



Overcoming Cloud- Based Mobility Challenges in Healthcare

July 17, 2012

Richard Mendis and April Sage

Speaker Intro



Richard Mendis

rmendis@anypresence.com

CMO and Co-Founder, AnyPresence

VA-based company offering a mobile platform and solutions for healthcare providers to engage patients and physicians

20 years in enterprise software industry:

- VP of Solution Management at SAP
- CMO and Co-Founder, Clear Standards
- VP of Marketing at Current Analysis
- Product Line Manager, Siebel Systems
- BS Computer Science, University of Toronto

Agenda

1 What are the trends, drivers, and expectations behind mobile adoption?

- consumer expectations
- mobile technology trends

2 What are the healthcare provider opportunities and challenges?

- mobile trends in healthcare
- business challenges
- HIPAA and FDA issues

3 What hurdles exist and technology options are available?

- mobile development challenges
- technology and solution approaches



Mobile Trends, Drivers, and Consumer Expectations

The Customer Experience “Engagement Gap”

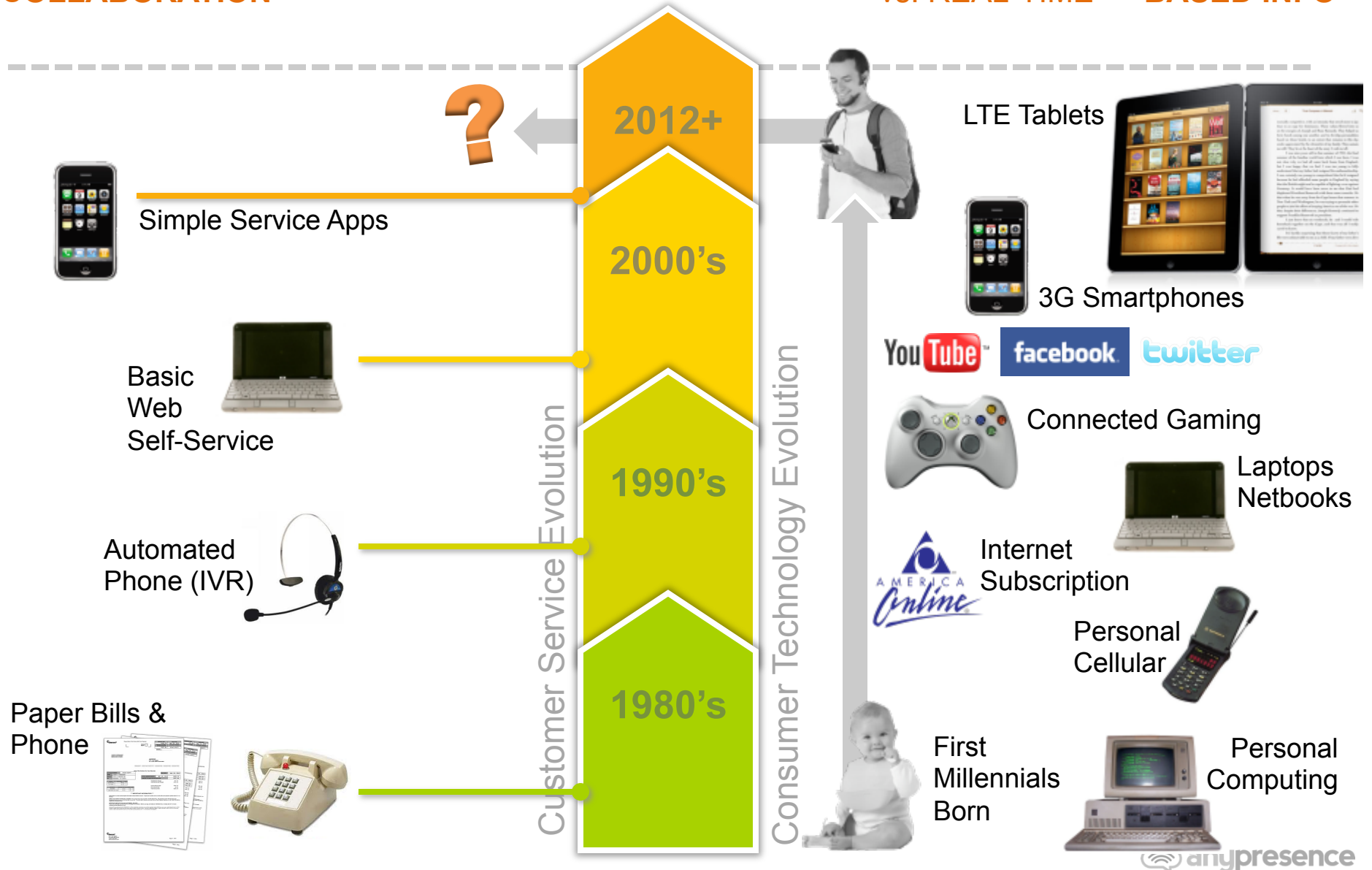
SOCIAL COLLABORATION

GAMIFICATION

MOBILE FIRST

“MY-TIME” vs. REAL-TIME

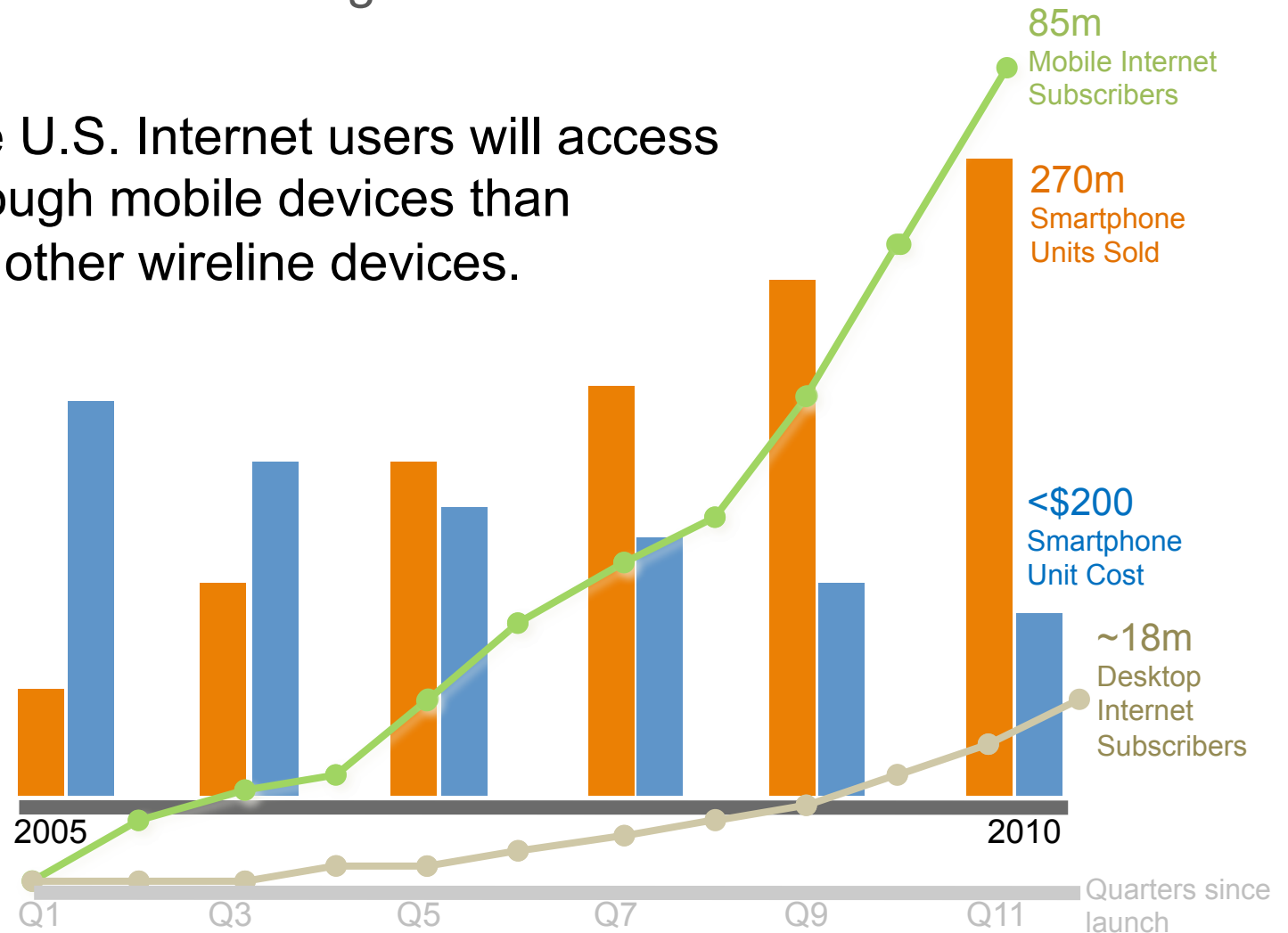
PUSH-BASED INFO



Mobile Web and Smartphone Adoption

Smartphone and tablet devices out-pacing PC as primary means for accessing email and Internet.

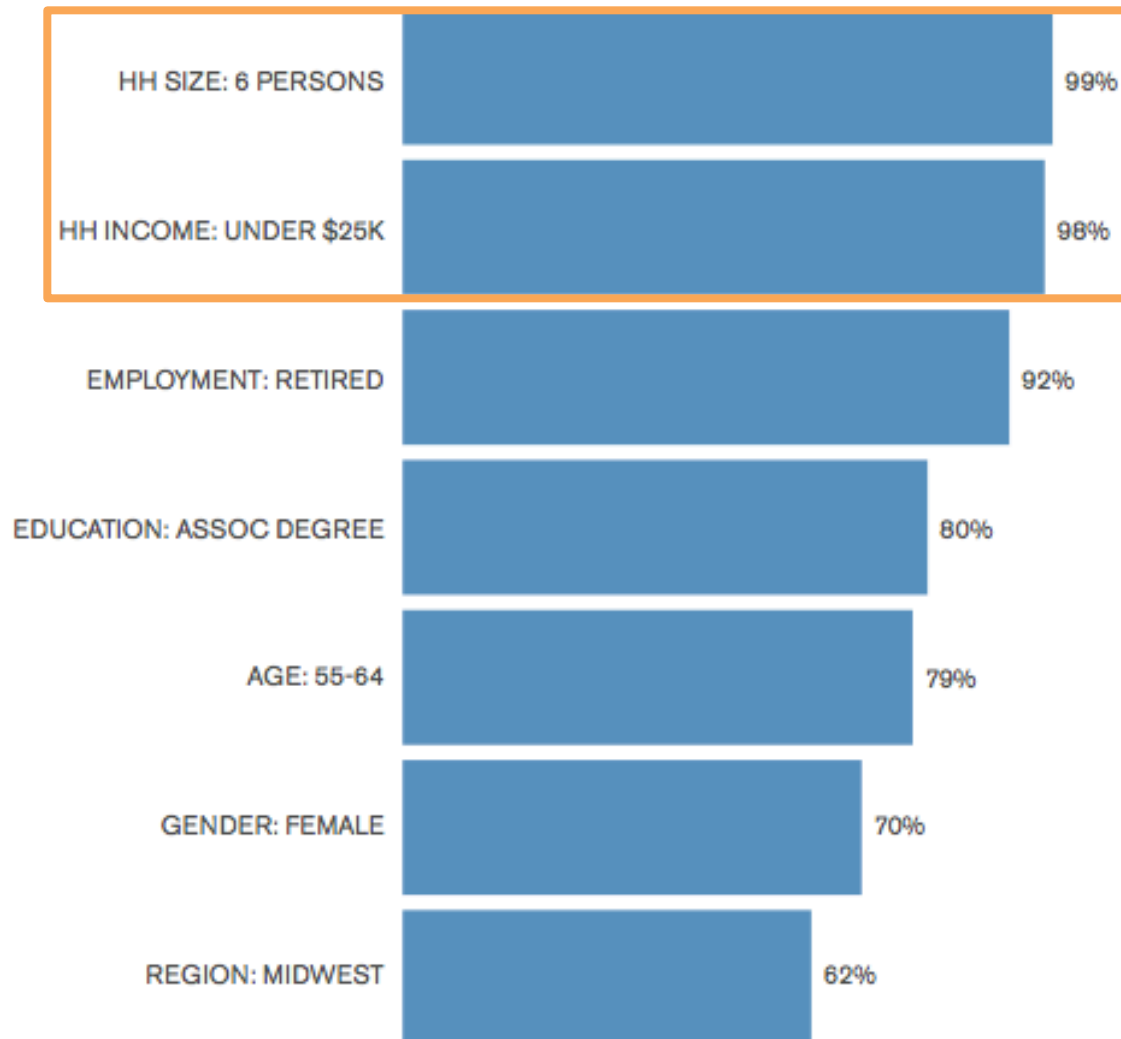
By 2015, more U.S. Internet users will access the Internet through mobile devices than through PCs or other wireline devices.



Smartphone Adoption Demographics

U.S. Fastest Growing Demographic Segments Among Smartphone Users

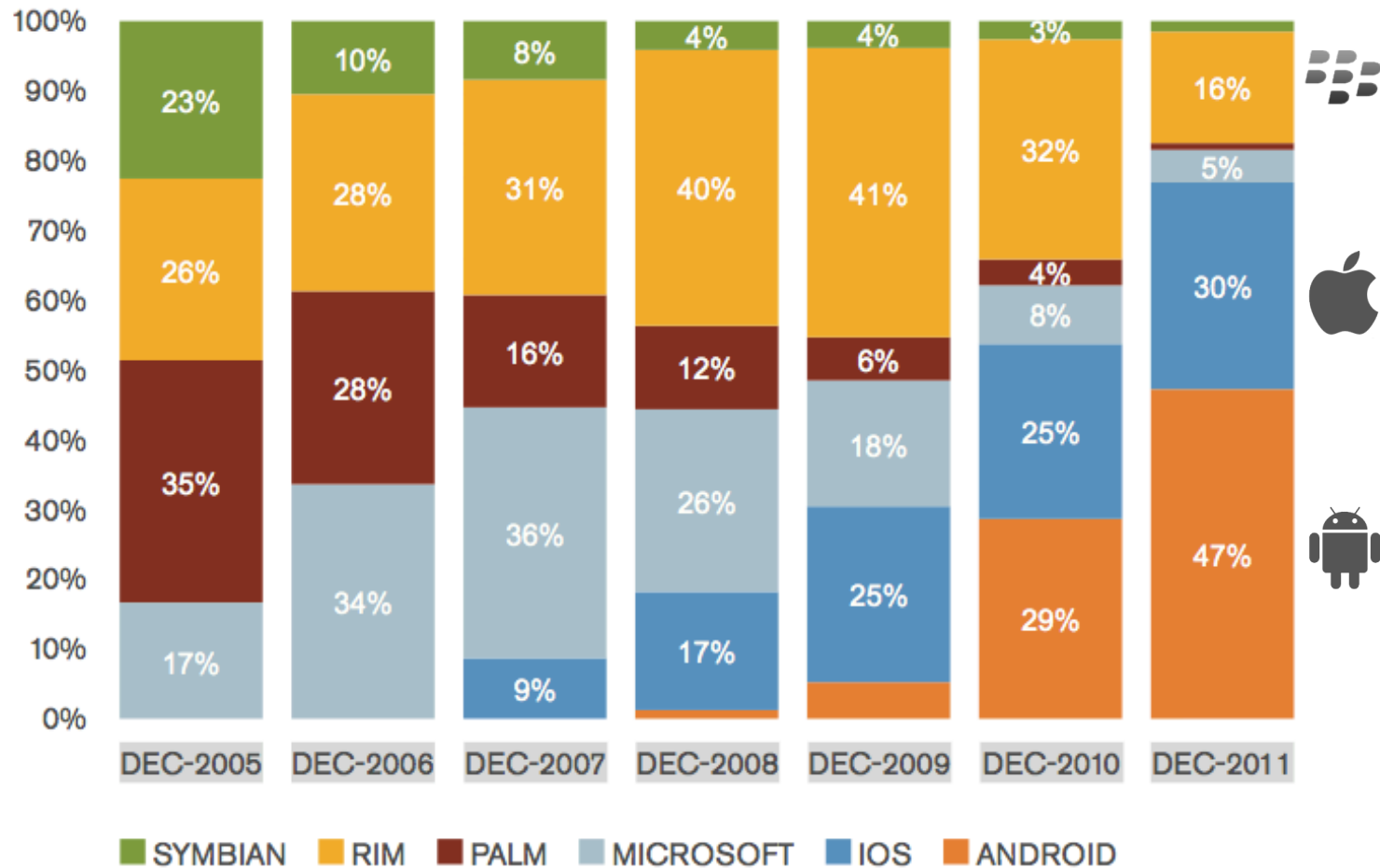
Source: comScore Mobilens, 3 mon avg. ending Dec-2011 vs. Dec-2010, U.S.



Mobile Platform Adoption Trends

U.S. Smartphone Market Share by OS Expanded Trend

Source: comScore MobiLens, 3 mon. avg. ending Dec-2005 to Dec-2011, U.S.



HTML5 Gains Momentum

HTML5: What Marketers Need to Know

You've likely heard the term 'HTML5' a lot recently, but what does it mean for marketers? HTML5 is a browser-based programming language that can make your content more accessible and interactive, with app-like usability and mobile-friendly delivery. The growth of HTML5 is undeniable, and its benefits for marketers are clear. Here's more:

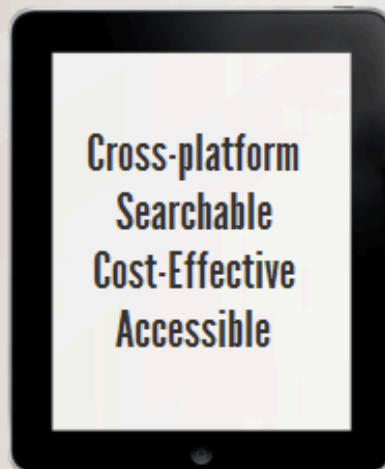
HTML



Key benefits for marketers ⁽²⁾



of developers are already using HTML5 ⁽¹⁾



of U.S. mobile users prefer to use the browser vs. native apps ⁽³⁾

“66% OF CONSUMERS PREFER THE MOBILE WEB OVER NATIVE APPS”

- KEYNOTE SERVICES

Key Takeaways

- ✓ **Consumers have expectations** for richer, more proactive interactions with businesses
- ✓ **Mobile devices** are becoming the **primary way for customers** to reach businesses on the web
- ✓ This applies across all customer demographics
- ✓ There are **2-3 dominant mobile platforms**
- ✓ **HTML5** is becoming a “lowest common denominator” platform



Mobile Opportunities and Business Challenges for Healthcare Providers

mHealth App Explosion

44 million

mHealth apps will have been downloaded by the end of 2012

13,000

consumer health iPhone apps by summer 2012

6,000

clinical-type iPhone apps for physicians by summer 2012

30%

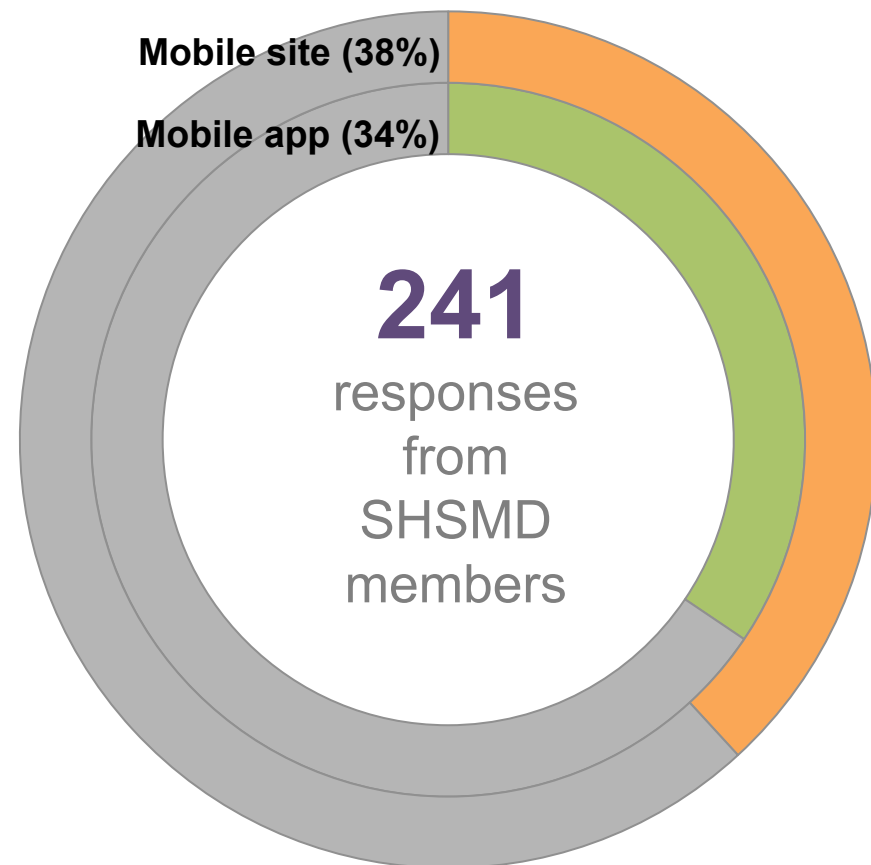
of physicians using smartphones and tablets to treat patients

Mobile Readiness in Healthcare Provider Industry

34% have
mobile apps

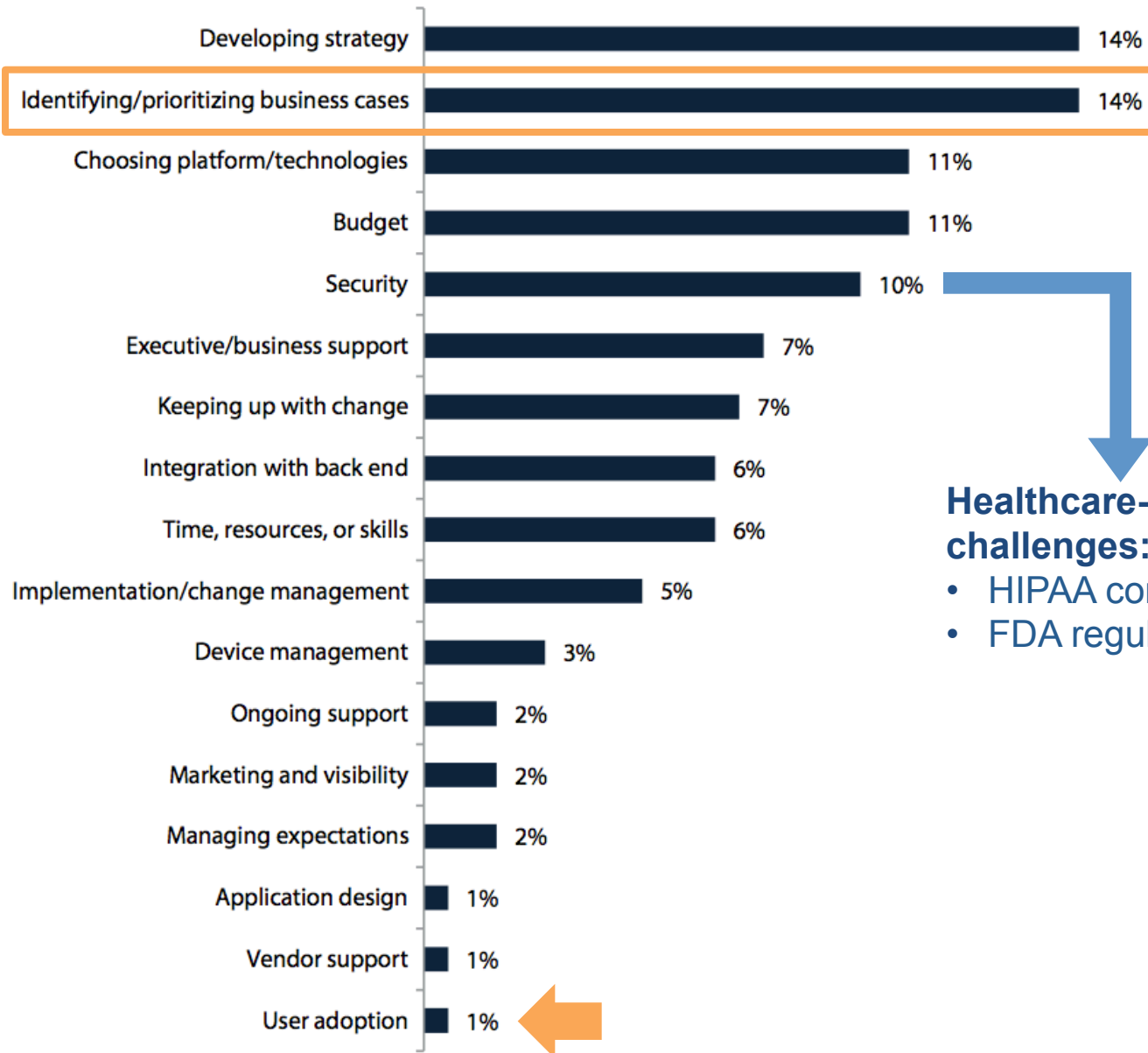
38% have a
**mobile-
enabled web
site**

SHSMD / MedTouch Survey
Fall 2011



Source: SHSMD / MedTouch Survey - Fall 2011

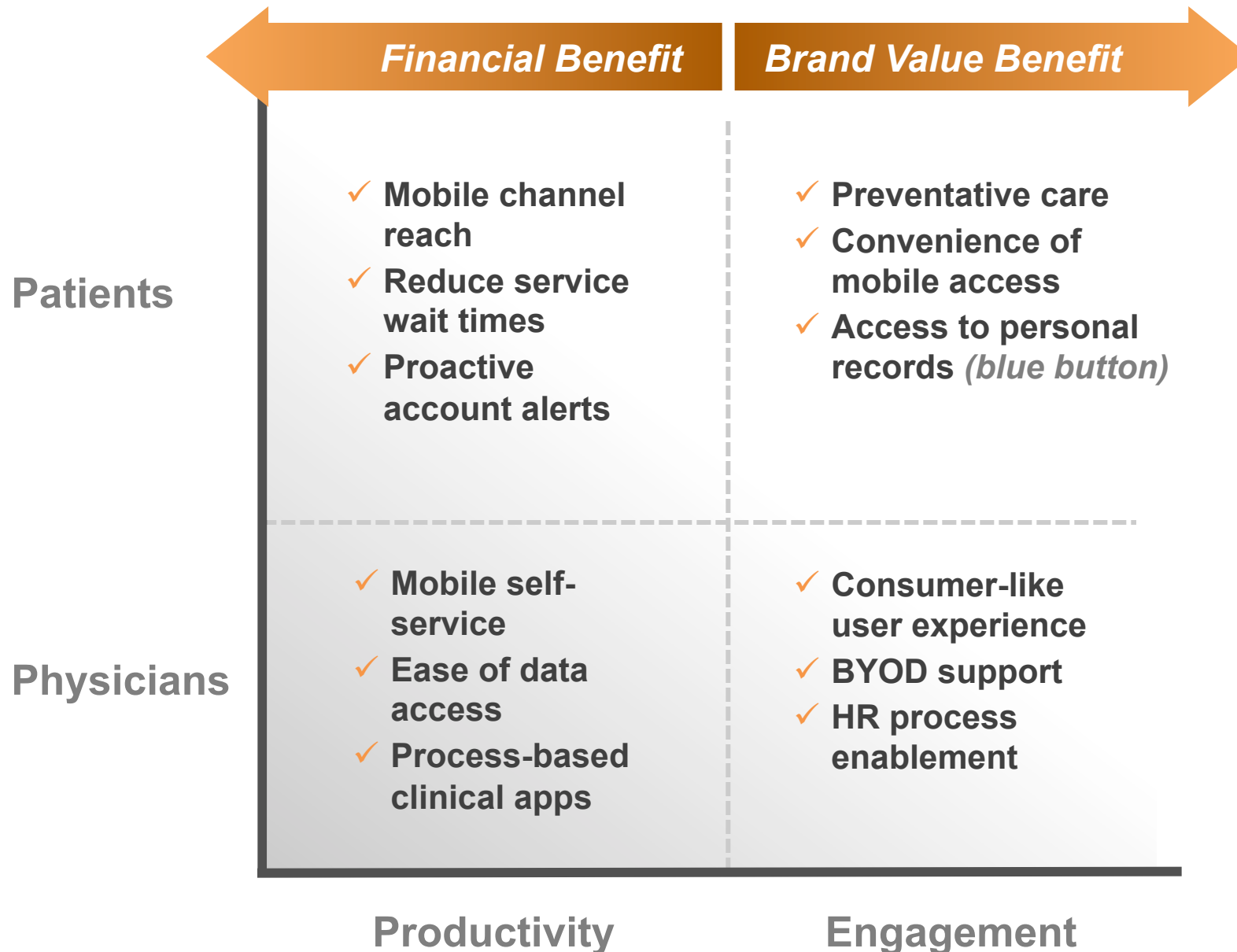
Top Challenges to Building a Mobile Strategy



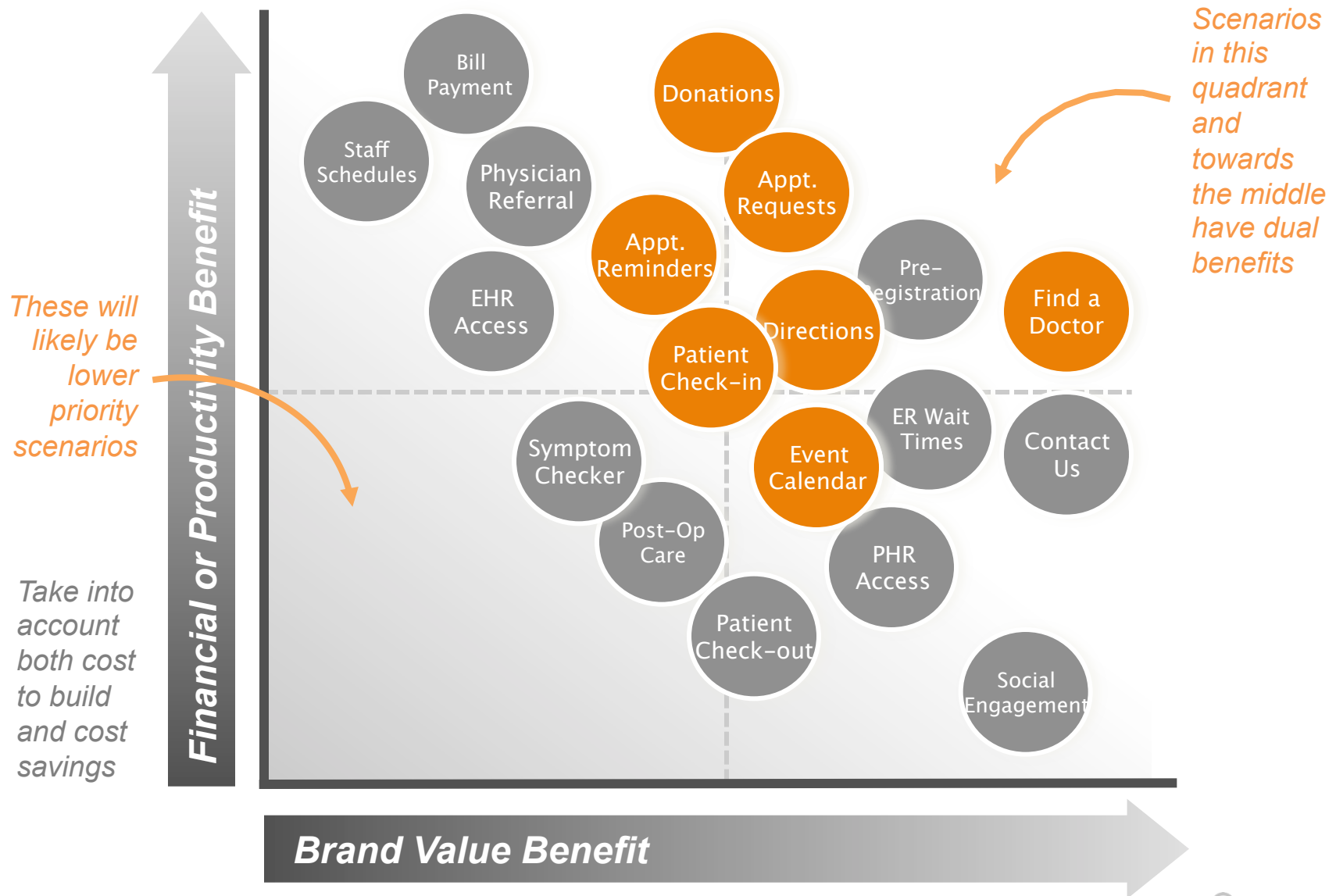
Healthcare-specific challenges:

- HIPAA compliance
- FDA regulation

Mobile Scenario Domain Areas

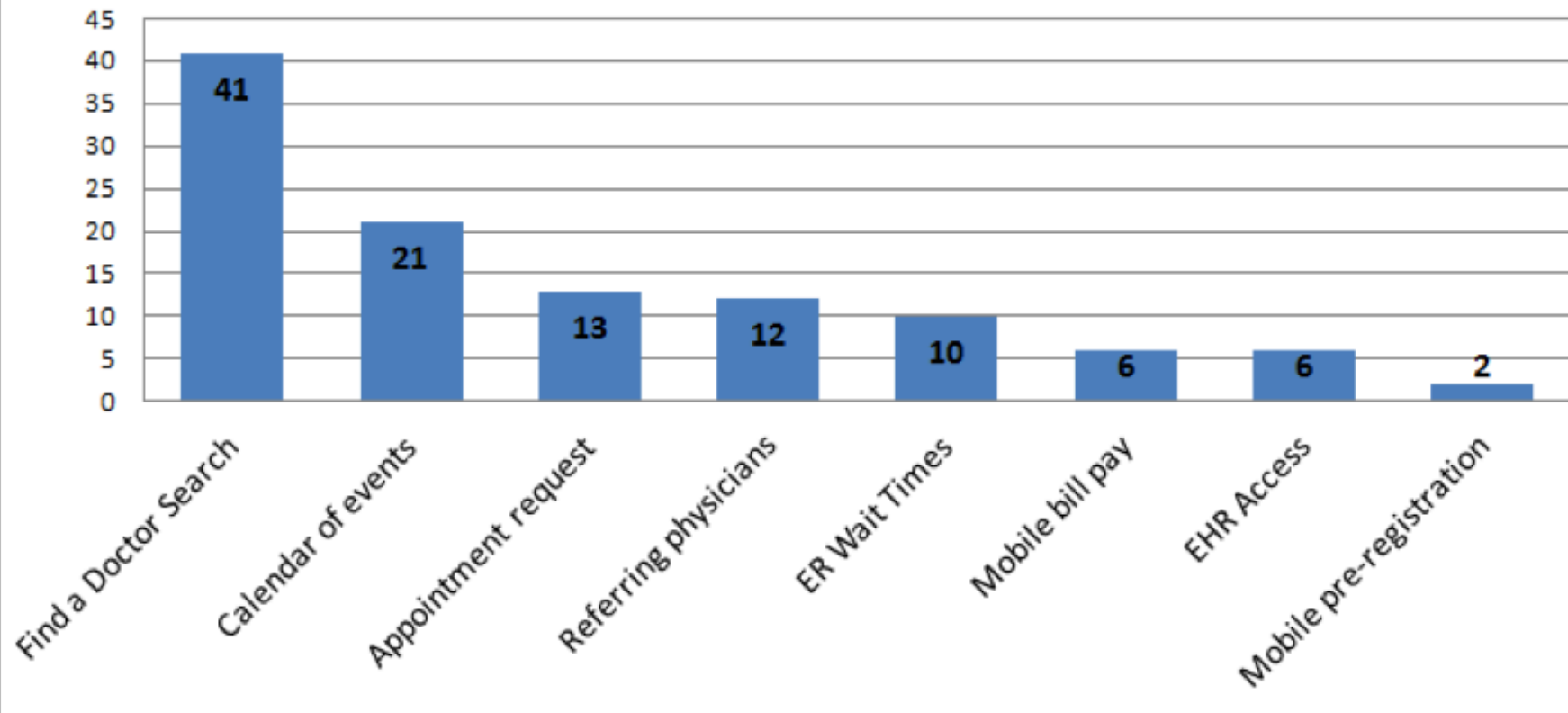


Mobile Scenario Prioritization – Example Method



Most Popular Mobile Web Features for Providers

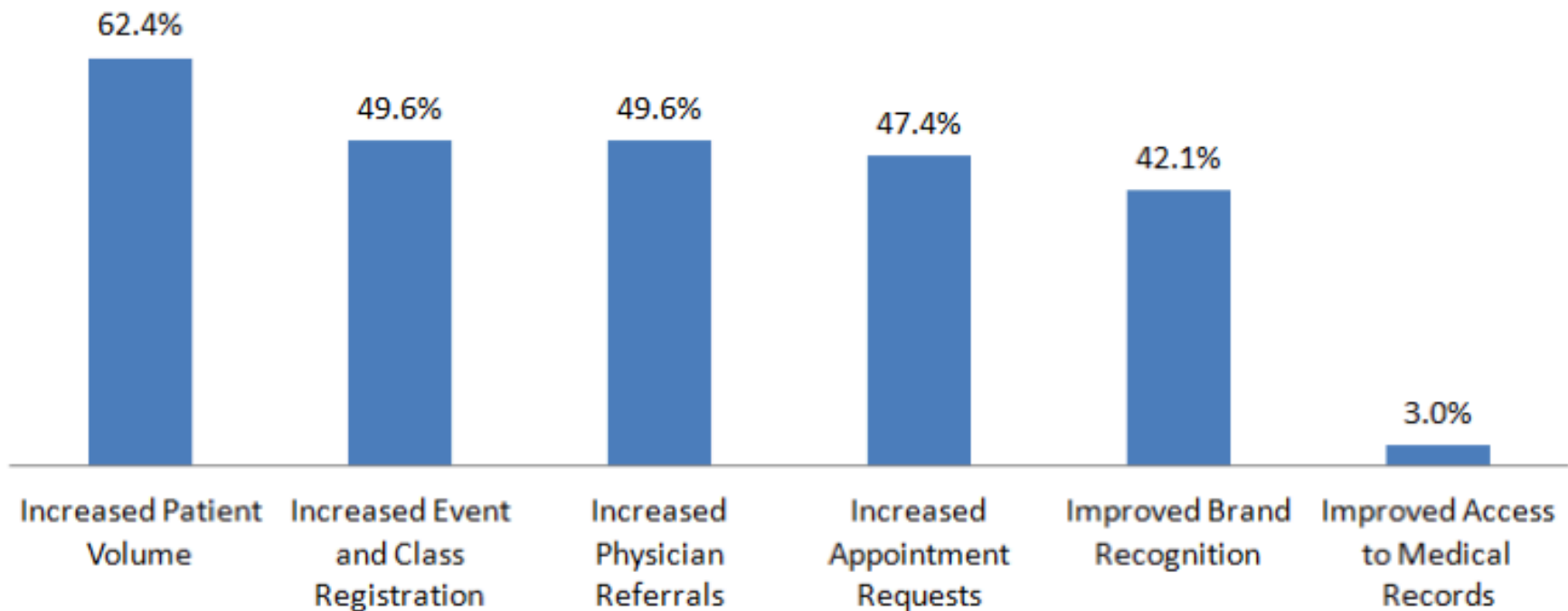
Which features are offered on mobile websites of healthcare providers?



Source: SHSMD / MedTouch Survey - Fall 2011

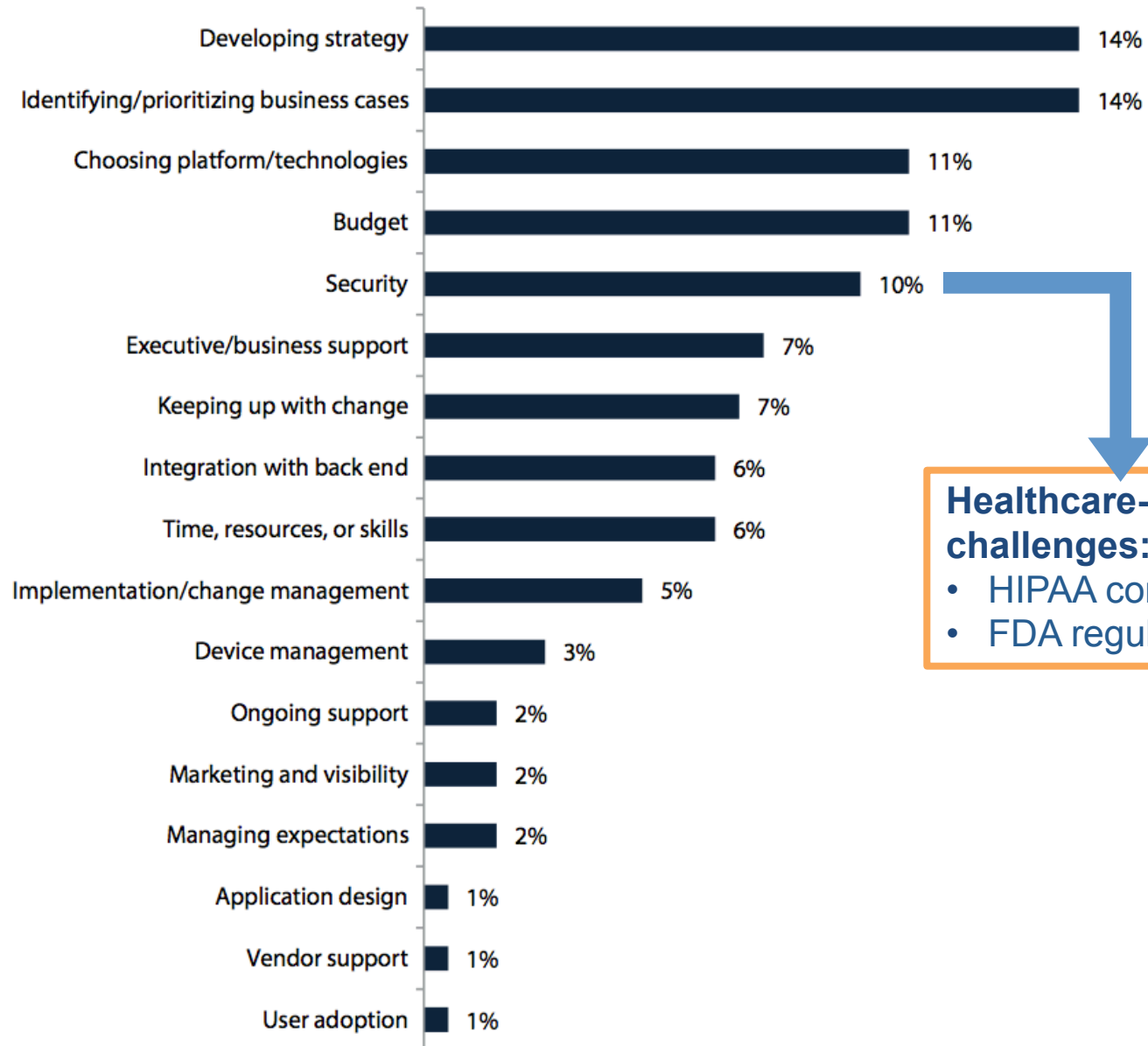
How Healthcare Measures Mobile ROI

How do you plan to measure ROI from your mobile and tablet (if applicable) initiatives? What key performance indicators will you be tracking?



Source: SHSMD / MedTouch Survey - Fall 2011

Top Challenges to Building a Mobile Strategy



Healthcare-specific challenges:

- HIPAA compliance
- FDA regulation

mHealth: Endless Opportunities ...

Juniper forecasts 3 million individuals will be monitored remotely by 2016.



40% OF CONSUMERS WOULD PAY FOR **MOBILE REMOTE MONITORING**

40% OF PHYSICIANS SAY THEY COULD **ELIMINATE UP TO 30%** OF OFFICE VISITS BY USING **MOBILE HEALTH STRATEGIES**

MOBILE APP ECONOMICS

GARTNER ESTIMATES TOTAL APP REVENUE WILL INCREASE TO

30 BILLION BY 2013.

+OVER 21 BILLION DOWNLOADS

WITH AN **87%** INCREASE IN FREE OR AD-FUNDED APPS.

resource.onlinetech.com/hipaa

mHealth: Endless Endpoints

National Cybersecurity and Communications Integration Center's bulletin: Healthcare Risks

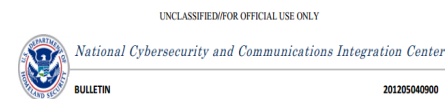
Insider: employees, portable media devices, email, cloud...

Malware: keystroke loggers, remote access trojans...

Spearphishing: email-based attack w/ malicious links...

Web: Silent redirection, obfuscated JavaScript, SQL injection, compromised authentication

Equipment Loss: laptops, desktops, backup tapes, smartphones, USBs



Attack Surface: Healthcare and Public Health Sector

Executive Overview

(U) The Healthcare and Public Health (HPH) sector is a multi-trillion dollar industry employing over 13 million personnel, including approximately five million first-responders with at least some emergency medical training, three million registered nurses, and more than 800,000 physicians.¹ This robust sector has led the way with medical based technology options for both patient care and data handling.

(U) A significant portion of products used in patient care and management including diagnosis and treatment are Medical Devices (MD). These MDs are designed to monitor changes to a patient's health and may be implanted or external. The Food and Drug Administration (FDA) regulates devices from design to sale and some aspects of the relationship between manufacturers and the MDs after sale. However, the FDA cannot regulate MD use or users, which includes how they are linked to or configured within networks. Typically, modern MDs are not designed to be accessed remotely; instead they are intended to be networked at their point of use. However, the flexibility and scalability of wireless networking makes wireless access a convenient option for organizations deploying MDs within their facilities.

(U) The expanded use of wireless technology on the enterprise network of medical facilities and the wireless utilization of MDs opens up both new opportunities and new vulnerabilities to patients and medical facilities. Since wireless MDs are now connected to Medical information technology (IT) networks, IT networks are now remotely accessible through the MD. This may be a desirable development, but the communications security of MDs to protect against theft of medical information and malicious intrusion is now becoming a major concern. In addition, many HPH organizations are leveraging mobile technologies to enhance operations. The storage capacity, fast computing speeds, ease of use, and portability render mobile devices an optimal solution.

(U) This Bulletin highlights how the portability and remote connectivity of MDs introduce additional risk into Medical IT networks and failure to implement a robust security program will impact the organization's ability to protect patients and their medical information from intentional and unintentional loss or damage.

Background

(U) According to Health and Human Services (HHS), a major concern to the Healthcare and Public Health (HPH) Sector is exploitation of potential vulnerabilities of medical devices on Medical IT networks (public, private and domestic). These vulnerabilities may result in possible risks to patient safety and theft or loss of medical information due to the inadequate incorporation of IT products, patient management products and medical devices onto Medical IT Networks. Misconfigured networks or poor security practices may increase the risk of compromised medical devices. HHS states there are four factors which further complicate security resilience within a medical organization.

resource.onlinetech.com/hipaa

mHealth: Securing ePHI is both a CE & BA Concern

- 32% Increase in Reported Data Breaches
- 62% involved a Business Associate
- Costs \$6.5 Billion and climbing

Business Associates
Why Invest in a HIPAA Audit?

Number of Reported
Data Breaches
Up 32%↑
in 2011, compared to 2010.

\$6.5 Billion Cost to the
Healthcare
Industry in
2011



BUSINESS ASSOCIATES
WERE INVOLVED IN
62% of Total Number of
Patient Records Breached

resource.onlinetech.com/hipaa

HIPAA Compliance Considerations

“If you use a cloud service, it should be your business associate. If they refuse to sign a business associate agreement, don't use the cloud service.”

*David Holtzman, Information Privacy
Division in OCR*

mHealth: Only HIPAA Compliance is HIPAA Compliant

HIPAA Security Rule

Administrative Safeguards

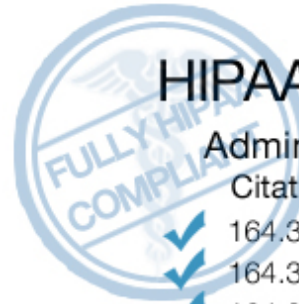
Physical Safeguards

Technical Safeguards

1. *Risk Assessment*

2. *Risk Management Plan*

3.



HIPAA Compliance Checklist

Administrative Safeguard

Citation & Standard

- ✓ 164.308(a)(1) - Security Management Process
- ✓ 164.308(a)(2) - Assigned Security Responsibility
- ✓ 164.308(a)(3) - Workforce Security
- ✓ 164.308(a)(4) - Information Access Management
- ✓ 164.308(a)(5) - Security Awareness Training
- ✓ 164.308(a)(6) - Security Incident Procedures

Physical Safeguard

Citation & Standard

- ✓ 164.310(a)(1) - Facility Access Controls
- ✓ 164.310(a)(2) - Facility Security Plan
- ✓ 164.310(b) - Workstation Use
- ✓ 164.310(c) - Workstation Security
- ✓ 164.310(d) - Device and Media Controls

Technical Safeguard

Citation & Standard

- ✓ 164.312(a) - Access Controls
- ✓ 164.312(b) - Audit Controls
- ✓ 164.312(c) - Integrity
- ✓ 164.312(d) - Person or Entity Authentication
- ✓ 164.312(e) - Transmission Security

www.onlinetech.com/hipaa

FDA Regulation of Mobile Healthcare Apps

FDA is proposing to oversee mobile apps that:

- **Are used as an accessory to an FDA-regulated medical device.** *For example, an app could enable a health care professional to view medical images on an iPad and make a diagnosis;*
- **Transform a mobile platform into a regulated medical device.** *For example, an app that turns a smartphone into an electrocardiography, or ECG, machine to detect abnormal heart rhythms or determine if a patient is experiencing a heart attack.*

When is FDA Regulation Applicable?

An app may be **subject to regulation** if...

- ✦ It is connected to a medical device to display results
- ✦ It serves as an accessory of any kind to a regulated medical device
- ✦ It takes patient data and interprets and outputs info for use in clinical decisions
- ✦ It uses device features (i.e. camera, microphone) to gather data for diagnosis

An app is considered be **outside regulatory scope** if...

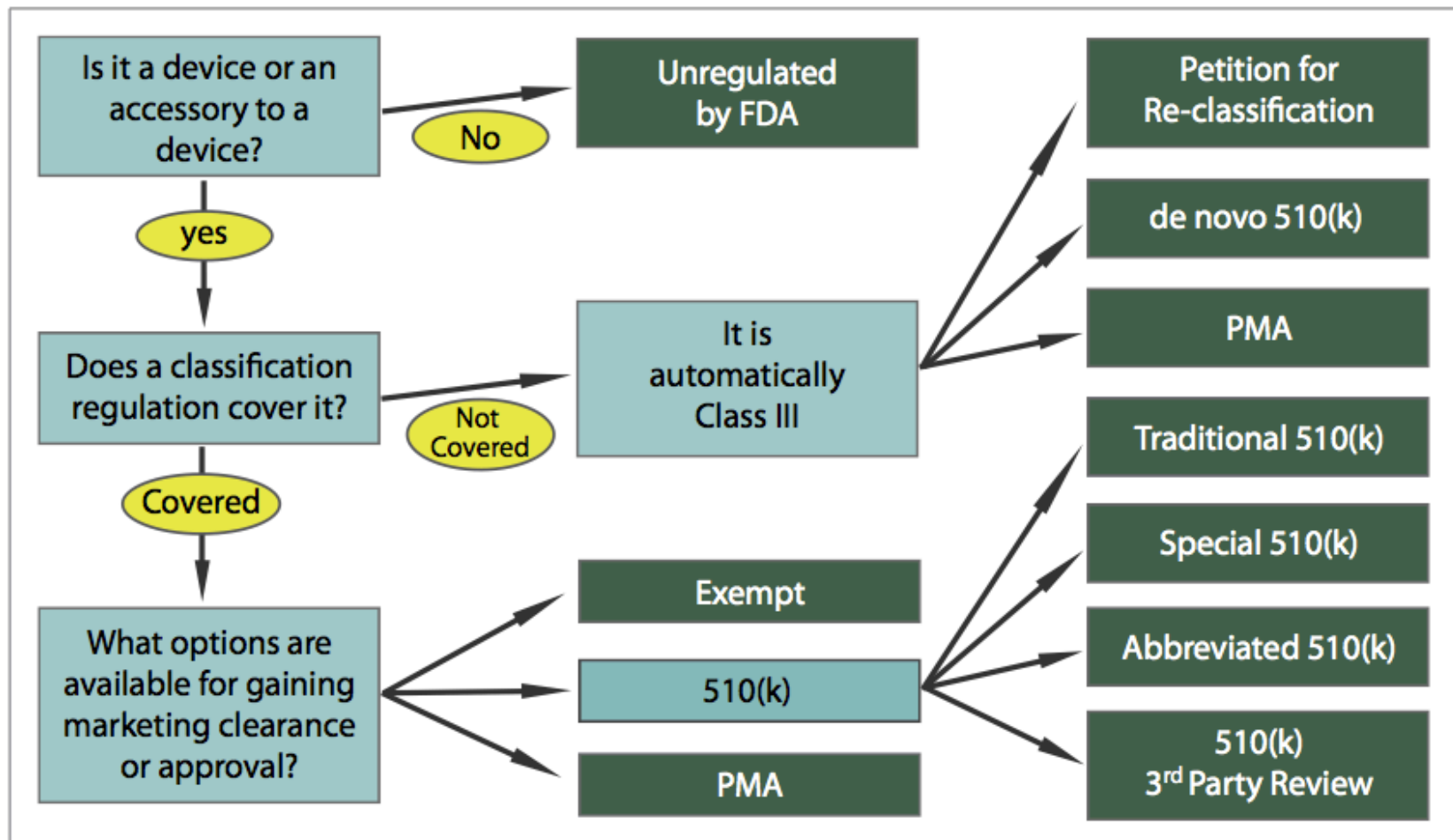
- ✓ It is provides reference content or training material
- ✓ It provides suggestions related to general health and wellness (preventative vs. curative)
- ✓ It is used to automate office operations (i.e. billing , administrative) or patient convenience (i.e. reminders)
- ✓ It functions as, or supplements, electronic health record system

Disclaimer: This regulation is in draft and being revised. Obtain legal advice before formulating long-term plans. Draft guidance can be viewed on the FDA.gov web site:

<http://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/GuidanceDocuments/ucm263280.htm#ft2>

What if my App Requires FDA Approval?

There are different FDA requirements based on the device classification. FDA is seeking comment to minimize burden on low-risk apps that qualify for regulation.



Key Takeaways

- ✓ There is an explosion of mHealth apps, but healthcare providers still **lack patient-facing self-service apps and mobile sites**
- ✓ There are **multiple potential business benefits** to mobile-enabling self-service for patients (and employees)
- ✓ **HIPAA compliance may be required** for apps that capture or transmit personal health data
- ✓ **FDA regulation may apply** to clinical apps or those that connect to regulated medical devices



Technology Challenges and Solution Options

Top Challenges to Building a Mobile Strategy



Mobile Enablement Challenges

Mobile platform fragmentation

- New devices and operating system versions released every year

Complexity of development

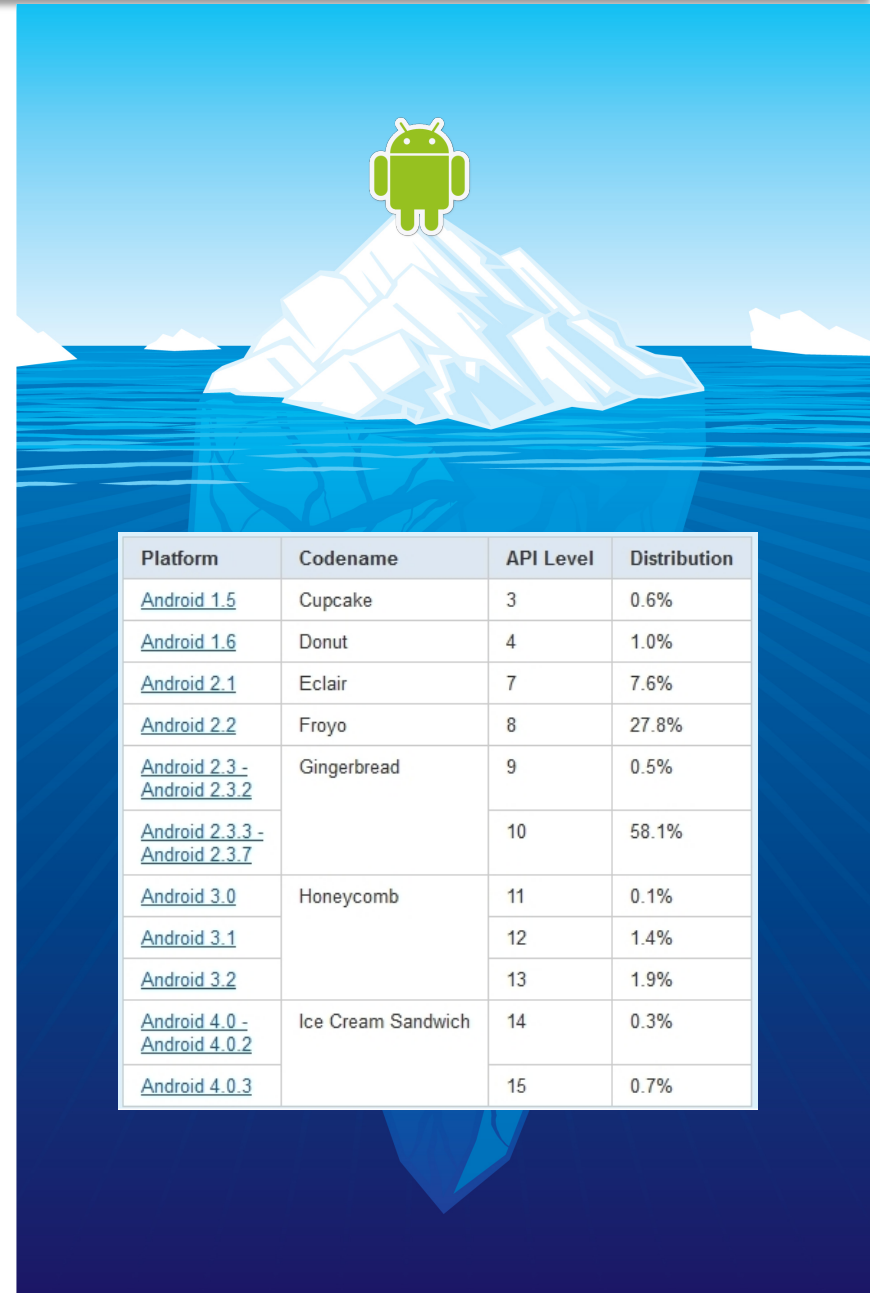
- Need specialized skill-sets for each platform: very difficult for non-technical users to build apps

Nuances of mobile design

- Mobile apps require different design and interaction
- Can't have one app per system; must consolidate functions

Hidden costs of maintenance

- Adding new features is costly across multiple platforms



Mobile Development Approaches




Approach	Pros	Cons
1. Outsource to Services Firm	<ul style="list-style-type: none"> ✓ Full flexibility ✓ Lower IT impact 	<ul style="list-style-type: none"> ✗ High ongoing TCO ✗ Lack of control
2. Outsource to Mobile Solution Vendor	<ul style="list-style-type: none"> ✓ Domain expertise ✓ Lower initial cost ✓ Lower IT impact 	<ul style="list-style-type: none"> ✗ Lack of control ✗ Limited functional scope
3. Custom build in-house	<ul style="list-style-type: none"> ✓ Full flexibility ✓ Full control 	<ul style="list-style-type: none"> ✗ High ongoing TCO ✗ Requires IT resources ✗ Slow ramp-up
4. Build on mobile app development platform (MADP or MEAP)	<ul style="list-style-type: none"> ✓ Full flexibility ✓ Full control ✓ Lower ongoing TCO 	<ul style="list-style-type: none"> ✗ Requires IT resources



By 2014 up to **40% of Fortune 1000 organizations** will employ a mobile enterprise application platform (MEAP) for app building

Source: MGI Research

Why Use a Mobile App Development Platform?

Inhibitor	How a Development Platform Helps
 <p>Long Time and High Cost of Development</p>	<ul style="list-style-type: none">✓ Assemble once, deploy everywhere to smartphones, tablets, web devices✓ Embedded mobile best practices✓ Less software to install just use browser
 <p>Need Data from Many Sources</p>	<ul style="list-style-type: none">✓ Standards-based web services integration✓ Pre-built connectors to common databases and enterprise systems
 <p>Onerous Deployment and Maintenance</p>	<ul style="list-style-type: none">✓ Instant deployment to scalable, cost-effective cloud infrastructure✓ Easily add new features to existing apps✓ Adapt to system or process changes

Key Takeaways

- ✓ There is **device and version fragmentation** within mobile platforms that may result in **unforeseen costs** down the road
- ✓ There are **multiple development approaches** and technology options
- ✓ **Mobile enterprise platforms will reduce TCO** (total cost of ownership) over time, especially with multiple mobile projects



Questions

Upcoming Webinars: Tuesdays @ 2

✓ August 7th: mHealth Intellectual Property 101

A primer on the major types of IP, their different characteristics and utilities, and their costs/benefits to businesses in the healthcare and medical device space.

Christopher A. Mitchell, Esq. & Member Dickinson-Wright

✓ August 14th: Using Cloud EMR Achieving Meaningful Use on a \$0 Budget

A case study of EMR implementation across the free clinics of Florida – all accomplished without incentive funding. Best practices, lessons learned, and perspectives

Tom Gomez, Founder & Director of Transformations at the Edge

www.onlinetech.com/webinars