

# The Art & Science of Looking at the Future of Healthcare Information Systems



PDF of Presentation + Resources:  
[garrygolden.com/May11](http://garrygolden.com/May11)

Presented by  
**Garry Golden**

Presented to  
  
**Northwell**  
Health®

**Start**

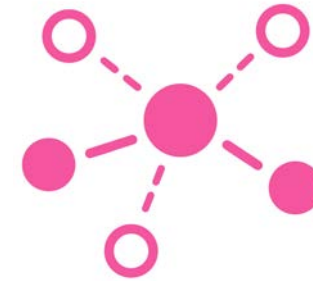
**End**



***Foresight 101***



**Drivers of Change**



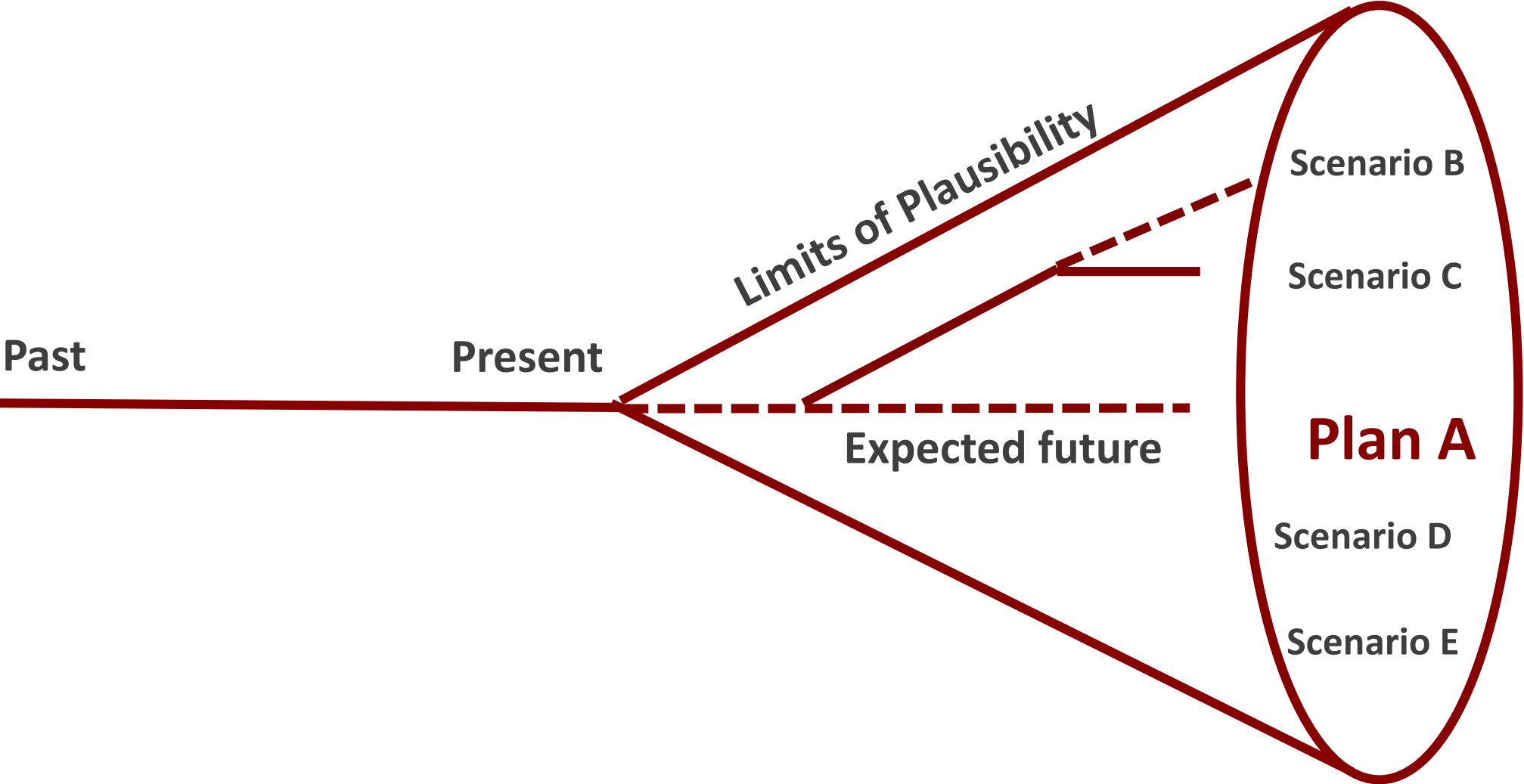
***Keep Making  
Connections***


# **Tapping My Inner Futurist?**



# Foresight 101: Cone of Plausibility

Multiple Outcomes, Multiple Time Horizons



A close-up photograph of a person's hand holding a small, rectangular white slip of paper. The paper is held between the thumb and index finger, with the rest of the hand visible in the lower-left corner. The background is a solid, dark black. The text on the paper is printed in a clean, black, sans-serif font and is slightly tilted upwards to the right. The lighting is soft, highlighting the texture of the skin and the edges of the paper.

You will have regulatory  
certainty for years to come.

IF YOU HIT THIS SIGN  
YOU WILL HIT THAT BRIDGE







WAIT FOR IT

.....Wait for it.....

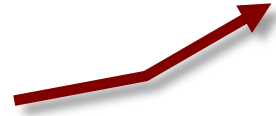


**Every day I make an effort to move toward  
what I do not understand.**

**- Cellist, Yo-Yo Ma**

# Foresight: Three Mechanisms of Change

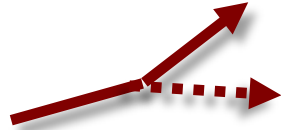
**Trends**  
(Continuities)



**Plausible**  
**Future**

Forecasts

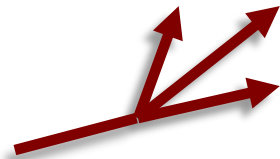
**Events**  
(Discontinuities)



**Possible**  
**Futures**

Scenarios

**Choices**  
(Discontinuities)



**Preferred**  
**Future**

Visions

# Four Futures Thinking

?

**Continued  
Growth**



**Disciplined  
- Constrained**



**Transformed**



**Decline  
- Collapse**

## Could we write the Four Futures of Northwell Health?



**Continued  
Growth**



**Disciplined  
- Constrained**



**Transformed**



**Decline -  
Collapse**



**In the News**

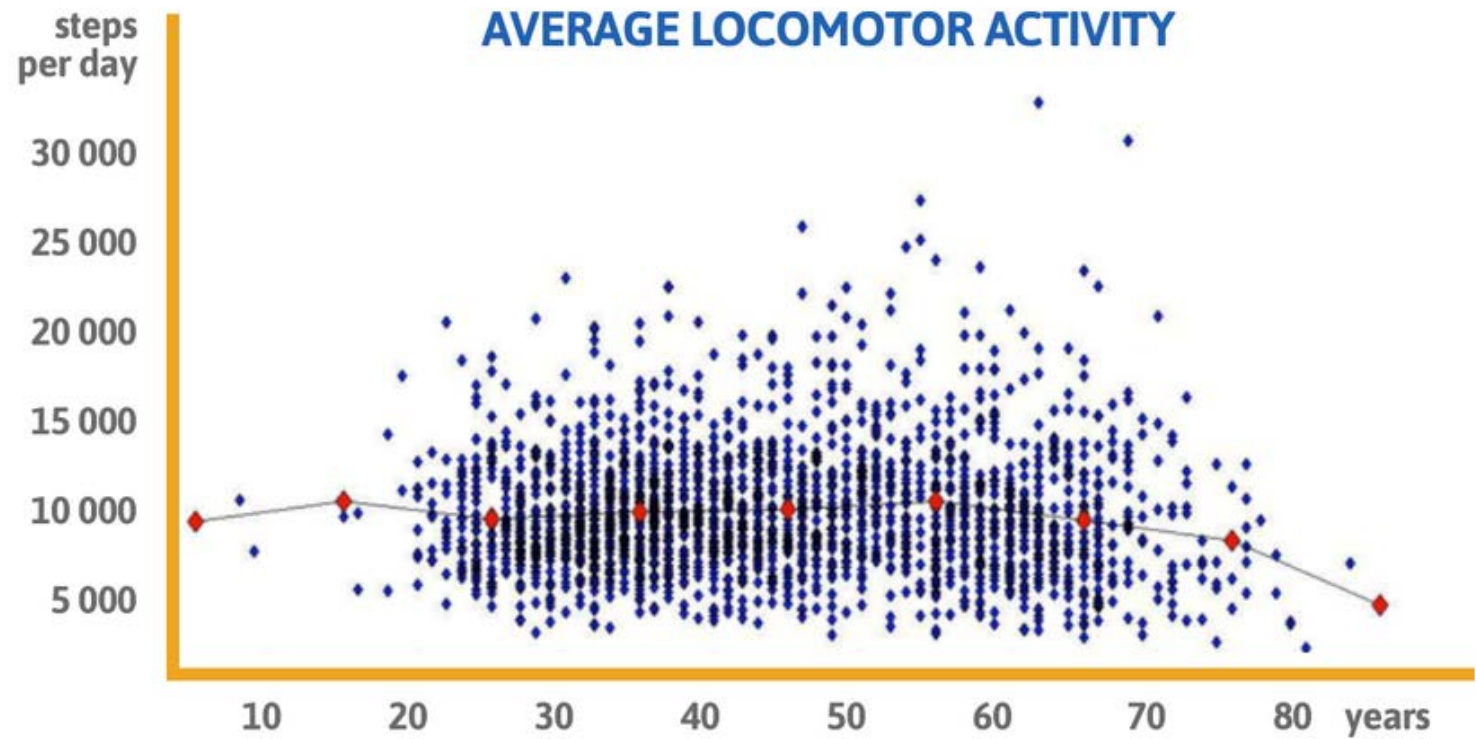
In 2019, all senior residents in the Japanese city of Nara will be required to have wearable devices that connect to the city's secured data feed used by families and local health & service agencies.



**True**

**False**

# Assumption: Radical Solutions Ahead for *Aging Populations*



**Wearables + Early Warning Signals = Interventions**



## **Context of the *Creepy Line***

The Google logo is displayed in its standard multi-colored font, with the letters 'G', 'o', 'o', 'g', 'l', and 'e' in blue, red, yellow, blue, green, and red respectively.

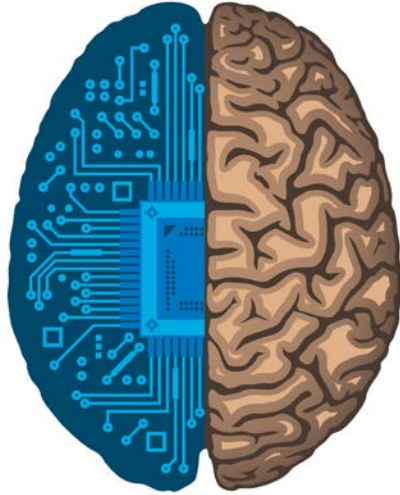
**Inevitability of Dealing with the *Creepy vs Compelling Line* at the..**

The Northwell Health logo is displayed in a multi-colored font, with the letters 'N', 'o', 'r', 't', 'h', 'w', 'e', 'l', 'l', 'H', 'e', 'a', 'l', 't', 'h' in blue, red, yellow, green, red, blue, red, yellow, blue, red, green, red, and blue respectively.

***How do we...***

- Deliver differentiation and balance privacy***
- Communicate value and benefits of data and AI-driven innovation***
- Maintain the human element for our patients and employees***

# Global Drivers of Change 2017 – 2030



**Working with Intelligent Systems**  
Experience Data + Performance Support

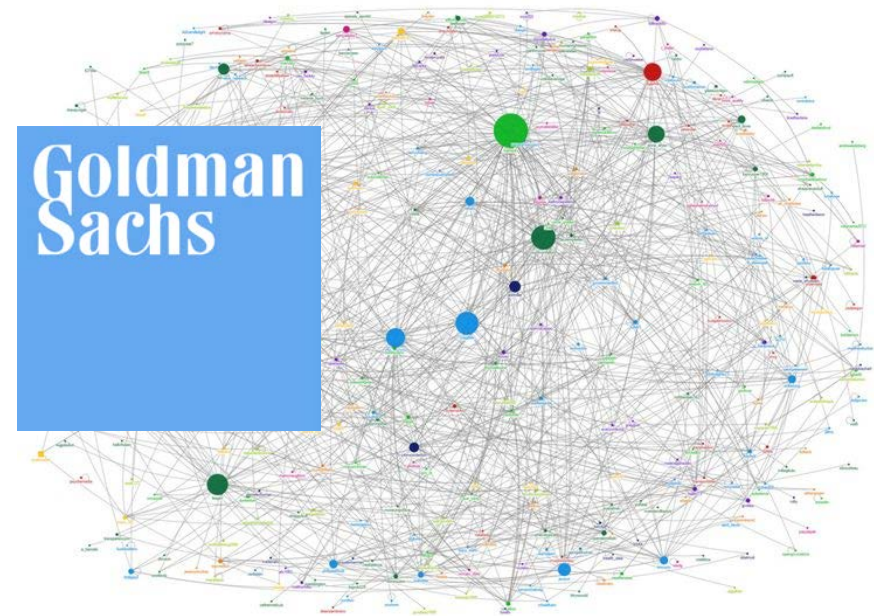


**Blockchain**  
+ Trusted Transactions

Goldman Sachs is piloting a program with startup **Experience.ai** to capture employee workflows and decision-making processes. Employee 'Experience Graphs' will replace resumes.

True

False



Data, AI + Design for Behavior Change

*Why Software is Eating the World...*

THE WALL STREET JOURNAL.

By MARC ANDREESSEN

August 20, 2011

**Social Norms for the  
Anonymous-Access Web**

**1993**



*“On the Internet, nobody knows you’re a dog.”*

“On Facebook, 273 people know I’m a dog.  
The rest can only see my limited profile.”

## Social Norms & the Social Web

2008







Everyone knows I'm working on some personal growth issues

**Assumption:**  
The web is becoming a platform for managing outcomes & personal behavior change.

BARRON'S  
**DOG TRAINING BIBLE**

Andrea Arden

- Masterclasses—inspiring their readers and creating an effective solution
- Socialization, reading, growing, and more
- Dog Training 101—inspiring to learn, fit, learn, the state of a book and more
- Behavior Professionals—inspiring personal learning, behavioral training, and more

BARRON'S



# Who will deliver the Nudges and Prescriptive Experiences?



---

... it is clear that the most powerful technology companies are investing immense resources to make virtual intelligent assistants ubiquitous before the end of the decade.

– Daniel Nadler, CEO of Kensho

Phase One

# Rolling Eyes at *Silly Chatbots*



Hi, I'm Chip! I can recommend products and services to help you meet your goals. Want to chat?

Sure



Great! I see that you're on the Savings Account page. What are you saving for? (Select all that apply)

Retirement

Car

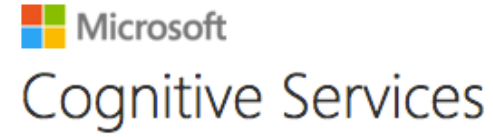
Special Event

Vacation

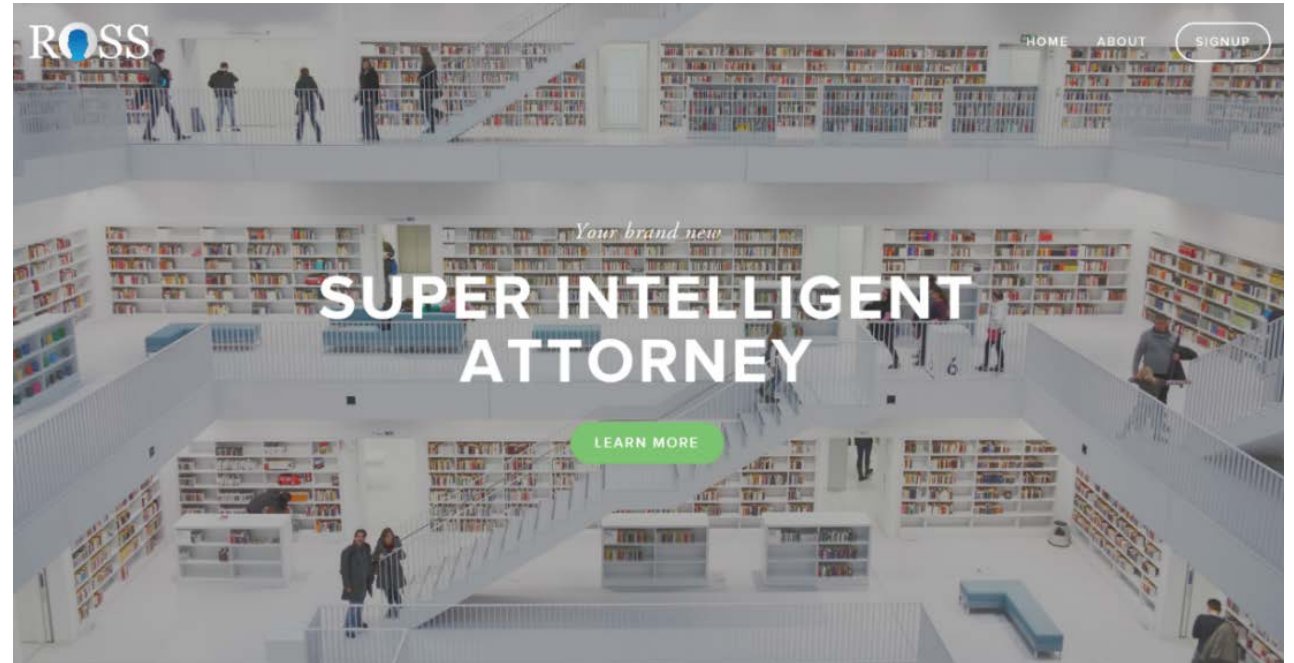
I want to save for retirement



Perfect! You should check out our [IRA](#) and [Money Market](#) accounts.



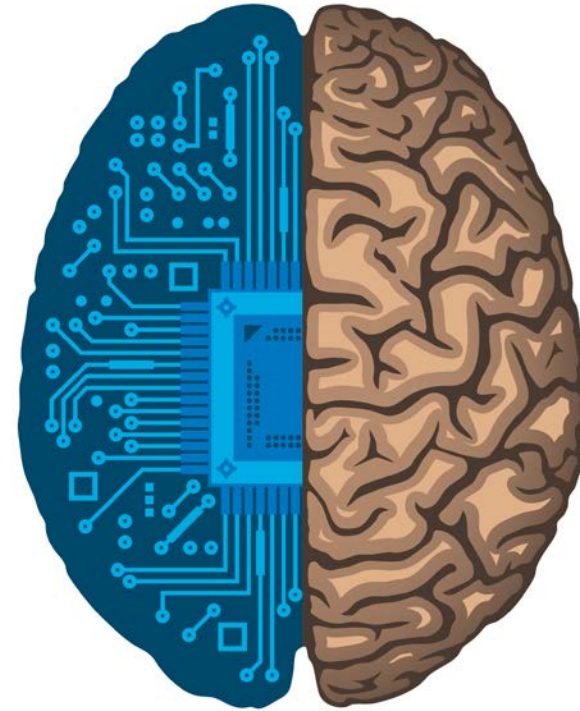
Phase Two  
**AI in the Cloud**  
**Transforms Service &**  
**Knowledge-driven Work**



***(Cognitive-Apps-as-Service)***



**How do we prepare for this potential disruption of AI inside the workplace?**



# Scenario: AI will Drive Learning & Performance Support



Course

**"I did this..."**  
Statements



xAPI Layer inside Software +  
Connected Devices



Real World

# Scenario: Talent Embraces Experience Capture Analytics

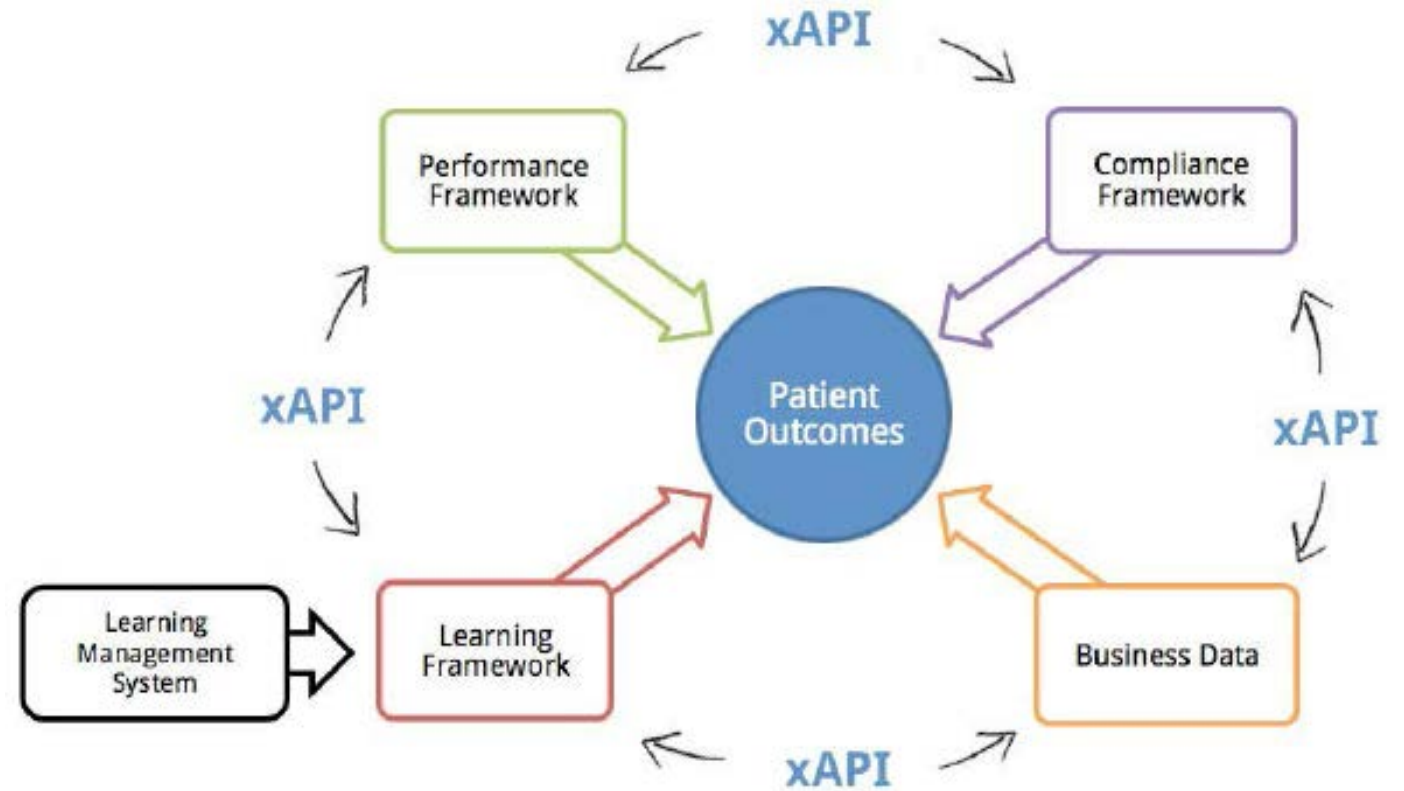


**“I did this...”**

Statements

- Lucy ***read*** an article on new technology and aging populations
- Lucy ***opens*** an Evernote folder on aging solutions
- Lucy ***watched*** Youtube video on Social VR Experiences for Aging Boomers
- Lucy ***interviewed the Director of the Active Aging Institute*** at MIT
- Lucy ***attended*** an MIT workshop on VR simulations
- Lucy ***wore*** an ‘aging suit’ at MIT Aging Lab
- Lucy ***mentored*** with the Head of Innovation at AARP
- Lucy ***drafted*** new service
- Lucy ***presented*** to the CEO on a new business model
- Lucy ***wrote a blog post*** on engagement via VR
- Lucy ***launched*** new VR platform for clinical checkups
- Lucy ***promoted*** head of VR Solutions for Aging Populations

# Early Days of Pilots and Case Studies







# Roadmap What if Experience Graph dynamics find Adoption?



Actor-Verb-Subject  
“I did this...”



## Learning Record Store (LRS)

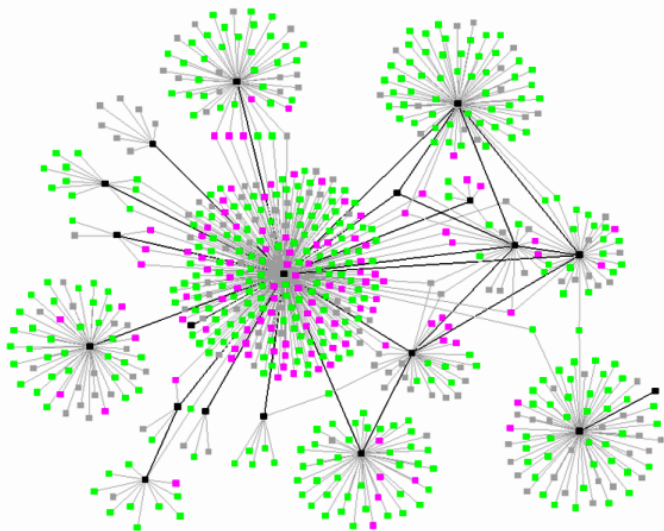
- Individual Control over Access to Learning Data

## 2017 – 2030

- ML to Datasets
  - Data store to Prescriptive Solution
- Knowledge Graphs
- Cognitive Solutions
- Battles for Control
- Equity + Digital Divides
- Govt Value in Unlocking Workforce Potential



# How might an *Experience Graph* future transform internal performance support within clinical settings – or wellness experiences of patients?

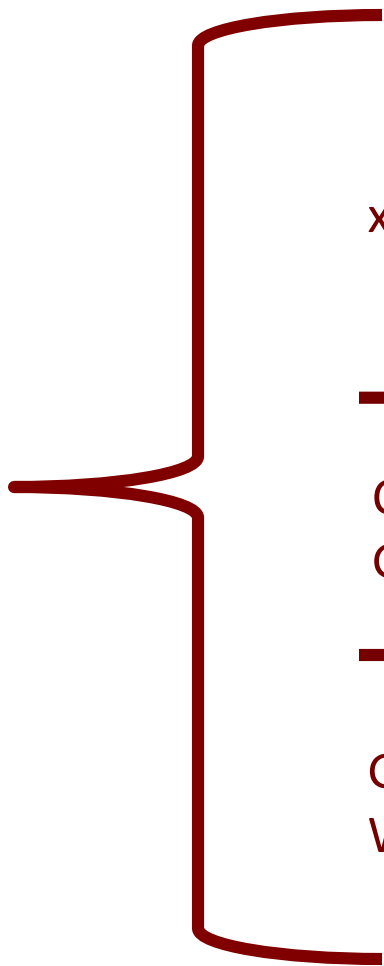


EXPERIENCE  
API

- ❑ **Experience as Data Asset Class**  
xAPI as AI training dataset
- ❑ **Performance Support As-a-Service**  
Conditions for Internal + External Solutions
- ❑ **Potential Threats:**  
*Creepy Line Kills Culture*



# Learning Curve Starts Now!



xAPI Ecosystem



Connected Data +  
Graph Analytics



Get Involved in  
Working Group



# The Blockchain

Peak Hype vs Pragmatic Hope



# Implications of the blockchain cannot be understood... yet



1994: "Today Show": "What is the Internet, Anyway?"

# Evolution of the Web



*Internet of  
Files*



*Internet of  
Social Networks*



*Internet of  
Trusted Transactions*

# Application Development Ecosystems



MONAX



*Public*

*Private*

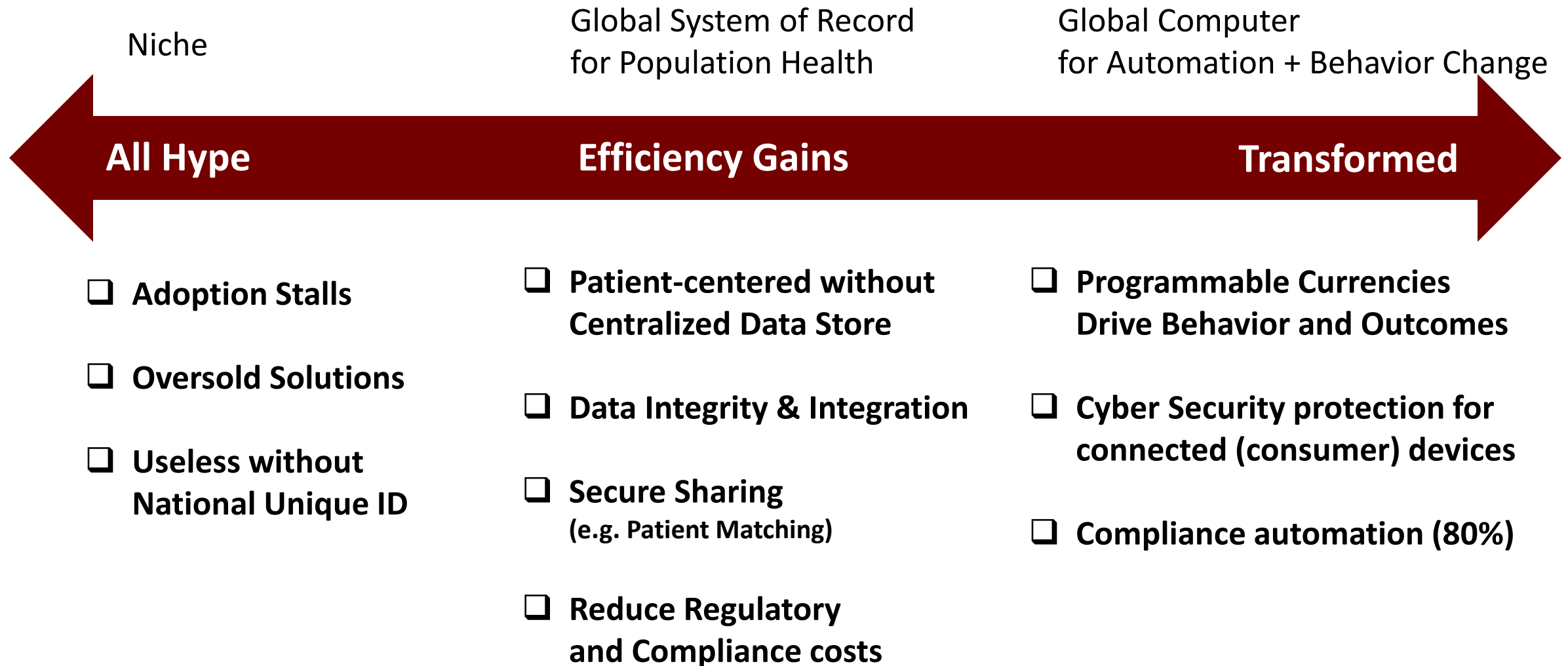


CØSMOS





# Range of Implications for Healthcare Sector



# Applications: Supply Chains & IoT (Connected Medical Devices)



**Blockchain-based Supply Chain Financial Services  
Platform for Pharmaceutical Procurement**



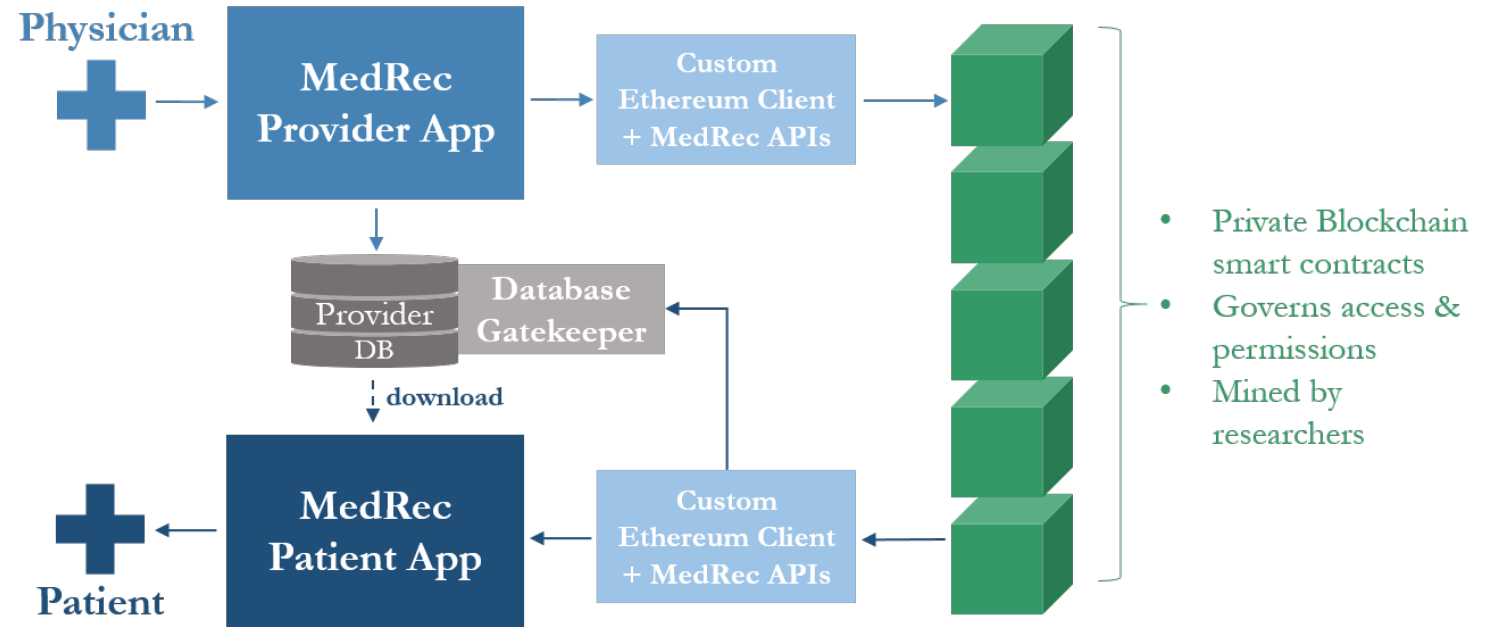
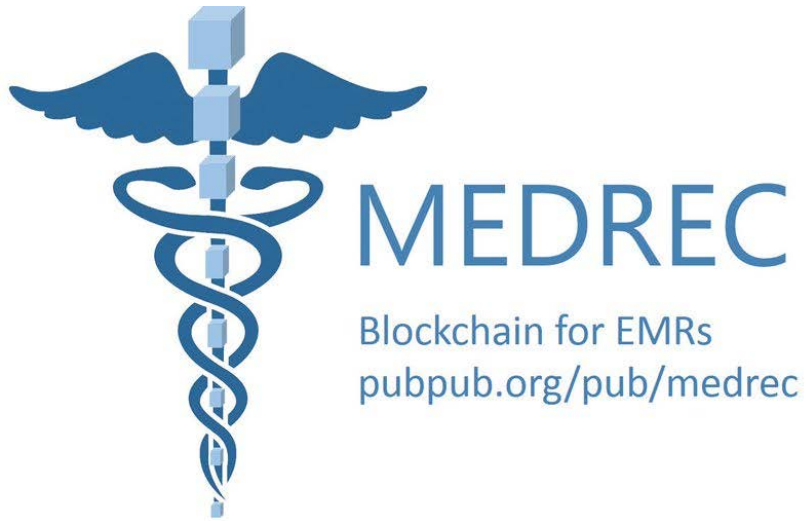
**合佳医药**

**Hejia**



How might solutions reduce supply chain costs + risks?  
Expand usage of at-home connected devices?

# Signals to Watch – Academics Build Proof of Concept



*MedRec restores patients' control over their medical data by linking access to records across doctor's databases. As an interface between institutions' siloed health records it also has the potential to include personal sources of data like your Fitbit or 23andMe*

# Signals to Watch: Entrepreneurs & Unique Partnership



Gem



**PHILIPS**

**Capital One**



*Prescrypt*

**Deloitte.** SNS BANK N.V. REshape Center Radboudumc

# Signals to Watch – Industry based Learning Communities



## Panel 1: The Future of Healthcare, Powered by Blockchain

Chamber of Digital Commerce

1 month ago • 146 views

Politico Pro e-health editor Arthur Allen leads a panel discussion on blockchain and distributed ledger technology in healthcare.



## MaaxMarket Video Case Study - Patientory



# Applications: Crypto Currencies Tied to Behavior Change



**Crypto Currencies + Smart Contracts  
automate support for adherence**

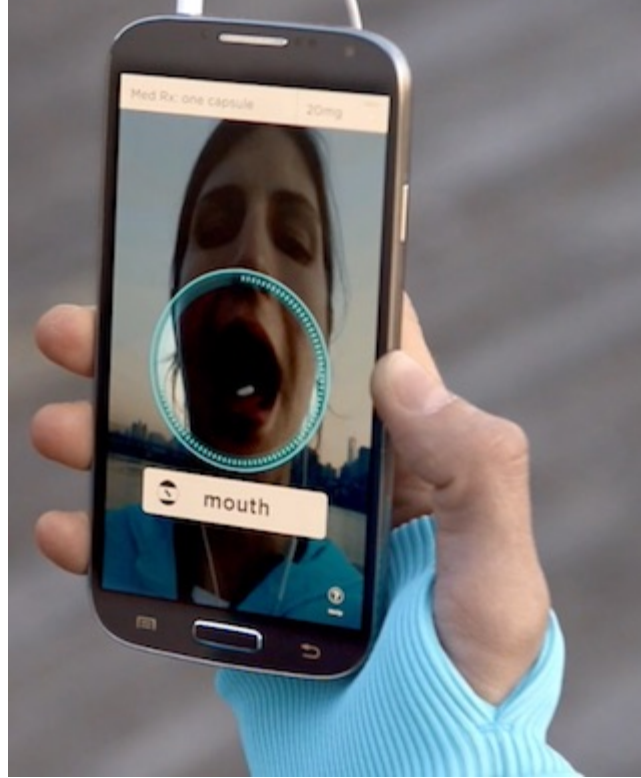
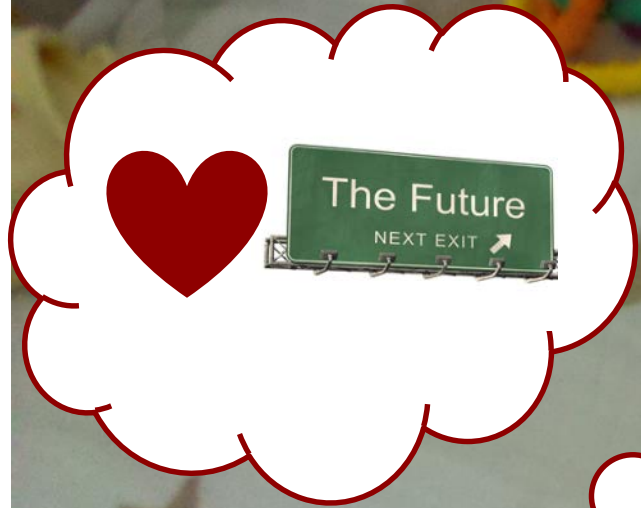


Image Removed





Every day I make an effort to go toward  
what I don't understand.

Yo-Yo Ma



## Step # 1

### Create a Healthy Sense of Urgency & Culture Aligned Around Anticipation

*On the Plateau  
'Managing the Decline'*

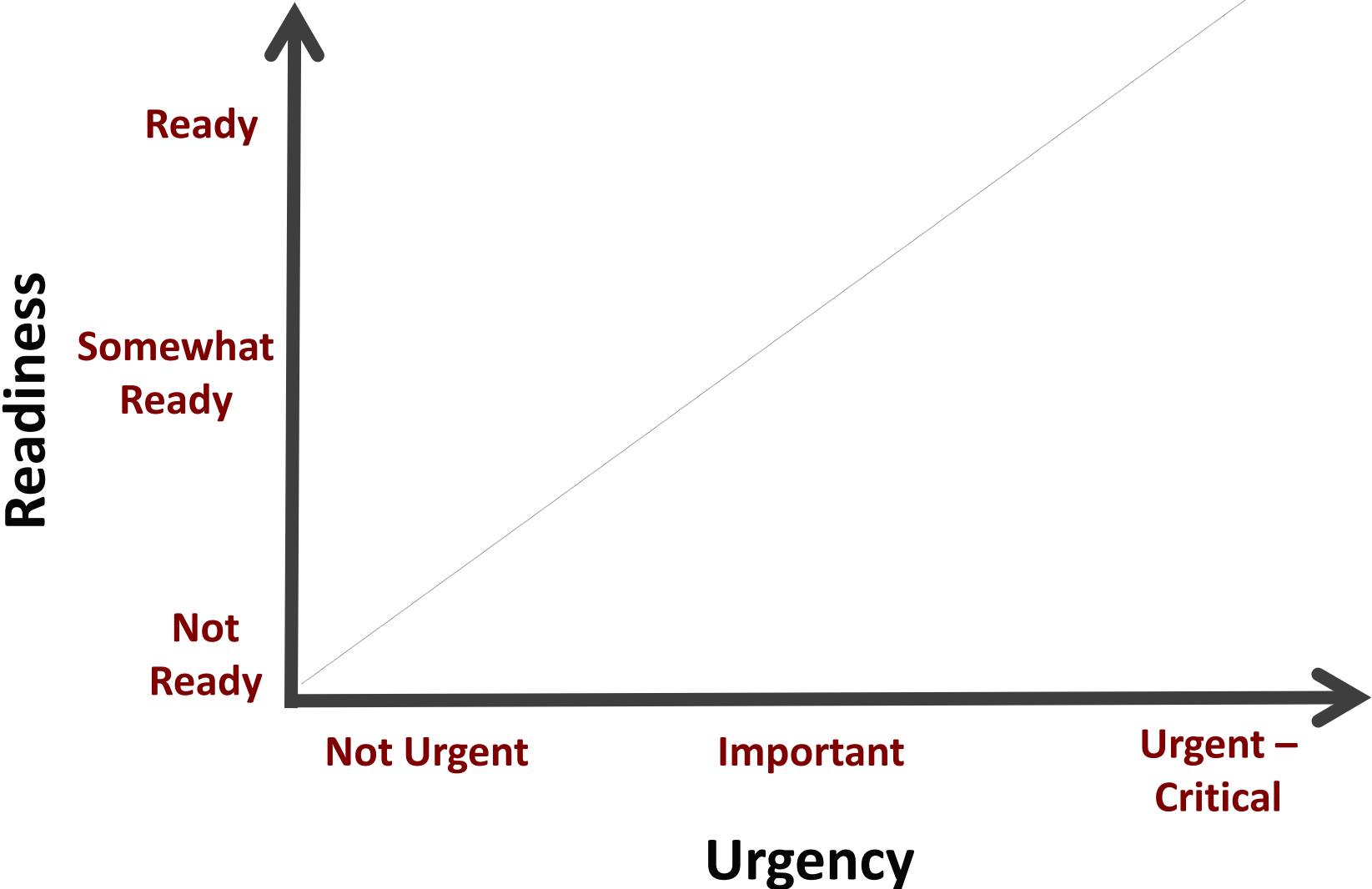
- Incumbent mindset
- Incremental Improvement
- Fear, Uncertainty, Doubt & Denial

*Big Bets,  
Small Steps*

- Entrepreneurial mindset
- *Prototyping*  
*Transformative Change*
- *Failing Forward*

**Step #2:**

**Take a Pulse Check on Emerging Trends vs Organizational Appetite**



## Step #3

### Start a Signals Team: Follow Those Who Imagine Radical Change

EXPERIENCE  
xAPI

Learning & Development  
xAPI “I did this...”



Graph Analytics  
*Connected Data*



Neuro Science  
+ Behavior Change

## Step #4

### Find the Right 'Killer Questions' to Brainstorm Ideas

Following the success of HP's Chief Innovation Officer Phil McKinney, generate a weekly 'Killer Question' email message or 'Twitter' conversation that spurs conversation about the future of healthcare experiences.

What is a need that does not exist today but in five years will be our most requested product/service from internal teams and/or communities?

What skills set will be most in demand in five years that we do not currently address in formal training programs?

## Step #5

# Get Creative by Designing 'Found Futures' / Futures Artifacts

EXTRAPOLATION FACTORY



PAWN TOMORROW





Questions:

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Two Rs

PDF + Resources:

**[garrygolden.com/May11](http://garrygolden.com/May11)**

