

VA Provider-Facing mHealth

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Poll Question #1

Who is here?

- a. VA healthcare provider
- b. Non-VA healthcare provider
- c. Research Professional
- d. Administrator
- e. IT Professional
- f. Other

Poll Question #2

**Do you own a
smartphone?**

- a. Yes
- b. No

Poll Question #3

Do you own a tablet (iPad, Kindle Fire, Android tablet, etc)?

- a. Yes
- b. No

Mobile Devices and US Healthcare Providers

Manhattan Research “Taking the Pulse” Survey (2041 US physicians surveyed)

- **May 2011**

- 30% of US physicians owned an iPad
- 28% of US physicians planned to purchase one in the next six months
- 81% of US physicians owned a smartphone
- 75% of US physicians owned at least one Apple product

Mobile Devices and US Healthcare Providers

Manhattan Research “Taking the Pulse” Survey (3015 US physicians surveyed)

- **May 2012**

- Tablet use up to *62% of physicians* (increased from 30-35% last year)
- 50% of tablet-owning physicians have used them at the point-of-care
- Smartphone use remains very high

VA Innovation Initiative (VAi2)

- **21st Century VA Guiding Principles**
people-centric, results-driven, forward-looking
- **“VA’s transformation will leverage the power of 21st century technology and know-how.” Secretary Eric Shinseki (Strategic Plan FY 10-14)**
- **The VA Innovation Initiative was created to tap into the creativity, talent, and expertise of VA employees, private sector companies, and academic partners – encouraging the contribution and development of innovations that improve the delivery of high-quality, accessible, highly-satisfying, and cost-efficient care.**



US DEPARTMENT OF VETERANS AFFAIRS
INNOVATION INITIATIVE

V Ai2 Innovation Project – iHealth Adapter

- **Partnership with**  Agilex
- **January 2011 through December 2011**
- **Goals**
 - Work through security issues to allow use of iOS devices within the VA environment.
 - Develop an iOS app to allow display of selected patient data from Vista on mobile devices.
 - Develop a prototype VA App Library (Store)
 - Pilot iOS devices and the patient viewer app at the DC VAMC

Mobility Vision

- Embrace Innovation / mHealth.
- Provide Decision Support and VA Clinical Data efficiently at the point of care.
- Improving Caregiver/Veteran Interaction, Access to Information, and Benefits.
- Assure Information Security



Improved Workplace Productivity with Mobile Smart Devices

Improved Workplace Productivity

4 Levels of Maturation

4th Level



VA Specific Applications and Data Access

3rd Level



Public Application Use and Resources

2nd Level



Connect Smart Phone to Email Account

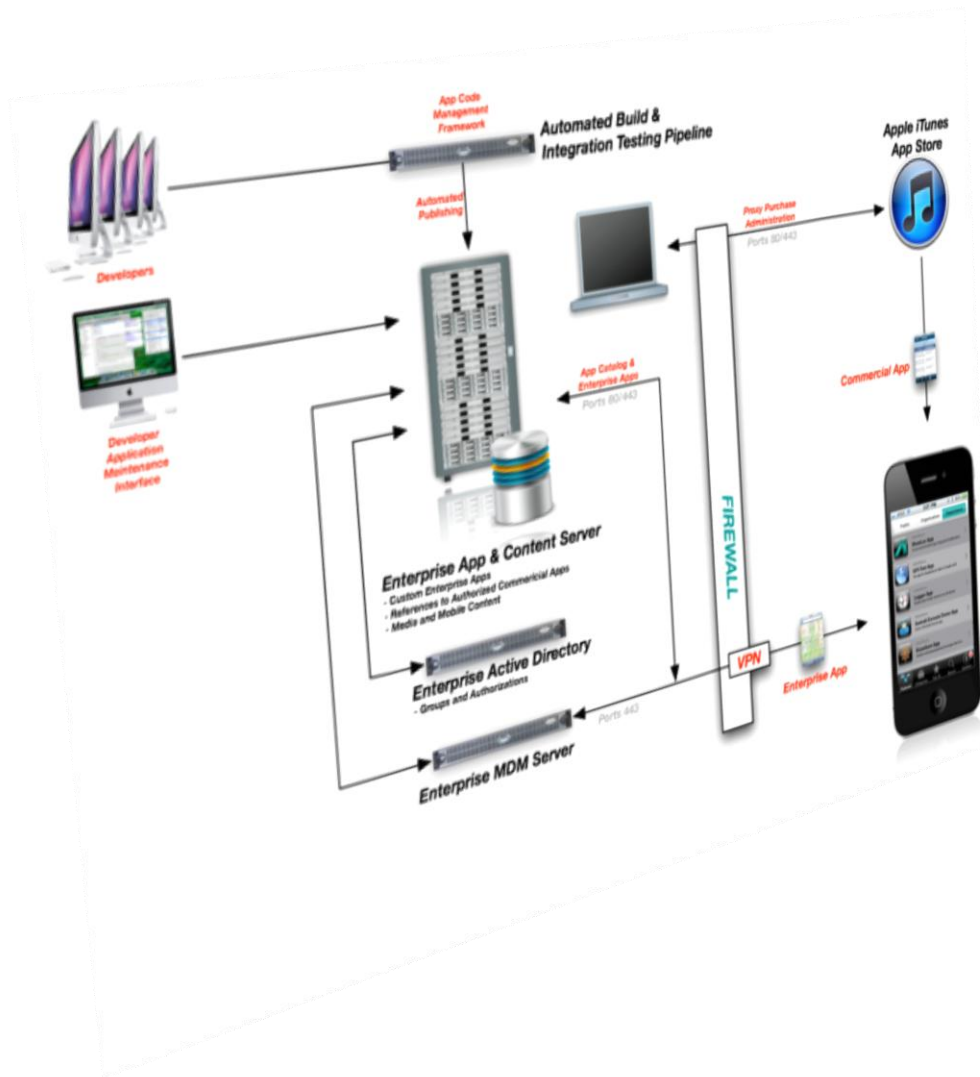
1st Level



Internet Access



Pilot & security validation



Device provisioning & configuration

Configuration & profile testing

Asset management

Policy enforcement

Threat modeling

Architecture / Security

1

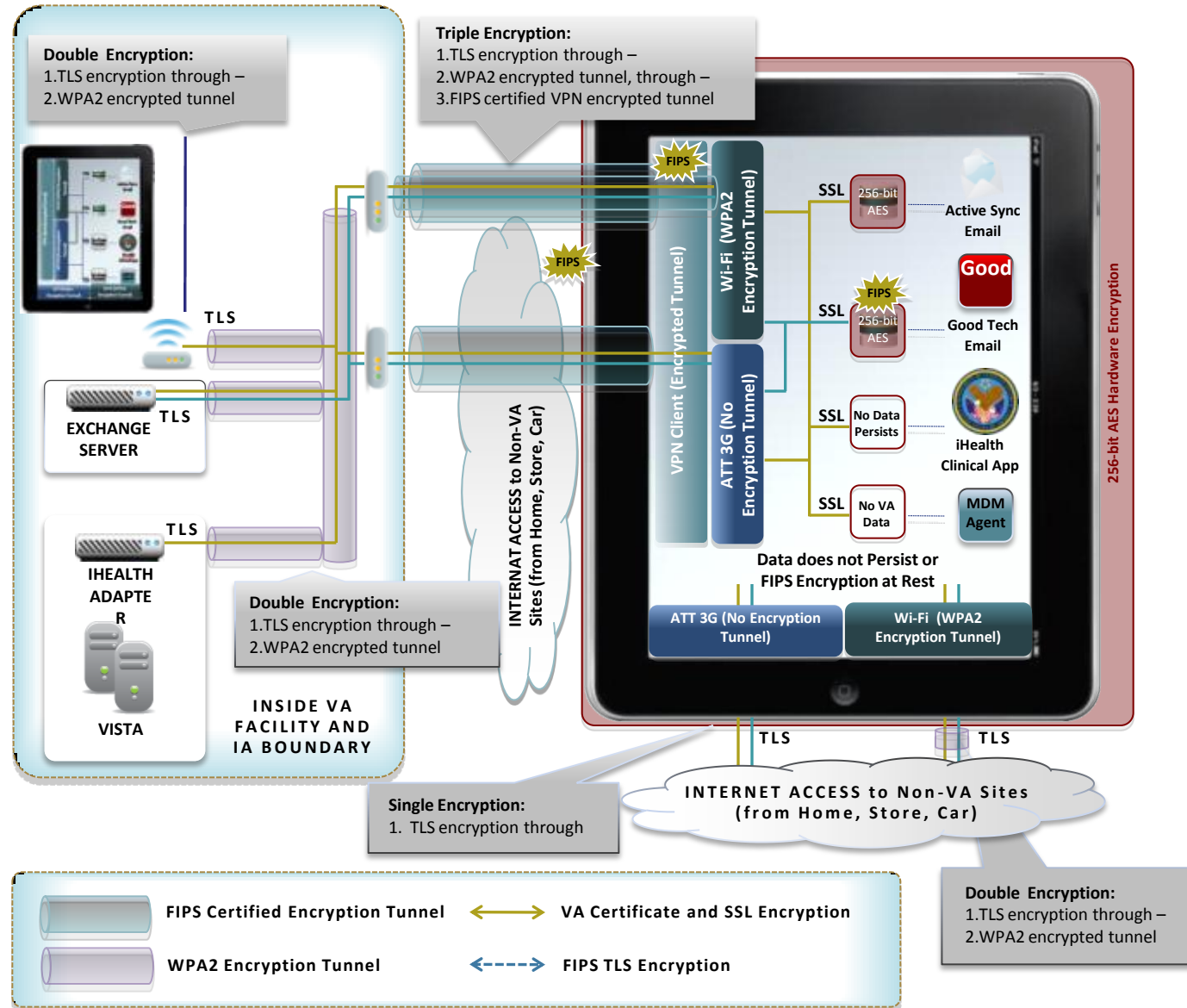
All traffic is single, double, or triply encrypted

2

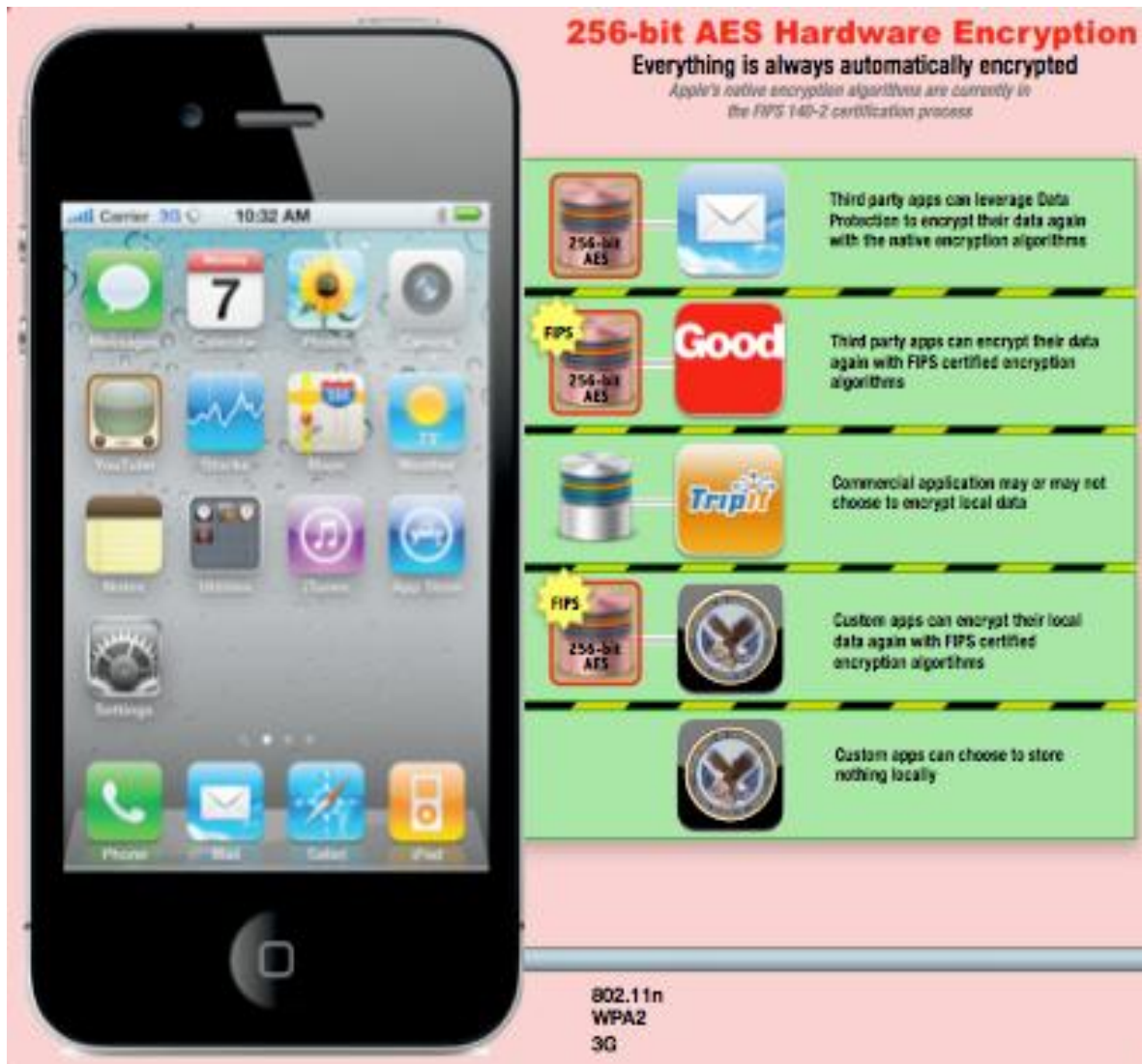
Sensitive data does not persist on devices or uses FIPS encryption at rest

3

Read only (to start)



Architecture / Security



VA Enterprise Application Store

The screenshot shows a desktop browser window displaying the Department of Veterans Affairs Enterprise App Store. The address bar shows the URL eas.agilexhealth.com/EASWeb/displayAppsByCategory. The page header includes the VA logo, the text "Department of Veterans Affairs ENTERPRISE APP STORE", and a "LOGOUT" button. A "Categories" dropdown menu is set to "Clinical". The main content area is titled "IPAD APPS" and features four app cards:

- Medscape**: Released on Sep 23, 2011, Version 2.4.1. Description: "Medscape from WebMD is the LARGEST, MOST COMPREHENSIVE, FREE medical app available for healthcare professionals." Action: ITUNES.
- mVisumCCSD**: Released on Oct 07, 2011, Version 1.0. Action: INSTALL.
- Opioid Converter**: Released on Sep 26, 2011, Version 1.5. Description: "Medical calculator to generate equivalent doses of various oral and IV opioids to treat chronic pain." Action: ITUNES.
- Patient Viewer**: Released on Sep 28, 2011, Version 1.2a. Description: "Patient Viewer for VAi2 Pilot Program." Action: INSTALL.
- WebMD for iPad Only**: Released on Sep 22, 2011, Version 4.5. Description: "Check symptoms, access drug and treatment info, and get first aid essentials." Action: ITUNES.

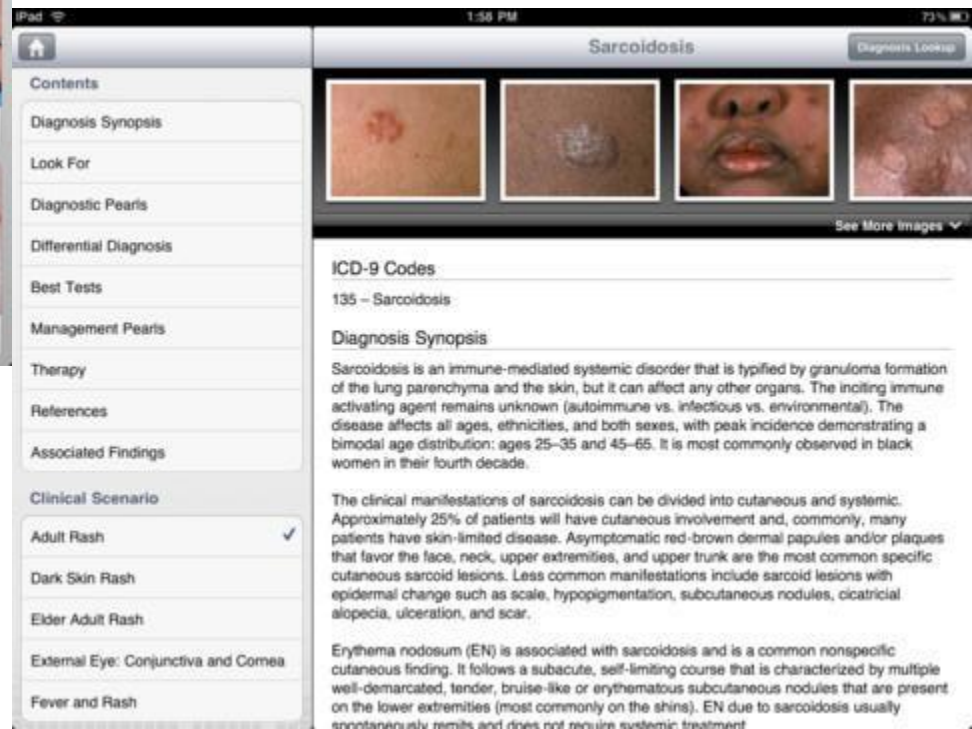
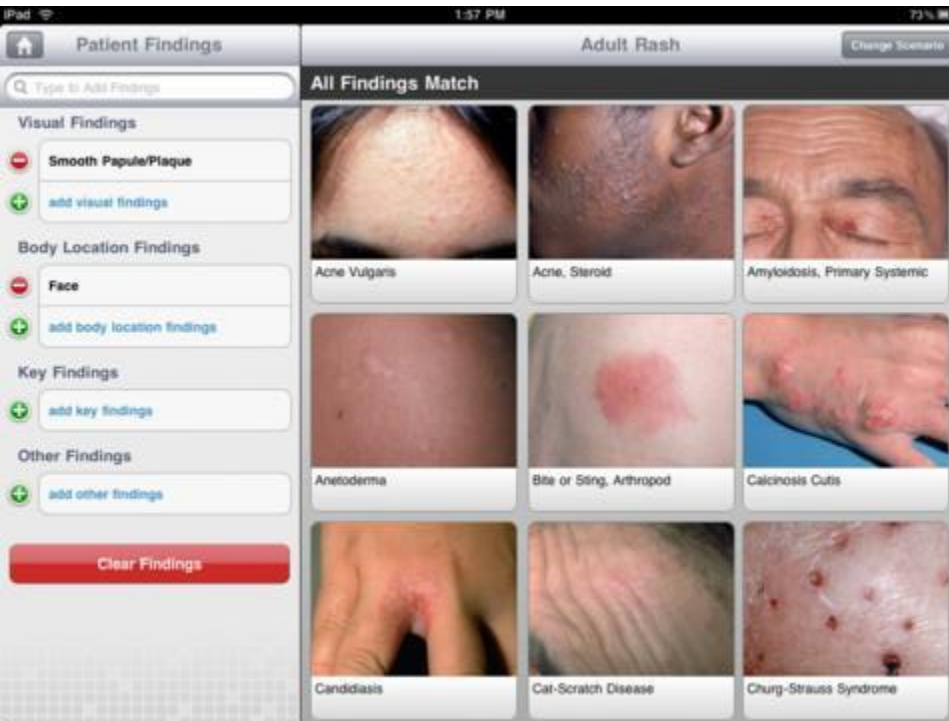
At the bottom of the page, there is a section for "IPHONE APPS" with left and right navigation arrows.

The screenshot shows the mobile app interface on an iPhone. The status bar at the top shows "AT&T" and "12:07 PM". The app header includes the VA logo, "Department of Veterans Affairs ENTERPRISE APP STORE", and a "Logout" button. Below the header is a search bar labeled "Filter items...". The main content area is titled "iPhone Apps" and lists three apps with their icons and descriptions:

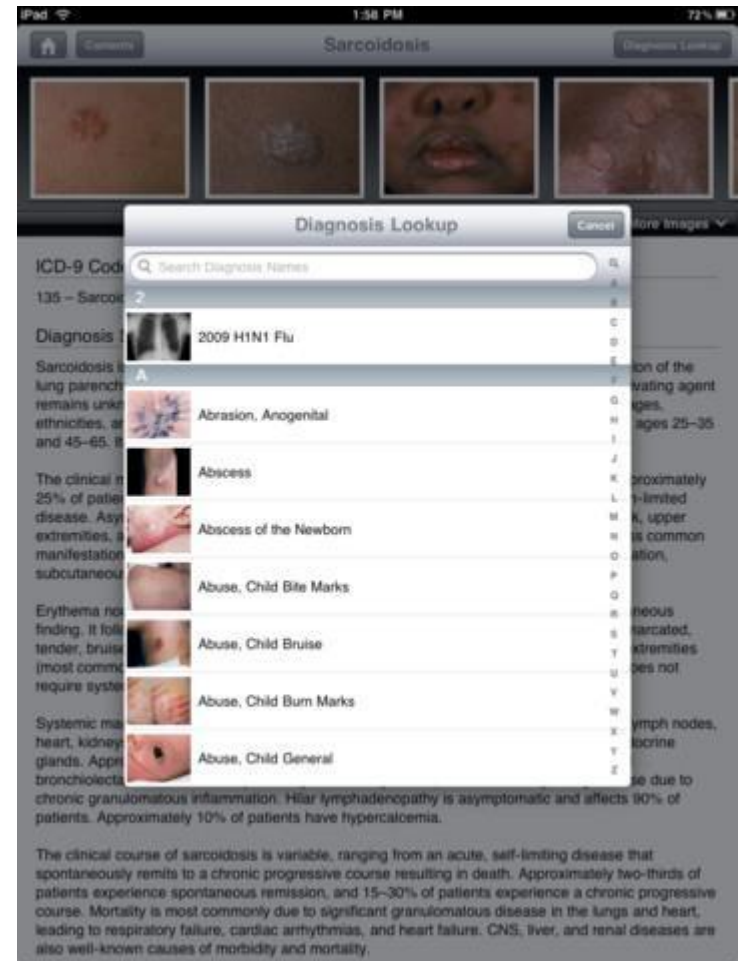
- Citrix Receiver**: "Use Citrix Receiver to ch..."
- Epocrates**: "Epocrates is the #1 mobi..."
- Good for Enterpr...**: "Delivers real-time, push..."

The bottom of the screen shows the standard iPhone navigation bar with back, forward, and home buttons.

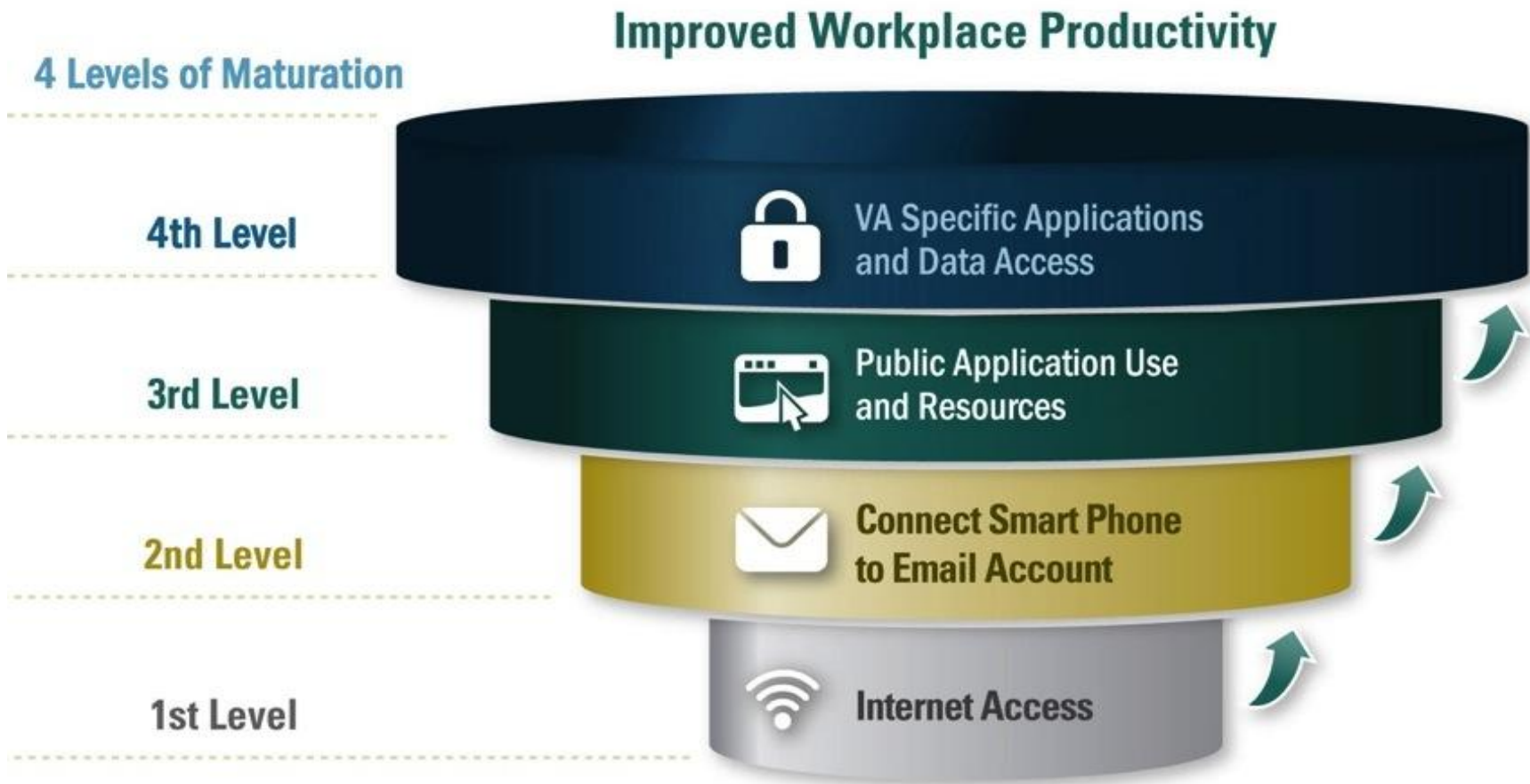
Decision Support / Patient Education Apps



Decision Support / Patient Education Apps



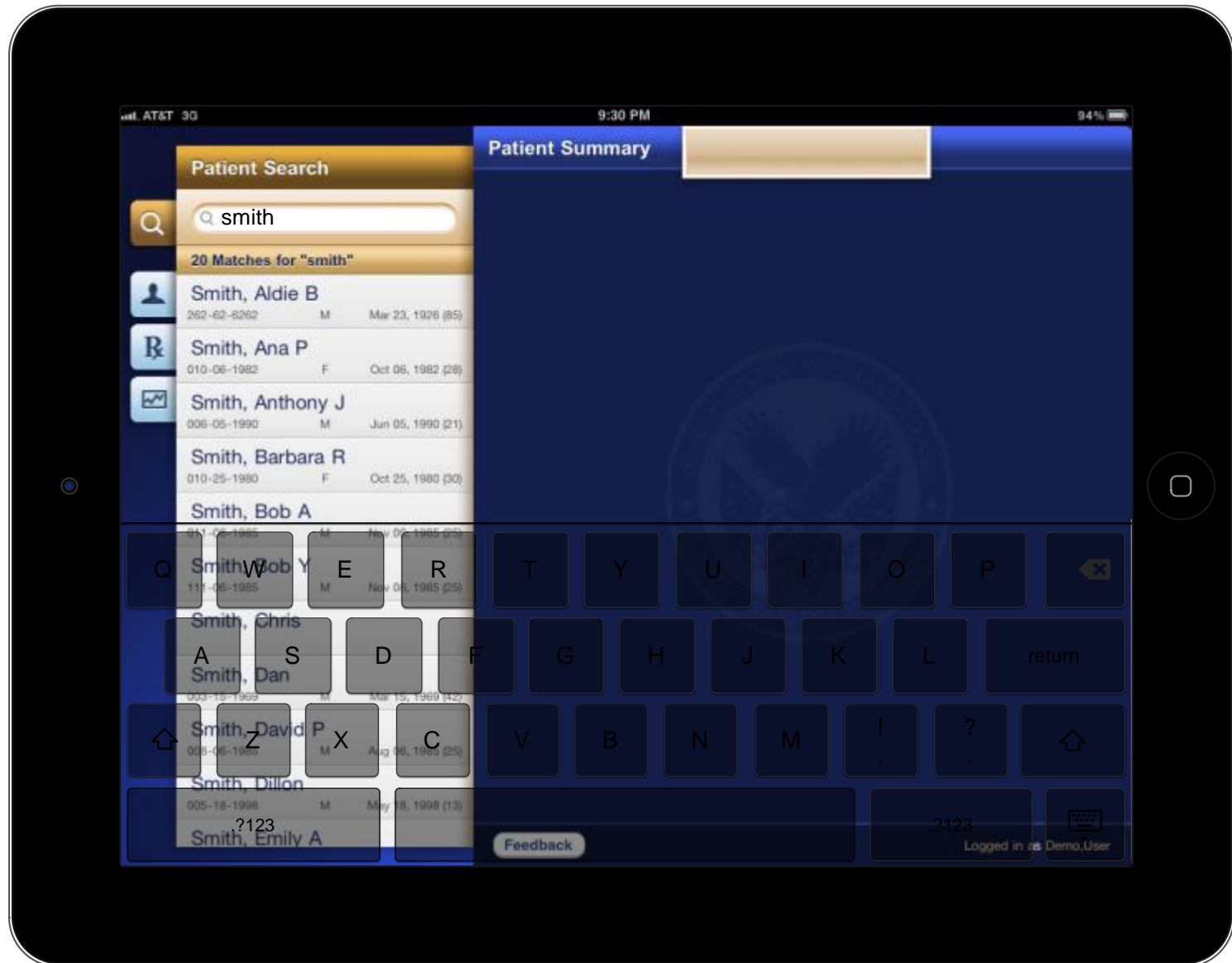
Improved Workplace Productivity with Mobile Smart Devices



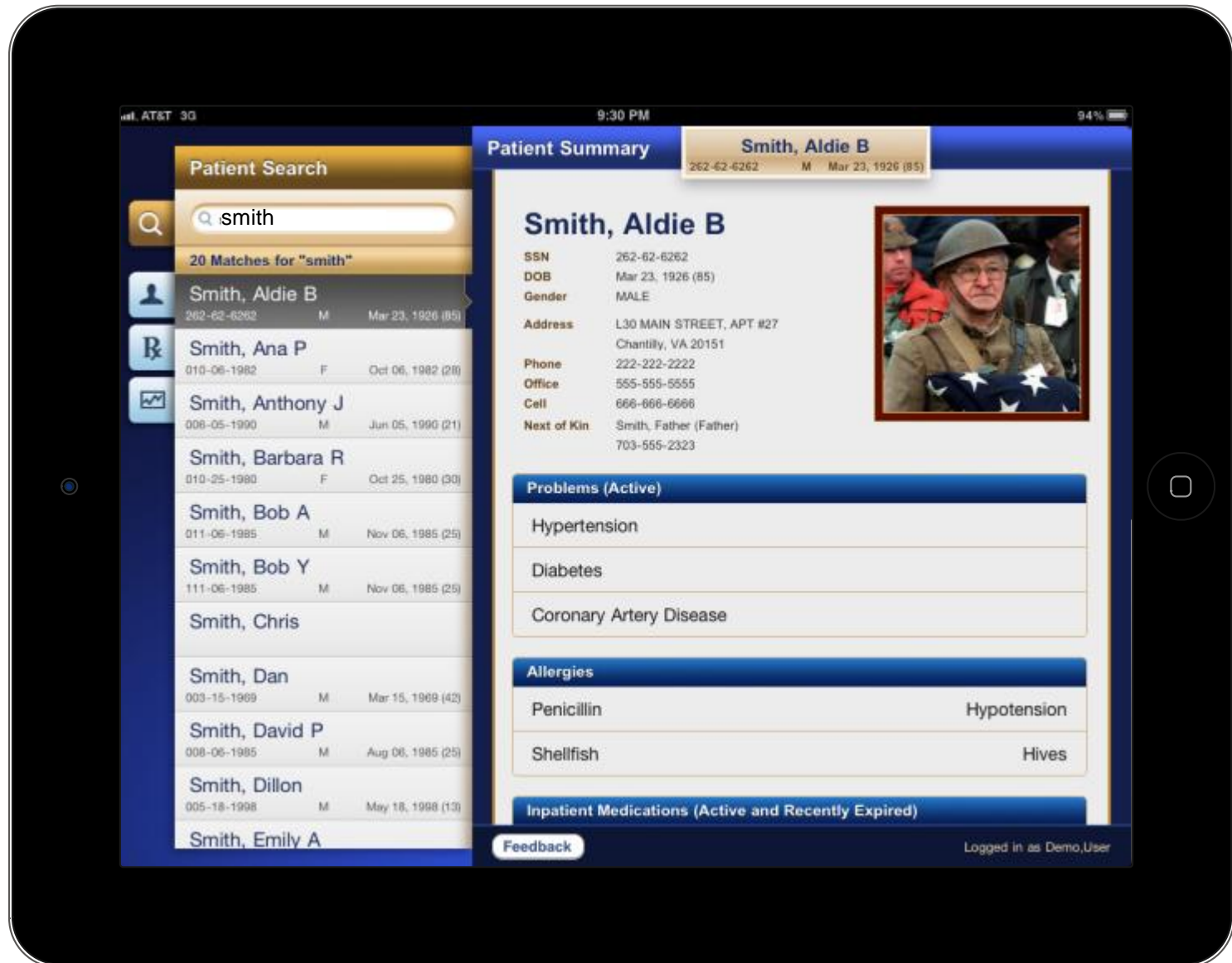
Application Development: V Ai2



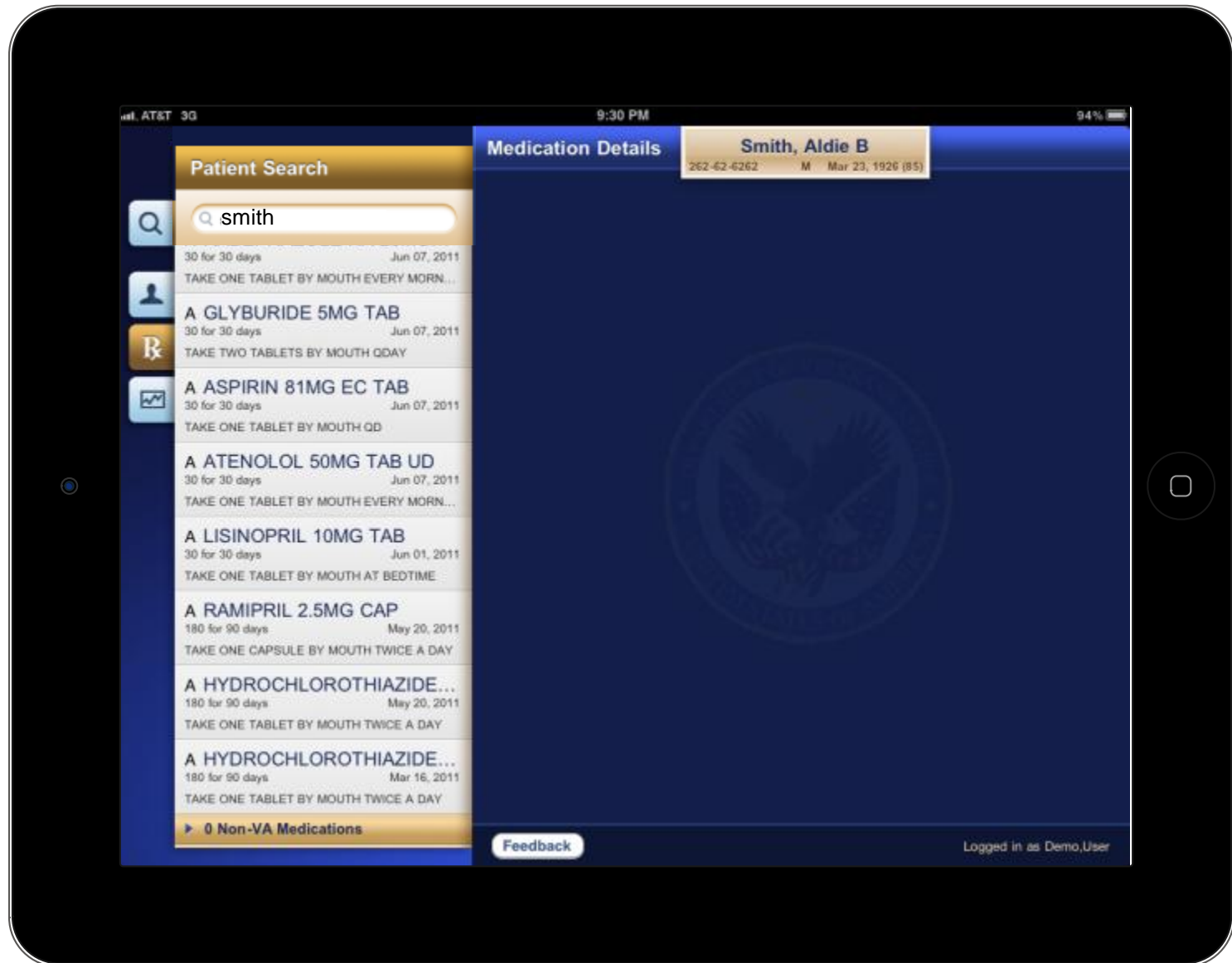
Application Development: V Ai2



Application Development: V Ai2



Application Development: V Ai2



Application Development: V Ai2



Application Development: V Ai2



Pilot Metrics and Monitoring

- **Three month pilot Washington DC VA Medical Center (September – December 2011)**
- **Thirty providers – Clinical Apps, 15 iPads, 15 iPhones**
- **Metrics:**
 - Performance
 - Usage
 - Four surveys – pre-pilot, 1,2,3 months
 - Satisfaction, usability, clinical impact

Performance

1

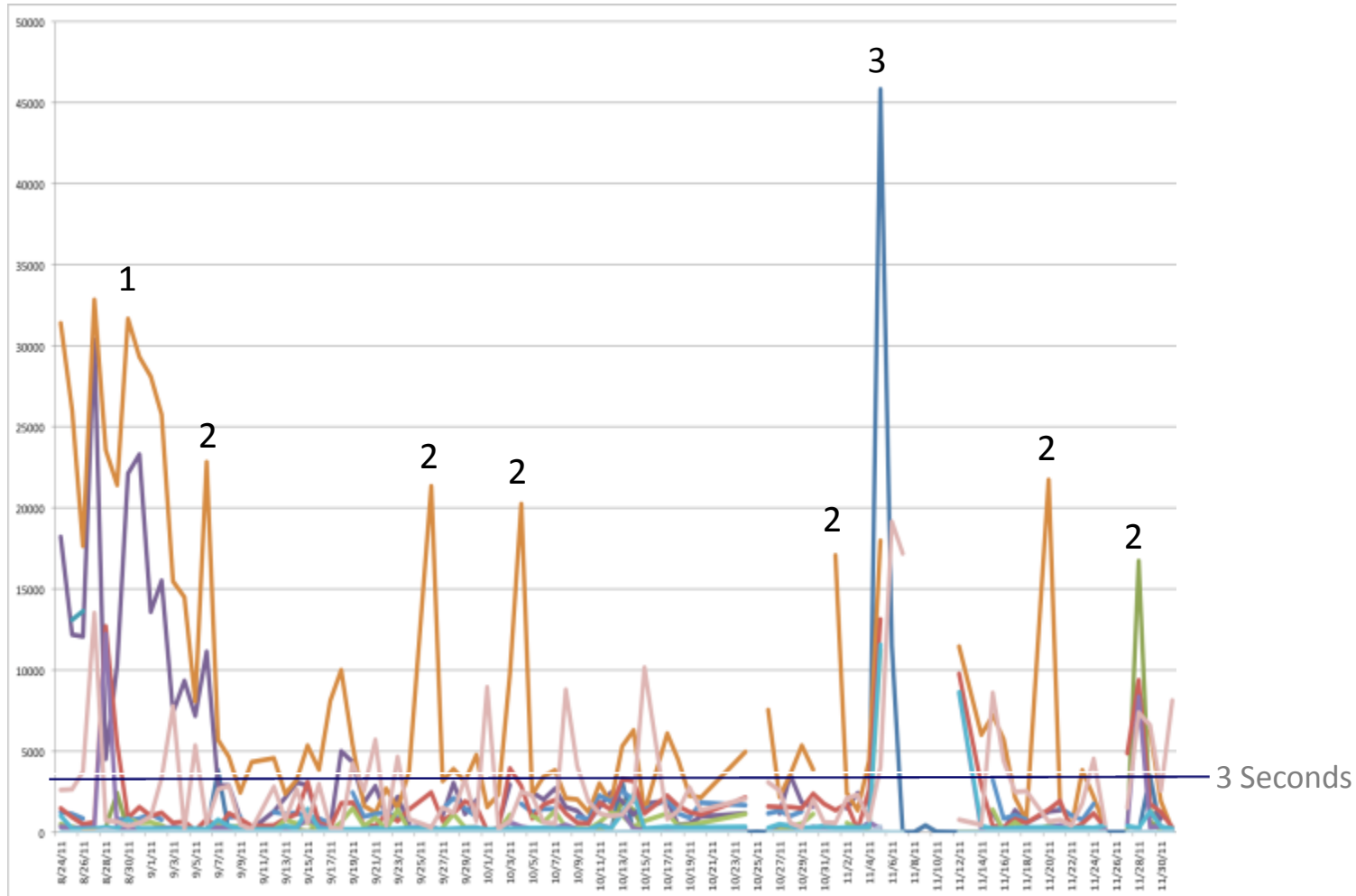
Initial implementation data retrieval issue

2

Version update downloads

3

Ram failure on server

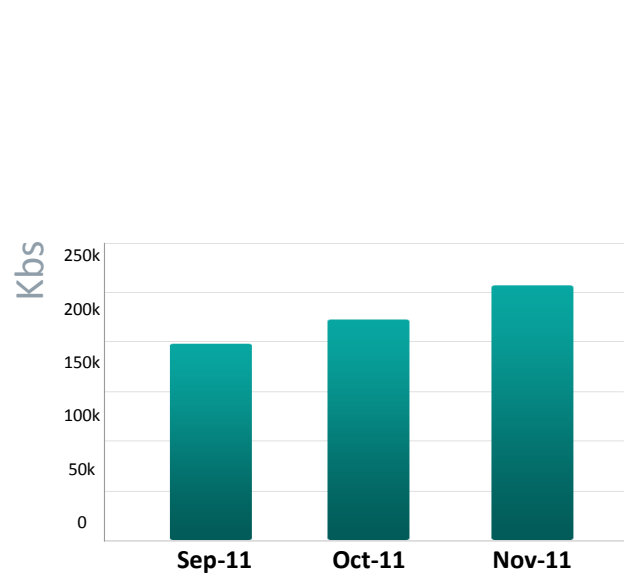


Data and Cellular Usage

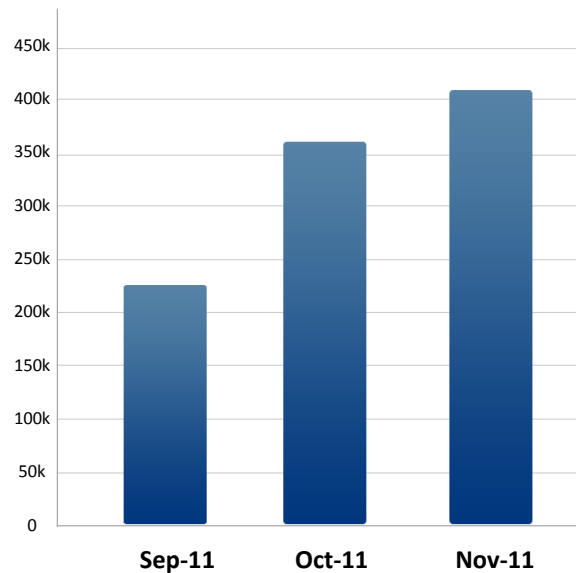
Service Provider Monthly Data/Minutes Usage (Average)

- iPad Data - 0.23 GB
- iPhone Data – 0.41 GB
- iPhone Minutes – 330 min

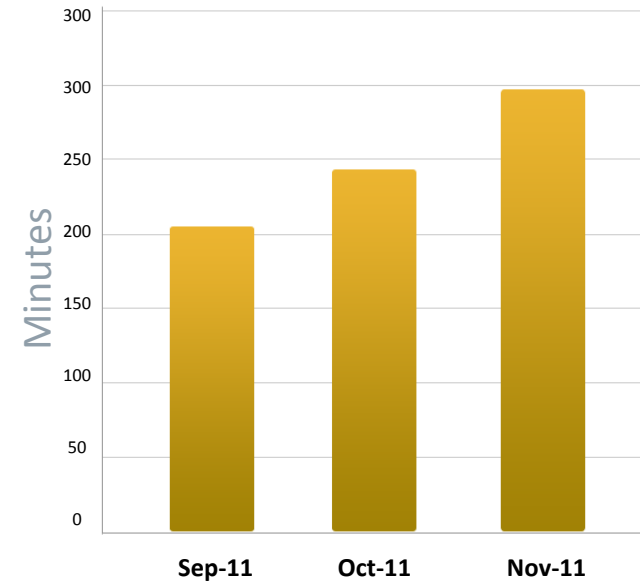
Average Monthly Kbs (iPad)



Average Monthly Kbs (iPhone)

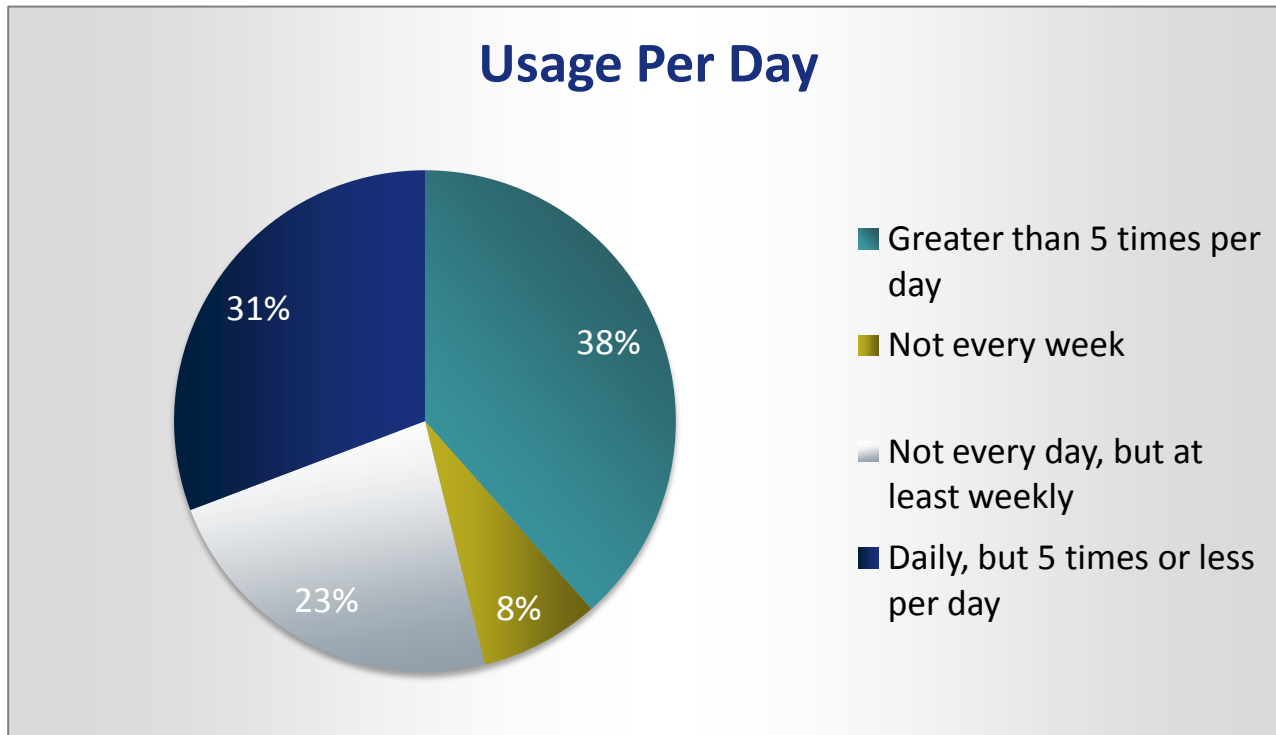


Average Monthly Minutes (iPhone)

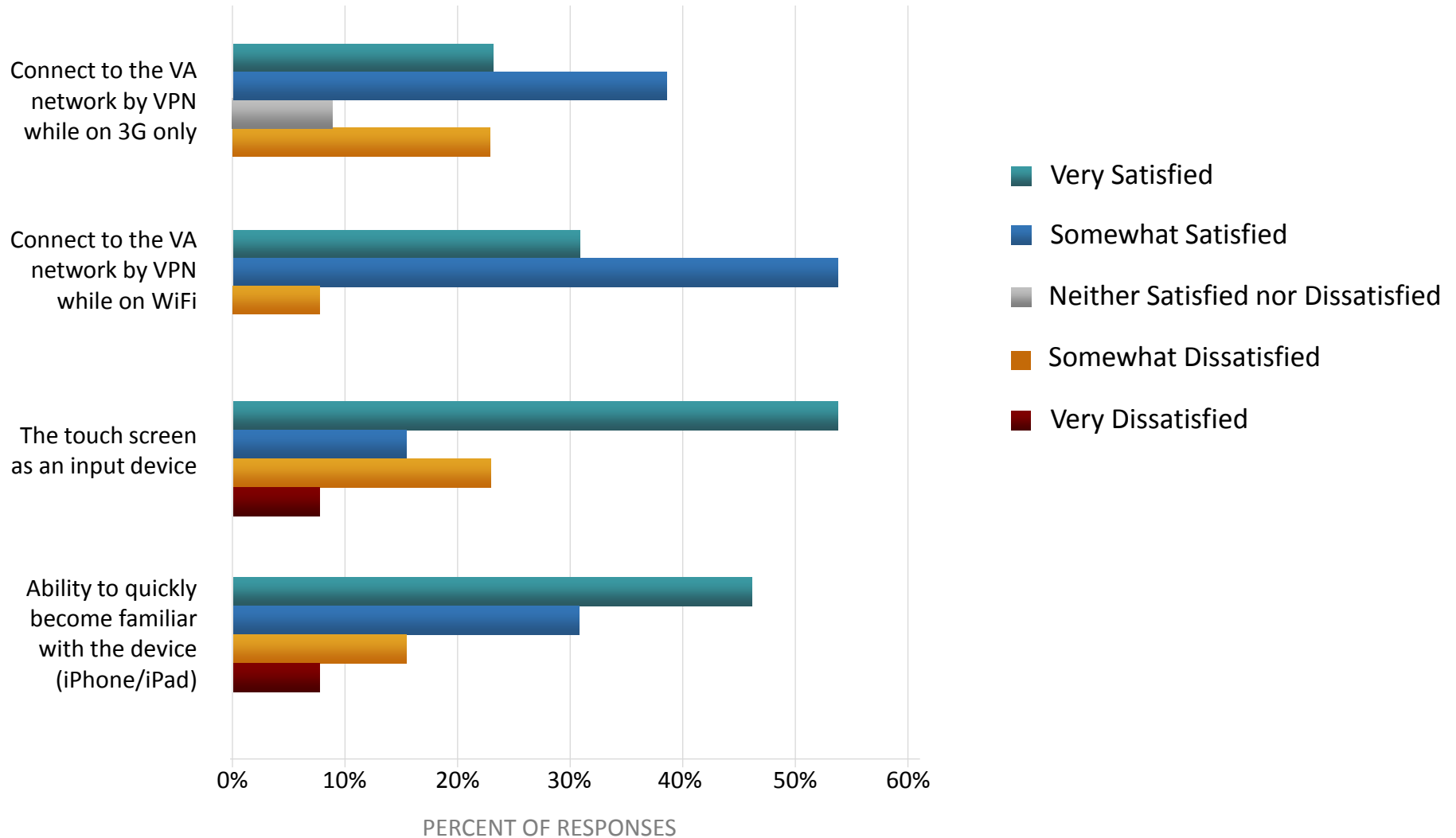


Provider Usage

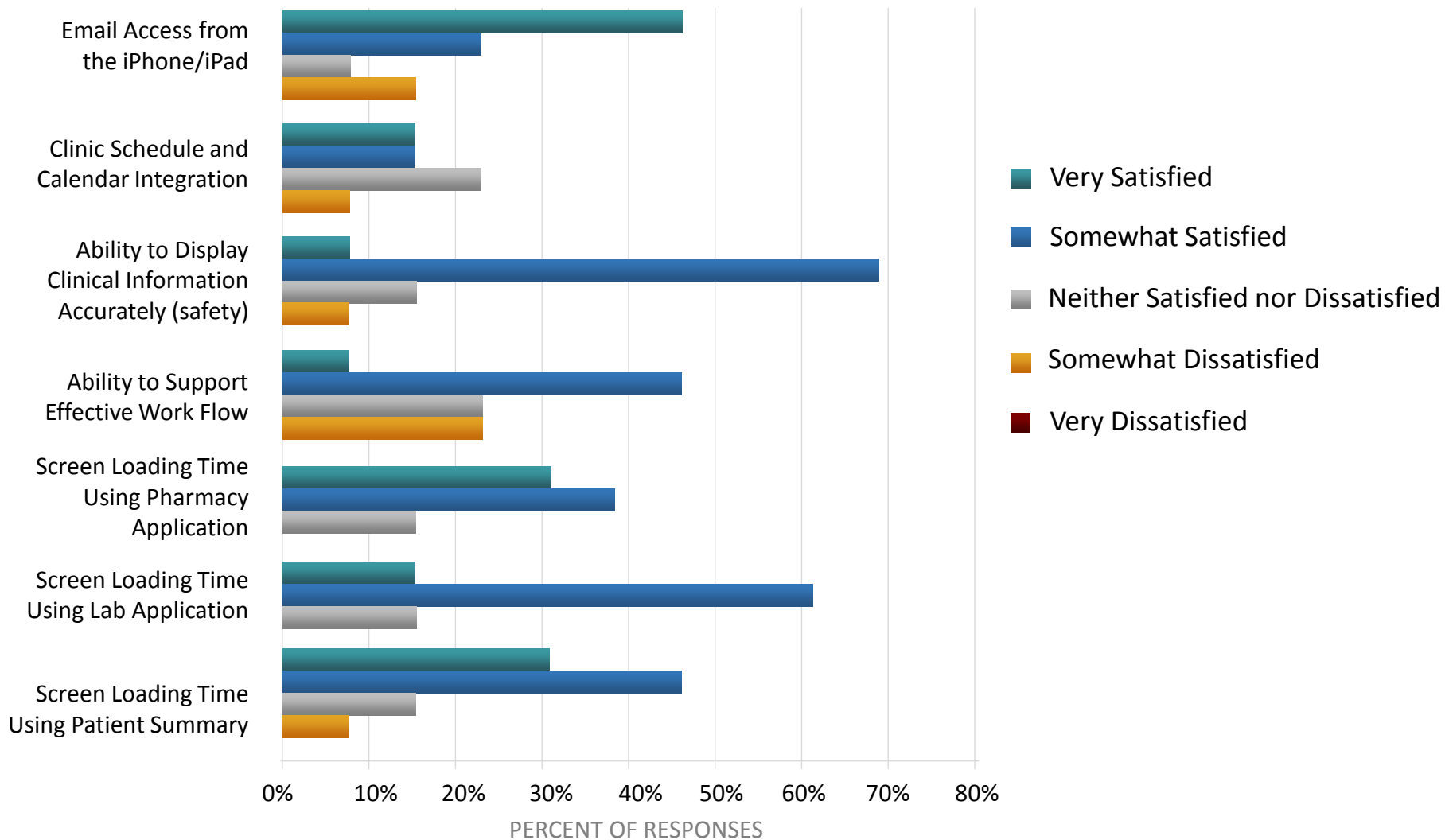
- **Pre-survey**
 - 26% never used an iOS device
 - 30% average user
 - 44% facile iOS device user



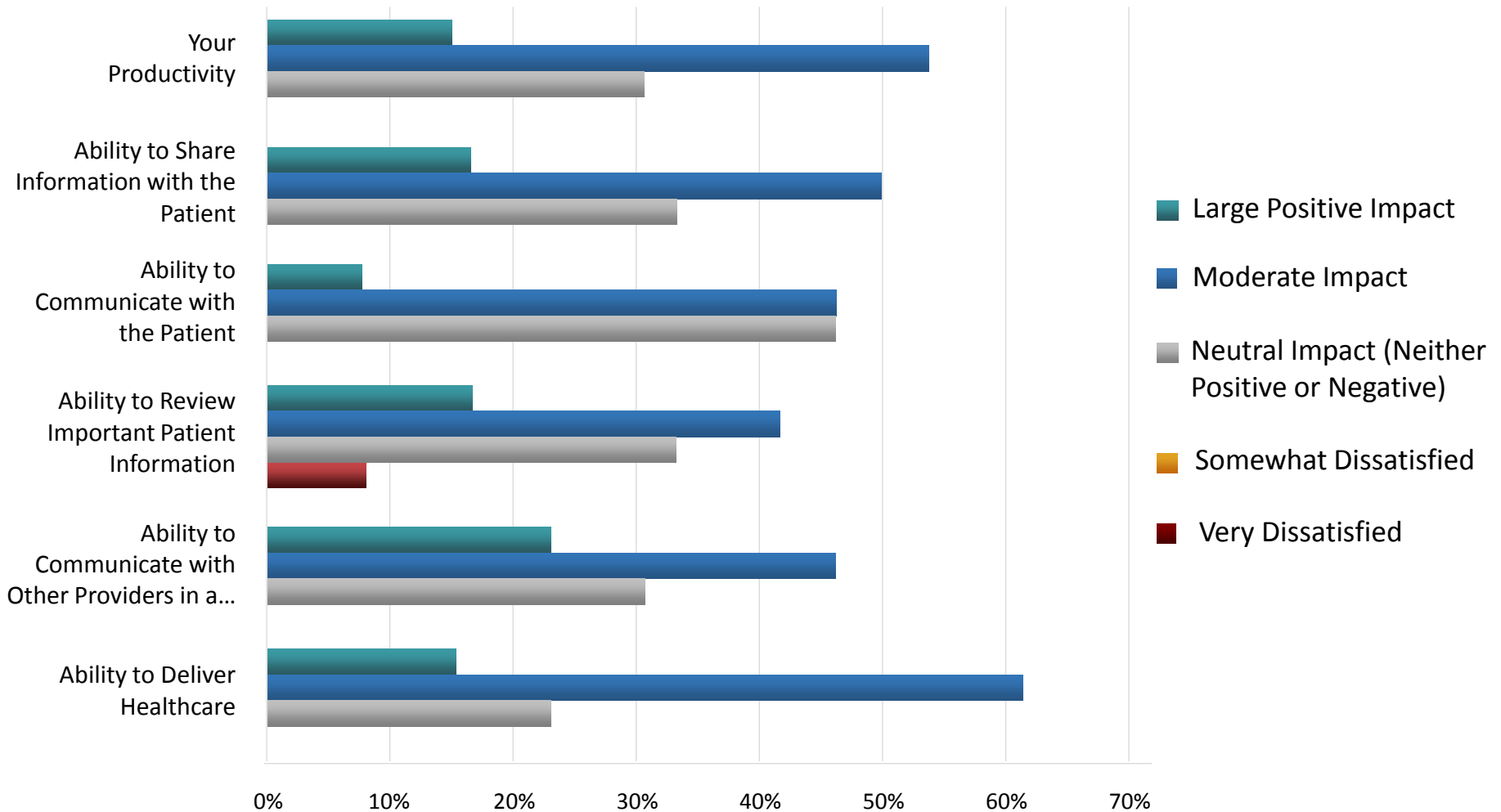
Device and Network Satisfaction



Application Performance Satisfaction



Impact on Healthcare Delivery



Further Key Findings of Pilot

- **Effective enterprise clinical apps should interact seamlessly with the electronic health record.**
- **Touch-enabled devices deserve touch-optimized apps. Otherwise, frustration ensues.**
- **Give providers access to some data and they will immediately want it all.**
- **Great ideas for niche/focused apps to optimize workflow and care are abundant. It's important to create the structure to allow rapid iterative development of these focused apps, once the data source has been made available to the mobile platform.**
- **Involve end users in development/feedback at all steps along the way. Pursue an agile development strategy.**

So, What's Next?

Chronic Disease Trends Are Shaping Health Care Redesign

Chronic disease spending comprises 80% of \$2 trillion spent on health care

Changes in behavior could reduce chronic disease morbidity by 80% (*WHO estimate*)

30-50% of patients with chronic diseases do not adhere to prescribed medication(s) (*WHO estimate*)

By 2015, 41% of American adults are projected to be obese

Diabetes

14M in 1995 → 35M in 2015 → 47M in 2025

The mobile phone has become the biggest platform in the history of mankind.

More than
five billion
total
subscribers.

More than
one billion
3G
subscribers
today.

*Expected to be
2.8 billion by
2014.*

Cell phones
are the
number one
global
computing
device

Veterans Impacted

Mobile Health

20+ Million

8 Million

5 Million

< 1 Million

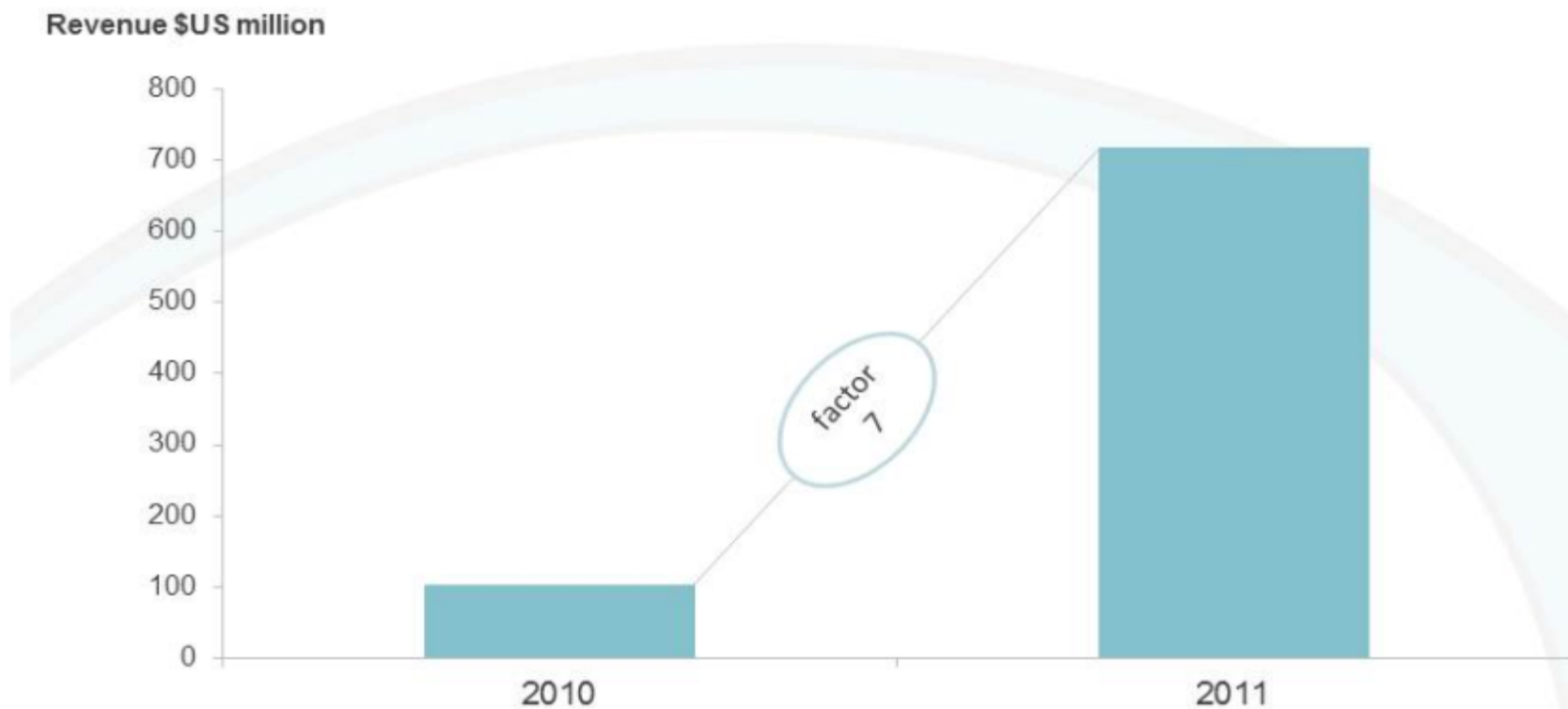
Outpatient Care

Home Based Care

Telehealth

Institutionalized care

Global smartphone mHealth app market 2011



Source: research2guidance

mHealth app revenue sources include: app download, marketing, transaction, service and devices sales

VA Mobile Health: *Expanding Care for Veterans*

Personalized



Convenient

Coordinated

Accessible

VA Caregiver Mobile Health Pilot

1,000 Family Caregivers

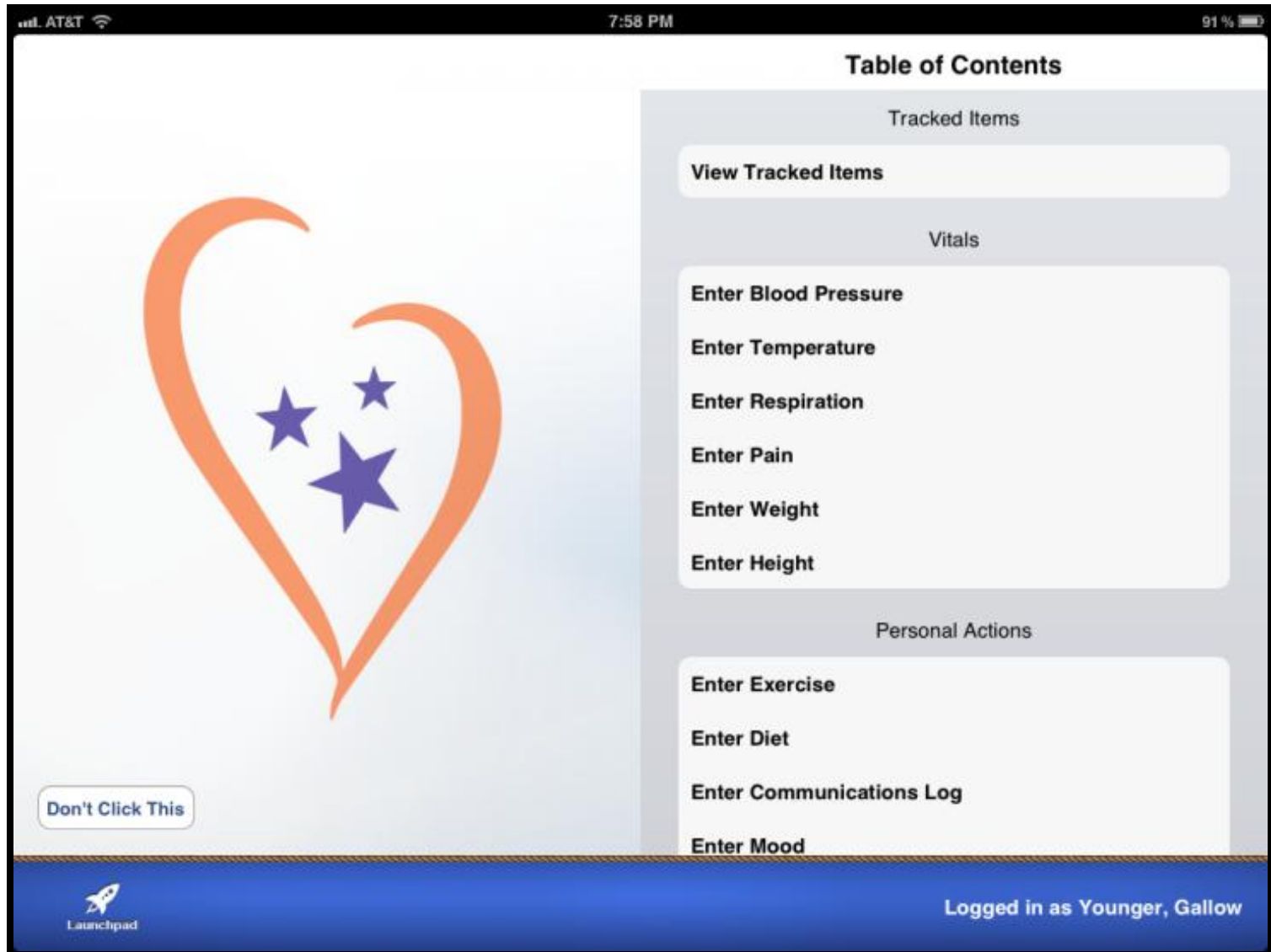
Pre-loaded iPads with VA Mobile Health Apps

Pilot evaluation (research study) to inform next steps

Summary of Care App



Journal App



Journal App

Vitals Sign Entry/Tracking

AT&T 7:58 PM 91%

Table Of Contents

Saturday, February 18, 2012

Enter Blood Pressure

Enter Temperature

Enter Respiration

Enter Pain

Enter Weight

Enter Height

Blood Pressure and Pulse +

Systolic (MM/Hg)	Diastolic (MM/Hg)	Pulse (bpm)	Time
------------------	-------------------	-------------	------

Temperature +

Value (° F)	Time
-------------	------

Respiration +

Value (/minute)	Time
-----------------	------

Pain +

Value	Time
-------	------

Weight +

Value (Lb)	Time
------------	------

Height +

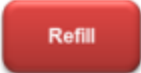

Value (Inches)	Time
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Launchpad Logged in as Younger, Gallow


Mobile Prescription Refill App

AT&T 1:43 PM 51%

Prescription Refill

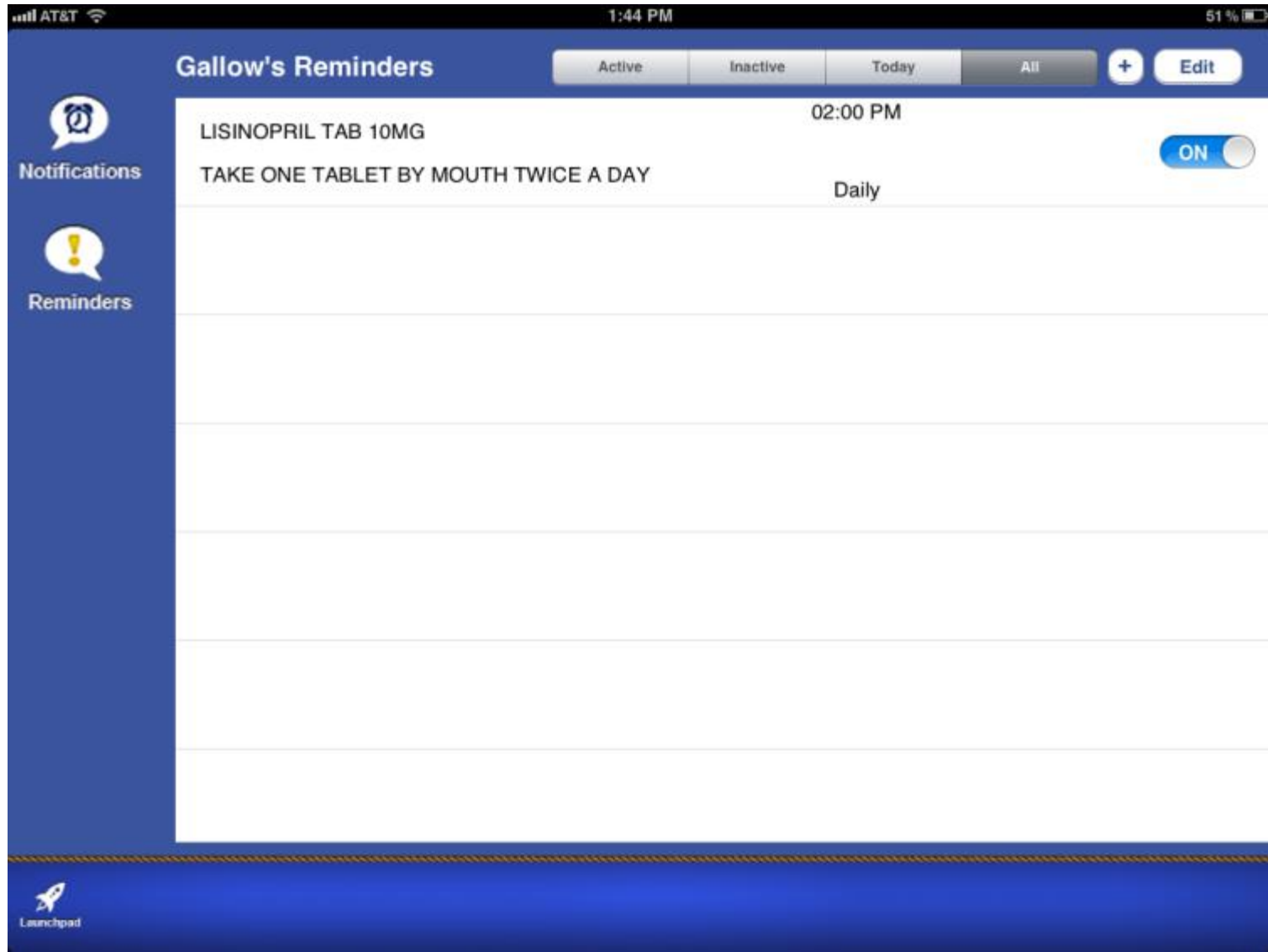
Abilify Refills Remaining: Last refill: <i>TAKE ONE AT NIGHT BEFORE GOING TO BED</i>	Rx #: 12 Quantity: 90 Next refill:	
Abilify Refills Remaining: Last refill: <i>GIVE 50 ml every day</i>	Rx #: 14 Quantity: 90 Next refill:	
AMITRIPTYLINE HCL 50 MG TAB Refills Remaining: Last refill:	Rx #: 1 Quantity: Next refill:	Active
Flintstones Vitamins Refills Remaining: Last refill:	Rx #: nonva Quantity: Next refill:	Active
my iv Refills Remaining: Last refill: <i>GIVE 50 ml every day</i>	Rx #: 4 Quantity: Next refill:	Active
Accolate Refills Remaining: Last refill: <i>GIVE 50 ml every dav</i>	Rx #: 16 Quantity: 90 Next refill:	Active

If you have a current VA prescription that is not listed, please contact the VA pharmacy where your prescription was written.

 Launchpad

Logged in as Younger, Gallow

Notification and Reminders App



Enterprise availability of apps



Cloud hosting

- VA staff access regardless of location
- Veteran access to all their VA information

Cross-Platform Development

- HTML5 development



Provider applications in development

- Print, copy, share
- Expand data domain access and viewing
- Mobile secure messaging
- Clinic directories
- Clerk appointing of Veteran requests (web)

Further plans...

Patient-provider expansion

- Expand secure messaging
- Context management
- Resume functionality
- Voice dictation integration
- Data reconciliation
- Patient reports
- Wound care app
- Intensive care unit (ICU) app
- Orders management app
- Mobile imaging
- Remote patient monitoring
- Facility and bed locator
- Antibiotic drug resistance
- Vital signs
- Progress note
- Surgical pathology/cytology app
- VA/DoD mobile provider
- Schedule integration

Further plans...

Patient-provider expansion

- Biosurveillance app
- My goals app
- Care plan app
- Caring for women Veterans app
- Customize views/search
- Immunization campaign app
- Coumadin clinic app
- Preconception and prenatal care app
- Maternity tracking and care coordination app
- Patient consent app
- Health competition app
- Enter progress notes
- Consults management app

Questions?