Navigating Our Way to a Digital Experience

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Conflict of Interest

✓ Jennifer Theriault, MSHI
✓ Steve Penney, MBA

Has no real or apparent conflicts of interest to report.
Agenda

• Where to start: Push-pull of operations and innovation at an AMC

• How to get there: Defining the gap and creating path to sustainability

• Seeking a Destination: Examples
  – Wayfinding
  – IoT
  – Virtual Voice Assistants

• Find your path: Practical takeaways for your institution
Learning Objectives

• Identify technology advances that enable success at AMC's and challenge our industry colleagues to translate commercial expectations to an enterprise environment.

• Develop a framework for evaluating new technology across a multi-site hospital system.

• Demonstrate tools for vendors and implementation team that enable successful pilots of new technologies across a complex multi-site hospital system.
About Brigham Health

Our commitment is not limited to one point on a map. Brigham Health is a global health leader committed to creating a healthier world.

• Reaching out—locally, nationally, and internationally.
• Bringing information and expertise to maintaining and restoring health.
• Being part of daily life and helping people make the best decisions about their health, even if they never set foot inside our walls.

Our patients come from over 120 countries.
• 777 inpatient beds
• 47 operating rooms
• 150 ambulatory practices
• 8,000 babies born
• 3.9 million outpatient encounters
• 61,000 emergency room visits
Applications were not scalable nor interoperable.

PAST: HOMEGROWN SYSTEMS

Partners has heavily invested in Epic, an enterprise solution to streamline health data management.

PRESENT: EPIC FOUNDATION

FUTURE: NEW TECHNOLOGY ADOPTION

New technologies and delivery models will leverage the foundation to disrupt the status quo to accelerate improvement of health and the delivery of care.

We should be the partner of choice for innovators across the digital health landscape.
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IS Operations- Structure & Planning

Enterprise IS: Partners Healthcare

Centralized Core Functions
- Desktop/Service Desk
- Data Center
- Telcom
- Network Engineering
- Application Delivery
- Access/Email
- Endpoint Computing
- Research IT
- Enterprise Applications

Entity IS: Brigham Health

Partner with Enterprise on:
- Customer Service
- Upgrades & Support
- EMR Optimization
- New Systems
- Network Expansion & Real Estate
- Information Security
- Mobile Technology/Communications
- Site prioritization/Governance
Defined multi-layered governance
Established prioritization process
Tight fiscal planning, much of the resource capacity is consumed by non-discretionary, must do projects
innovation hub

BWH
BRIGHAM AND WOMEN'S HOSPITAL
Digital Health Innovation at BWH

**MISSION:** To drive more patient-centered, efficient, and safe care through use, development, evaluation and commercialization of digital health solutions

- Support BH Innovators
- Match Hospital Priorities to Market Solutions
- Create Infrastructure to Scale Innovation
- Collaborate with External Partners

Advance BWH clinicians and researchers digital health ideas
Identify and pilot digital solutions to high priority hospital challenges
Provide platforms to expedite safe and efficient use of digital health tools
Find partnership opportunities with digital health industry

- Schlager Family Early Stage Digital Health Innovation Grants
- SpeedyAudit Hand Hygiene mobile app
- Redox Engine to accelerate EHR integration
- Herald Health collaboration
Digital Health Innovation Guide (DHIG)

The DHIG governance committee and process reduces risk for both individual projects and for the broader organization, improving the likelihood success by ensuring proper approvals and best practices are followed.

CROSS-FUNCTIONAL GUIDANCE
Information Security, Partners eCare, Compliance, IRB, Partners Innovation and other teams

CHECKLIST-DRIVEN PROCESS
Pre-approved/customizable guardrails and regular check-ins keep projects on track

IMPACT TO DATE

100+ PROJECTS REVIEWED
9 MONTHS AVERAGE TIME FROM INTAKE TO PILOT FOR PROJECTS WHICH ULTIMATELY EXECUTED A PILOT
Expedited Pathway to Launch

Pilot Review
Upon pilot completion, the innovator, operations partner, and stakeholders review the pilot and decide on path forward.

Implementation
Pending pilot success and hospital needs the DH solution may be implemented beyond the initial pilot population.

Sustainable Operations

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Bridging the Gap
Keystone to Sustainability

Brigham Health has all the elements needed to scale innovation from pilot to sustainable operations

INNOVATION ECOSYSTEM

- Digital health start-ups
- Investors
- Industry partners
- Academic collaborators

BRIGHAM HEALTH IS

- Expert IT Staff
- Support Infrastructure
- Scalable Resources
- Rich, proprietary data

Translate Planning and Assessment to Scale and Support TPASS
TPASS Checklist

Ensuring the relevant teams are aware and the gotcha questions are asked and answered

- Pilot Information, history
- Operational Scope
- Product Information
- Product Use
- Roles & Responsibilities
- Documentation Checklist
- System Architecture
Pathway to Sustainable Operations

INNOVATION

• Early Stage
• Ideation
• Pilot

COORDINATION

• Handoff
• Assessment
• Planning

OPERATION

• Support
• Scale
• Manage
Stepwise Process

Identify pilots early in DHIG process that have a goal of moving to operations at BHIS

Schedule a **post pilot touch base** meeting with iHub rep, IS rep, and vendor. Purpose is to connect the group and review what needs to be done prior to IT PAC.

Complete the project specific **TPASS checklist** of items that need to be done prior to assessment at IT PAC (visp, analysis, scope documents, etc.)

Present at **IT PAC**: 1. Scope (pilot to ops or expanded implementation) 2. Implementation Resources 3. Support Resources 4. Timelines 5. Governance Group/Oversight

**Operations Pipeline**. IT PAC follow ups are completed and project moves forward as capacity allows or is requested to do further analysis and come back to IT PAC.
The Combined Landscape

Bleeding Edge

Innovation

1-2 clinics
Advancing ideas

2-3 Departments
Integrating novel w/ existing

Settled

Researcher/Clinic

Scale

Hospital-wide

System-wide

Stable tech

HIMSS19
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Wayfinding
Wayfinding Background

Why: Desire to improve the experience and ease of access for all of our patients, families, and staff.

How: Implement a multimodal digital solution that complements BWHC’s physical wayfinding ecosystem.

Why now: Wayfinding technology and digital adoption has reached a tipping point.
Sample Use Cases for Patients and Families

Plan a Visit

Launch **app or website** → enter home address as start → enter clinic location

Get Around Campus

**Kiosk** “knows” start location → search for nearest restroom

Info Desk staff enters into **website** a destination based on patient description → print, e-mail or text instructions
Crawl/Walk/Run Approach for Wayfinding

**Crawl**
- Mobile Responsive Web
  - Provide turn-by-turn directions of public and staff areas
  - Maps of all locations
  - Limited integration
  - Develop consistent icons, language for maps
  - Understand use cases

**Walk**
- Bluedot Community hospital
  - Real-time indoor positioning at community hospital.
  - Technology development
  - Further integration with IS operations teams to enable app

**Run**
- Bluedot AMC
  - Full scale implementation
  - Transition all support and management to IS Operations team
  - Integrate SDK with other apps
**Impact**

**Empower Patients & Staff**

Provide high value tools & put Brigham resources at their fingertips so they can navigate their experience seamlessly.

**Building Blocks**

Layered approach allowed quick launch and absorption of lessons learned that builds upon itself.

**Get More Value from Existing Resources**

Identification of additional programs to integrate and individuals’ expertise to support program goals enabled faster adoption without re-inventing the wheel.
Where do we go next

Blue Dot
Indoor navigation native to iOS and Android mobile devices. (Google maps for inside the hospital)

Multilingual
Support for written translations native to the kiosks and mobile application

Patient Gateway
Integration with appointment reminders through Patient Gateway and text message

Add-Ons
Location-based functionality such as cafeteria coupons, patient surveys, public tours, asset tracking and additional apps developed for BWH
IoT Buttons
IoT Buttons @ Brigham Health

- Bluetooth or WiFi connected
- Battery life > 2,000 clicks
- Relatively cheap
A Common Hospital Problem

A **major** factor in **poor** Press Ganey scores for hospitals is the **cleanliness** of public restrooms

- Staff are not always the first ones to see the need for service.
- Method/Instructions for a visitor/patient to report a service need are not clear or easy to do.
- Health and safety risks can arise.
- Major work flow changes to environmental and facilities groups is a complicated and lengthy process.

- **Opportunity to think innovatively for a solution to a not-so-simple need.**
- **Consider and expand upon the existing communication processes for this type of request and action.**
IoT Buttons @ Brigham Health

- BWH Dash Bathroom Use Case

- Programmable for up to 3 functions
  - Single Click: dirty restroom email and SMS sent
  - Double Click: restroom cleaned email and SMS sent
  - Long Click: restroom inspected
Four Month Usage Results

- Oct 2017 - Feb 2018
  - 1,356 total events logged
  - 907 single click requests
  - 382 double click requests
  - 67 long presses

Count of BUTTON NAME

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Crawl/Walk/Run Approach for IoT Innovation

**Crawl**
- Low Risk
- Non-urgent
- Non-clinical
- Not critical to operations
- Zero to Low HIPAA exposure risk.
- “Nice to Have”

**Walk**
- In production
- Scale “Crawl” projects
- Low risk clinical use cases
- Integrated to day to day operations in a meaningful way
- “We use this”

**Run**
- Scale
- Scale “Walk” projects
- Sustain existing “Walk” projects
- “We rely on this”

**Scale**
Lessons Learned to get to Sustainable Operations

- Theft/Physical damage risk.
- Reprogrammable.
- Current buttons cannot connect to certain secure WiFi configurations.
- Guest WiFi not meant for business purposes and provided at best effort basis which could lead to message failure/delays.
- Look to expand and integrate
Virtual Voice Assistants
What gives you anxiety about virtual voice assistants (Alexa, Google Home, etc) in a healthcare setting?

- Hack/Vulnerability Risk
- It’s always listening
- User frustration/incorrect responses
- All of the above
Shhh...No Talking!

Conclusion & Recommendation:
- It is the recommendation of the Brigham Health Information Security Officer and Partners Healthcare Wireless Communications Manager to prohibit the use of Amazon Echo, and similar on the PHS network or in a clinical setting due to the risks outlined above and until Amazon offers a HIPAA certified offering or enables enterprise level security controls.

- Organizational stance on Voice Virtual Assistants: **NOT TO BE USED**
  - Physical and Network Connectivity concerns
  - Echo devices/Alexa service is not HIPPA Compliant
  - Data and liability concerns
How can we move forward?

- The Amazon Echo could be used, but only on the Guest Wi-Fi network and only for personal uses and there is no guarantee of security or privacy on this network.

- With technologies such as secure text messaging and similar communication tools, the organization was slow to adopt and now is playing catch up.

- Engaging Voice Assistants early provides an opportunity to actively learn about the technology and align future projects.

- Placing Voice Assistants work under the umbrella of innovation, and understanding the organization’s policies allows for us to strategically engage and begin to progress this powerful technology.

- To advance, this would require involving and aligning key IS resources from multiple groups and concentrations.
Innovate Together
Succeed Together

Innovation Group
• Initial concept support and engagement.
• Bridge to entity (committees, governance groups, etc.)
• Leverage vendor relationships for mutual advancement.

Information Security
• Engage immediately
• Ensure a mutual understanding of the innovation and IT boundaries.
• Keep a constant contact cadence

IS Ops and PM Groups
• Leverage existing project data and support workflows.
• Manage costs and resources.
• Look for opportunities to strengthen existing initiatives
• Provide learning and feedback opportunities.

“When something is important enough, you do it even if the odds are not in your favor.”
Crawl/Walk/Run Approach for Voice Innovation

**General Information**
- General entity information only.
- Visitor type agnostic.
- No clinical information or advice.
- No identifying session or user information saved.
- Zero to Low HIPAA exposure risk.

**Crawl**

**Walk**
- Patient-oriented information.
- Could contain HIPAA or PII information.
- Could contain clinical information or advice.

**Run**
- Access to the patient EMR.
- Clinical Systems Integrations.
- High potential HIPAA exposure risk.

**EMR Interfacing**
The Faulkner Voice Assistant is a voice based, in-hospital information guide which provides a new and interactive experience for Faulkner Hospital patients and visitors.

"How do I get to the Spine Center?"
"What’s on the café menu?"
"When is the next shuttle arriving?"
"Where can I get a coffee?"
"Where is a bathroom?"

Lives on a Guest WiFi Network
- Uses familiar hardware devices
- No session information is saved
- Leveraged existing Wayfinding data
- Strategically located and clear signage
- New central device management
- Customized alerting and alarming
- Onsite IS support during pilot
- Usage reports and activity frequency
- Compliments Patient Experience Initiative
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Building Blocks of Innovation

Processes and components already exist

Use them to design an engine of innovation
Have a vision of your destination
Keys to Success & Considerations

Engage Teams Early and Often
Find opportunities within the interconnectedness of your organization. Work across silos to leverage knowledge, process and user reach.

“Test and Learn”
Recognize that processes change and stakeholders will impact requirements. Iterate, iterate, iterate. Ask why not.

Create Force Multipliers
Develop tools that enable non-traditional PMs to support their own projects
Thank you for attending!

Questions?

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Let us know what you thought about our presentation by filling out the online Session Evaluation!
Appendix and References

1. Matney, L. (1/7/2019). *More than 100 million Alexa devices have been sold*. Retrieved from https://techcrunch.com/2019/01/04/more-than-100-million-alexa-devices-have-been-sold/