Mobile Application Implementation for the 21st Century

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No Disclosures
Learning Objectives

• Differentiate between the factors affecting app implementation and use
• Explain and categorize successful game apps.
• Review and question existing medical application “solutions” and new technology
• Construct a design for a mobile application with a study model to support an outcome
Mobile Healthcare - Solutions Looking For Problems
Triad

Wetware
Patients/Providers

Software
OS/Apps

Hardware
Physical Device
Application Use

- Why will they use it?
- Where will they use it?
- How should they use it?

- Better for users to want it than "make" them use it.
Current Mobile Solutions

• If you build it they will come
• “They” need this
  • We will give it to them for free
  • We will monetize later
• Does it scale?
• Diabetes applications...
Rigorous Study Design

• Improved outcomes not established
• Cost effectiveness not established
Conceptual Successes
Simplicity With No Depth

- “Smartphone”
- Prosthetic cognitive device
- Ask question to get answer
- High cognitive load
- Question origination
- Solution generation
Simplicity With Depth

Angry Birds

• Who doesn’t like to launch things?
• One finger - Complex physics
• Single solution but others possible
• Score and stars - milestones

• Vertical game model with central theme
Complexity Without Depth - The Room

- Broad problem presented
- Must discover each task
- Complexity within the task
- Tasks must be completed in sequence
- Score irrelevant

- Horizontal game model - only one room
Complexity With Depth (Presented Simply)

- Questions anticipated
- Problem identified and presented
- Tasks easily identified and worked in parallel
- Best solution provided with other options
- Short feedback loop for improvement
  - Task completion progress
  - Progress presented simply despite complexity
How Are They Similar

- Nearly everyone knows the apps
- Millions use them
- Millions enjoy using them
- The have been monetized, making millions
Medical Apps
UP by JawBone

Features

SLEEP AND NAP TRACKING
Intelligently tracks hours slept, light vs. deep sleep and waking moments.

24/7 ACTIVITY TRACKING
Get a holistic view of your activity intensity.

FOOD & DRINK TRACKING
Fun and easy way to track your food and beverages.

MOOD TRACKING
Log your moods and discover connections that affect how you feel.

INSIGHT ENGINE
Discover hidden connections and patterns in your day-to-day activities.

IDLE ALERT
Reminds you to move when you've been inactive for too long.

POWER NAP
UP will wake you up at the optimal time (around 26.5 minutes) after you fall asleep.

SIMPLE SYNC
Simple and easy connectivity. Just plug it in.

DAY AND NIGHT FORM FACTOR
Designed for comfort. Because the more you wear it, the more you'll track.
Interesting

- Wearable
- Works by movement
- Calibration dependent
- App does more than hardware
- Social media
Airstrip
Vendor Interface Options — Depending on vendor interfaces, features may include but are not limited to trended and most recent data for:

- Hemodynamic parameters
- Vital signs
- Vasoactive infusions
- Medications
- Allergies
- Demographics
- Is & Os
- Dynamic search features
VPIMS
VPIMS

- Vanderbilt Perioperative Information Management System (application suite)
  - Anesthesia Documentation/Billing
  - White Board
  - Quality Assurance
  - Nursing documentation
  - eORBoard
  - Notification engine
- Dedicated Development Team
Square
On The Cusp
Casio

Bluetooth® v4.0 enabled
G-SHOCK

GB6900AA
Mobile Link
Radio Frequency Identification (RFID)

- Passive and active chips
- Real-time location service (RTLS)
  - Equipment
  - Staff
  - Patients
- Transactional
Near Field Communication

- Technology lies over RFID
- Encryption possible
- Smartphones equipped with NFC paired with NFC tags
  - can automate task execution on a smartphone
  - No company or manufacturer reliance
  - Utilized immediately by anyone anywhere with an NFC equipped smartphone and an NFC tag

http://en.wikipedia.org/wiki/Near_field_communication
Other Technologies
Our Task -
Create The Horizon
What Do We Need?

• Agree on one or more problems and create a mobile solution
• Use existing and/or evolving technologies
• Explore application of conceptual or experimental technologies
Consider

- Wetware
  - Patients/Providers
- Software
- OS/Apps
- Hardware
  - Physical Device
How Can Mobile Health Help?

- Simplicity and complexity with depth
- Predict the questions and present the best solution
- Present other solutions
- Present tasks based on selected solution
- Short feedback loop rating performance
And Then...

• Design a study that will rigorously test the hypothesis that the proposed solution solved the problem.
Finally...

- What do we do next?