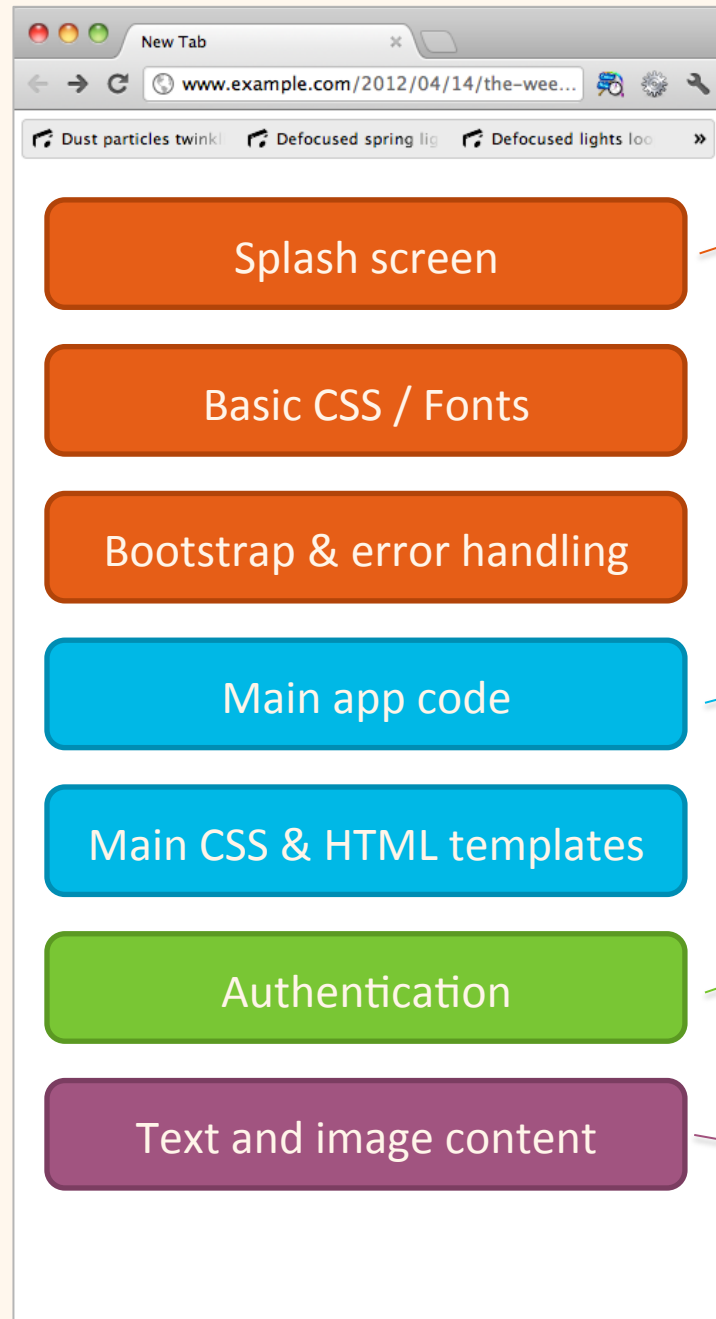
Q: If the value of **navigator.onLine** is **true**, what does that mean?

A: The device **might** be online.

For when there's no connection

- AppCache
 - Essential for offline functionality
 - Just use it to bootstrap your app.
- LocalStorage
 - Great for code and templates
- Cookies
 - Shared with the server
 - Included in every request
- WebSQL / IndexedDB
 - Great for content





HTML5 AppCache for
initial page load

Beware. AppCache needs
careful handling.

LocalStorage for code
and templates

Cookies for data shared
with the server

WebSQL / IndexedDB for
news content

Squeezing your bits

- Devices tend to limit HTML5 storage
- Storing images offline:

Base64 encoded data-URLs
+ UTF-16 storage encoding
= Inefficient



An image storage solution

1. Download images as gzipped base64
 2. Squeeze $2\frac{2}{3}$ base64 characters into one UTF-16 character
 3. Push that into the database
 4. Reverse when rendering the page
- Go to <http://labs.ft.com/> to read more.

Tips for coping with the network

- Batching your requests
- Prioritise requests
 - User requested content first
 - Analytics last
- Progress bars
 - Show feedback fast
 - Be pessimistic

One HTTP request!

- Aggressive batching – collect requests asynchronously:

```
api.add('getStory', {'path': '/1'}, callback1);  
api.add('getStory', {'path': '/2'}, callback2);  
api.send(callback3);  
api.add('analytics', params, callback4);  
api.send(callback5);
```

- Callbacks per action and per group

Going native

Acclimatised users

- Android
 - Back and Search buttons
 - Sharing: `Intent.ACTION_SEND`
 - Widgets
 - Background content downloading
- Windows 8
 - Sharing and Search charms
 - Home screen tile
 - Nav bar

Search on Android




Search on Windows 8

PERSONAL FINANCE

10:33 PM Monday


Banks plea for right to sell derivatives



In their evidence to a Parliamentary Commission probe, the leaders of HSBC, Barclays and Santander UK say that the products are crucial to SMEs

6:20 PM Sunday

Many mortgages still interest-only



Moody's finds 52.6% of London loans are to borrowers not making repayments of principal and geographic clusters of such loans can raise lenders' risks

5:03 PM Sunday

Student housing is top property asset

Rise in student numbers is generating double-digit returns in US and UK, outperforming equities, gilts and other property investments

Mortgages

Investments

Pensions

Tax

Banking & Savings

Bank pulls out of British expat mortgages

Mortgage snapshot shows fortunes vary

Germans warm to property own

Search

Financial Times

four more years

Apps

Settings

Files

Financial Times

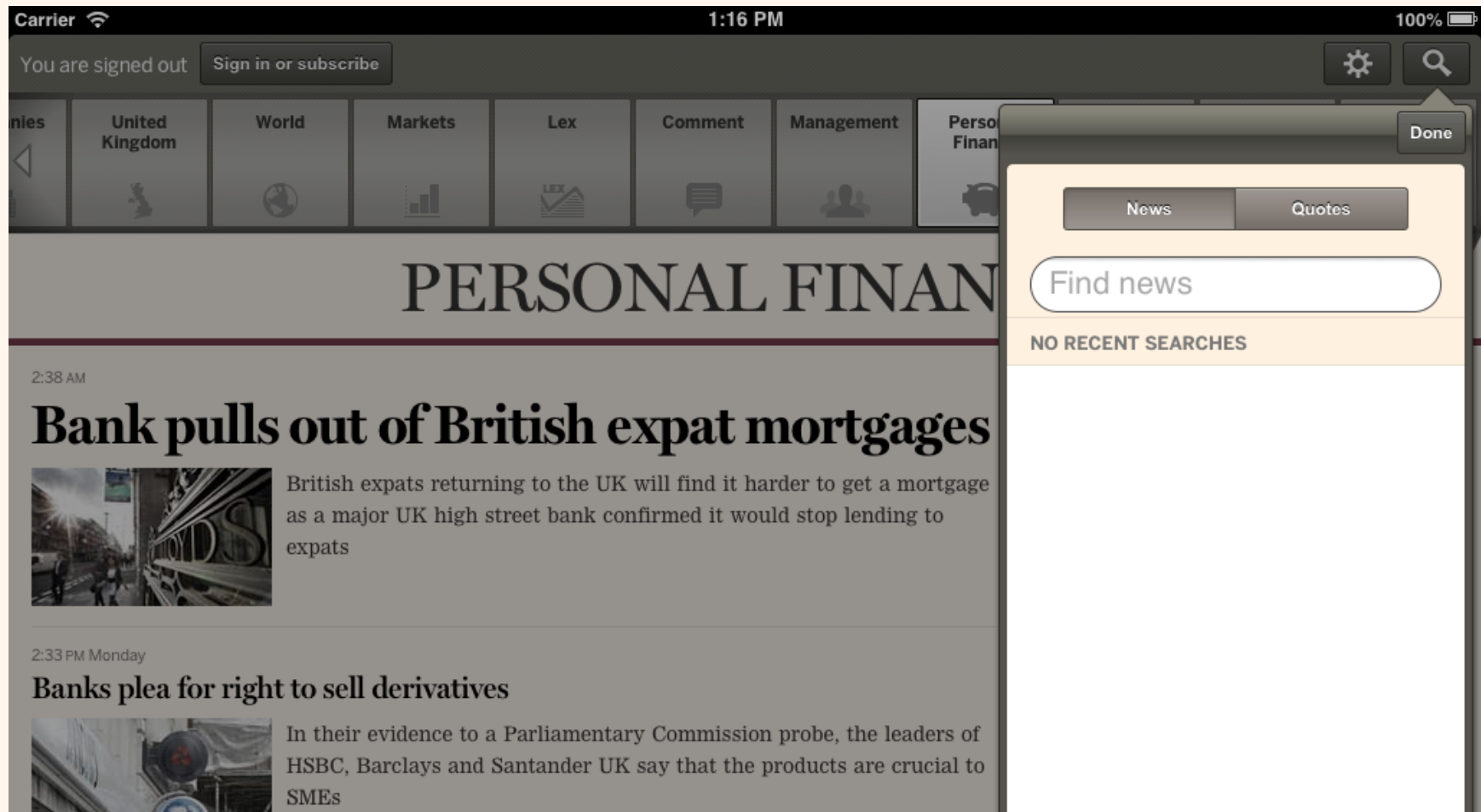
Store

Bing

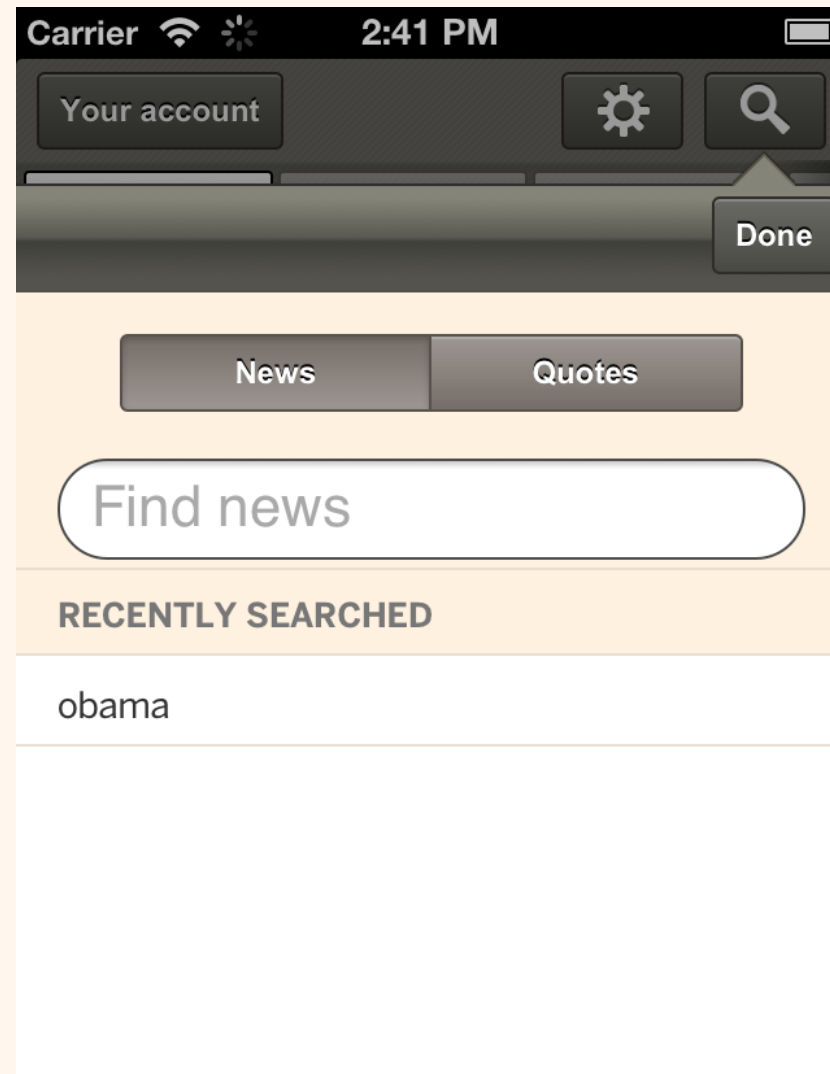
Finance

Games

Search on iPad



Search on iPhone



Native wrappers

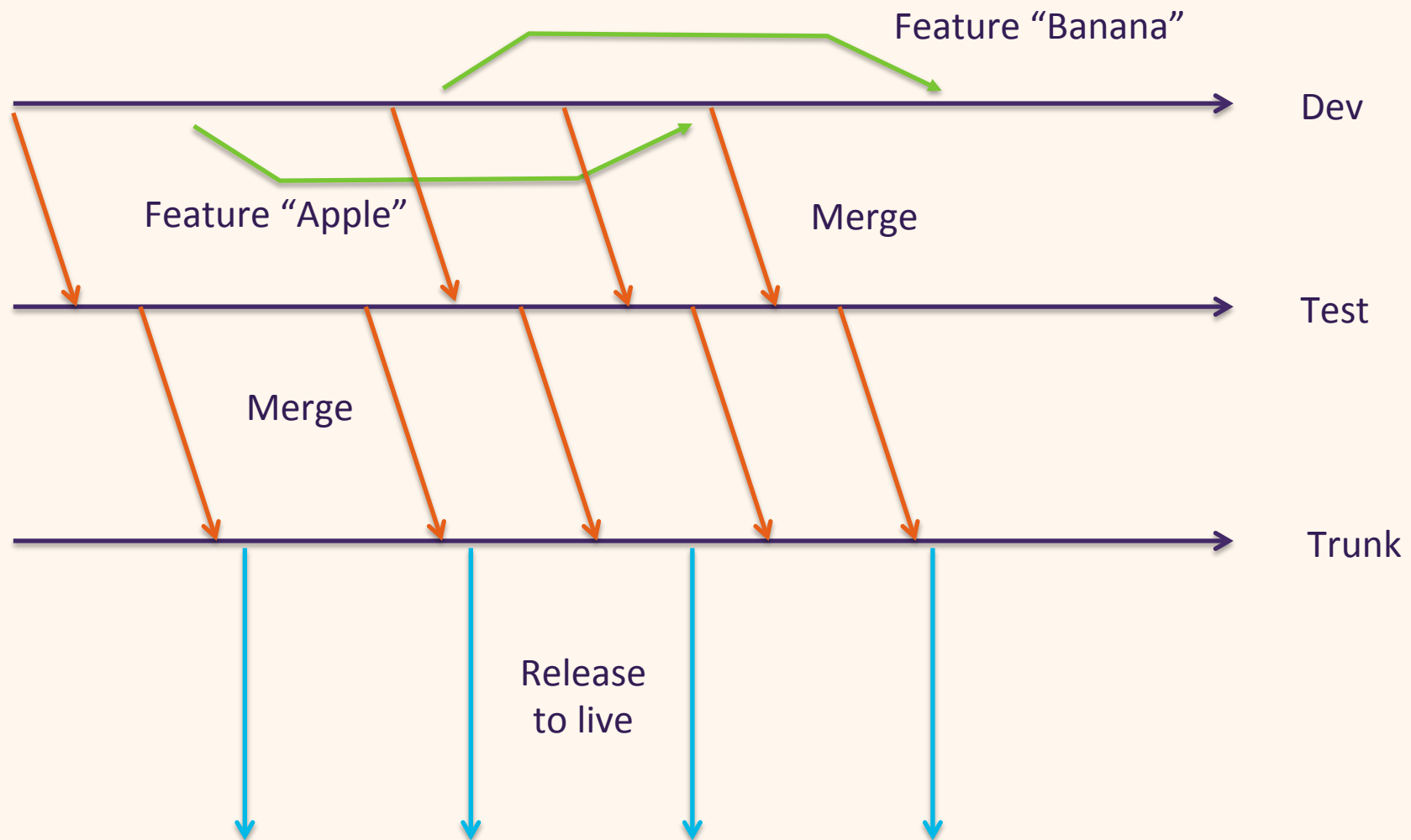
- Invoke same core online web site
- Wrapper to web communication
 - via HTML5 postMessage
 - JavaScript function calls

But with multiple devices, surely

Managing the release process

is hard?

The Old Days: Branches



The alternative: Feature flags

- Develop in one place
- Switch bits of code on and off

```
if (Flags.get('WidgetEnabled')) { ... }
```

- Centralise those switches

```
function get(flagname) {  
  switch flagname:  
    case 'WidgetEnabled':  
      return isAndroid  
    ...  
}
```

- Don't associate multiple things to the same flag

Feature flags: Override for testing

Screenshot of flag tool

	Default	Base	Override
Use HTML5 Application cache The app cache stores files in a simple local cache which can be accessed when the browser is not connected to the network. If the app cache was already loaded before it was disabled using this interface, the server will attempt to obsolete it by responding with HTTP 410.	true	true	<input checked="" type="radio"/> true <input type="radio"/> false
API backend The HTML5 app does not have a database of subscribers. When you log in, it needs to contact the registration servers to validate your account.	"live"	"live"	<input checked="" type="radio"/> live <input type="radio"/> stage <input type="radio"/> badapi
Use JPEG2000 JPEG2000 is a different way of compressing images. Its support across devices is unclear, and the level of compression it brings is still being evaluated.	false	false	<input checked="" type="radio"/> true <input type="radio"/> Cancel

Feature flags: Override for testing

- Code example:

```
function get(flagname) {  
  flagoverrides = JSON.parse(localStorage.getItem('flags'));  
  if (flagname in flagoverrides) {  
    return flagoverrides[flagname];  
  }  
  switch flagname:  
    case 'AppleEnabled':  
      return isAndroid  
      ...  
}
```

Feature flags 2.0

- Server-side decisions control client side behaviour
 - Enable A/B feature release
 - Deploy features to different platforms
 - Push flags to client
- Share flags client and server side
 - Get feedback on A/B testing
- Remember analytics!

Client-side code updates

- The bootstrap code:
 - Runs what's in localStorage
 - Asks the server if there's a new version
 - Allow beta users to get version first
 - Downloads it for use next time
- Minimises AppCache aggravation
- Gives us complete control

Final points

HTML5 sites can be great

**But building a good HTML5
site is very hard.**

Summary

- Less **separation**, more **adaptation**
 - Fewer, more adaptive websites
- Less **native**, more **web**
- HTML5 is NOT just a mobile solution, but a way of **making better websites**.
- Responsiveness is not about multiple static designs, it's a multi-variable equation

Summary

- appCache + localStorage + intelligent bootstrapping + good use of storage
= **reliable offline app**
- You don't have to sacrifice features
- With good optimisations you can get a great app experience

We're trying to help

- Your dev team can use our code
 - github.com/ftlabs
- We blog about techniques at labs.ft.com
- Consultancy available
- Talks at conferences like this one

**“Don’t build native apps,
build web apps”**

- Tim Berners-Lee



Thanks

rob@labs.ft.com

@FTLabs

Do you want to build this stuff? **Join in.**
jobs@labs.ft.com

Image credits:
<http://cdn3.worldcarfans.co/2008/2/medium/9080214.017.Mini1L.jpg>, <http://www.netbasic.com/blog/2008/10/mini-car-parking-fail>, <http://runningstopsigns.files.wordpress.com/2011/04/smart-car.jpg>