

Toward Complete & Sustainable Learning Systems

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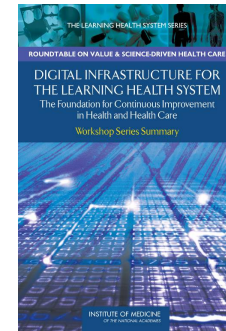


Disclosure

I am the chair of the Interim Steering Committee of the Learning Health Community, a grassroots not-for-profit organization.

How I Got Here

- **2009-2011:** Encountered the LHS as ONC's Chief Science Officer and engaged with IOM
- **2011-2012:** Organized LHS National Summit, which spawned a national grass-roots Community
- **2013:** Organized NSF workshop on LHS research challenges
- **Now:** Chair of first academic department of LHS



Research and applications

Toward a science of learning systems: a research agenda for the high-functioning Learning Health System

Charles Friedman,¹ Joshua Rubin,¹ Jeffrey Brown,² Melinda Buntin,³ Milton Corn,⁴ Lynn Etheredge,³ Carl Gunter,⁵ Mark Musen,⁷ Richard Platt,² William Stead,³ Kevin Sullivan,⁶ Douglas Van Houweling¹



Main Points

Goal from Lynn's presentation:

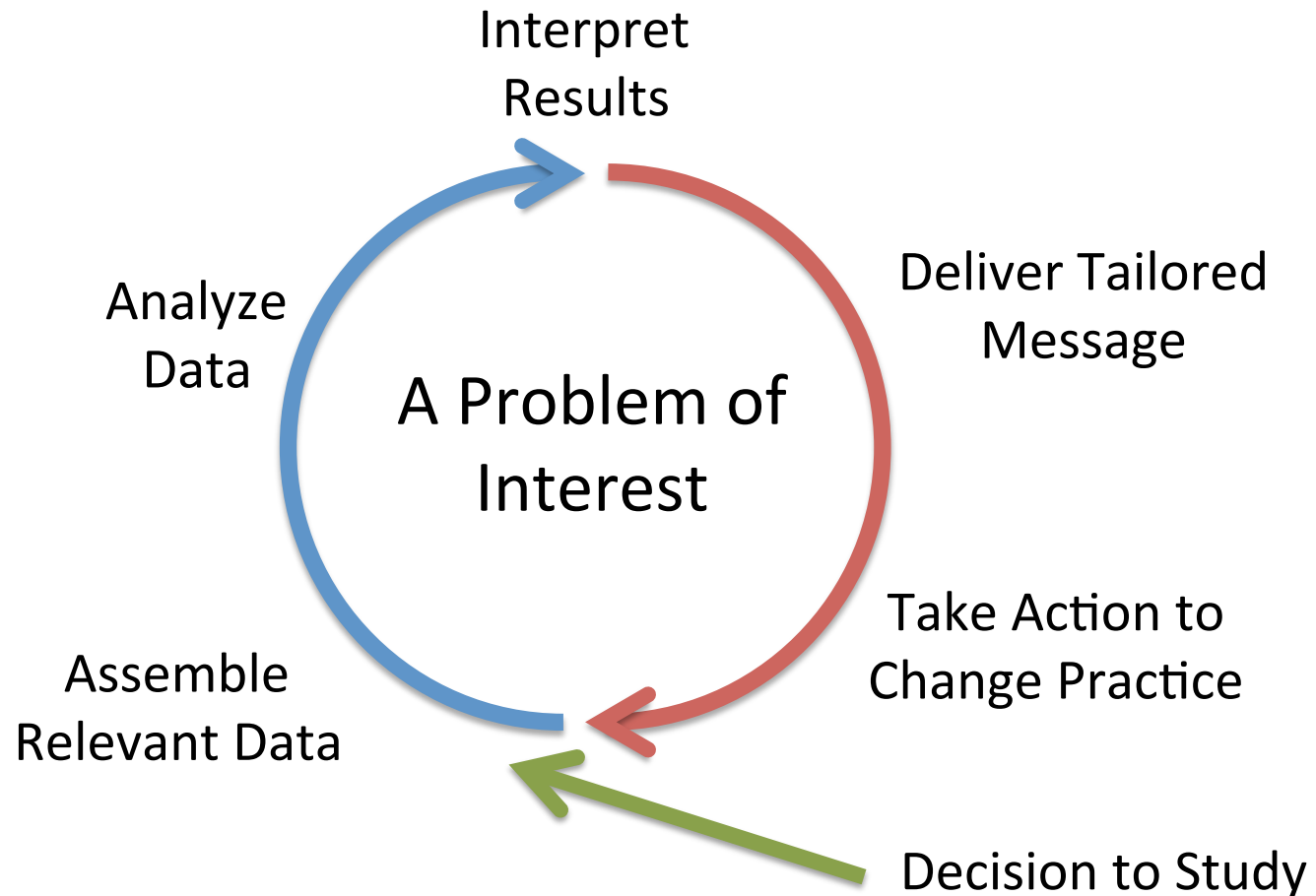
To learn as quickly as possible about the best medical care for each person—and to deliver it.

- This requires support of complete learning cycles
 - Without complete cycles we cannot improve
- This requires a scalable infrastructure (platform)
 - Without a platform there will be chaos

A Health System That Can Learn

- Every patient's characteristics and experience are available for study
- Best practice knowledge is **immediately available** to support decisions
- Improvement is **continuous** through ongoing study
- This happens **routinely, economically** and almost invisibly
- All of this is part of the culture

Complete “Virtuous Cycles” of Study and Improvement

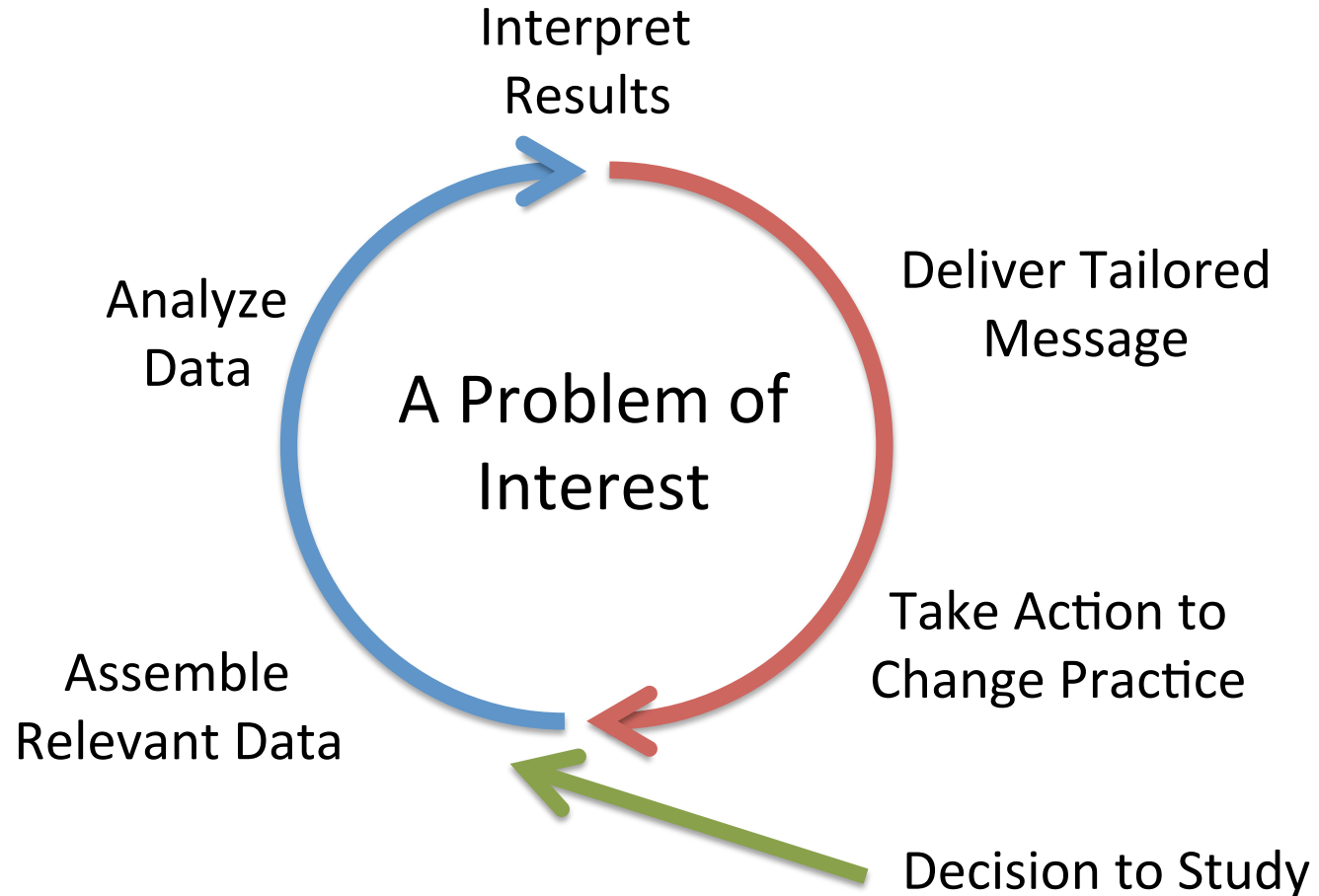


Importance of Complete Cycles

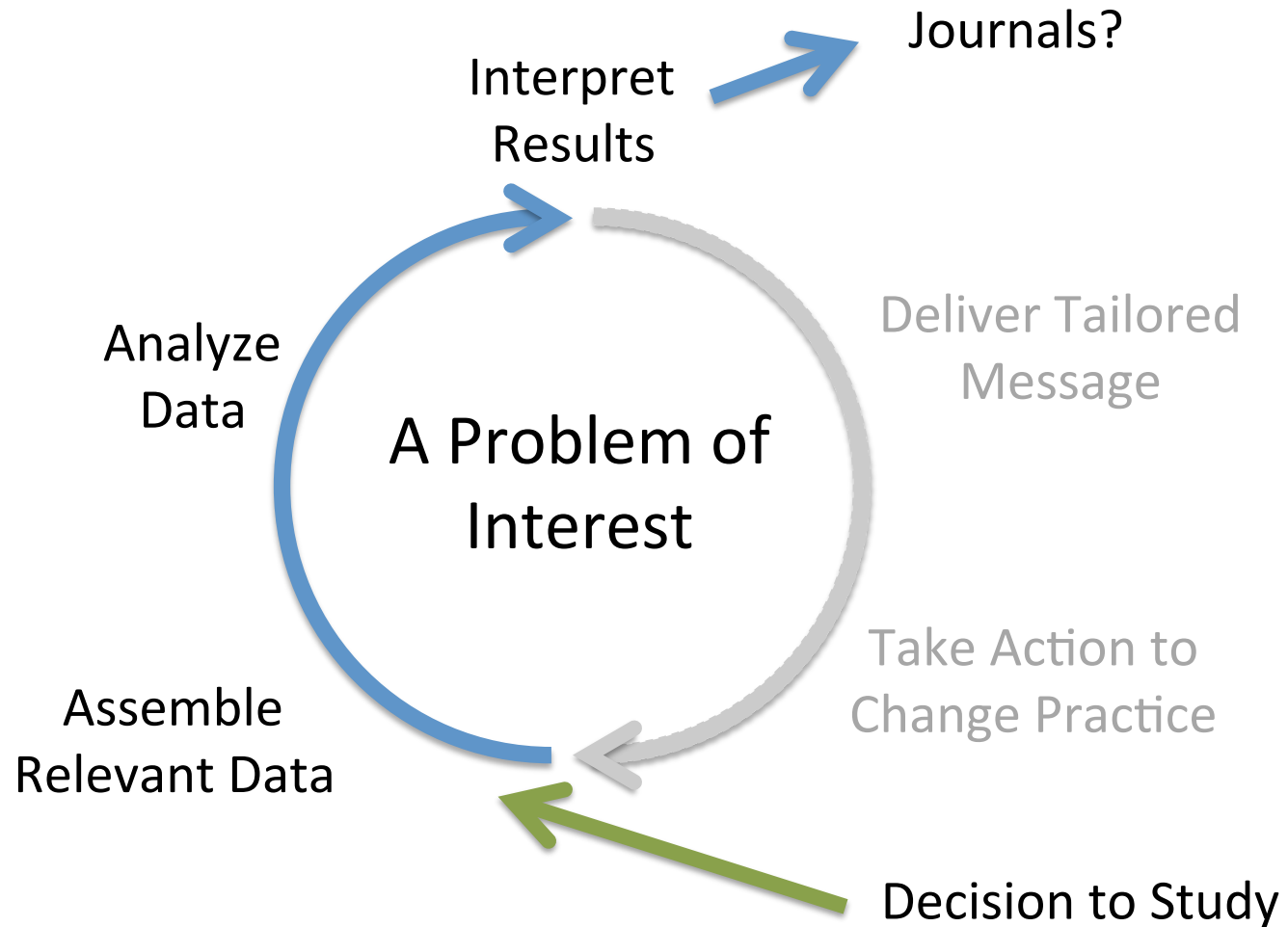
- Lynn's expressed goal of **delivering** best care after learning what it is
- **Jason report: November, 2014**

The learning health system needs to be "closed loop" to ensure a continuous and transparent cycle of research, analysis, development, and adoption of improvements relevant to health and wellness and to the delivery of health care.

But Instead of Doing This...

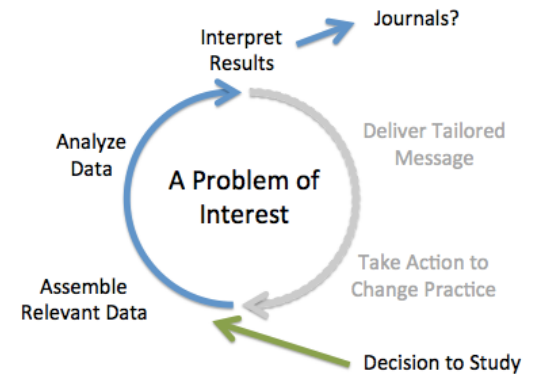


We Seem to be Doing This



What I'm Observing

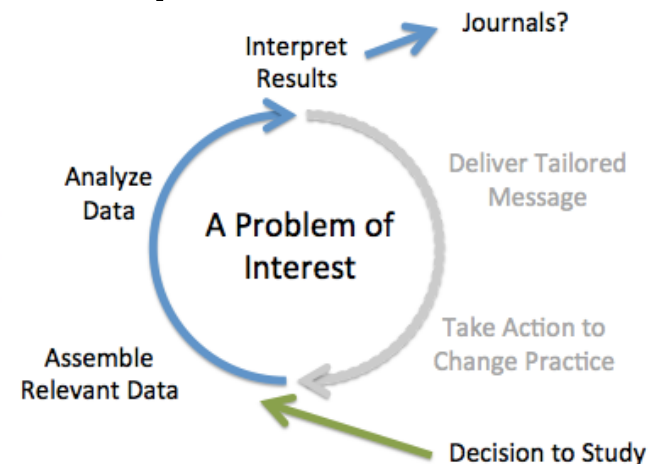
- Belief that if we get the data and analytics side right, everything else will fall into place
 - But we know that's not true
- “Big Data to Knowledge”
 - And then what?
- PopMedNet (basis of PCORnet) does not support the feedback “red” side of a complete cycle



Jeff Brown's NIH Grand Rounds: 11/14/14

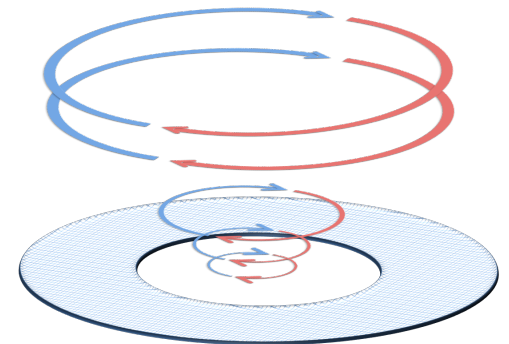
Use cases, all "open loop":

- Pragmatic clinical trial design
- Observational studies
- Single study private network
- Pragmatic clinical trial follow up
- Reuse of research data

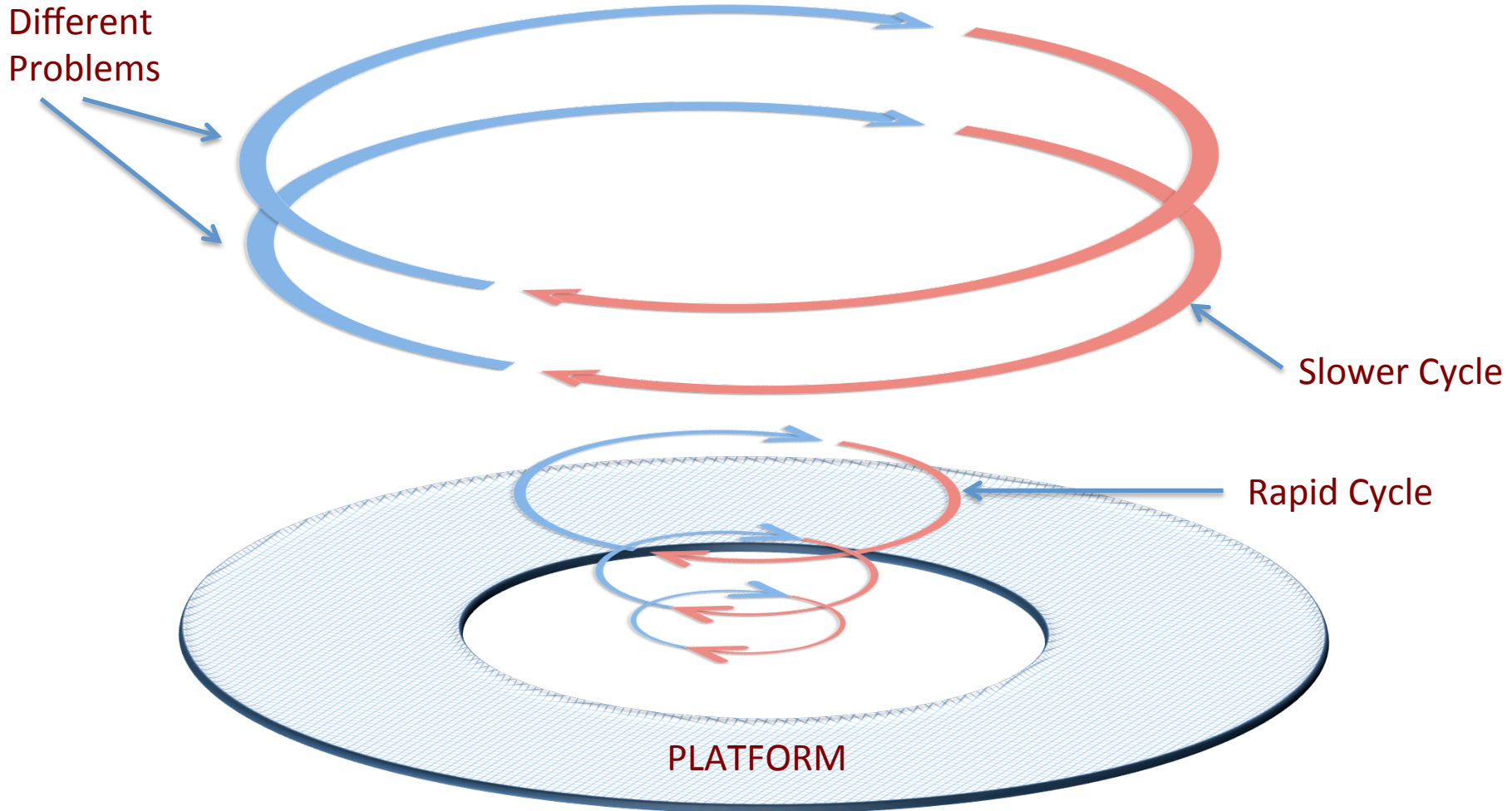


My Pitch...

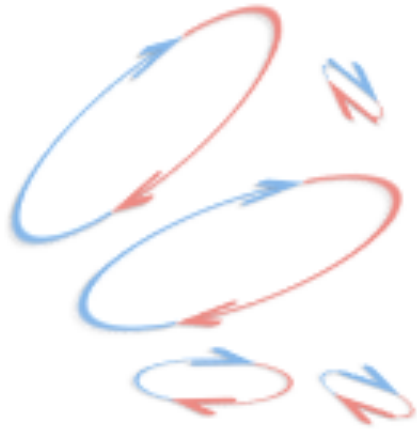
- To meet Lynn's goal, delivery systems & research networks must run many **complete** learning cycles simultaneously, each addressing a different problem
- Also, need an **infrastructure** that makes learning effective, sustainable, and routine--with economy of scale
- Enter the platform...



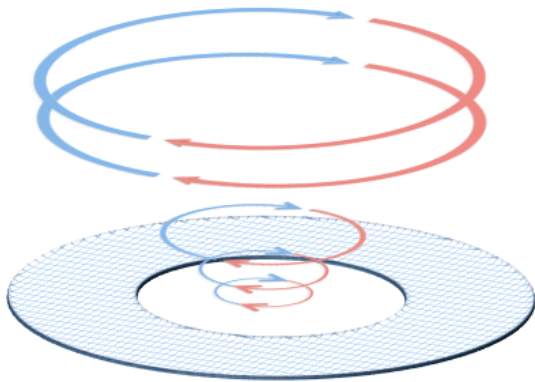
How to Learn *Routinely*: A Single Platform Supports Multiple Simultaneous “Virtuous Cycles”



In Other Words...

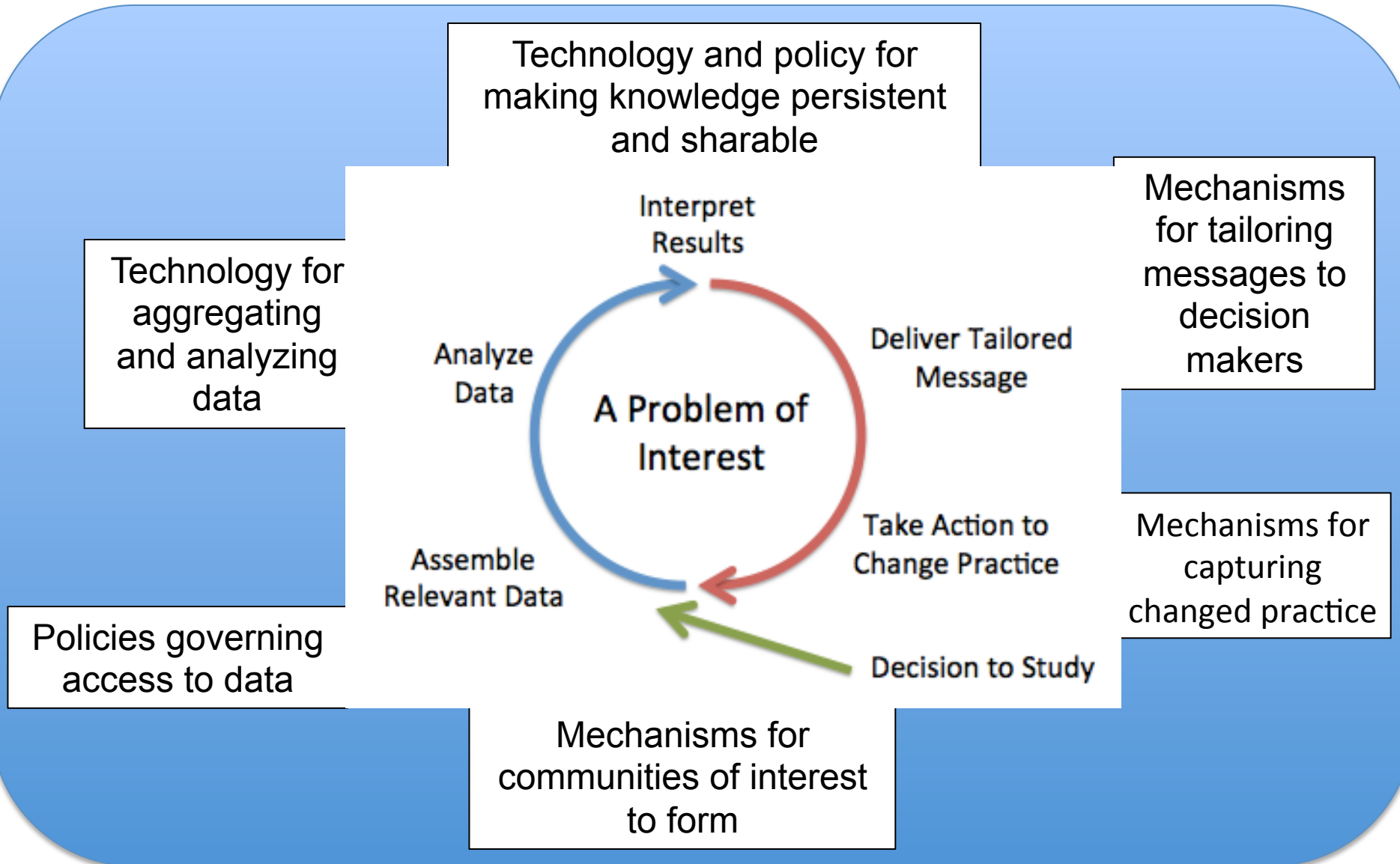


- **Without a platform,** each learning cycle develops its own, sub-optimal methods for learning; no economy of scale



- **With a platform,** all cycles share & benefit from a common infrastructure; costs are distributed

Components of the Complete Platform



Components of the Complete Platform

Technology and policy for
making knowledge persistent
and sharable

Technology for
aggregating
and analyzing
data

Policies governing
access to data

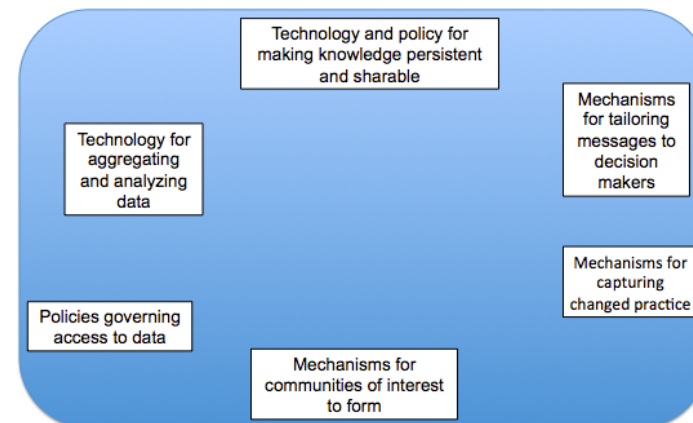
Mechanisms
for tailoring
messages to
decision
makers

Mechanisms for
capturing
changed practice

Mechanisms for
communities of interest
to form

A Platform, Built Right

- Will scale to embrace genomic data
- Will have sharable, interchangeable components: “build once, use many”
- I urge the genomic community to demand attention to complete learning cycles and the “platform” approach



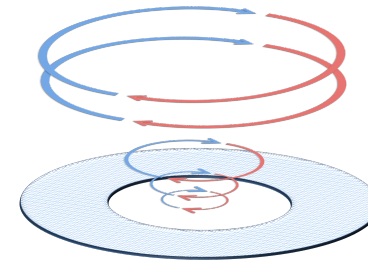
What is My Department Doing?

- Viewing the LHS as a research challenge
- Trying to balance out current efforts with focus on the “feedback” side
 - Partnering with PopMedNet
- Building reusable and scalable platform components
- Would be delighted to partner with the genomics community

Research and applications

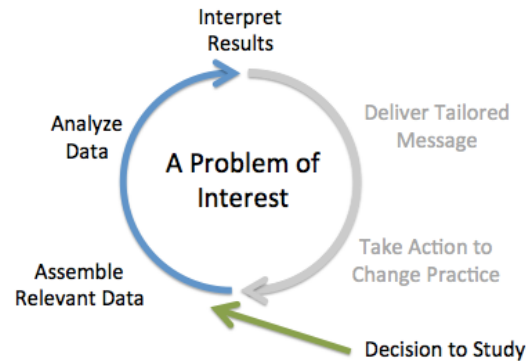
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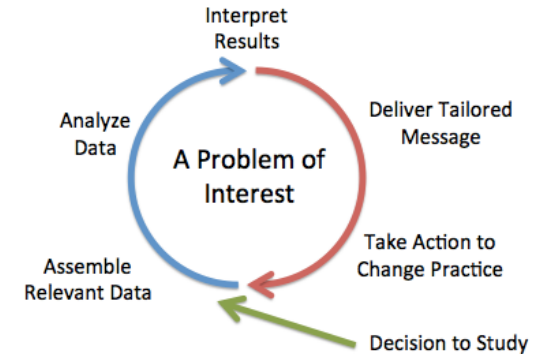


So It's Up to Us and the Stakes are High

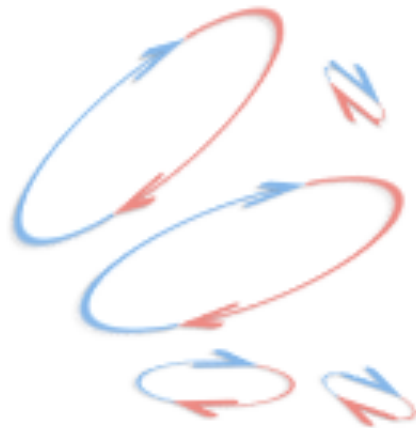
Is it?



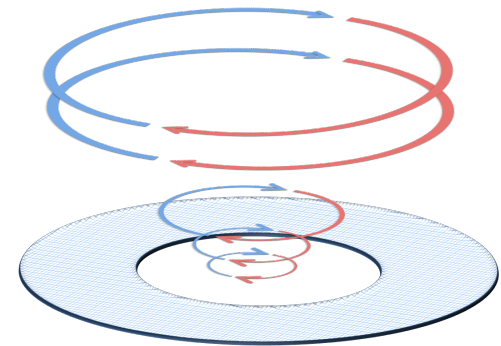
Or



And is it?



Or



Thanks & Write to Me

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