

## **Innovation to Transform Healthcare: The Massachusetts General Hospital Experience**

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**Founder & Director**  
**MGH Healthcare Transformation Lab**  
**Associate Professor of Medicine**  
**Harvard Medical School**



## **Disclosures**

- No disclosures

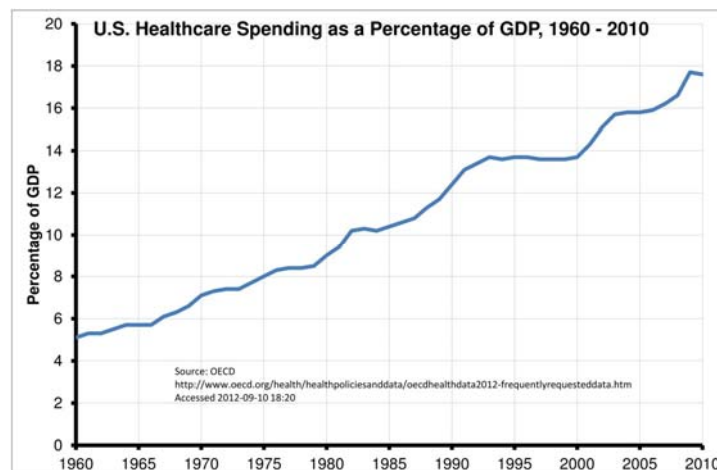
## Healthcare Delivery



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## US Healthcare Delivery: The Need for Change

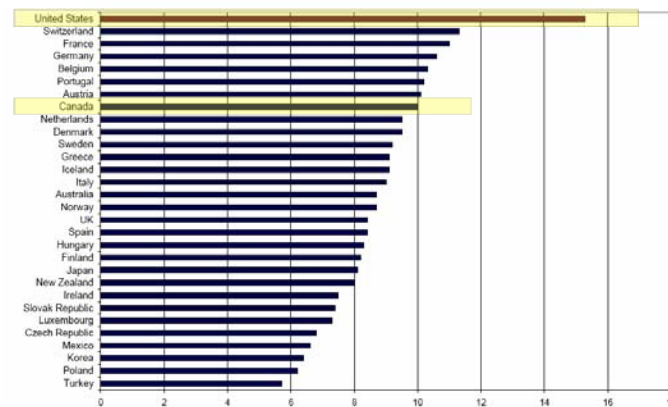
- Rising cost



## US Healthcare Delivery: The Need for Change

- Highest cost

Healthcare Spending as % GDP

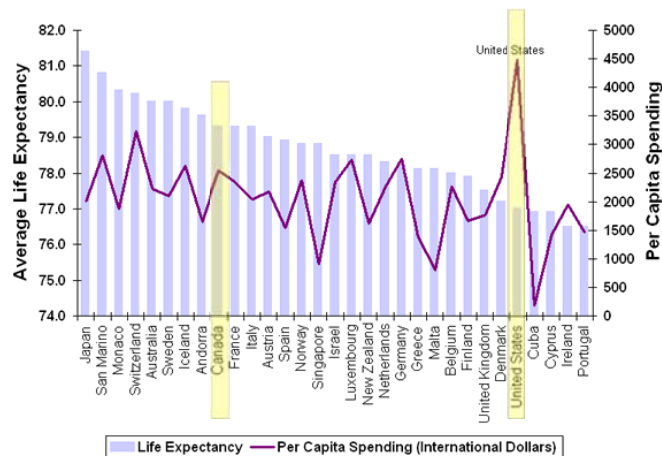


Source: Organization for Economic Cooperation and Development, OECD Health Data, 2008 (Paris: OECD, 2008).  
Note: For countries not reporting 2005 data, data from previous years is substituted.

## US Healthcare Delivery: The Need for Change

- Quality

The Cost of a Long Life



## Institute for Healthcare Improvement: Triple Aim (2008)



Guiding principles to optimize health system performance

1. Improve the patient's experience of care
  - Including quality and satisfaction
2. Improve the health of populations
3. Reduce the per capita cost of health care

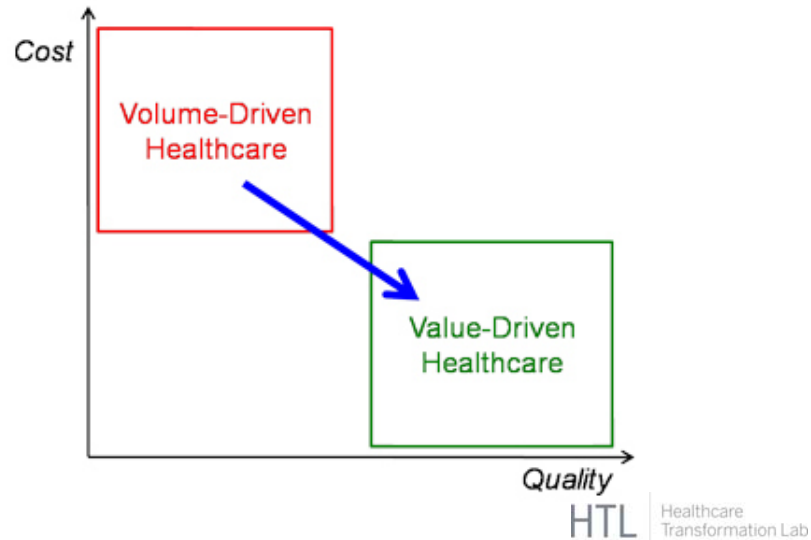
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## Present Healthcare Delivery System: A Long Way From Achieving These Aims

- High cost
- Limited quality
- Episodic care
- Fragmented healthcare delivery
- Misaligned incentives
- Lack of patient engagement
- Etc.

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We have to change the principles guiding how we deliver care



## Addressing the Challenges in Healthcare: Government Role

- National healthcare reform is needed
  - Obamacare was just a first step
  - Comprehensive reform is not likely



## Addressing the Challenges in Healthcare: Health System and Hospital Level

- There are no funds left to hire more care providers or expand services.



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## Addressing the Challenges in Healthcare: Health System and Hospital Level

- Incremental changes aren't enough



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## Addressing the Challenges in Healthcare: Health System and Hospital Level

- Hospitals and health systems are looking to “innovate”



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## Innovation is the Answer

**Innovation is  
the New Black**

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## Innovation is the Answer



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## Innovation in Cardiovascular Science

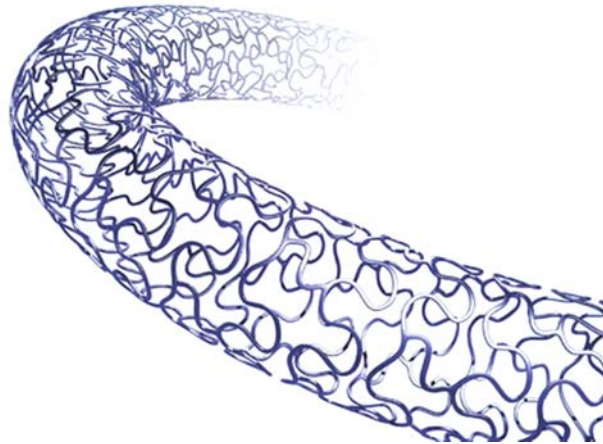
*Mason Sones . . .  
The Great cardiac cinematographer*



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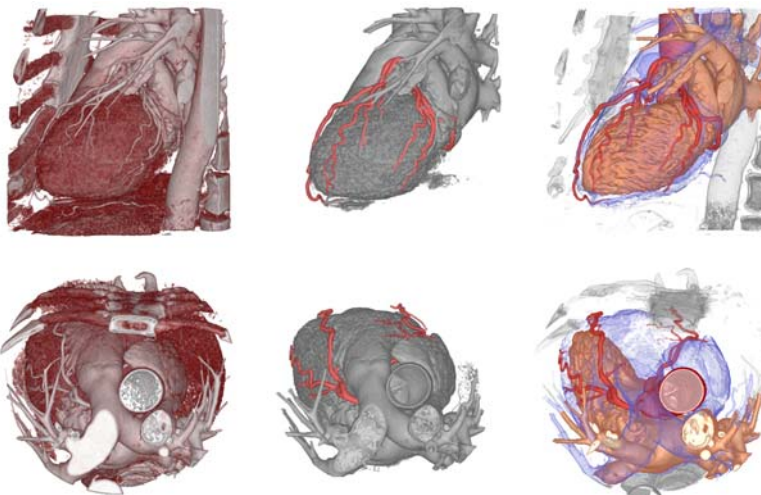


## Innovation in Cardiovascular Science



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## Innovation in Cardiovascular Science



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## Innovation in Cardiovascular Science



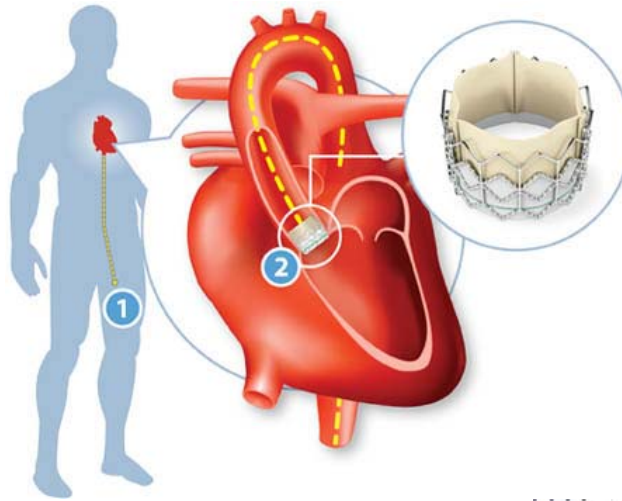
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## Innovation in Cardiovascular Science



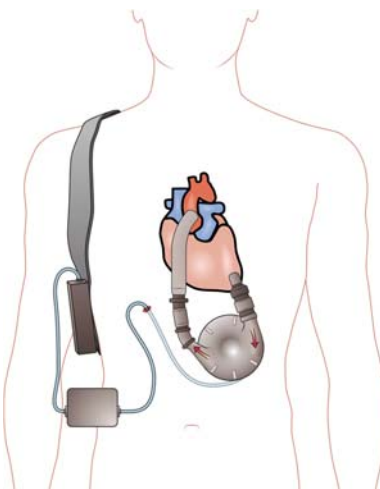
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## Innovation in Cardiovascular Science



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## Innovation in Cardiovascular Science



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## Technical Innovation

A

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## Technical Innovation

A+

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## But How Have We Done with Innovation in Healthcare Delivery?

TRANSFORMING THE DELIVERY AND  
EXPERIENCE OF HEALTH CARE

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## The Technology of the 1970s and 2010s



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## Consider What Consumers Have Come to Expect in the Everyday Non-Healthcare World



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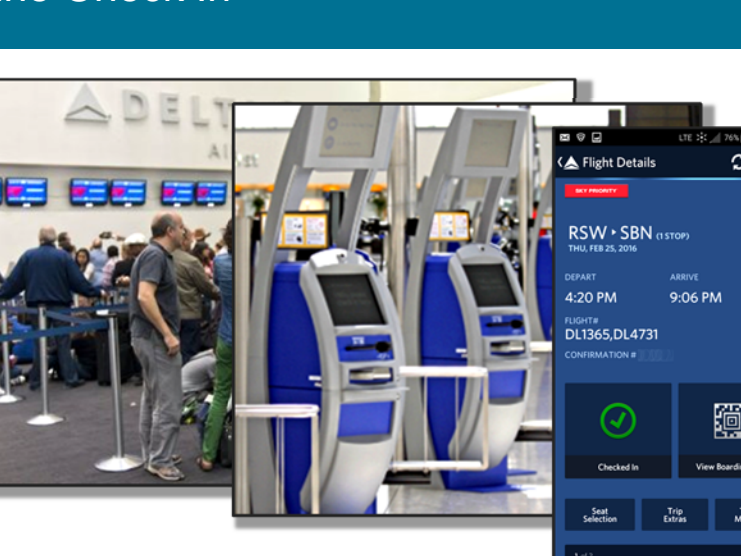
## Family Dinner



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# Airline Ticketing

# Airline Check In



The collage illustrates the airline check-in process. The top-left photo shows a traditional check-in counter at an airport, with a Delta logo visible in the background. The top-right photo shows a modern self-service kiosk. The bottom photo is a screenshot of the Delta mobile app, which provides a digital check-in experience. The app interface includes flight details for RSW to SBN, departure and arrival times, and options to check in or view the boarding pass.

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## Is Healthcare Delivery Keeping Pace?



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## Our Goals Should Be Clear...

- Automated systems vs. manual systems
- Integrated care vs. fragmented care
- Patient-centered care vs. provider-centered care
- Continuous care vs. episodic care
- Incentives that favor appropriate care vs. more care
- Evidenced-based care vs. provider preferences
- Standardized protocols and checklists vs. winging it.

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## Innovation in Healthcare Delivery is Desperately Needed

- Enormous potential
  - Improve quality of care
  - Reduce cost
  - Increase patient satisfaction.



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## Innovation at MGH: My Story

- Associate Director of the Heart Center x 10 years
- I led a variety of innovation efforts in care delivery
  - Some were successful
  - Some stalled
  - Some met resistance



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GENERAL HOSPITAL

HEART CENTER

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## Impediments to Innovation at MGH

- MGH was ranked #1
- Financially stable
- High patient demand
- “We’re doing well... why change, why be disruptive?”



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## No company is too big to fail



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## Innovation at MGH: My Story

- The challenge was clearly how to lead innovation in a successful company or organization...

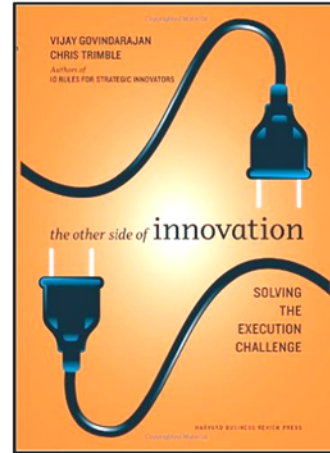
## Master in Health Care Delivery Science Program at Dartmouth / Tuck



Preparing you to change the way health care is delivered.



## Prof. Chris Trimble at Tuck



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## Organizations are Designed to Be “Performance Engines” Focused on:

### Performance Engine

- Today's customers
- Today's competitors
- Routinized operations
- Familiar tasks/workflows
- Efficiency
- Accountability
- Generating revenue

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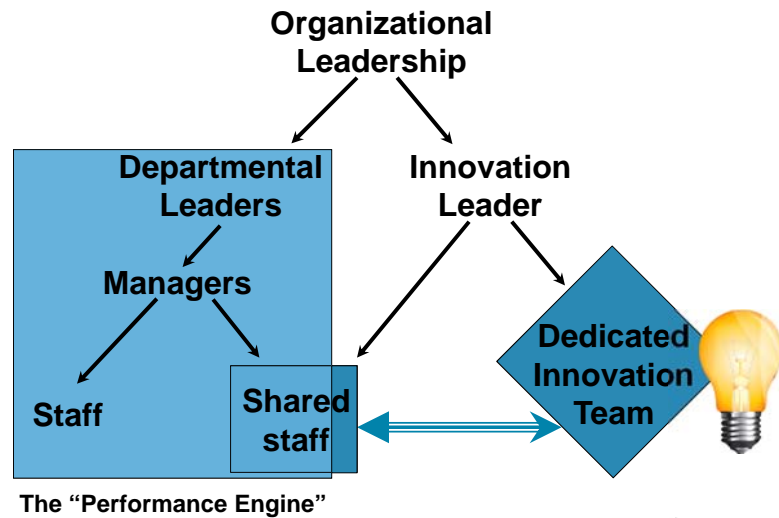
### Innovation Team

- New customers
- Future competitors
- Novel operations
- Experimentation
- Accepting inefficiency
- Taking risks
- Requiring an investment

## Innovating Within a “Performance Engine” Poses Real Challenges

- Threatens those who created or are personally invested in the current systems
- If added on to staffs’ day jobs, the innovation work is usually lowest priority
- Experiments decrease efficiency and increase costs
- Tension or sibling rivalry arises if the old way and the new way are being executed side-by-side
- When finances get tight, innovation staff or budgets are easy targets to cut.

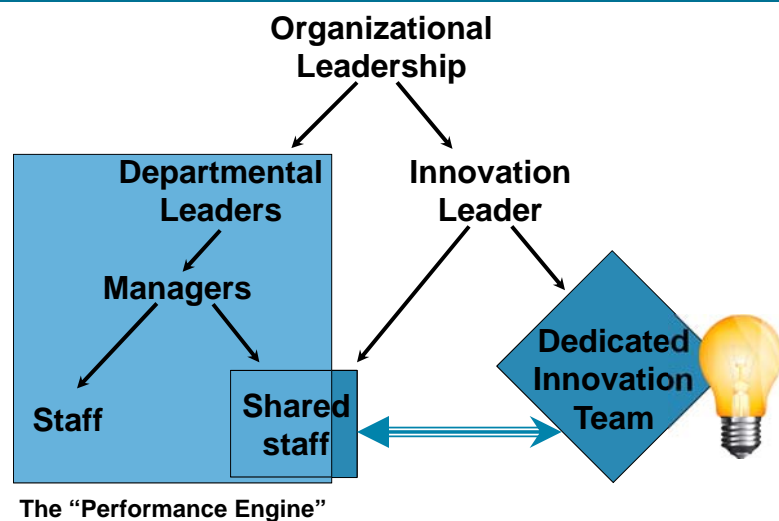
## Proposed Model: Performance Engine and an Independent Innovation Lab



Chris Trimble, Tuck School of Business

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## Model of a Performance Engine and an Independent Innovation Lab

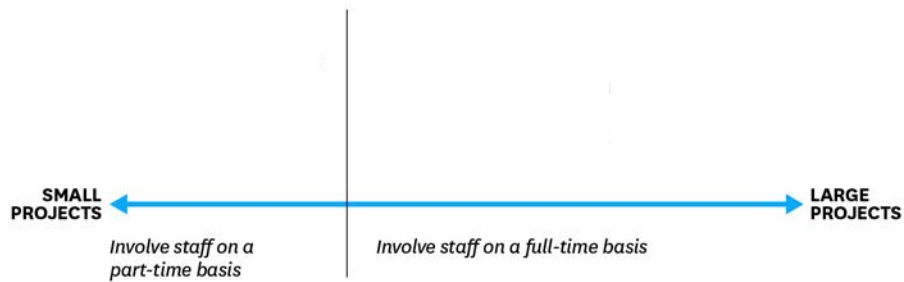


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## Where Does Such a Team Focus its Sights?

### The Ecosystem of Innovation

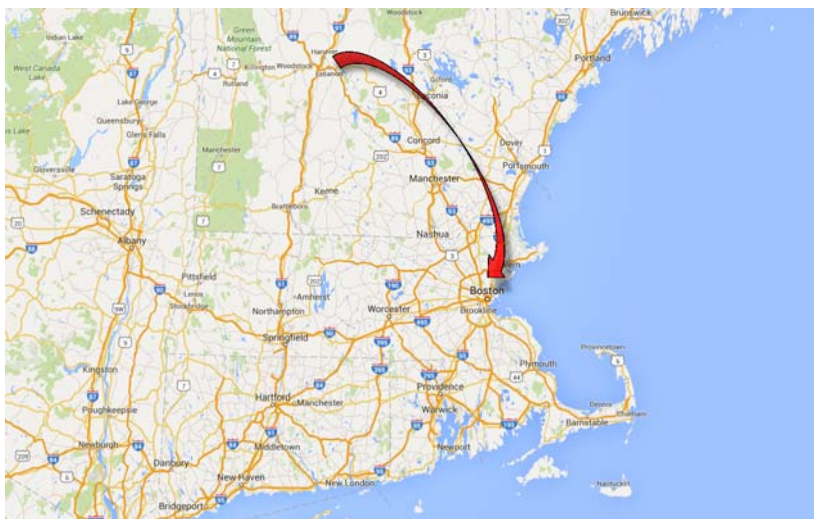


SOURCE CHRIS TRIMBLE

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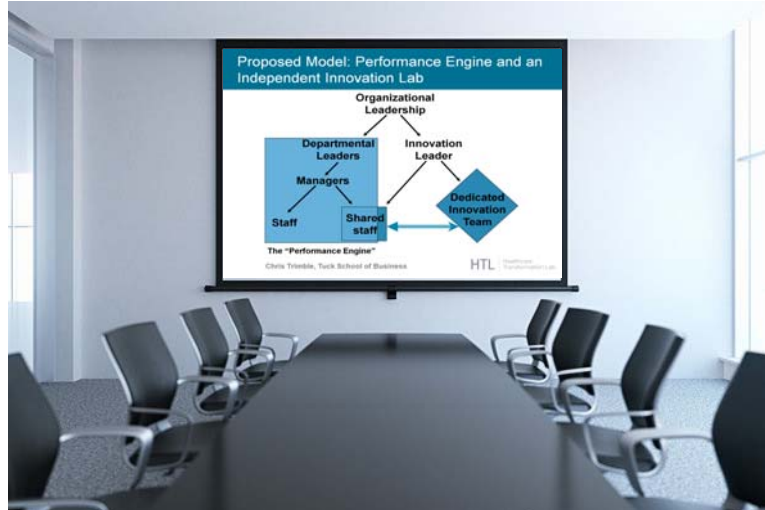
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## Putting Principles into Practice



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## Step 1: Propose the Plan



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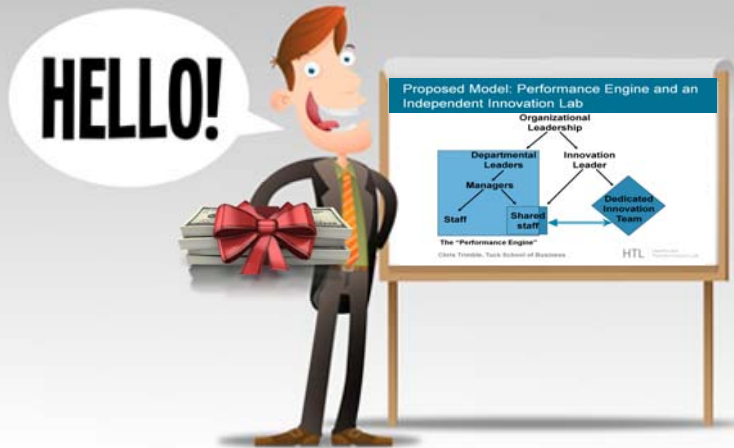
Good idea but...



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## Step 1: Get Buy-In From Donors



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## Step 2: Propose the Plan to Leadership



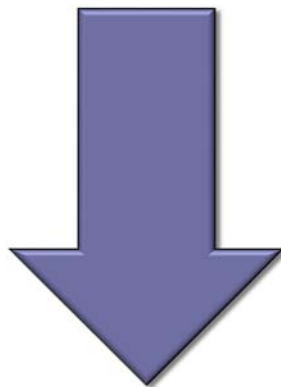
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## MGH Healthcare Transformation Lab

- Began building the team in 9/2013
- Formal launch in 4/2014

## Approach to Engaging Hospital Staff and Targeting Problems

Top down

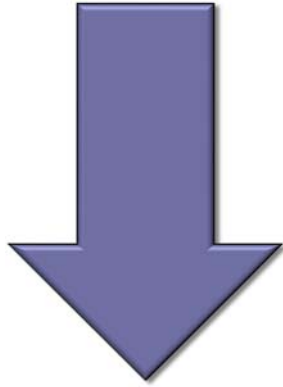


Bottom up



## Approach to Engaging Hospital Staff and Targeting Problems

Top down



- Advantages
  - Leadership buy-in
  - Consistent with institutional goals
  - Clout / authority
- Disadvantages
  - Hospital may set our priorities
  - Viewed as outsiders
  - Don't understand the problems
  - Unfamiliar with the players

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## Approach to Engaging Hospital Staff and Targeting Problems

Bottom up



- Advantages
  - We set our own priorities
  - Engage the front lines – ideas, participation, ownership
  - Focus on fundamental problems
  - Non-threatening to staff
- Disadvantages
  - Lack of hospital mandate
  - May threaten managers / leaders

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## Launch Hospital-wide or Within the Heart Center?

- Lab leaders were cardiologists
- Knew the problems, could design the solutions
- Understood the operations, knew the administrators
- Social capital at all levels
- Heart conditions make good innovation targets
  - High impact (health impact and \$\$)
  - Common: High volume of inpatients and outpatients
  - Quantifiable things to measure and monitor
  - Outcomes readily defined; frequent events.

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## The Healthcare Transformation Lab Team



**Eric Isselbacher, MD**  
Founder and Director



**Julia Jackson, MBA**  
Managing Director



**Maulik Majmudar, MD**  
Associate Director



**Ami Bhatt, MD**  
Clinical Affiliate



**Ann Prestopino, MPH**  
Executive Sponsor



**Aaron Aguirre, MD**  
Clinical Affiliate



**Perry Band, MPA**  
Project Specialist



**Nora Metzger, MSW**  
Project Specialist



**Victoria Vacaro**  
Project Coordinator

## Vision

*What is the purpose of the lab?*

- To improve the **value** and **experience** of healthcare through **collaborative innovation**

## Mission:

*What are the goals to achieve the vision?*

- To serve as a venue for like-minded, passionate people to collaborate on disruptive ideas to improve healthcare
- To develop, validate, and implement innovative solutions to the challenges associated with traditional methods of healthcare delivery

## Setting Our Priorities

- Many hospital innovation labs are focused on intellectual property, launching startups, and partnering with industry
  - Seen as potential sources of revenue
  - But successful profitable spinoffs are rare
- We decided to narrow our Lab's focus: Our primary goal should to improve the value and experience of healthcare for patients at providers at MGH
  - If projects can then be disseminated, great
  - If we happen to generate IP, all the better

## We Understood the Risk of Failure

- 70-95% of innovation teams fail !!!



## So We Sought To Identify Potential Obstacles and Find Ways to Leap Them



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### 1. Culture

- AMC culture does not support innovation
  - Love of tradition: “That’s not the way we do things”
  - The record of success speaks for itself
  - Status quo bias: Faced with alternatives they should objectively prefer, people disproportionately favor the status quo
  - Doctors like their independence and resist changes that dictate care delivery...

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## 1. Culture: Solutions

- Foster a “culture of innovation”
  - Anticipate a future that looks very different from today
  - Preserve “traditional” goals while encouraging new ways to achieve them
  - Emphasize the “value” of innovation
  - Encourage a willingness to disrupt the status quo, even when the current performance engine seem “successful”:
    - In 1989 the new Kodak CEO said he’d make sure to stick to the core businesses of film and photographic chemicals
    - In 1997 Jack Welch said that despite GE’s success: “I take absolutely no comfort in where we are today.”

## 2. Fear of Failure

- Hospital and department leaders tend not to accept failure
  - Equate a project’s failure with a team or leader’s failure
  - This favors only small or “safe” incremental changes
- Doctors don’t like to fail either
  - Most of their career advancement required that they consistently follow norms
  - Their goal is always to “succeed” in their work; failure is humiliating.



## 2. Fear of Failure: Solutions

- Leaders must acknowledge failure as the price of doing business
  - Recognize that the team may have performed well even when an innovation fails
  - This frees people up to take risks
  - Google: “The moment you stop taking risks is the moment you get left behind.”
- Reframe failure as learning:
  - Thomas Edison: “I have not failed 1,000 times—I’ve successfully found 1,000 ways that will not work.”

## 3. Innovation Is Often Carried Out Without Experimentation

- Innovation is planned out carefully in advance
- Innovation is evaluated based on standard metrics of success
  - Either a “success” or a “failure”
  - If a success, then rolled into daily operations
  - If a failure, abandoned
- Leaders are evaluated accordingly.

### 3. Innovation without Experimentation: Solutions

- Instead, innovation should be conducted as disciplined experimentation
  - An experiment is “successful” if it answers questions, lead to refinements, and prompts the next experiment
  - Google: “Strive for continual innovation, not instant perfection”
- Rely on rapid-cycle innovation or “iteration”
  - Google: “Our iterative process often teaches us invaluable lessons. It’s much better to learn these things early and be able to respond than to go too far down the wrong path.”

### 4. Inadequate Resources

- Lack of leadership
- Lack of administrative support
  - Innovation is viewed as a distraction from the “important” or “productive” work
- Lack of time
  - Expecting staff to add it on to regular jobs
- Lack of funding
  - One of the first items to get cut
- Lack of dedicated space
- This is why even great ideas get no traction...

## 4. Inadequate Resources: Solutions

- Commit dedicated resources
  - Protect time for staff to think about, engage in, and support innovation
  - Create a dedicated team
    - Promote needed training and skill building
    - The team can identify good ideas & develop and test them
  - Provide administrative support
  - Provide space for interacting, collaborating
  - Provide funds to launch and sustain innovation
    - Separate from regular operating budgets
    - An investment in the future
  - Makes you more attractive to industry for partnerships.

## 5. Lack of Engagement & Diversity



## 5. Lack of Engagement & Diversity: Solutions

- Innovation should not happen behind closed doors
- The dedicated team should lead innovation, not own it
- Promote innovation throughout the organization
  - Emphasize collaboration and inclusion
  - Doctors, nurses, techs, administrators, support staff
  - Welcome ideas from all
  - Provide a mechanism to share, discuss, and submit ideas.

## 6. The Belief That Innovation Must Be Big or Bold...



## 7. Lack of Implementation

- Some think that generating a great idea is all it takes



*If you build it they will come.*

## 7. Lack of Implementation

- Not having a system to follow through with implementation
  - Brainstorming is not enough
  - Ideas are left to wither on the vine
- Need a well defined and widely understood process to turn ideas into reality
  - Best managed by a skilled, dedicated team
    - Project managers, administrators, data managers
    - Resources to support them.

## Having identified these 7 obstacles, the HTL set out to address them directly by...

- Introducing innovation into everyday culture with events, lectures, demos, and broadening of the conversation
- Emphasizing collaboration and inclusion
- Practicing iteration: Experimenting, learning, modifying, and repeating
- Normalizing failure
- Allocating needed resources: \$\$ 🕒 👤 👤
- Planning small projects as well as large
- Making implementation a top priority...

## HTL's Three Areas of Focus



## Collaborative Innovation

- Invite and encourage every member of the MGH community to contribute to the process of ideation and innovation
- A bottom-up approach to problem solving.



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## Collaborative Innovation: The Ether Dome Challenge

- An open innovation contest that tapped into the collective knowledge, experience, and creativity of the Heart Center staff to transform healthcare
- Carried out with guidance from the Crowd Innovation Lab at Harvard Business School



## Ether Dome Challenge Metrics



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## Ether Dome Challenge Winners Year-1

### Provider-facing

#### Expertaj/Optimizing Outpatient Access

Adam Cohen, Kathleen Gallen, Avni Khatri

#### No EKG Left Behind

Ada Stefanescu

#### What is the Cost to Cath?

Meg McCleary

### Patient-facing

#### Cardiac MRI Virtual Tour

Lauren Kleinkauf

#### Visit Navigator App

Jonathan Passeri

#### Wait Times Display

Attila Roka

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## HBS findings from surveys and interviews of Ether Dome Challenge participants

ENABLES BOTTOM-UP  
INNOVATION CONTRIBUTION

PROMOTES A SENSE  
OF COMMUNITY

SYSTEMATIZES FRONTLINE  
IDEA CONTRIBUTION

CREATES A SENSE OF  
OWNERSHIP/ ENGAGEMENT

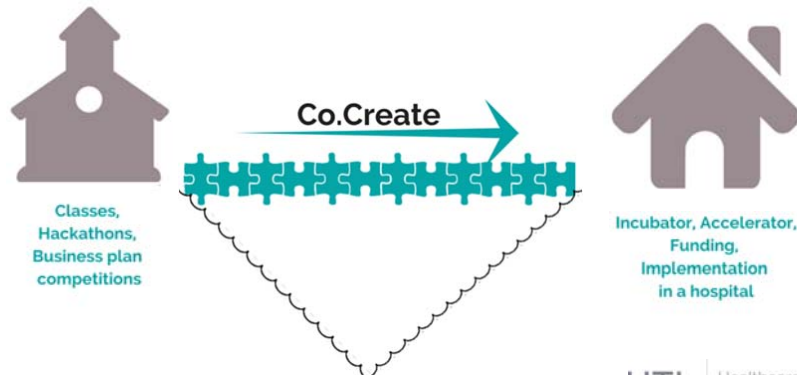
FACILITATES  
ORGANIZATIONAL  
EXCHANGE OF IDEAS

SPREADS INNOVATIVE  
THINKING

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## Co.Create = MGH + MIT Hacking Medicine

A co-development program that supports and enables students to tackle healthcare's greatest challenges and make sustainable and scalable ventures



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## Digital Health: Sample Projects

- Use of mobile and digital devices for better engagement and monitoring of patients between visits
- Secure texting/blogging among members of a patient's team → More timely, more effective, more inclusive
- More intuitive data displays and alerts for EHR, ICU
- Telemedicine
- E-consults
- Multimedia tools to improve patient and provider education
- Exam room of the future.

## Validation Studies

Lots of cool devices already on the market: Do they do what they say? Do they add value? Can they be operationalized?



## Validation Studies: The Alliance for Digital Health Translation



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**Stanford**  
HEALTH CARE



**Duke University**  
Medical Center

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## An Example of Weaving It All Together: Making the Business Case for vScan



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**WHAT'S  
NEXT?**

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## Expanding Hospital Wide: Partnering with Other Departments

- ✓ Established a record of success
- ✓ Achieved visibility for the Lab, our projects, and our method of collaborative innovation
- ✓ Now taking on roles outside of the Heart Center
  - Cancer Center
  - Radiology
  - Pediatrics
  - Nursing
  - Anesthesia

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## Expanding Hospital Wide: A New Home: “The Collaboratory”



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## Expanding Our Depth and Breadth

- Recurrent challenges
  - Technical expertise
  - Access to data feeds and connections
  - Getting a seat at the table with leadership
- Strategic partnership with two well established teams



mghlcs

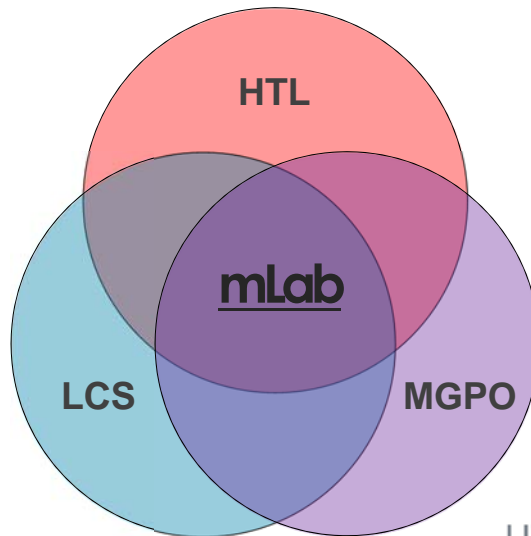
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mLab

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## mLab: To Advance Digital Health Solutions at MGH



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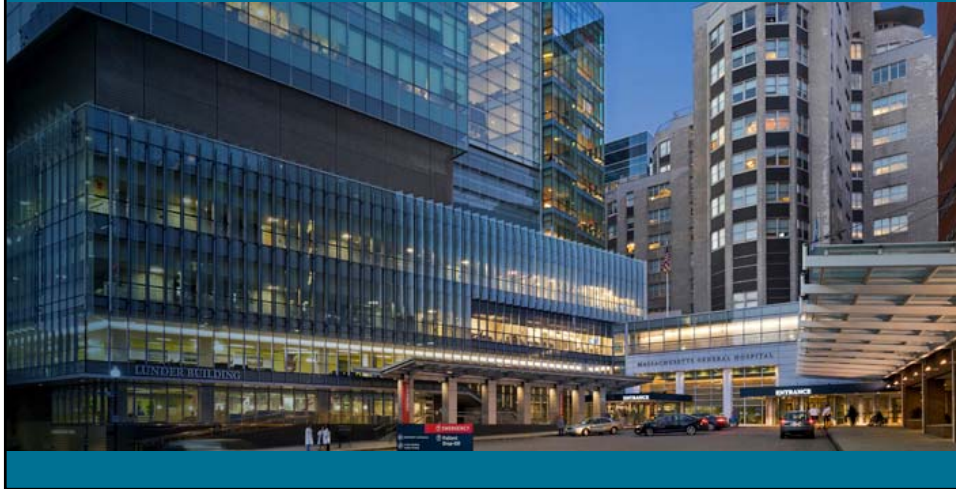
## Summing Up What's Important

- "Innovation has nothing to do with how many R&D dollars you have. When Apple came up with the Mac, IBM was spending at least 100 times more on R&D. It's not about money. It's about the people you have, how you're led, and how much you get it."

– Steve Jobs

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Better care begins with collaboration



## Looking Back



## Keep calming institutional fears



"This really is an innovative approach, but I'm afraid we can't consider it. It's never been done before."

"Innovation is the ability to see change as an opportunity, not a threat."  
— Steve Jobs

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## Ask "What's the Job To Be Done?"

- Leavitt, Ulwick, Christensen
- "People don't want to buy a quarter-inch drill. They want a quarter-inch hole."
- Distill and define the healthcare problem we're trying to tackle, and then make sure the proposed idea is the best way to solve it.



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## Good ideas are out there: Borrow freely



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## Shoot holes in your ideas at the start... better to uncover flaws early rather than late



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Date your ideas, don't marry them



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Invest in the right people, not just the right projects



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## Make the business case for good ideas



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## Make changes that add tangible value



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## Know your limits



*"Never, ever, think outside the box."*

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Better care begins with collaboration

