



Learning Health System Workshop

Minnesota e-Health Summit

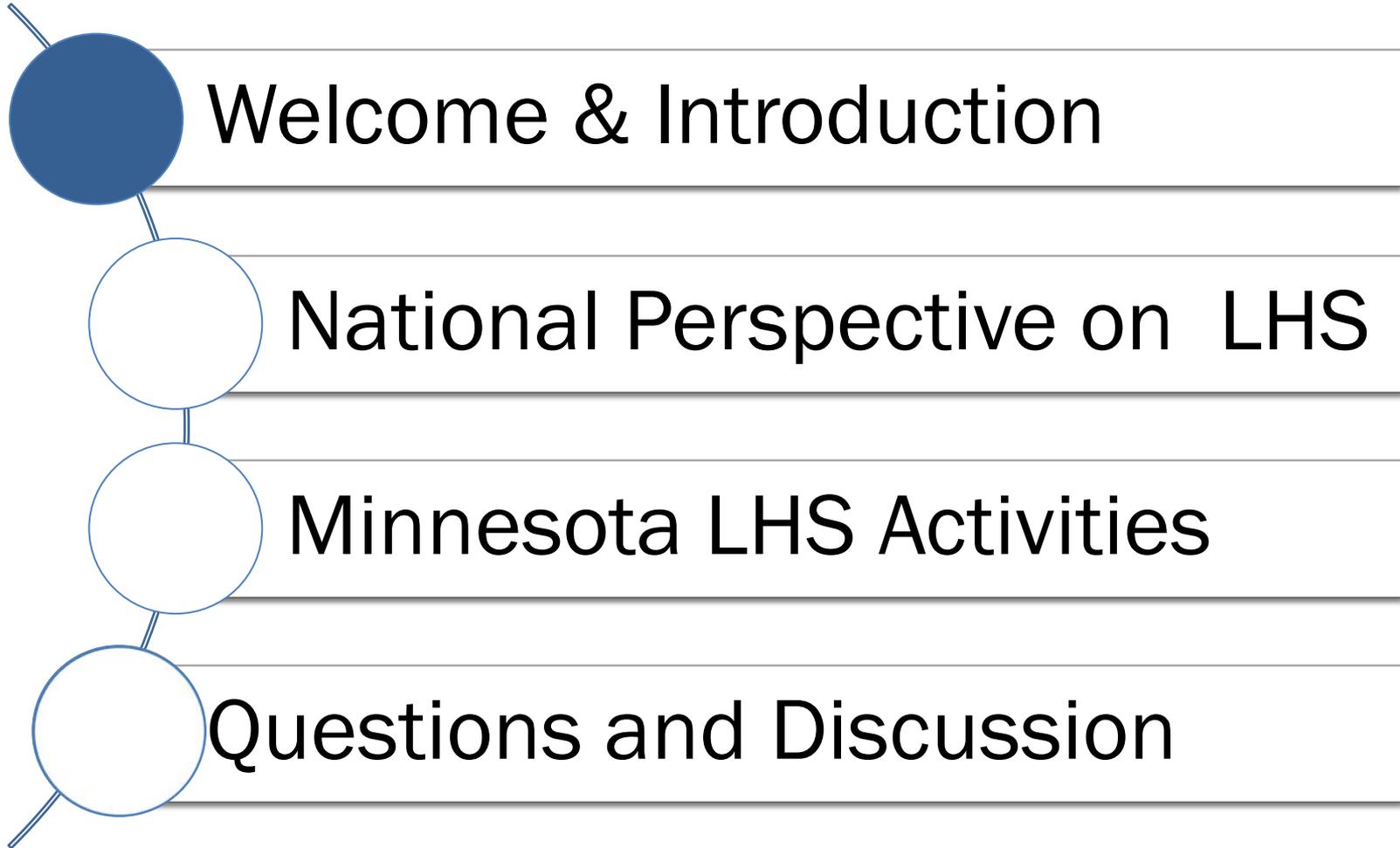
Looking Back to Celebrate.
Looking Forward to **Innovate**.



June 12, 2014



Overview



Session Objectives

- Hear about national Learning Health System activities
- Participate in a discussion about developing the Minnesota Learning Health System
- Identify actions and opportunities to continue advancing the Minnesota Learning Health System

Presenters

- Marty LaVenture

Director, Office of Health IT & e-Health, Minnesota Department of Health

- Chuck Friedman

Professor and Director of Health Informatics, University of Michigan

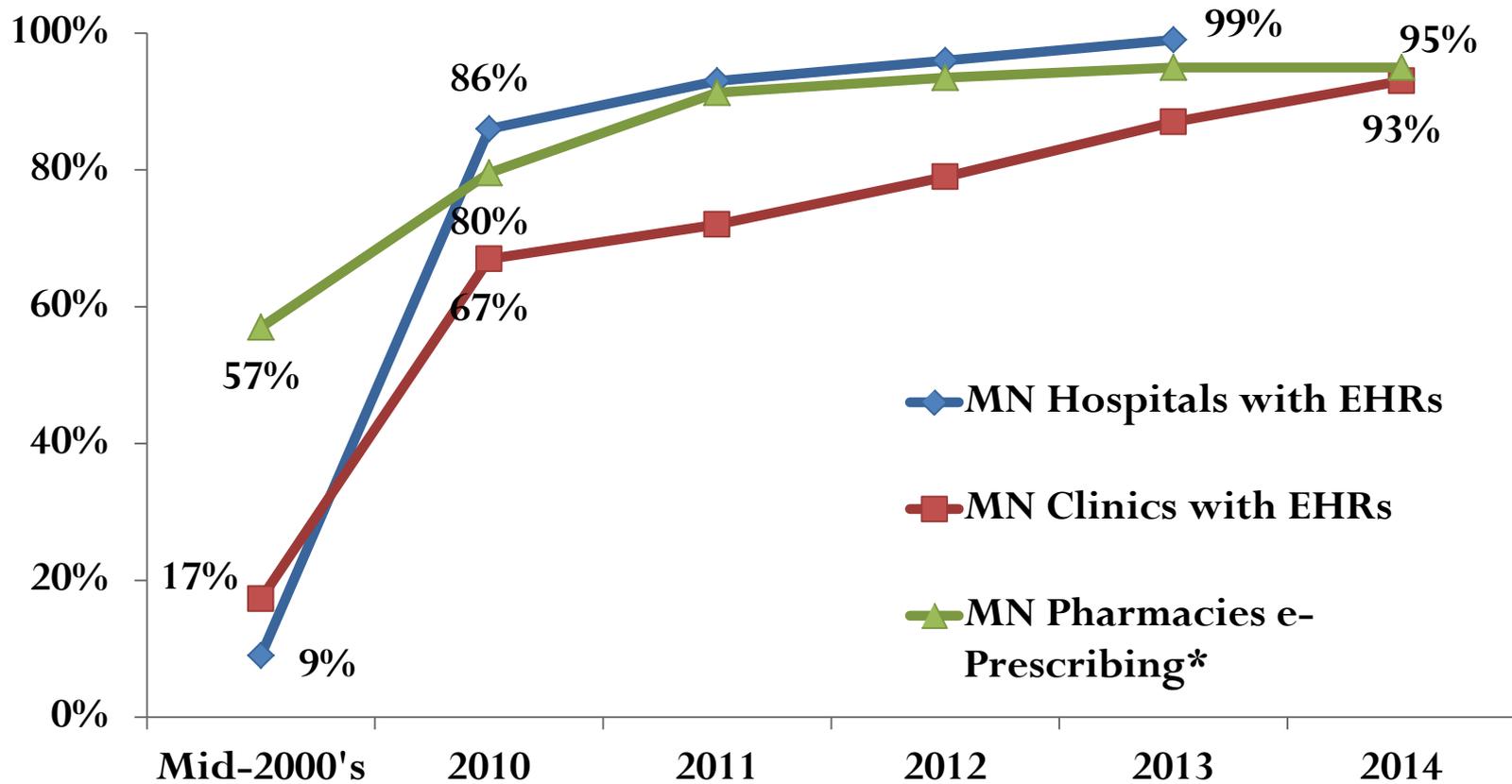
- Josh Rubin

Executive Program Officer for Learning Health System Initiatives, School of Information, University of Michigan

Introductions

- What is your definition of a Learning Health System?
- What do you want to learn during this workshop?

Remarkable Minnesota Progress



*Excludes pharmacies with the pharmacy class of medical device manufacturer

Source: Minnesota Department of Health, Office of Health Information Technology, 2004-2014 ; Office of the National Coordinator, Surescripts

How do we achieve the vision for 2024 and beyond?

Minnesota e-Health Vision:

To accelerate the adoption and effective use of electronic health record systems and other health information technology in order to **improve health care quality, increase patient safety, reduce health care costs, and improve public health.**



Minnesota e-Health Initiative

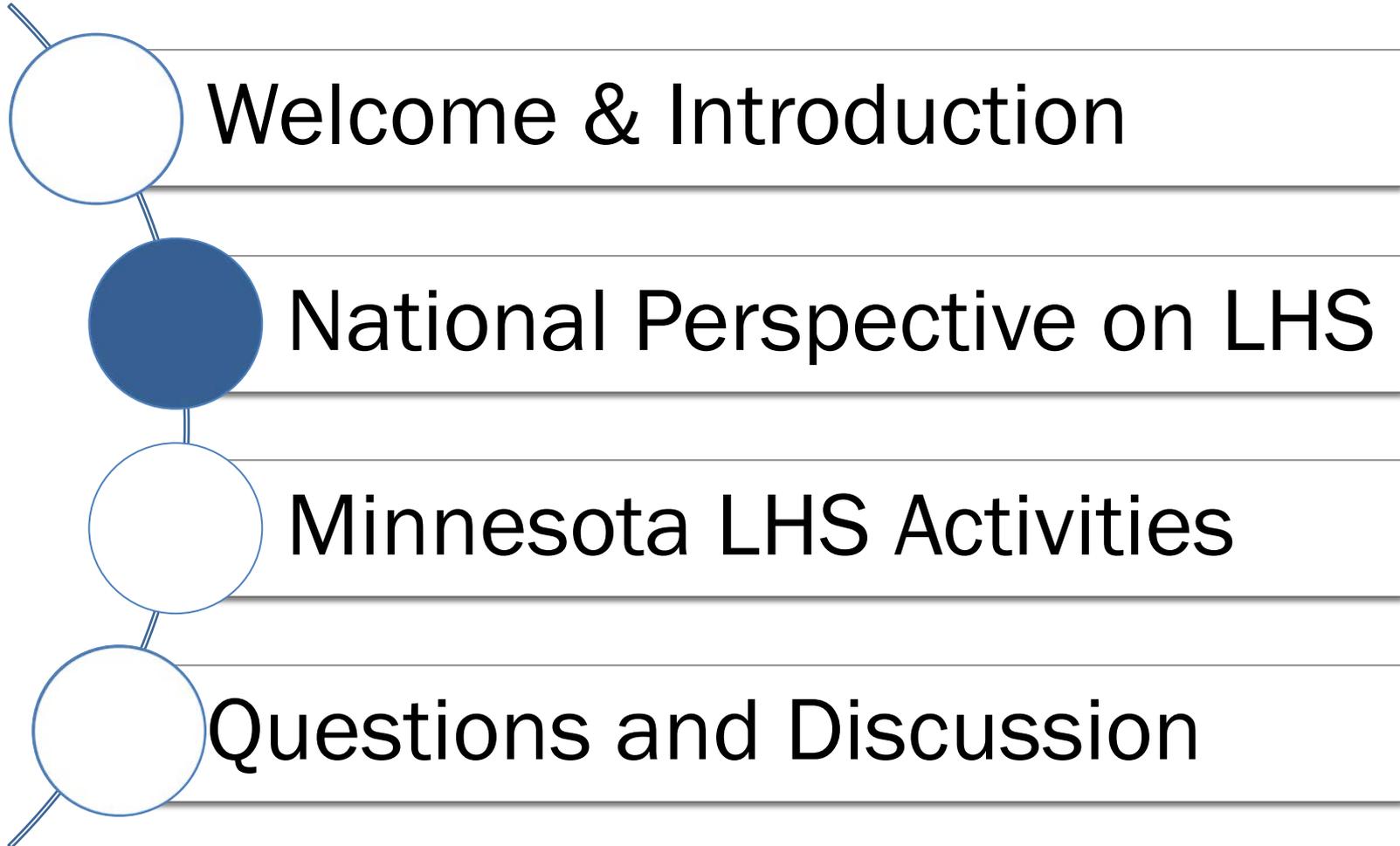
ONC 10-Year Vision to Achieve an Interoperable Health IT System



ONC Guiding Principles

1. Build upon the existing Health IT infrastructure
2. One size does not fit all
3. Empower Individuals
4. Leverage the Market
5. Simplify
6. Maintain Modularity
7. Consider the current environment and support multiple levels of advancement
8. Focus on value
9. Protect privacy and security in all aspects of interoperability

Overview



The Learning Health System: A Golden Opportunity for Public Health

Charles P. Friedman
Professor of Information and
Public Health
University of Michigan

Minnesota e-Health Summit

June 12, 2014



Preamble

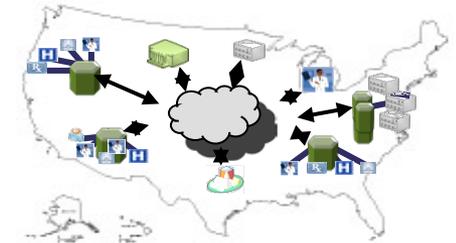
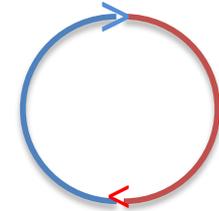
I believe that people are drawn to ideas that reflect imagination and vision.

The nation will invest approximately \$200 billion in health IT but until recently, we have lacked an idea that captured why we were doing it.

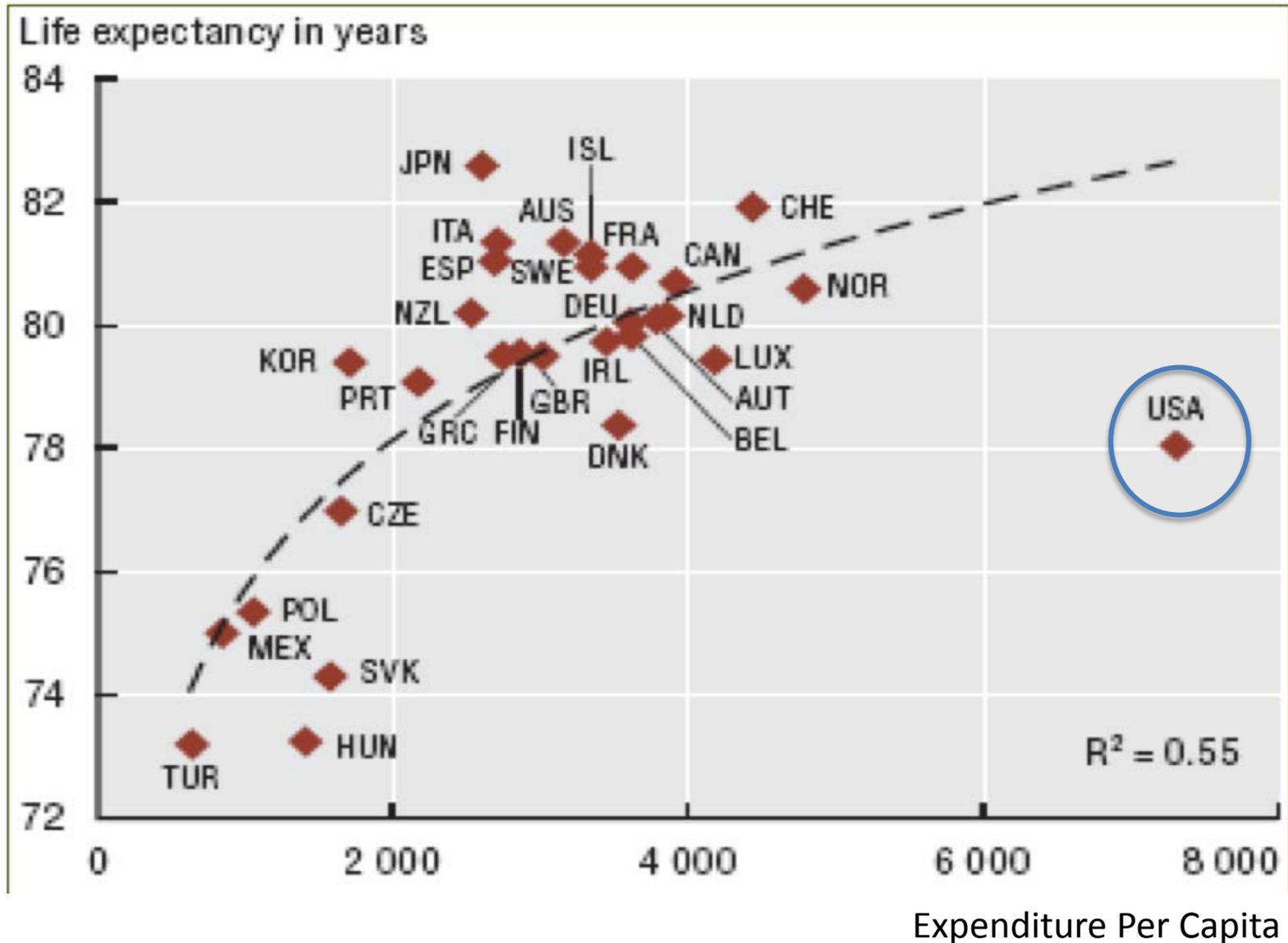
By the end of this hour, I hope to convince you that the concept of **learning** is that key idea and how important this is to public health.

Today's Menu

- The plight of nation's health system (briefly)
- The visions of **Learning** and the **Learning Health System (LHS)**
- Widespread calls for the LHS and early progress toward a national system
- The golden opportunity for public health



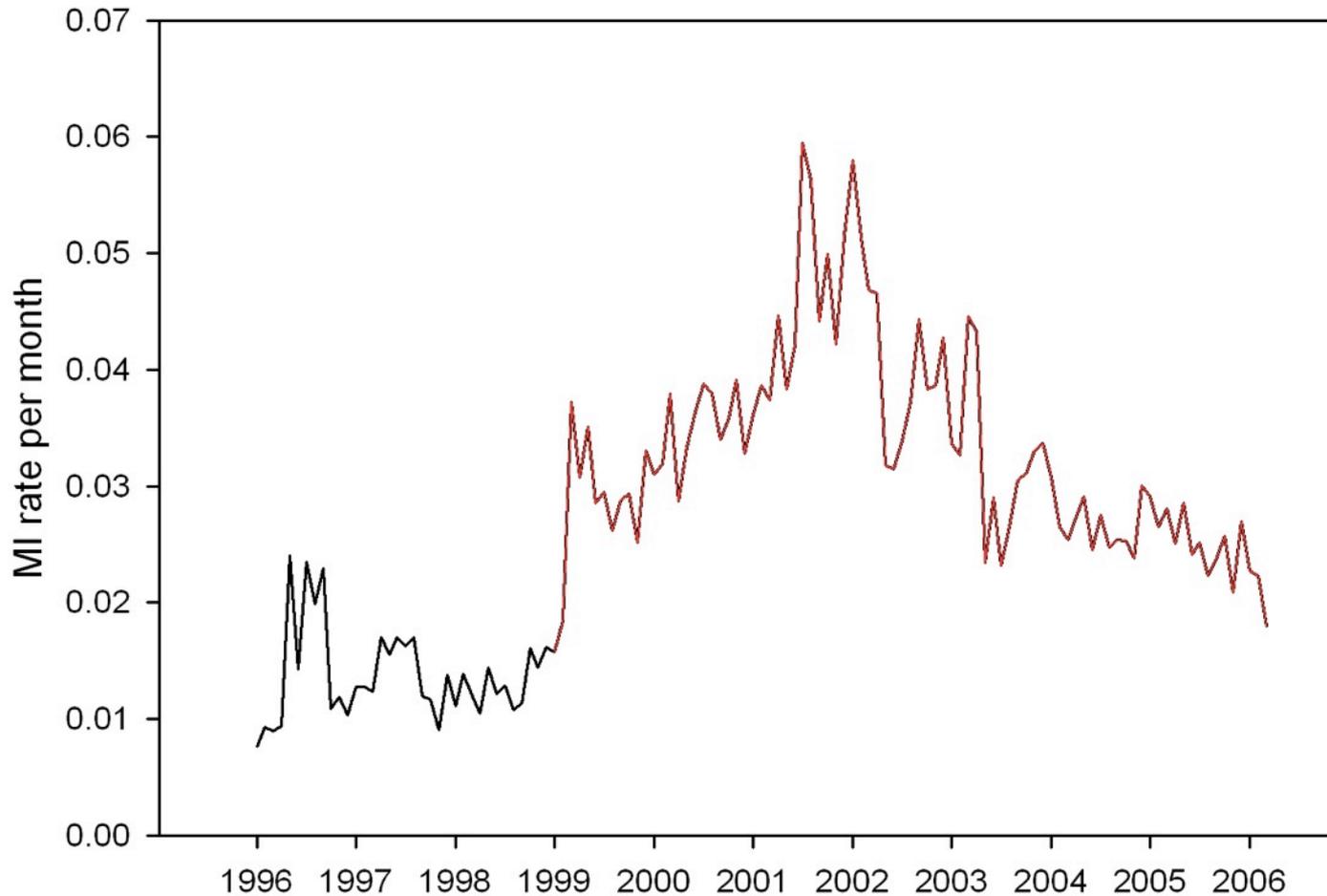
The Plight in a Figure



The Plight in Words

- Spending 18% of GDP on health, which is unsustainable
 - 25% of which is “wasted”
- ~45th in infant mortality. Japan and Sweden have a rate 40% of ours.
- “To Err is Human” Study: ~100,000 deaths per year due to medical error. No improvement since then.
- Among five highly developed nations, the U.S. is last or next-to-last on five indicators of a “high functioning” health system

And We're Virtually Blind: We Can't Monitor the System in Real Time

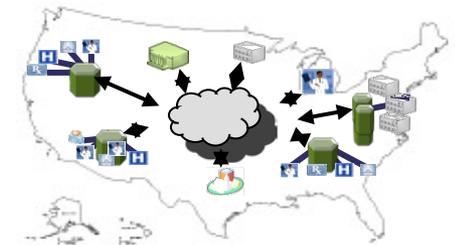
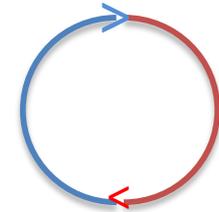


We Need a Hefty Rudder, Now...

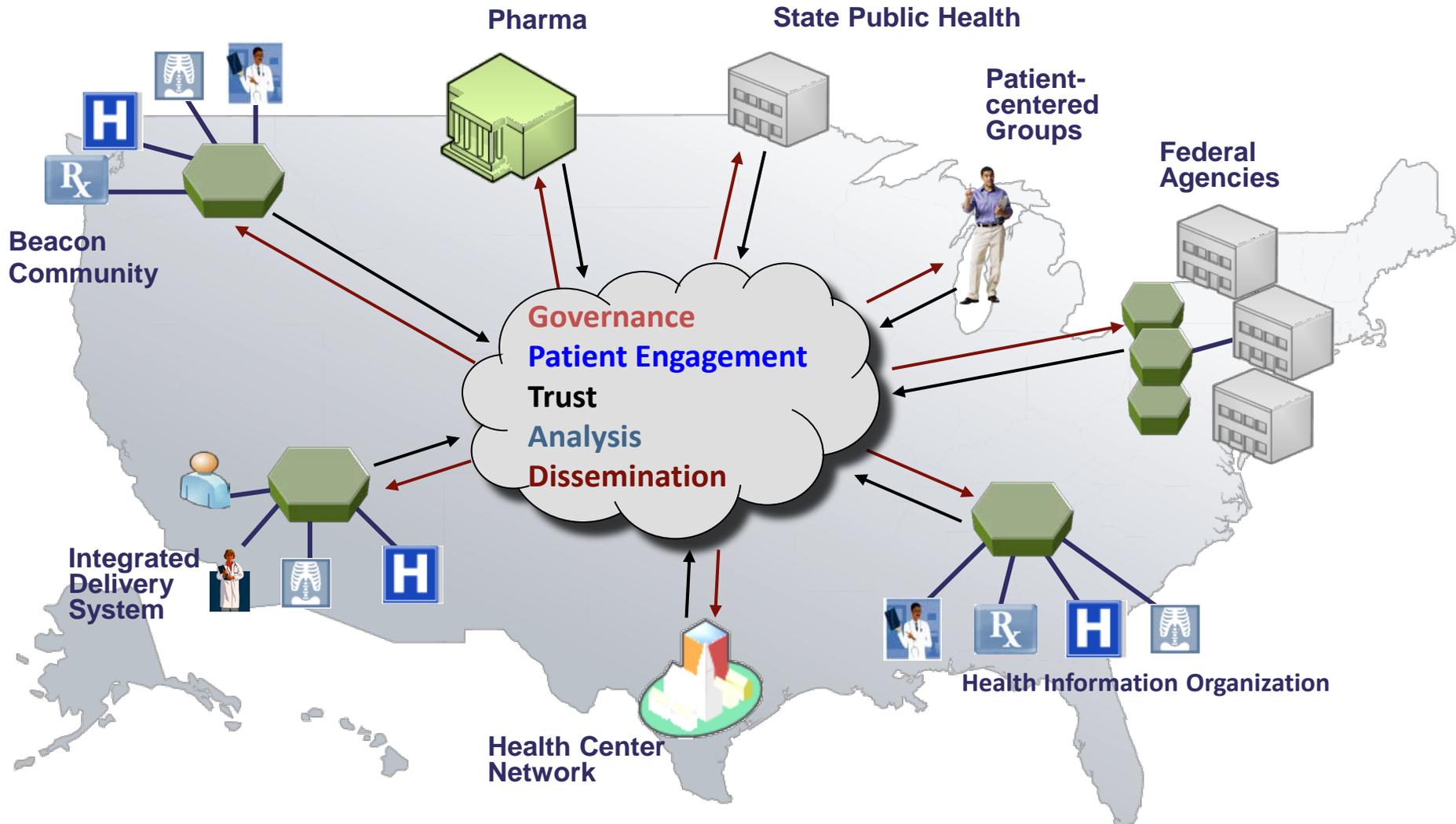


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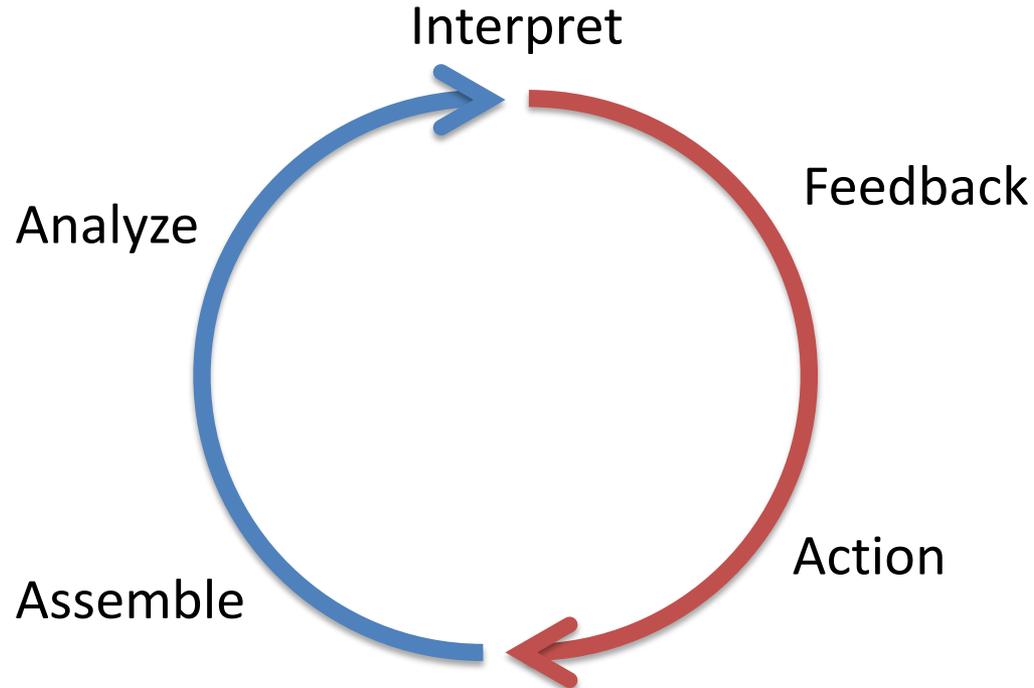
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A National-Scale Learning Health System (LHS)



“Virtuous Cycles” of Study, Learning and Improvement



Example: Reducing Falls in Nursing Homes

Interpret Findings:

Are the results credible?

What advice should be given?

Analyze Data:

What practices
associate with
lower fall
rates?

Provide Feedback:

Based on your current
practice, you might
want to consider...

Assemble Data:

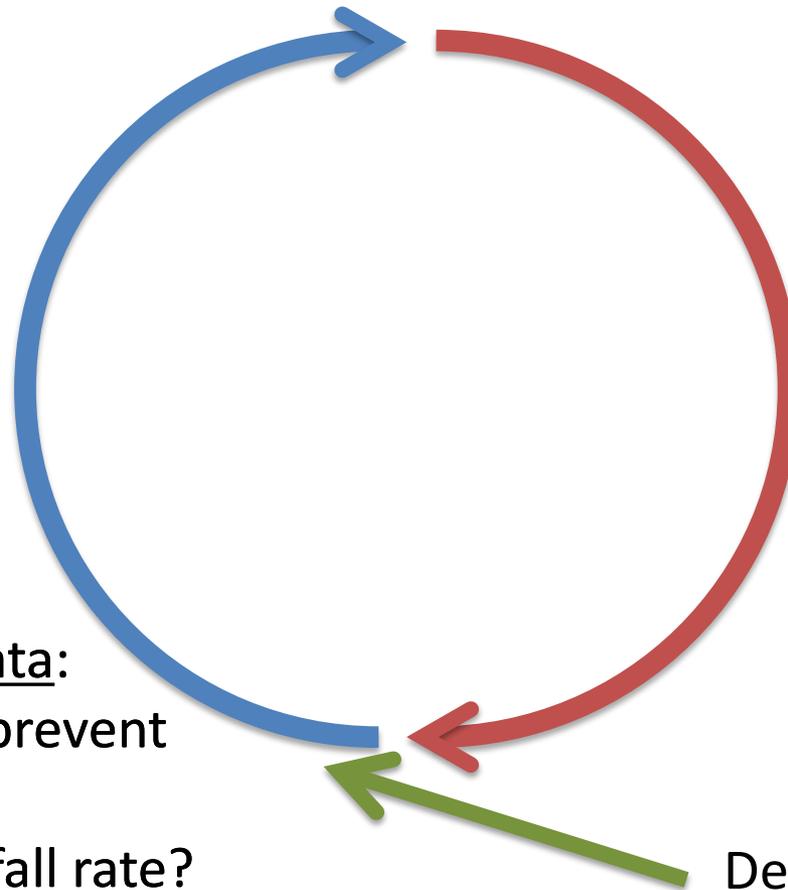
How do we prevent
falls?

What is the fall rate?

Take Action: Change

Current Practice:

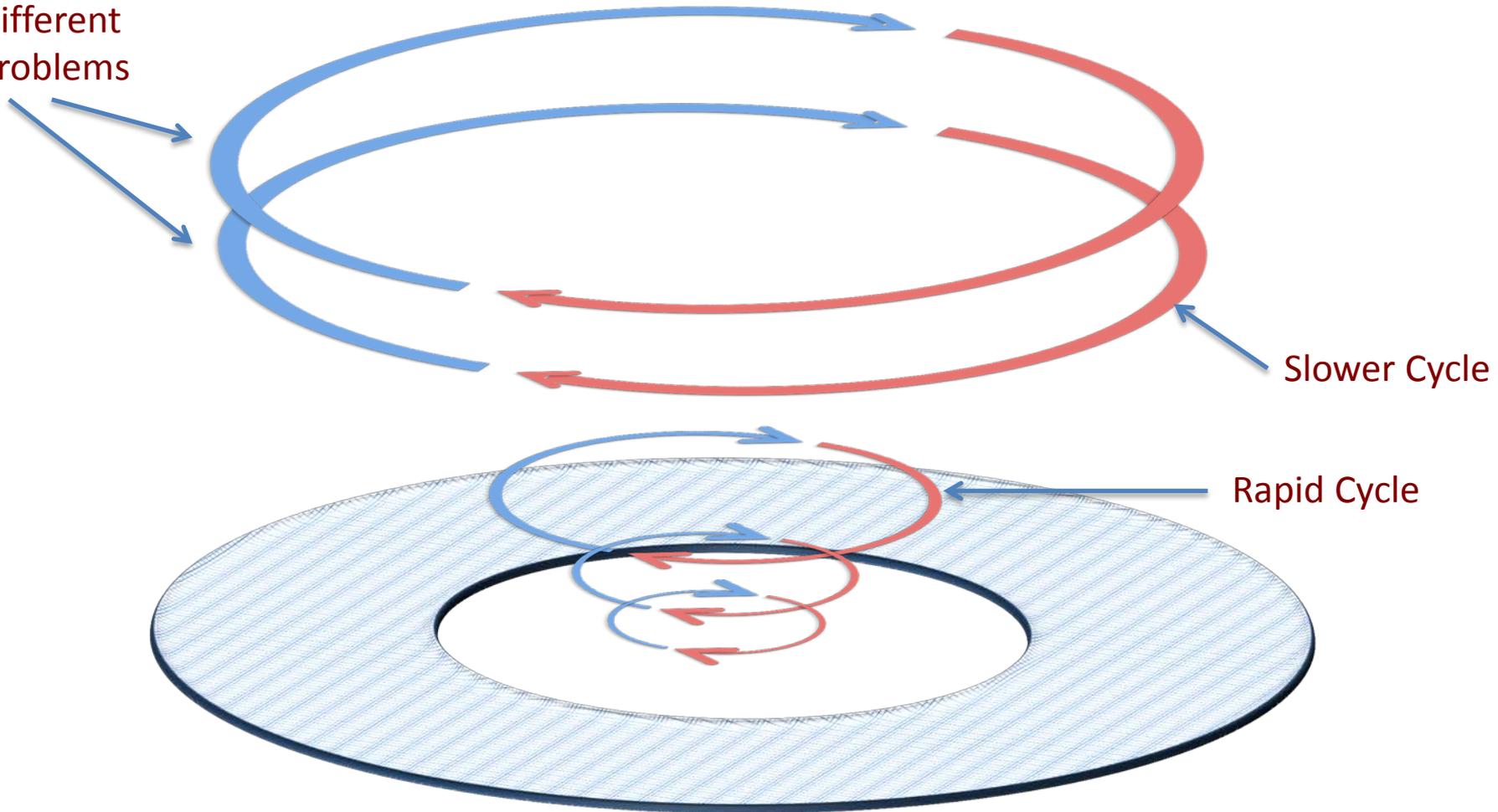
In whole or part...



Decision to study falls

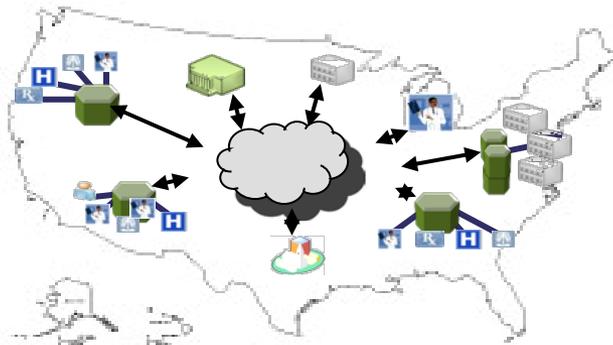
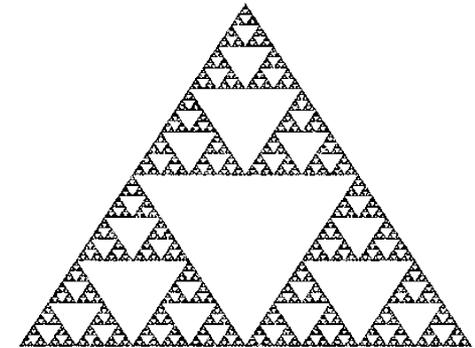
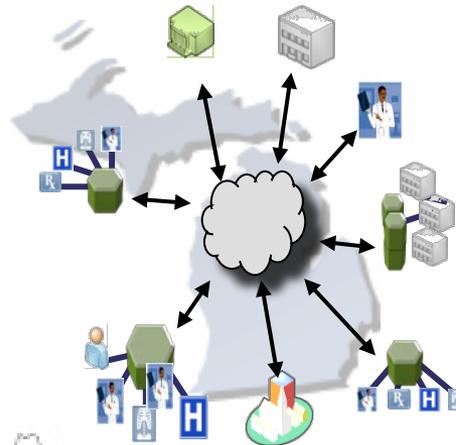
LHS: A Infrastructure Platform that Supports Multiple “Virtuous Cycles”

Different Problems



Learning Systems Can Exist at Any Level of Scale

- At every level of scale, it looks pretty much the same
- Local, state, national, global



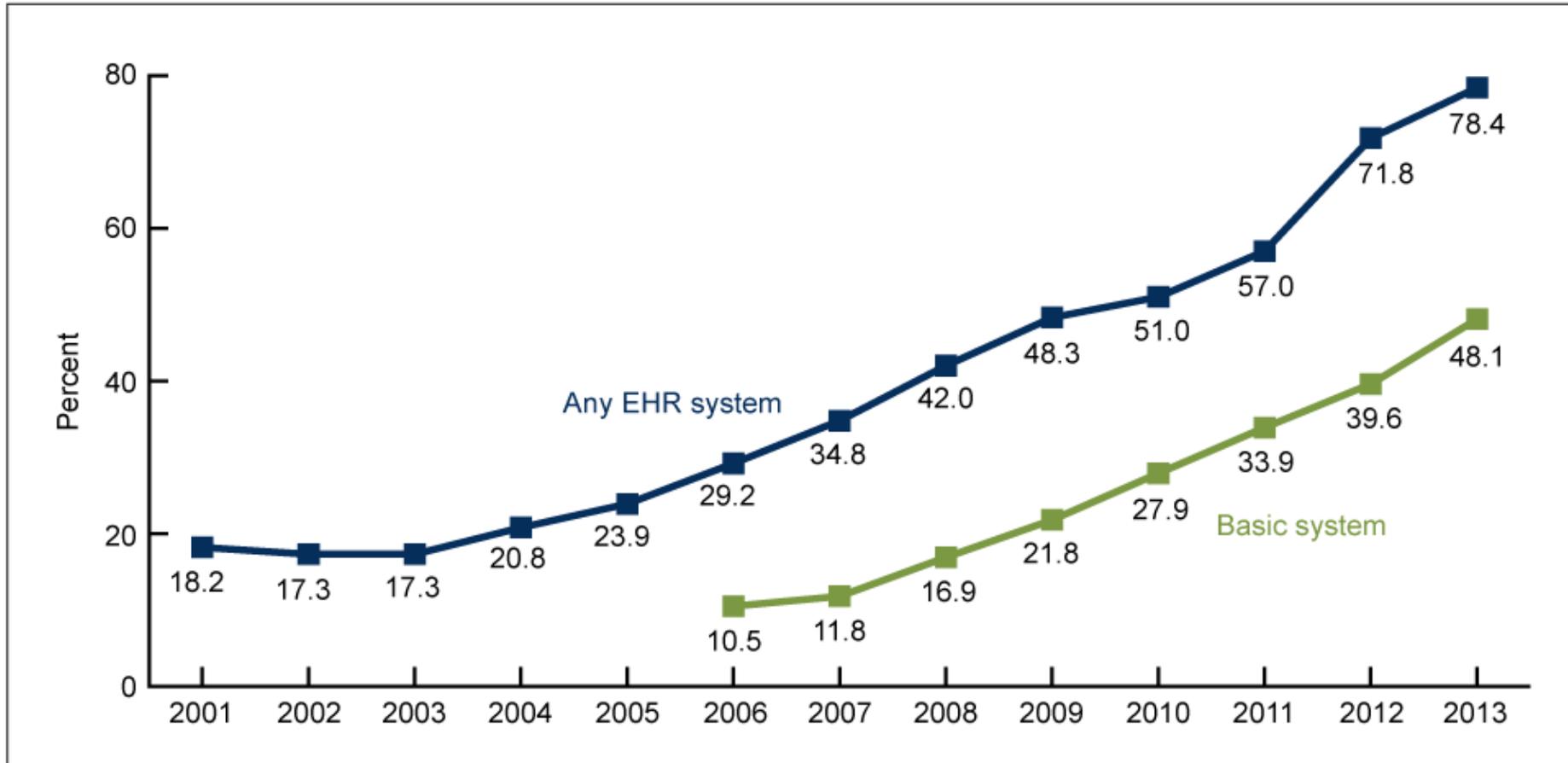
A High Functioning LHS Will Make These (and Other) Things Possible

“17 years to 17 months, or maybe 17 weeks or even 17 hours...”

- Over time, the best “personalized” dosage of a new drug is learned based on patient experience. The current optimal dosage algorithm is automatically implemented nationwide in EHR systems.
- During an epidemic, new cases are reported directly from EHRs and the spread of the disease is predicted. Clinicians are alerted as the epidemic approaches their practice areas.
- A patient facing a difficult medical decision describes her case. She discovers the experiences of other patients like her.

The Nation's Health System Goes Digital

Figure 1. Percentage of office-based physicians with EHR systems: United States, 2001–2013

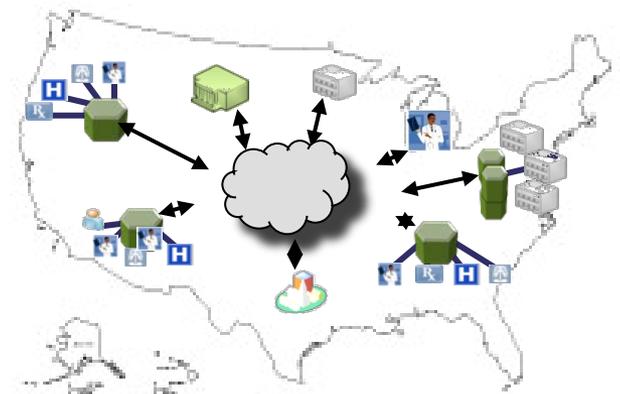


NOTES: EHR is electronic health record. "Any EHR system" is a medical or health record system that is either all or partially electronic (excluding systems solely for billing). Data for 2001–2007 are from in-person National Ambulatory Medical Care Survey (NAMCS) interviews. Data for 2008–2010 are from combined files (in-person NAMCS and mail survey). Estimates for 2011–2013 data are based on the mail survey only. Estimates for a basic system prior to 2006 could not be computed because some items were not collected in the survey. Data include nonfederal, office-based physicians and exclude radiologists, anesthesiologists, and pathologists.

SOURCE: CDC/NCHS, National Ambulatory Medical Care Survey and National Ambulatory Medical Care Survey, Electronic Health Records Survey.

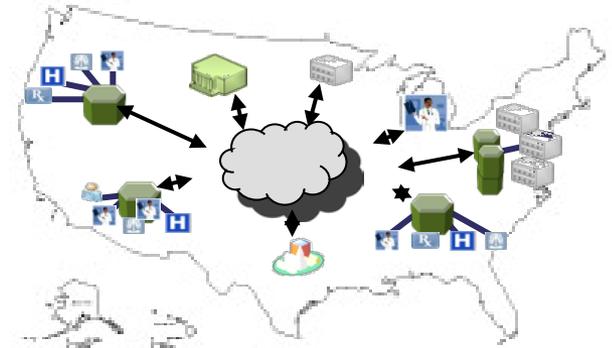
The LHS: *One Infrastructure that Supports*

- **Research**
 - Clinical
 - Comparative effectiveness
 - Translational
- **Public Health**
 - Surveillance
 - Situational Awareness
- **Quality Improvement**
 - Health process and outcomes research
 - Best practice dissemination
- **Consumer Engagement**
 - Knowledge-driven decision making

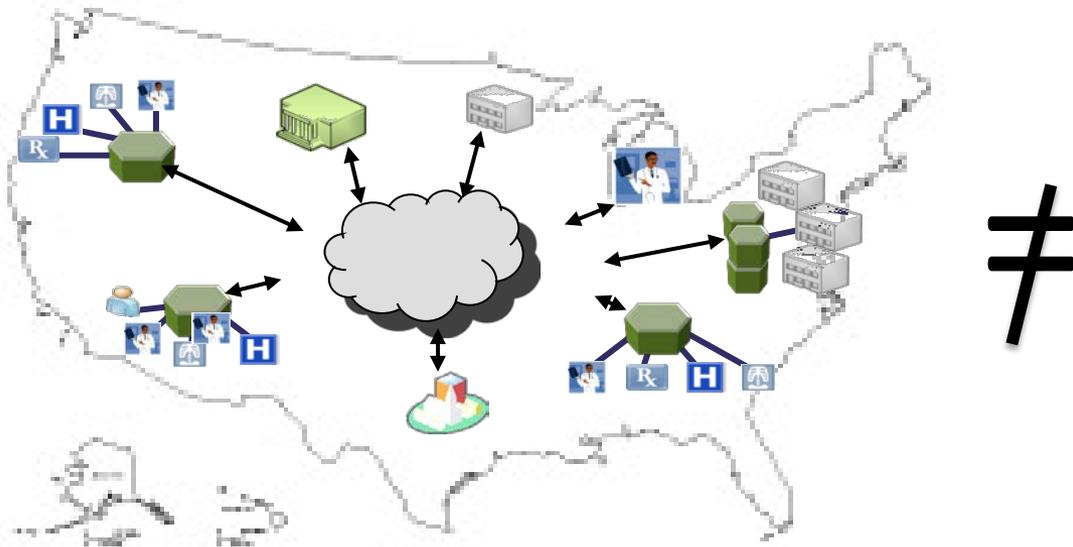


The LHS as Currently Envisioned

- A federation
 - *Not* a centralized database
- Grounded in public trust and patient engagement
- Participatory governance
- An “Ultra Large Scale” System
 - “Just enough” standardization
 - Supports innovation around standards

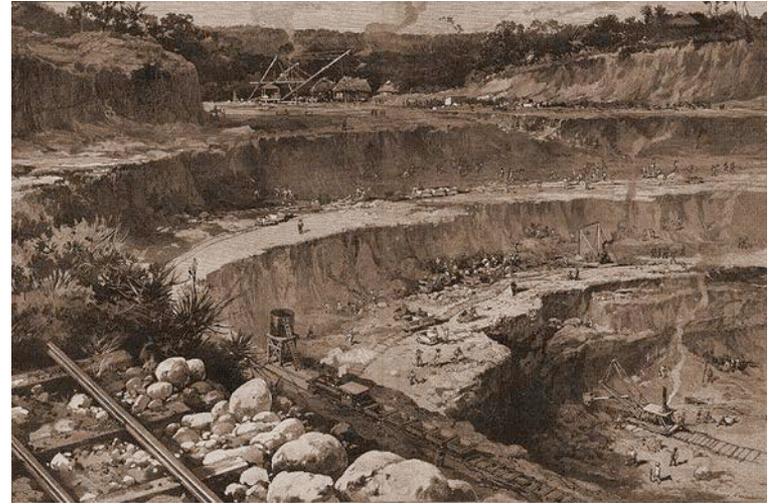


The LHS Can't be Framed Purely as a Technical Problem



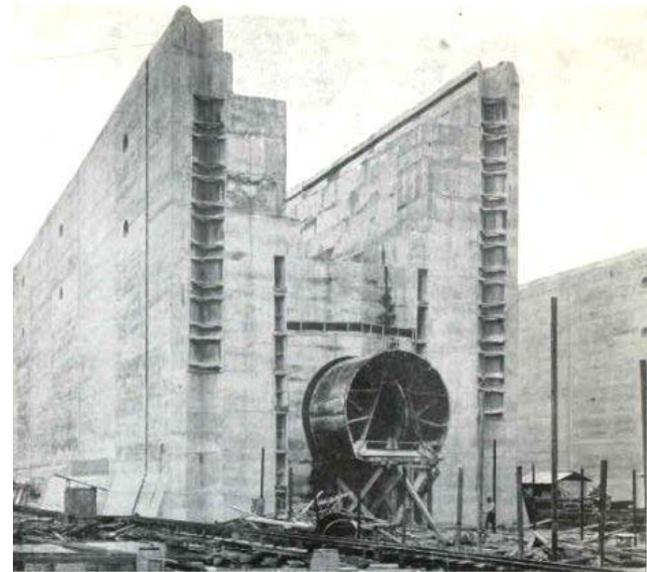
History Lesson: the Panama Canal

The French built the Suez Canal as a ditch in the desert.



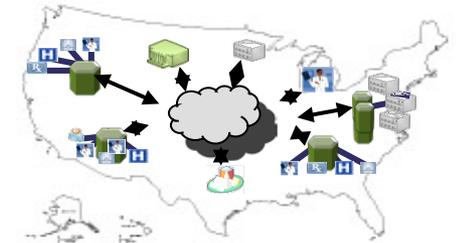
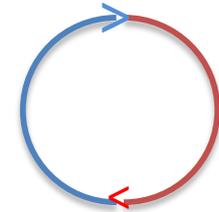
They tried to build the Panama Canal the same way, and failed. They didn't have the right perspective on the problem.

The Socio-Technical Approach that Built the Panama Canal



Today's Menu

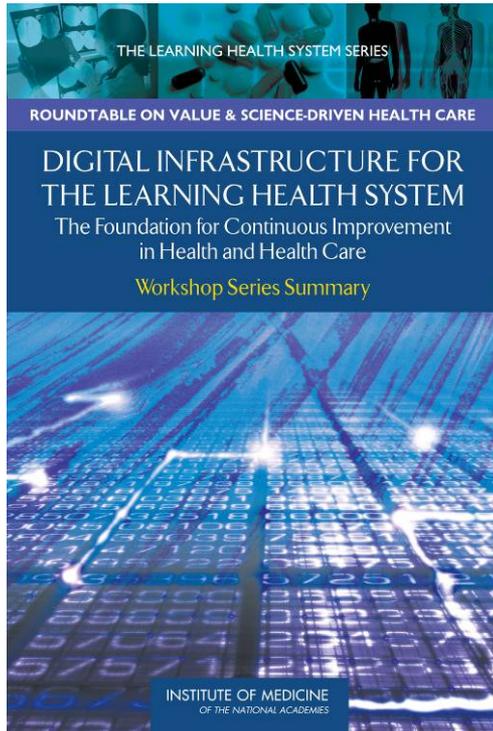
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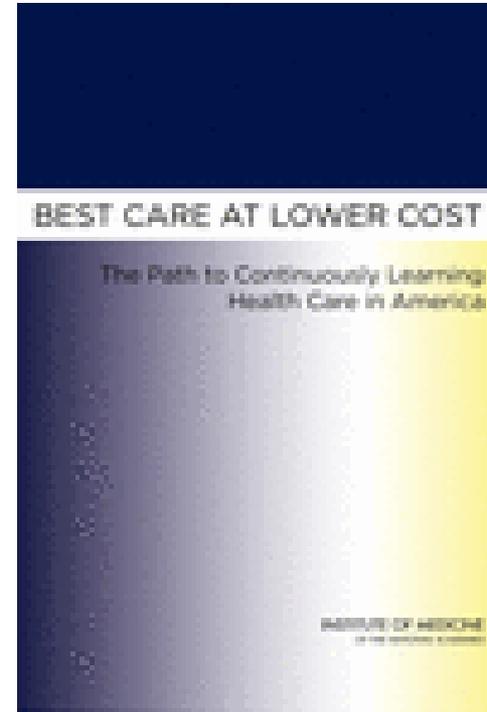
Institute of Medicine Reports



Digital Infrastructure for the Learning Health System: The Foundation for Continuous Improvement in Health and Health Care



Best Care at Lower Cost: The Path to Continuously Learning Health Care in America





The NEW ENGLAND JOURNAL of MEDICINE

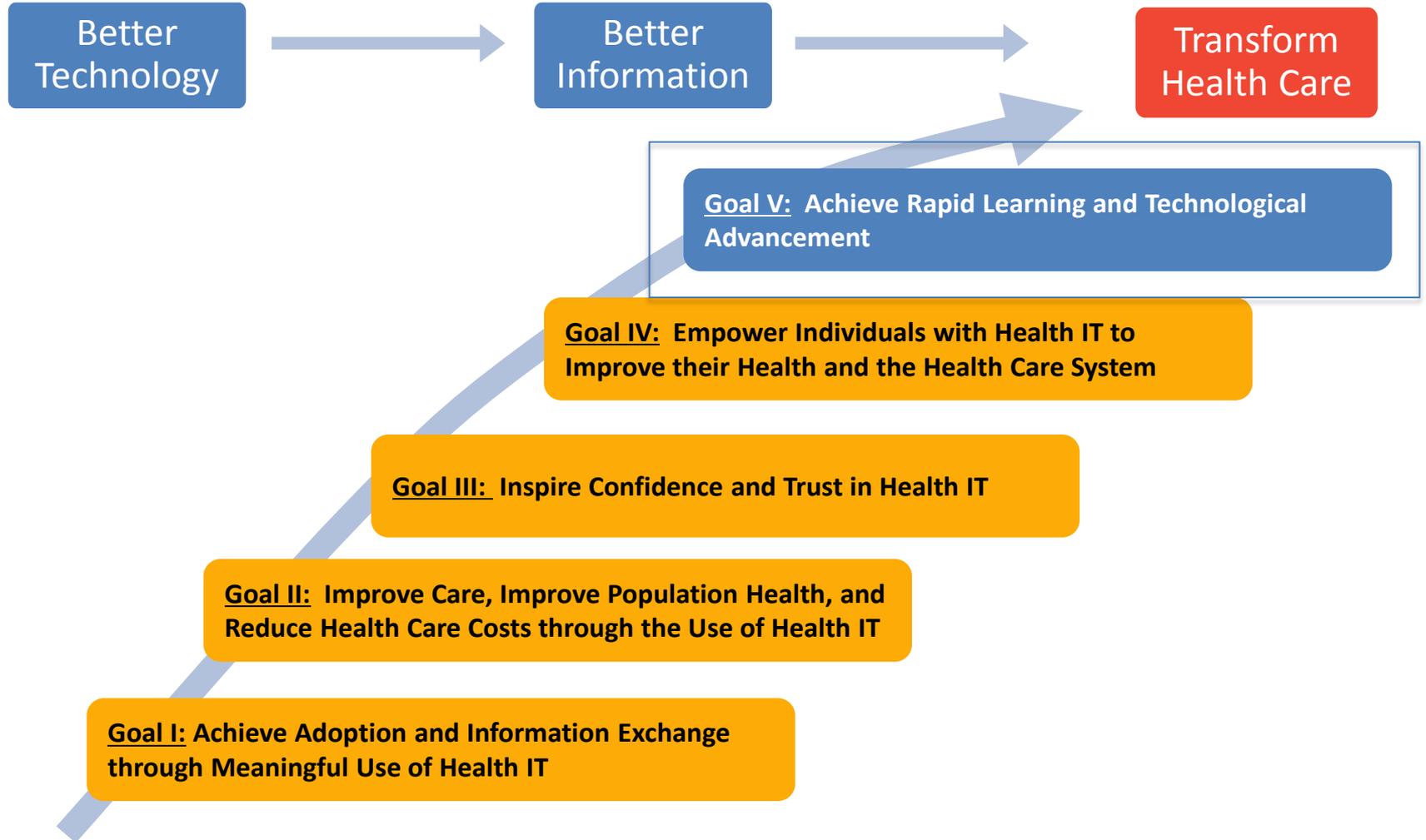
- Arnold Milstein. “Code Red and Blue — Safely Limiting Health Care’s GDP Footprint”, Jan 2013

*“U.S. health care needs to adopt new work methods, outlined in the Institute of Medicine’s vision for a **learning health system**...”*

- Victor Dzau et al. “Transforming Academic Health System for an Uncertain Future”, Sept 2013.

*“In the Big Data era, AHCs should strive to become “**learning health systems**” by making clinical data “research grade” and lowering the costs of data acquisition and knowledge generation.”*

The 2011 Federal Health IT Strategic Plan

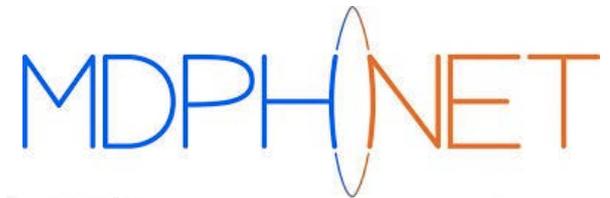


Progress: Learning “Islands”

- *Organizations that have become Learning Health Systems at their level of scale.*
- *But don't routinely connect with other islands.*



Progress: Inter-organizational Data Federations and Networks

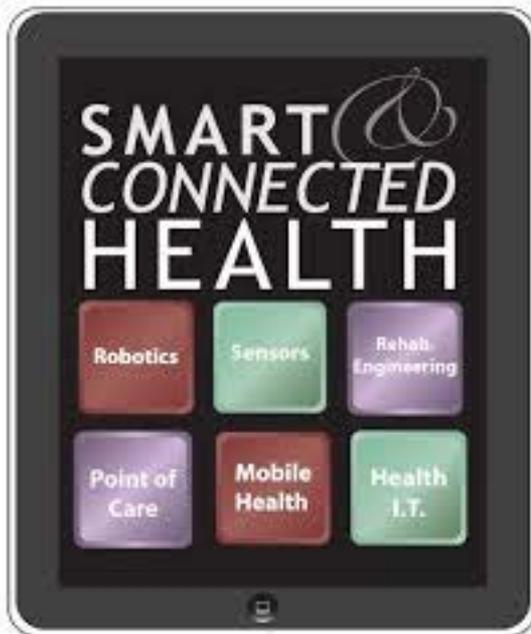


PopMedNet™



Progress: Grant Programs

- NIH “Big Data to Knowledge”
- PCORI Research Networks
- NSF Smart and Connected Health



Progress: Grassroots Movement

- National “Summit” convened in May 2012 to envision LHS as set of shared beliefs
- A Dumbarton Oaks conference for the LHS
- ~ 70 organizations represented at the National Press Club
- Resulted in 10 consensus *Core Values*
- 60 organizations have formally endorsed
- Giving rise to a **Learning Health Community**



60 Endorsements of the LHS *Core Values** (As of 5/2/2014)

NCHICA
 North Carolina Healthcare Information and Communications Alliance, Inc.

patientslikeme

MedDATA FOUNDATION

GEISINGER HEALTH SYSTEM

Peachy
 SecureHealthHub, LLC

ANA
 AMERICAN NURSES ASSOCIATION

Open Health Tools

THE CDI GROUP

NorthShore
 University HealthSystem

vitaTrackr

AMIA
 INFORMATICS PROFESSIONALS. LEADING THE WAY.

Lewin and Associates LLC
Ursus Technologies (SDVOSB)

Minnesota e-Health

MDH
 MINNESOTA DEPARTMENT OF HEALTH

JOHNS HOPKINS MEDICINE

Biovista
 To seek - To know - To act

GPII
 GLOBAL PATIENT IDENTIFIERS INC.

VUHID
 VOLUNTARY UNIVERSAL HEALTHCARE IDENTIFIER

SIEMENS
 Siemens Health Services

Intermountain Healthcare

HealthCore

WELLPOINT

ACP
 AMERICAN COLLEGE OF PHYSICIANS
 INTERNAL MEDICINE | Doctors for Adults®

SANOFI

LAMBDA SOLUTIONS

INHS
 INLAND NORTHWEST HEALTH SERVICES

AZZLY
 One Click Patient Care Management™

CDISC

National eHealth Collaborative

himss
 transforming healthcare through IT

Imperial College London
 Department of Primary Care and Public Health

M

AHIMA
 American Health Information Management Association®

CRITICAL PATH INSTITUTE

Rhode Island Quality Institute

Open mHealth

oz systems

Duke Clinical Research Institute
 DUKE UNIVERSITY MEDICAL CENTER
 The Center for Learning Health Care

e-Patient Dave
 A Voice of Patient Engagement

American Academy of Pediatrics
 DEDICATED TO THE HEALTH OF ALL CHILDREN®

Genetic Alliance

MOSAICA PARTNERS™

2311

COUNT US IN

Harvard Pilgrim HealthCare

AL TARUM INSTITUTE
 SYSTEMS RESEARCH FOR BETTER HEALTH

RightCare+ SOLUTIONS

DANA-FARBER CANCER INSTITUTE

ONS
 Oncology Nursing Society

ASCO

gsk
 GlaxoSmithKline

ANI

GE Healthcare IT

University of Pittsburgh
 School of Dental Medicine
 Center for Dental Informatics

Diogenec Group
 Seek Truth, Question Convention™

KANTER HEALTH!

galileo analytics

Medical Advocacy Mural Project
 Let's change the "face" of healthcare.

*To be included on a Learning Health Community public website that will list all organizations that have endorsed the LHS Core Values.

LHS Research Challenges Workshop: April 2013



- A national workshop to explore the *research challenges* inherent in achieving a high functioning LHS
- Computer science to epidemiology to economics
- 45 invited participants plus Federal liaisons
- Report (“Toward a Science of Learning Systems”) at healthinformatics.umich.edu/lhs/nsfworkshop



Workshop Findings at Two Levels



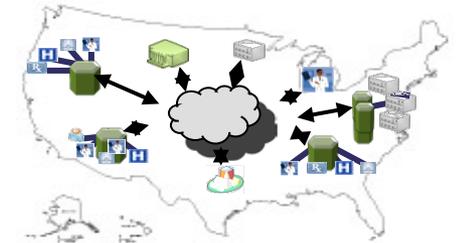
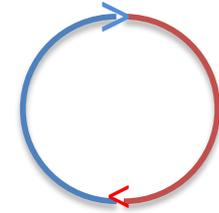
1. **What we were asked to do:** the research questions that must be addressed to meet LHS system level requirements
 - **106 questions** organized into four categories and 19 sub-categories
2. **Something transcendent:** A vision of a *science of cyber-social ecosystems* necessary to address these questions (and achieve the LHS)

Approaching a “First” National System

1. Words: calls and reports
2. “Learning Islands”
3. Data federations and networks
4. Grant programs
5. A grassroots coalition of the willing
6. A emerging science of learning systems

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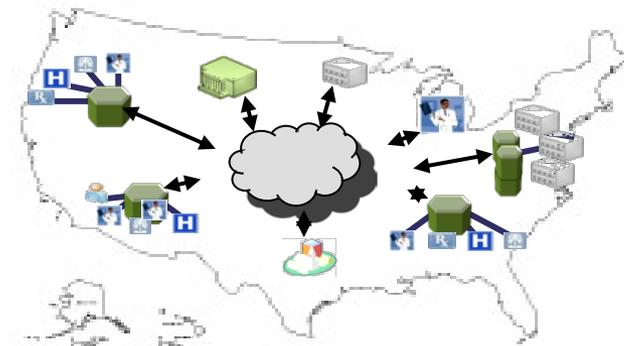
Infrastructure, Infrastructure, Infrastructure...



Paradoxically: Where is Public Health?

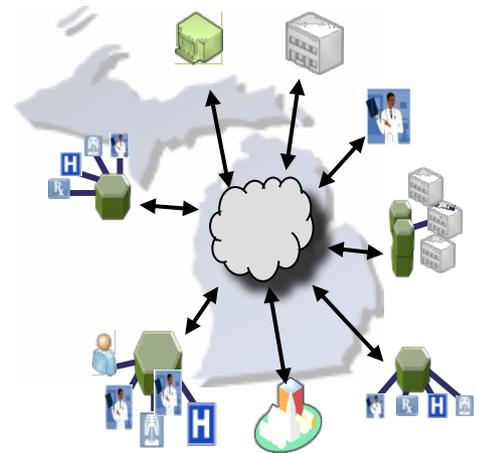
Public health has the most to gain from an LHS:

- Engages the entire population
- Aligns with public health's mission of intervention
- Public health needs the persistent infrastructure and economy of scale



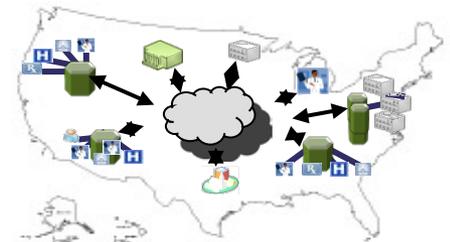
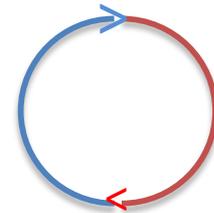
State Level LHS Initiatives

- LHS is a fractal: allows initiatives at any level
- State level initiatives put public health at the center



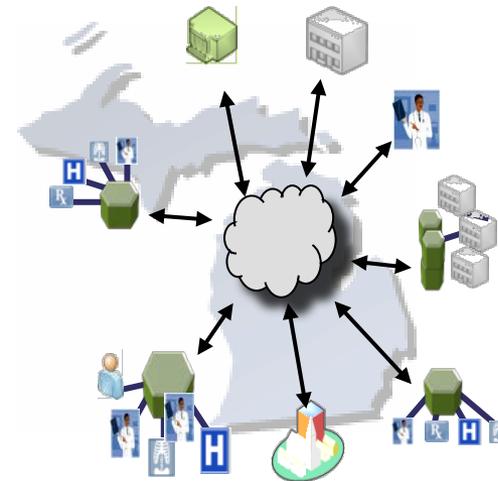
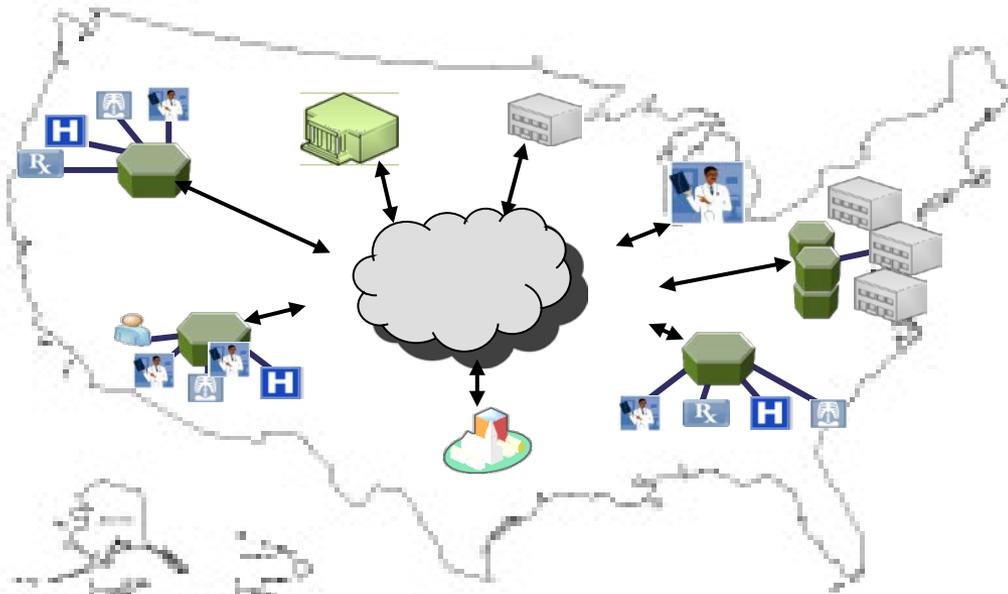
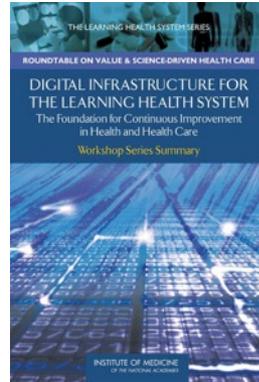
In Sum

- We need to turn the “Titanic”, locally and nationally
- The **Learning Health System** (LHS) can help do this
- I’m not the only one who believes this to be the case
- Public health may have the most to gain from an LHS

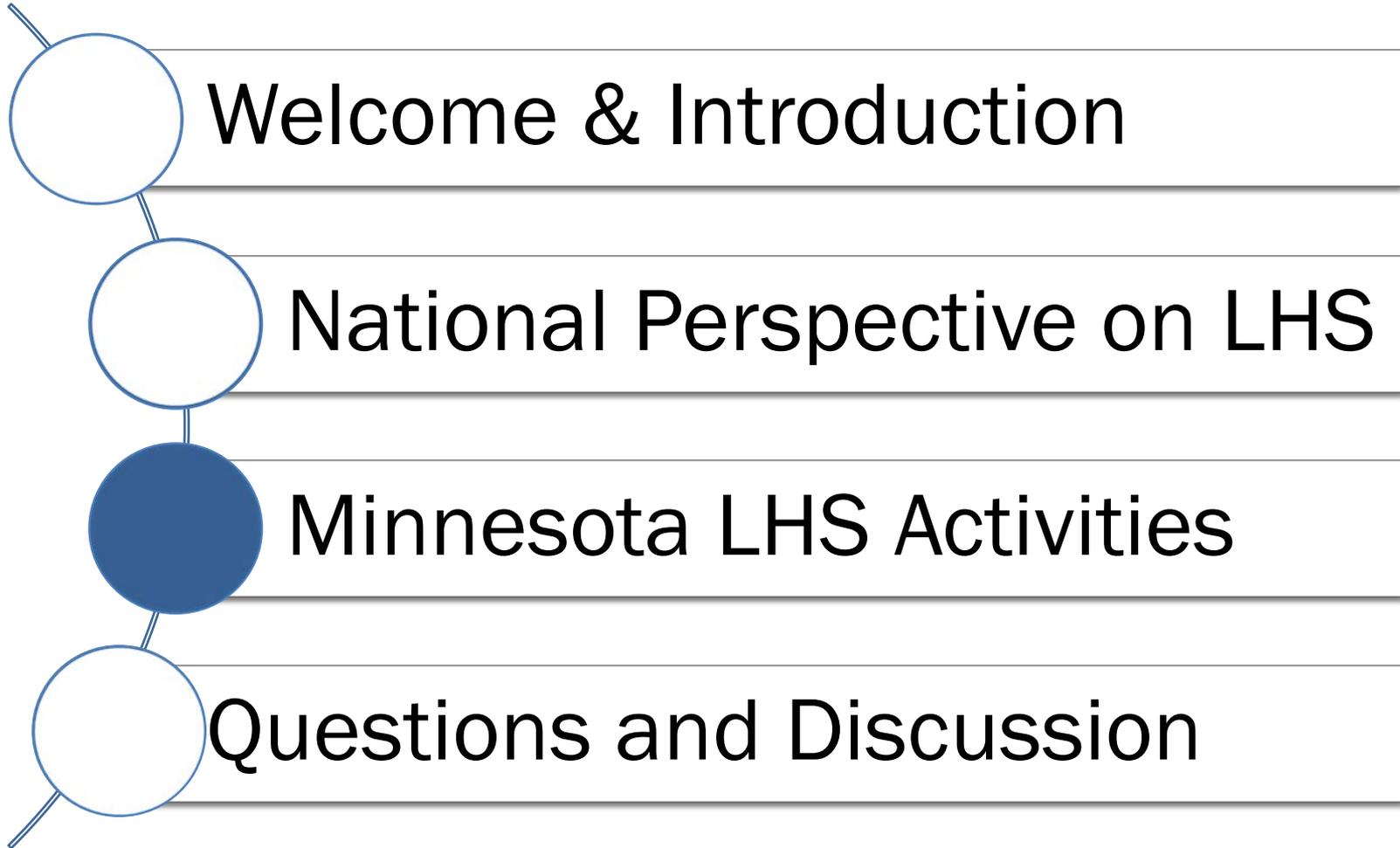


Thanks & Write to Me

cpfried@umich.edu



Overview



Activities Related to MN-LHS

MN E-Health Initiative

- Review and endorsement of LHS core principles
- Communications / Sharing

Potential MN-LHS activities for MN

1. Establish Minnesota Framework and Definitions
2. Assessment of current LHS related activities
3. Identify example use cases / stakeholders
4. Public health; Research, Acute Care, Consumers
5. Formulate a MN Action plan and high level Roadmap
6. Action Communications and educations
7. Practical Next Steps

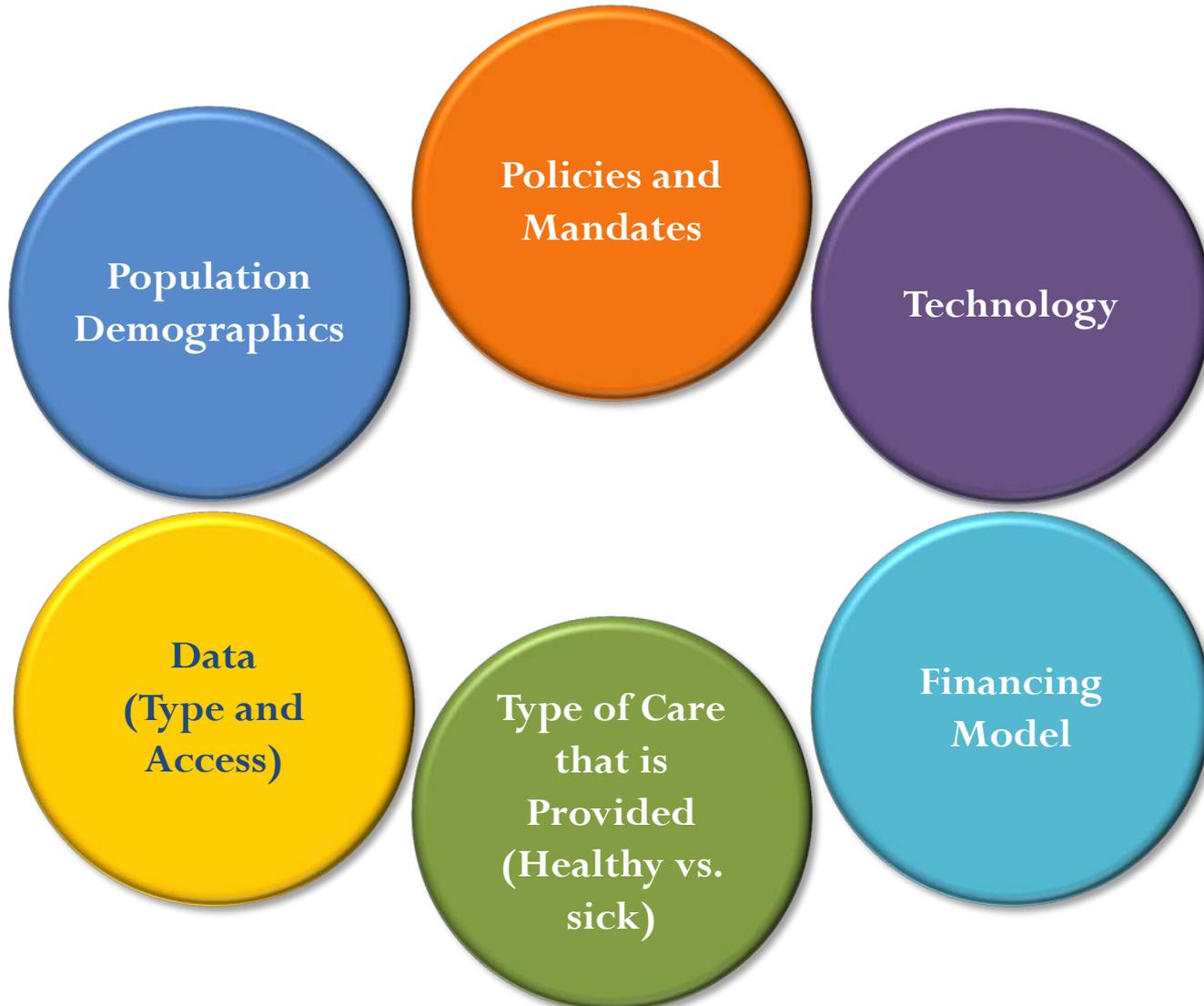
Imagine.

In 2024, how will the art of supporting Health and providing care be different?

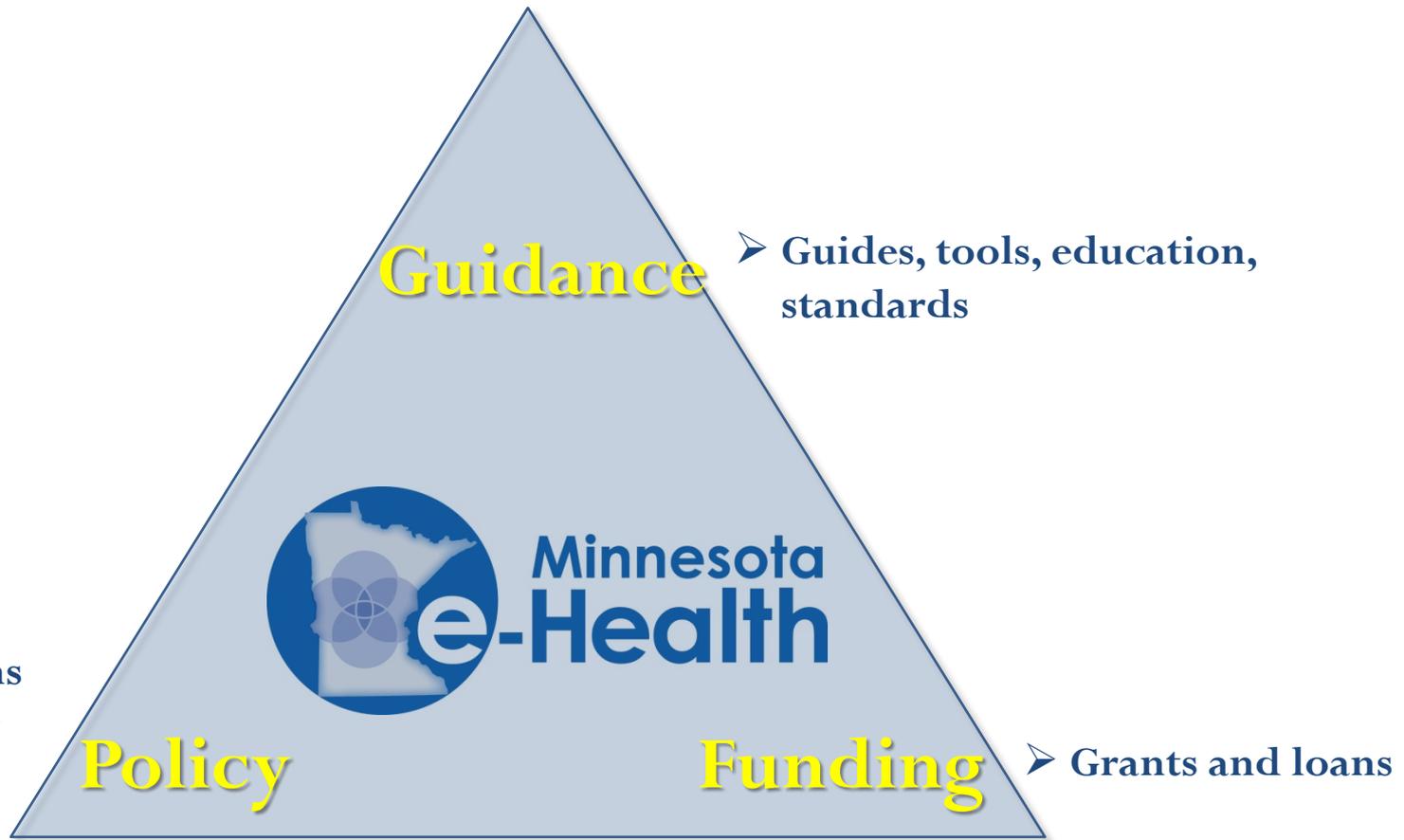
- Effectively use information to improve the health of populations?
- Provide real-time understandable information to patients and providers?
- Reduce disparities, increase health equity?
- Achieve healthier communities?
- Embrace those disenfranchised with the health care system?

Imagine.

In 2024, what will be different in health & health care?

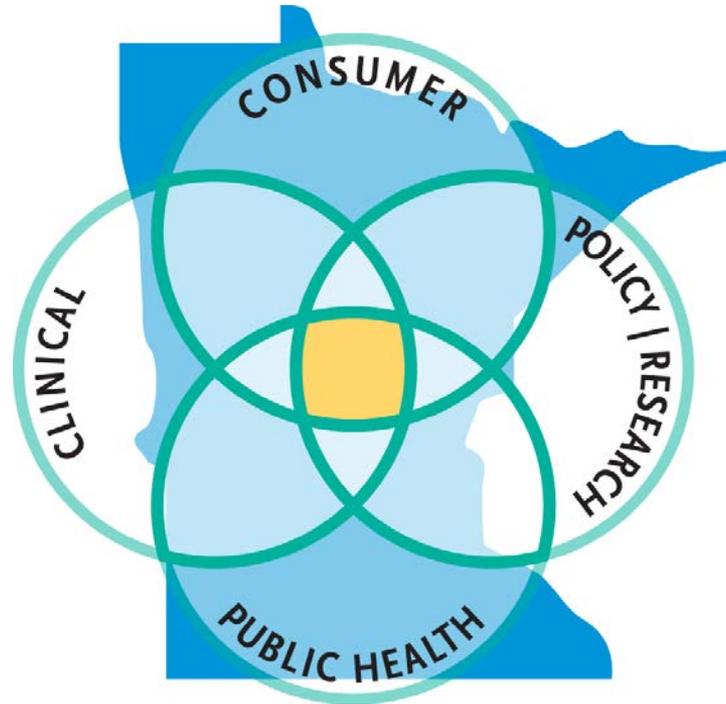


Imagine Supporting elements

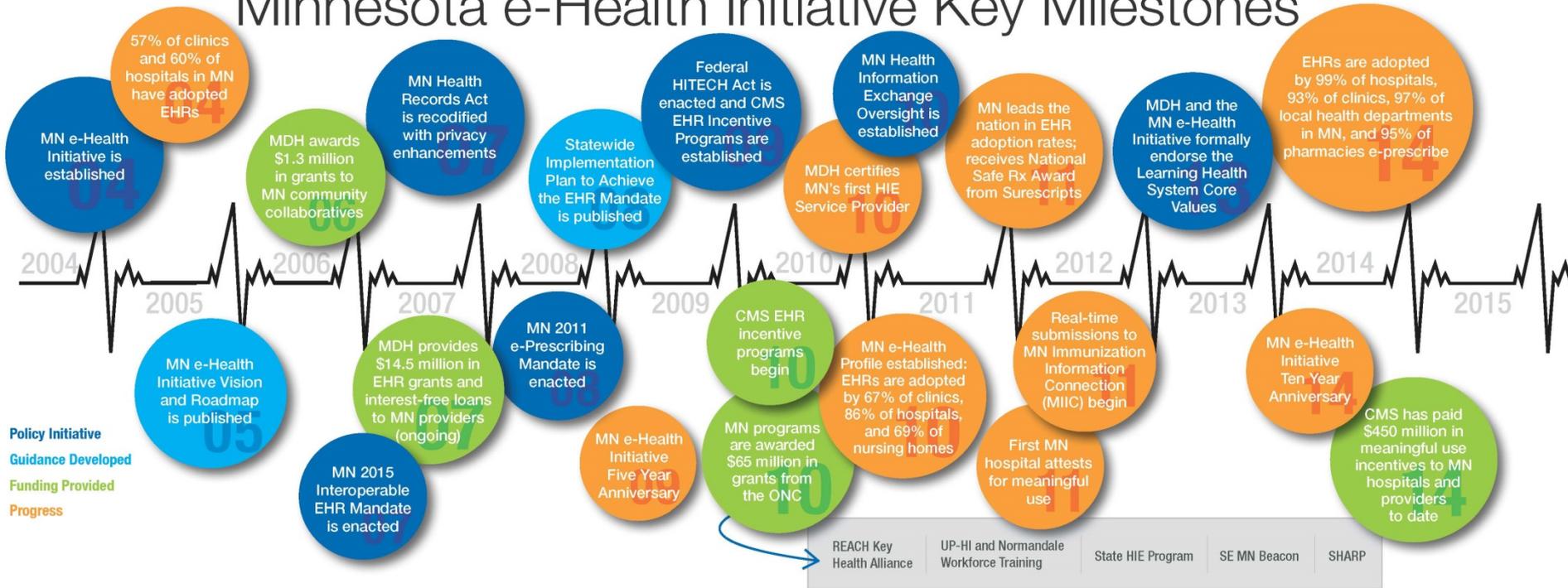


Imagine what YOU will do?

- Participate
- Collaborate
- Influence
- Promote
- Commit



Minnesota e-Health Initiative Key Milestones



Add your milestones at the MDH exhibit!

Discussion Questions

1. Share what you are doing and how it might contribute to the Minnesota LHS.
2. What and who should also be part of this discussion?
3. What are important next steps to advance the Minnesota LHS?

Thank-you!

www.health.mn.us/e-health



June 12, 2014

