Center for
Health Innovation &
Implementation Science

*Indiana University School of Medicine*

# Journey Mapping
# Agile Change Conductor

**October Weekend Residency**
**9/12/2020**

**Malaz Boustani, MD, MPH, Chief Innovation and Implementation Officer, CHIIS**
**Jose Azar, MD, Chief Quality and Safety Officer, IUH Academic Health Center**
**Andrew O'Brien, MD, Assistant Professor of Medicine, CHIIS**

- Conflict of Interest in the past 12 months
  - Ownership:
    - RestUp, LLC
    - PPHM, LLC
  - Advisory Board:
    - Eisai
    - Merck
    - Acadia
  - Research Support:
    - NIH
    - AHRQ
    - CMS
    - Merck

“It's a dangerous business, Frodo, going out your door. You step onto the road, and if you don't keep your feet, there's no knowing where you might be swept off to.”

# *My Story!*

## *Becoming a Physician Scientist!*

## *A Journey of 10,000 Hours*

# Timeline

- 1994: MD and Immigrated to the USA
- 1996-1999: Residency program at community hospital in Cleveland.
- **1999-2002**: Geriatric Fellowship + K30 + MPH (**Basic Research Skills**)
- **2002-2005**: 13 failed external grant submissions (**Basic Experimentation and Vital Failure Skills**)
- 2005-2010: Beeson K23 (**Leadership Skills**)
- 2007: First R01 (**Mentorship skills**)
- 2009: Second R01 (**Mentorship Skills**)
- 2010: Third R01 (**Mentorship Skills**)
- 2012: Fourth R01 (**Mentorship Skills**)
- 2012: CMMI grant (**Implementation and Dissemination skills**)
- 2013: Founding Director Center for Health Innovation and Implementation Science (**Administration leadership Skills**)
- 2013: Chief Innovation and Implementation Officer at IUHealth (**Administration leadership Skills**)
- 2014: Richard M Fairbanks Chair in Aging Research (**Growth Skills**)
- 2015: Great Lakes Practice Transformation Network (**Network engineering skills**)
- 2015: SECBCI (**Network Engineering Skills**)
- 2019: Director Senior Care Innovation (**Network Engineering Skills**)

# 10,000 Hours of Research Practice

- **1999-2000**:
  - 25% research; 10 hrs / week X 46 = 460 hrs
- 2000-2002:
  - 80% research: 32 hrs / week X 92 = 2,944 hrs
- 2002-2005:
  - 70% research: 28 hrs / week X 138 = 3,864
- 2005- 2007:
  - 75% research: 30 hrs / week X 92 = 2,760

- By 2007 (**first R01**) I crossed the professional tipping point with accumulating **10,028** hrs of research practice

# The Minimally Specified Criteria for A Successful Scientist

- 10,000 hours of research practice and training
- Receiving successful mentoring
- Acquiring the Innovator DNA
- Developing,  maintaining, and controlling a research laboratory
- Developing and maintaining a successful and evolving messaging and communication strategy
- Growing intellectual (human) and financial capitals
- Mastering the science of network engineering.

# The Minimally Specified Criteria for Successful mentorship

- Primary mentor and mentorship panel who put mentee first
- 30-60 minutes of face-to-face weekly meeting with primary mentor
- 30-60 minutes of face-to-face monthly meeting with mentorship panel
- 30-60 minutes of face-to-face weekly attendance of leadership development

# The Innovator's DNA

- Questioning
- Observing
- Experimenting
- Networking
- Associate thinking

# Tips From My Journey

- Do not forget about the Null hypothesis
- Biostat is an imperfect tool with plenty of assumptions
- Always open a saving account with your collaborators and deposit the first five checks.
- Perception is reality
- Success comes from harvesting luck
- Give credit to luck for your success and blame yourself for your failure.
- Red is love and negative feedback is a diamond!
- Most innovations are product of matching

Who are **YOU** really?

**WHY** are you here?

**WHAT** is your story?

# -Defining Your Success-

How do you define success for your journey?

# Our Principles of Agile Mindset

- Safe Culture
- Feedback
- Sprints of Minimally viable prototypes

# Our Adult Learning Philosophy

- Deploy or Die
- Rapid Experimenting
- Investing in Feedback Loops
- Networking
- Questioning
- Multisensory deep Observing
- Allowing time for Associate Thinking
- Learning form the Bayesian Scientist
- Checking  Assumptions
- Self caring is not selfishness
- Allocating Time for Reflection
- Embracing Personalization
- Becoming a Choice architect
- Leading at least 150 humans

# Minimally Specified Certificate Criteria

- 50/50 Interaction
- We will always tell you the truth
- We hope you can trust us to tell us the truth
- We are creating knowledge (Agile Science)
- We are operationalizing knowledge (Agile Processes)
- Our innovation is based on integration.
- Our platform is adaptive
- We will teach you how to influence people and social organizations
- If you do not feel uncomfortable within the first 30 days, we are not doing our job

# THE CHIIS: WHO WE ARE

Powered by

INDIANA UNIVERSITY SCHOOL OF MEDICINE

INDIANA CTSI Clinical and Translational Sciences Institute

**MISSION**: Build a tightly linked network of **Agile Change Conductors** who are united in their passion to make a profound and lasting difference for the health of their community.

**VISION:** Transform healthcare for the better, for all, right NOW!

**VALUES**: Creativity, Excellence, Collaboration, Integrity

# The beginning of a Journey

**August 2012**
Conversation became an initiative within IU School of Medicine

**September 2015**
Enrolled 15 clinicians into the Graduate Certificate

**October 2015**
Started the GLPTN (~47 Million CMS award)

**January 2019**
Selected as one of 59 approved contractors nationwide for CMS $25 billion Healthcare Quality Services IDIQ

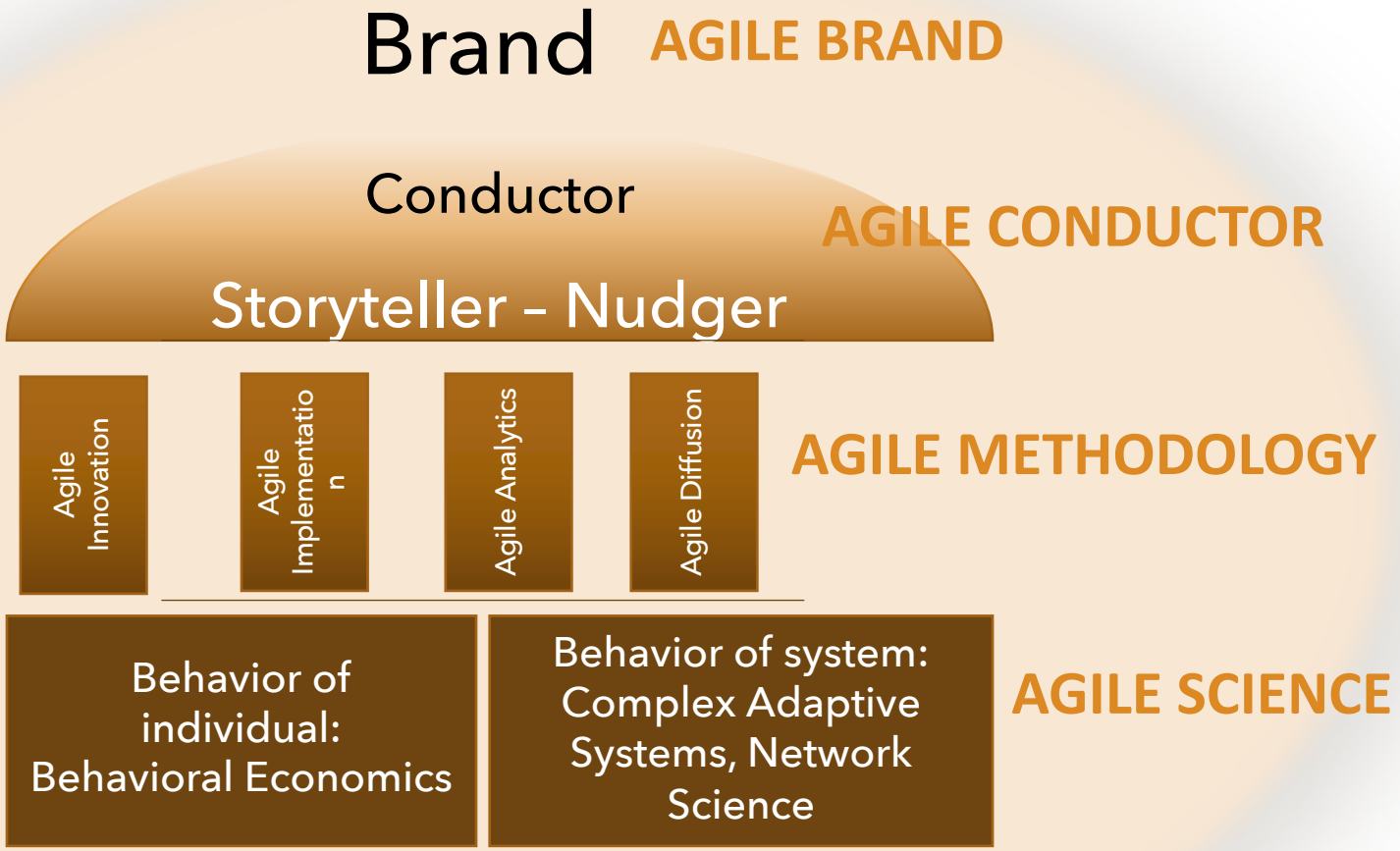
**August 2011**
Conversation began within IU School of Medicine

**September 2013**
The initiative was converted into the CHIIS

**October 2017**
Saved ~80 million via quality enhancement within the first 24 months of GLPTN

CHIIS
Center for Health Innovation & Implementation Science

# Building an Army of 6,000 Agile Change Agents



# Certificate Competencies

# Certificate Competencies Pt. 1

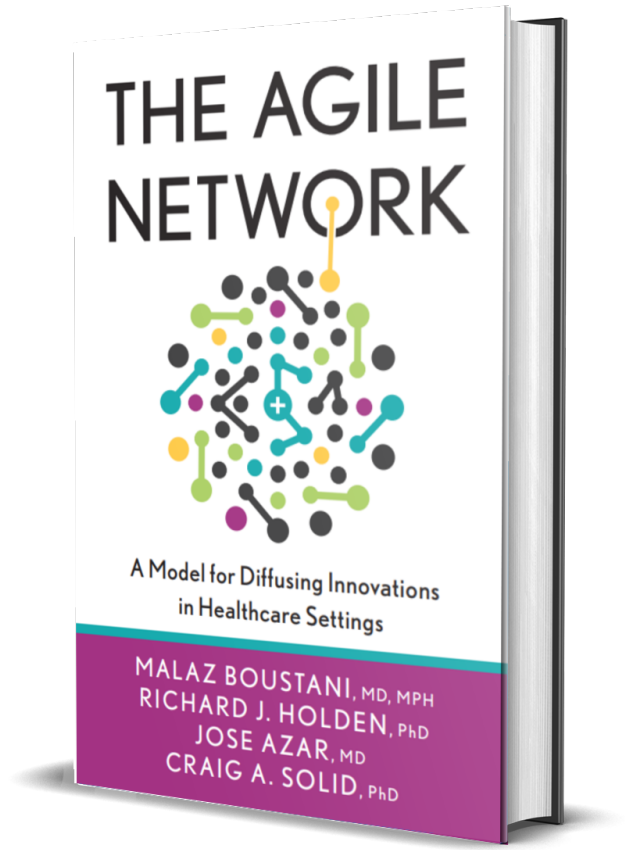
- Master Agile Science, Agile Processes, and Agile Mindsets
- A competent Nudger and story teller capable of facilitating a planned change At individual and organization level
- Communicate clearly and brand your competencies as an agile change conductor
- Innovation Forum facilitator

# Certificate Competencies Pt. 2

- Articulate the WHY, the What and the How of  the Agile Science, Processes, and Mindset
- See the  world through the lens of the complex adaptive system theory, Network science, and behavioral economics
- Leverage the framework of five factors and the source of variation frame work
- Acquire the Innovator DNA
- Architect agile units (Innovation, Analytics, and Nudge) as the building units of agile organization
- How to manage a planed change within a large network (N > 150 ) of semi autonomous human
- How to manage the behaviors of human facing the challenges of uncertainty, variability, and dynamic interdependency

# Certificate Competencies Pt. 3

- Select an evidence based healthcare solution (EBHCS).
- Develop innovative healthcare solution (IHCS) in the case of absence of an evidence based healthcare solution.
- Implement the EBHCS / IHCS successfully
- Evaluate the effectiveness of the EBHCS / IHCS
- Scale up the EBHCS / IHCS
- Diffuse the EBHCS /IHCS


THE AGILE NETWORK
A Model for Diffusing Innovations in Healthcare Settings
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# Building the Foundation

1. Behavioral Economics
2. Complex Adaptive Network
3. Network Science

Illustrated by Beth Traylor: Cohort 2019 CHIIS

# Building Structure – The Agile Processes

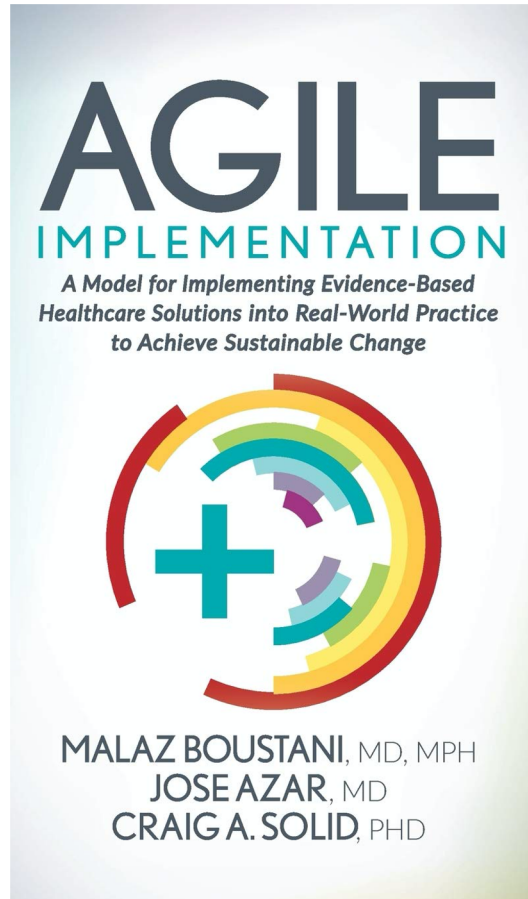
- Agile Implementation
- Agile Innovation
- Agile Analytics
- Agile Diffusion

Illustrated by Beth Traylor: Cohort 2019 CHIIS

# Tools for Success

- Storytelling
- Nudge
- Branding

Illustrated by Beth Traylor: Cohort 2019 CHIIS


AGILE
IMPLEMENTATION
A Model for Implementing Evidence-Based Healthcare Solutions into Real-World Practice to Achieve Sustainable Change
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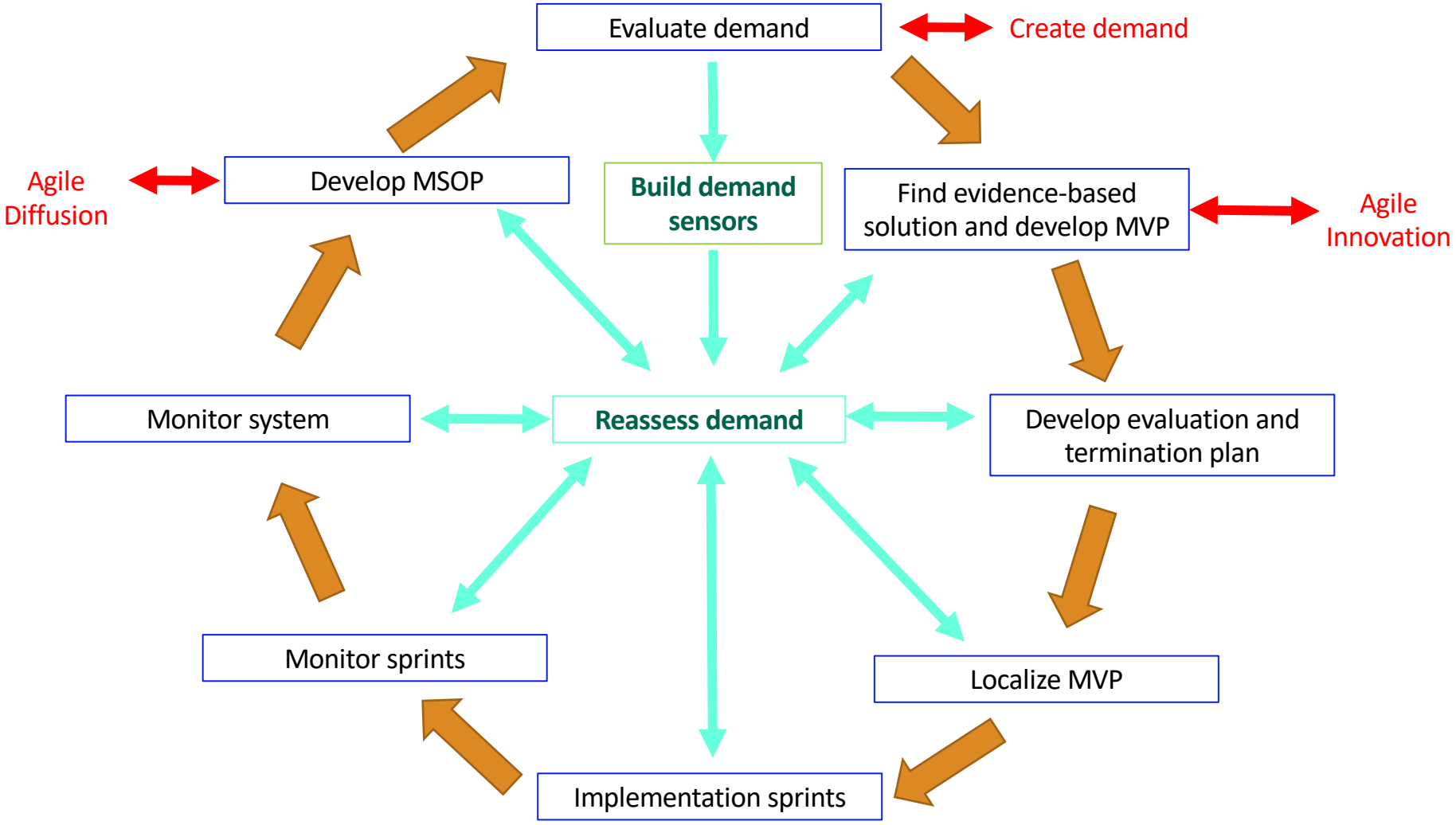


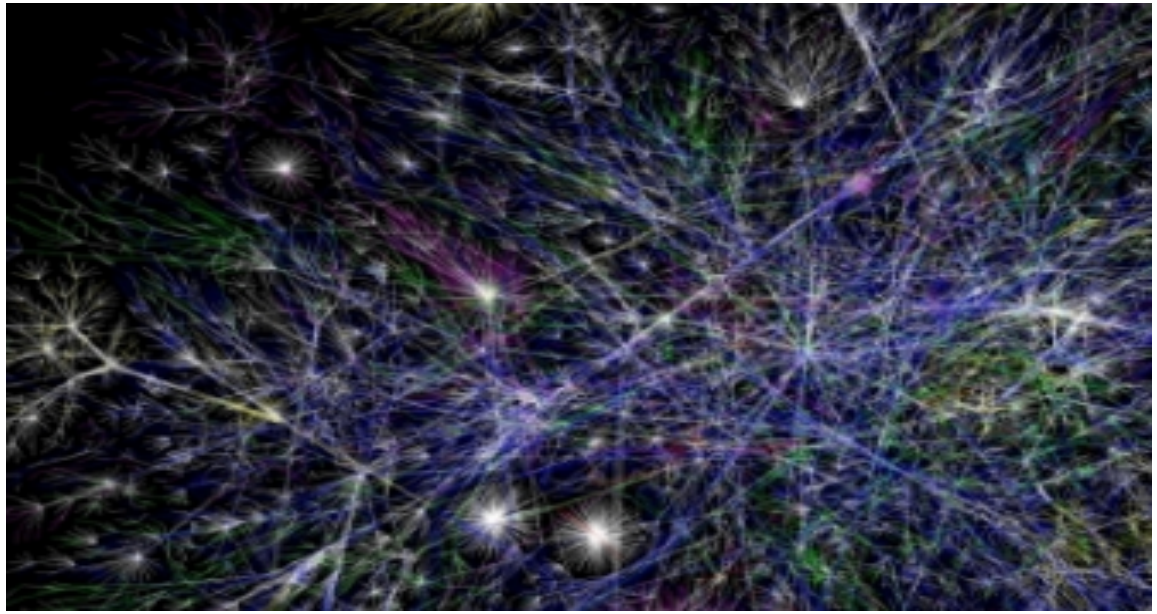

Illustrated by Andrew O'Brian: Cohort 2019 CHIIS

# Innovation & Implementation Science

- What does Innovation and Implementation Science mean to you?

# Our Innovation philosophies

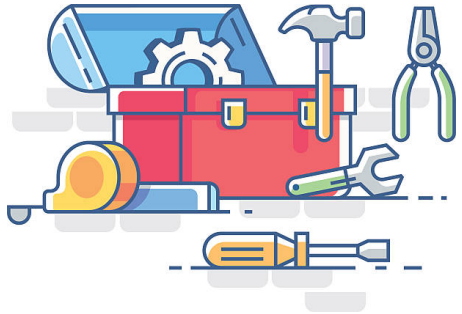
- Conversion of a new idea or a new **match** into a successful, scalable, and sustainable solution that provides high value for human everywhere.
- Successful conversion depends on
  - The innovator DNA*
    - Questioning, deep observing, experimenting, networking for discovery, and association
  - Diversity
  - Limited resources
  - **Harvesting Luck**
  - Agile mindset
  - Agile Innovation



*By Jeffrey H Dyer, Hal B Gregersen, and Clayton M Christensen

# IMPLEMENTATION SCIENCE

Implementation Science is Developing…



**TOOLS**

**PROCESSES**

**STRATEGIES**

for **rapid**, **efficient**, and **sustainable** implementation of evidence-based programs and practices in the local “real world” to accomplish the quadruple aim

# Why

# OUR CHALLENGE
# Healthcare 1.0


- **Healthcare providers encounter limited time, tight budgets, oversight, and governance**
- **Average time from research to practice estimated to be 17 years**
- **Harmful practices can remain in practice for a long time**

# Today's Health Care System

# OUR CHALLENGE

## It is NOT a “Knowledge” Problem

Every day, the scientific community publishes 75 trials and 11 systematic reviews[6]


**<15%** success rate of implementing [7]

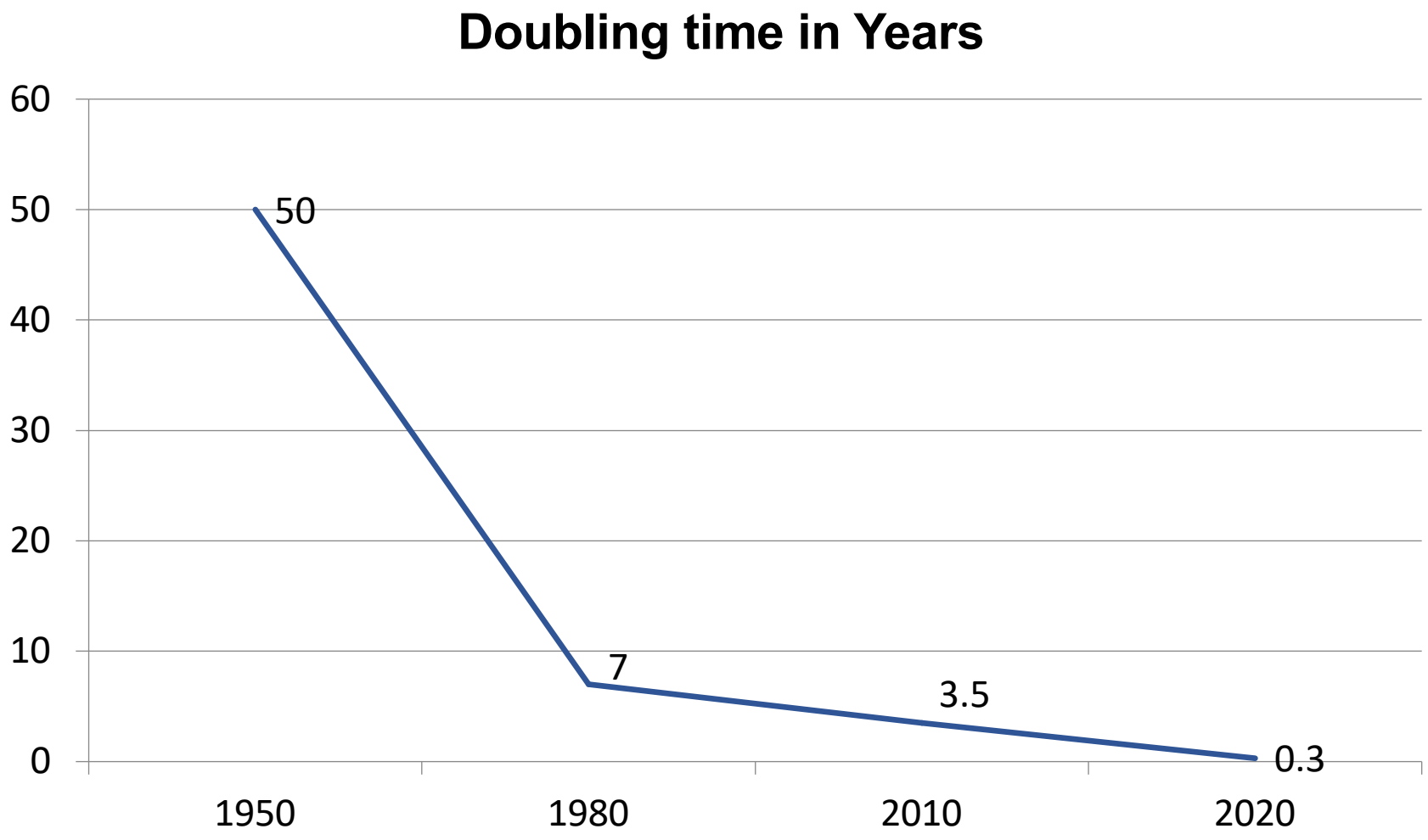

**17+** years to implement [8]


**<1%** of new knowledge is generalized into practice [9]


**$1 B+** for each new drug developed [10]

Smith et al, Best care at lower cost: the path to continuously learning health care in America. National Academies Press; 2013; Bastian et al, Seventy-five trials and eleven systematic reviews a day: how will we ever keep up? PLoS Med. Sep 2010; Green et al, Diffusion theory and knowledge dissemination, utilization, and integration in public health. Annu Rev Public Health. 2009.

# Growth in Medical Knowledge




Densen P. Challenges and opporunity facing medical educaiton. Trans Am Clin Climatol Assoc 2011;122:48-58

CHIIS
Center for Health Innovation & Implementation Science

# INDUSTRY IDEA COLLISION

## The new Healthcare System – Healthcare 2.0

Retail

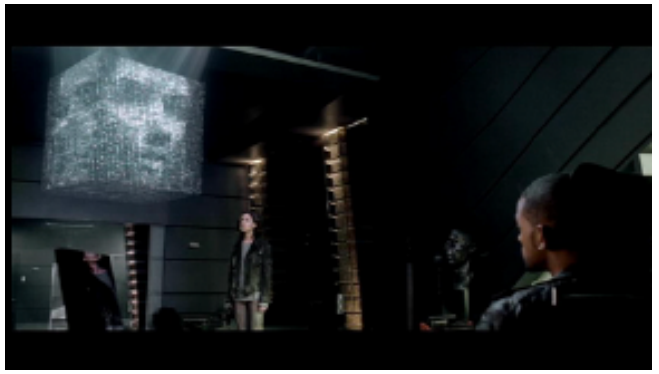
Banking

Bio Tech

Hospitality

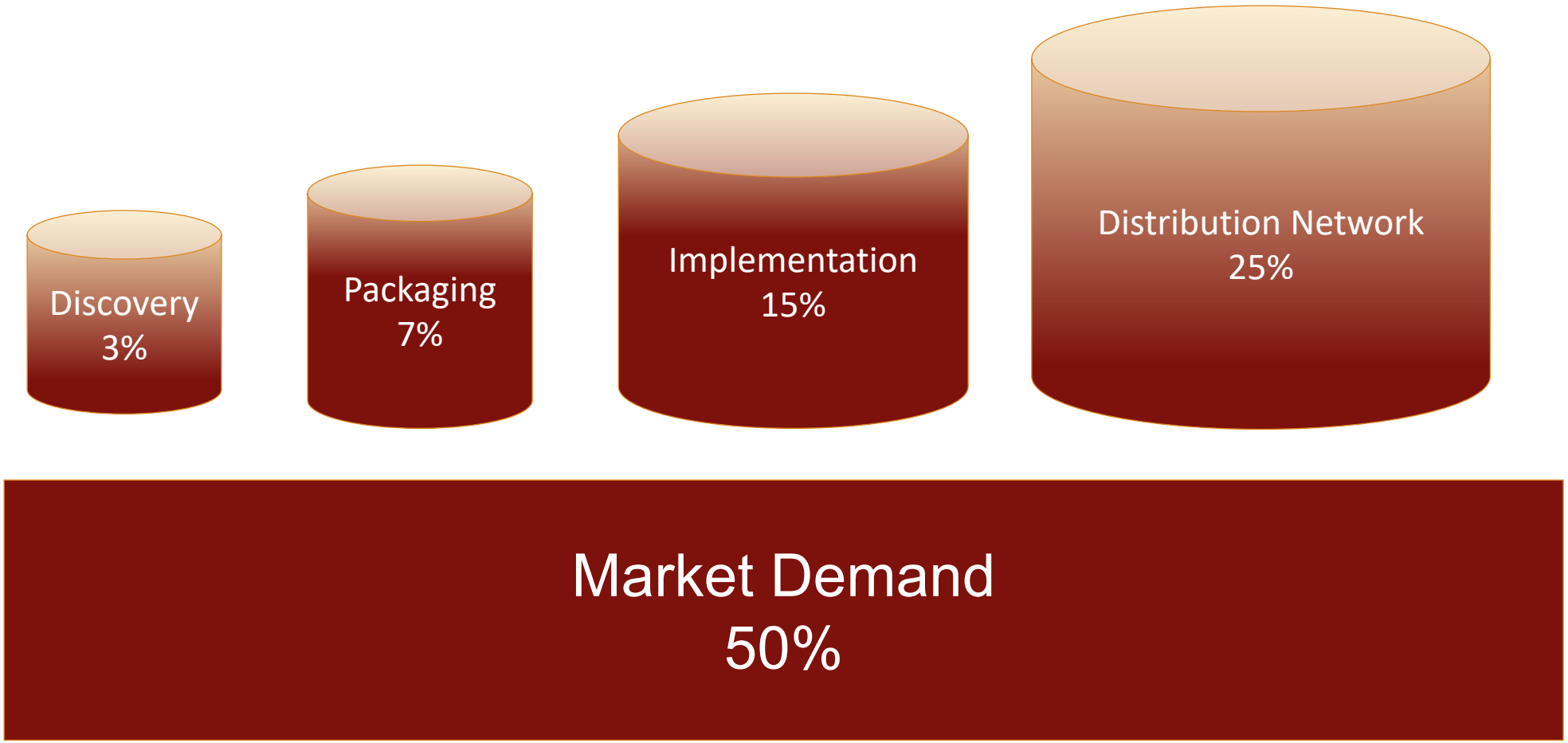
# HealthCare 2.0: Agile Network

- A collision of insights from five industries:
  - Health care (Precision Medicine and Population Health)
  - Hospitality (Brand Loyalty, Great and Personalized Customer experience)
  - Retail (Reliability, Scalability, Convenience, Network Distribution)
  - Technology (Automation, Constant innovation)
  - Banking (Automation, security).


- Agile network where highly engaging avatars provides personalized answers to 90% of healthcare related questions

# The Optimal Discovery-to-Delivery Resource Allocation



# What

# AGILE: Ask Google?

“Able to move quickly and easily”

“Able to think and understand quickly”

“Relating to or denoting a method of project management, used especially for software development, that is characterized by the division of tasks into short phases of work and frequent reassessment and adaptation of plans”

“Agile methods replace high-level design with frequent redesign”

# THE HISTORY OF AGILE AT IU CHIIS

- 2001: THE AGILE MANIFESTO
- 2010: AGILE IMPLEMENTATION 1.0
- 2015: AGILE IMPLEMENTATION 2.0
- 2015: AGILE INNOVATION 1.0
- 2014: AGILE ANALYTICS 1.0
- 2017: AGILE ANALYTICS 2.0
- 2019: AGILE INNOVATION 2.0
- 2019: AGILE DIFFUSION 1.0

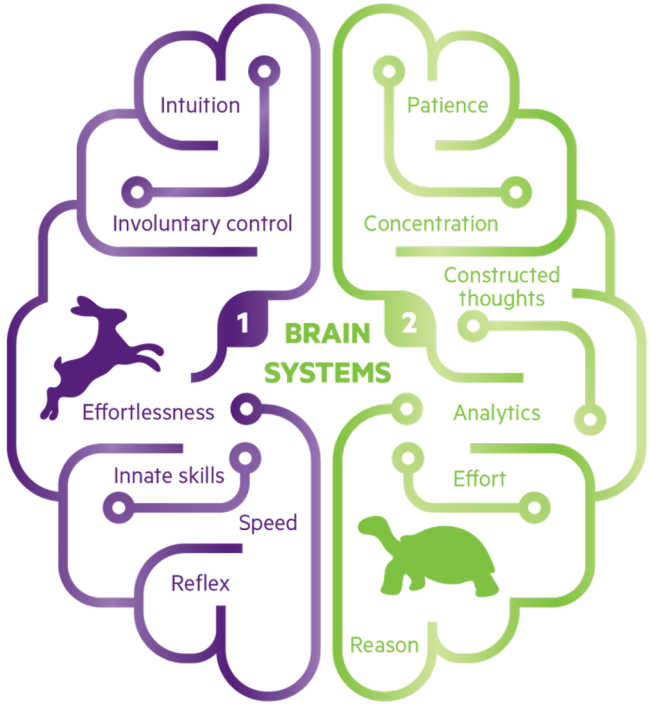
# Agile Science

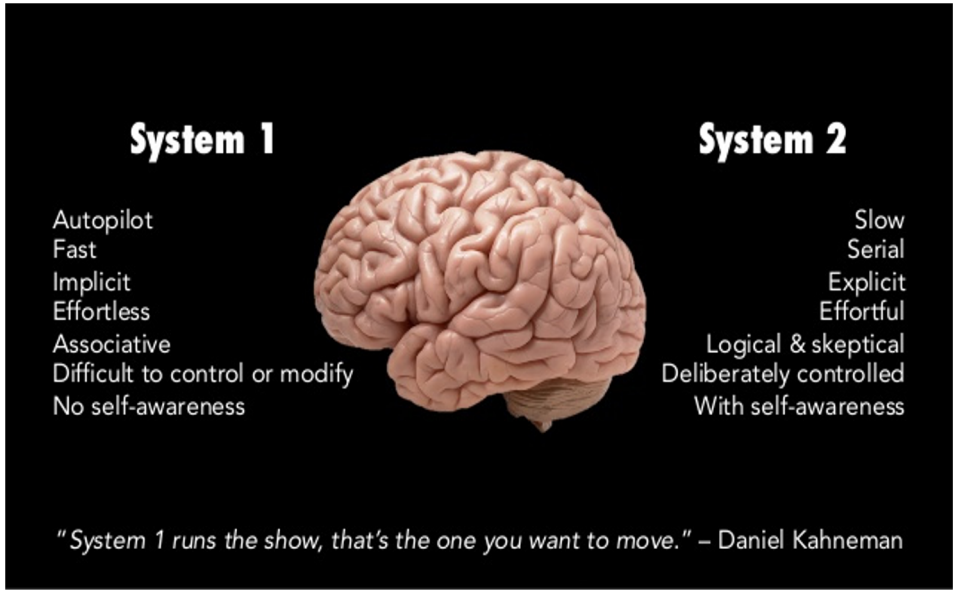
# BEHAVIORAL ECONOMICS DEFINED

A combination of economic incentives with insights from psychology about how people actually behave under real-world circumstances[6]

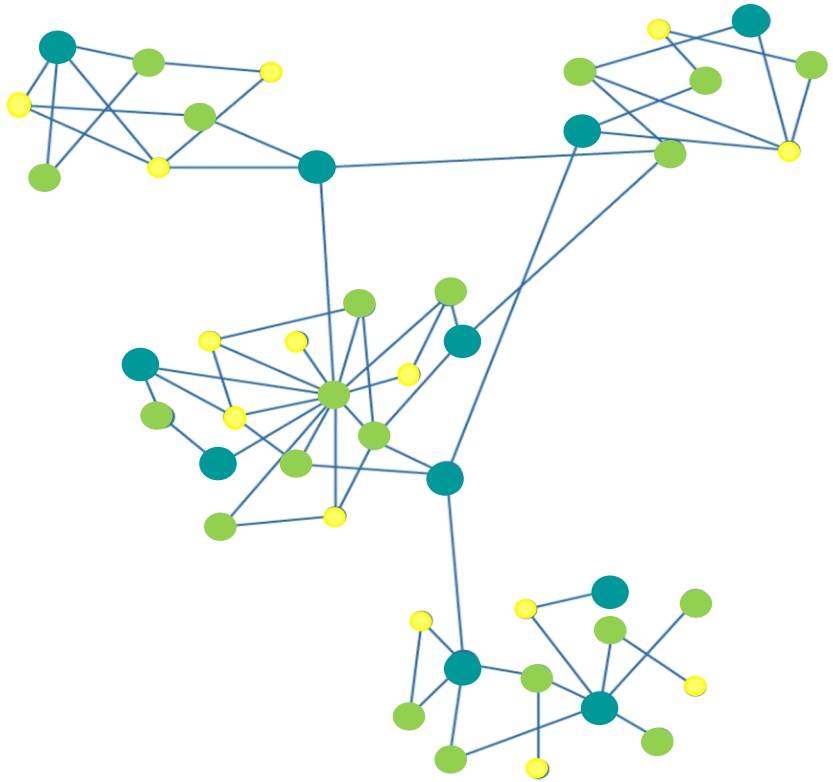
- People do not make decisions in a rational fashion
- Thoughts and choices are influenced by environment and context
- Human Decision Making Theory: **Two separate brain systems operate in decision making**

# Behavioral Economics



# Network Science



# COMPLEX ADAPTIVE SYSTEM

Kevin Dooley, defined Complex Adaptive System (CAS) as “a group of semi-autonomous agents who interact in interdependent ways to produce system-wide patterns, such that those patterns then influence behavior of the agents.”

# Complex Adaptive Healthcare Delivery Social Network

- Network that is open, dynamic, flexible, adaptive and complex
- Complex due to:
  - **Numerous interconnected, semi-autonomous, competing, and collaborating members**
- Adaptive due to:
  - Capability of **learning** from prior experiences
  - **Flexibility to change its members** connecting patterns to fit better with its surrounding environment

# Complex Adaptive Healthcare Delivery Social Network

- **Each CAS is unique in its:**
  - Member diversity
  - Member interactions
  - Surrounding environment
  - Previous history
  - Evolving and learning process

# Complex Adaptive Health Care System

The connecting patterns of its members are:

- Dynamic
- Change over time

The performance of a CAS fluctuates over time due to:

- Response to the stress or the fitness requirements of its surrounding environment

# Agile Mindset

# The Agile Mindset and its Principles

- Safe Culture
- Feedback
- Sprints of Minimally viable prototypes

# Safe Culture

Establish **a psychologically safe** climate where members

- Feel comfortable giving and receiving **feedback** and direction,
- Have **time and space** to collaborate and exchange information,
- Foster appreciation for **“good enough”** rather than perfect solutions.

# Feedback

- Embed **sensors** within the internal and external environment of the healthcare delivery network capable of capturing both signal and noise including gossip, rumors, and hallway conversations.

- Invest in timely, nonjudgmental, and actionable **feedback** loops.

- Activate **networks** of information flow, identifying information hubs, local communities, and bridges between communities, for rapid information spread

# Sprints of **M**inimally **V**iable **P**rototypes

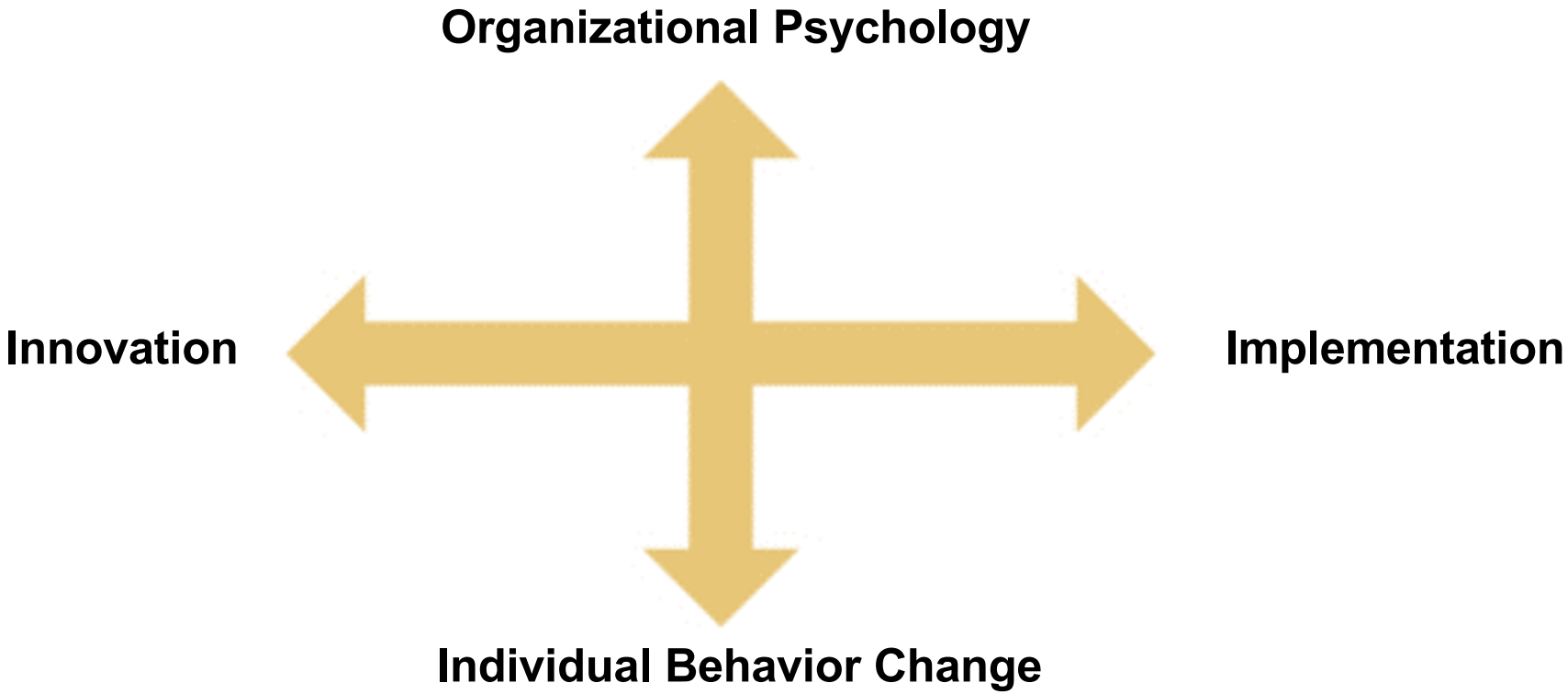
- Develop **minimally viable products (MVPs)**
- Quickly test their performance in real systems through rapid experimentation.
- Conduct **sprints** in the target local environment to evaluate the MVP and revise based on gathered feedback

# How

# The Agile Processes

# AGILE Processes

## Never Ending, Dynamic Dance



# The Agile Innovation Process

**Planning:**

**1. Confirm Demand**

Verify support for solving the correct problem

**2. Study the Problem**

Investigate the current state to identify needs

**3. Scan for Solutions**

Scout and analyze existing solutions

**4. Plan Evaluation and Termination**

Determine when to proceed with solution or stop and reflect

**Execution:**

**5. Ideate and Select**

Collect ideas and select top candidates

**6. Do Innovation Sprints**

Prototype, test, prototype, test, prototype, test

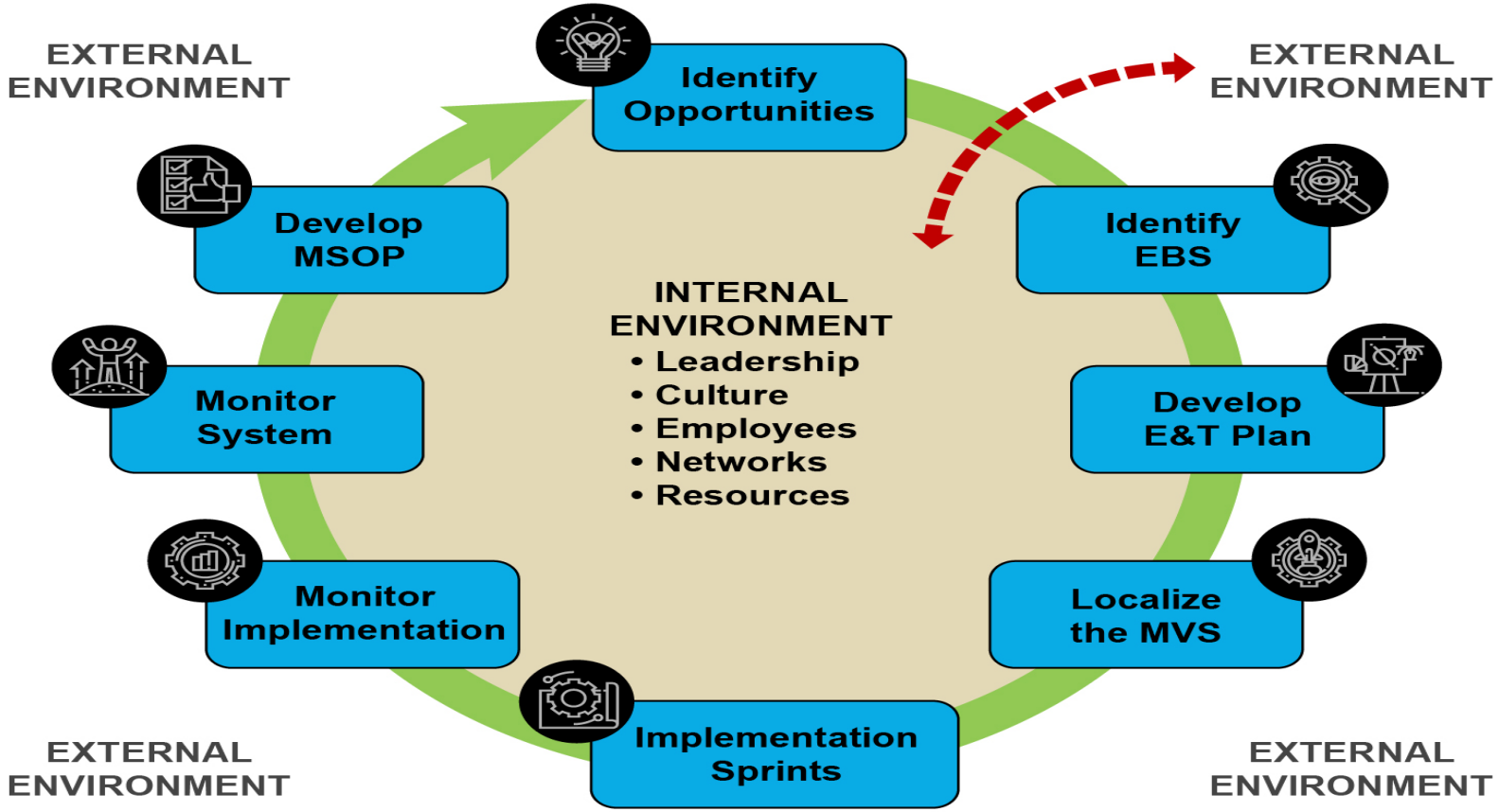
**7. Validate Solutions**

Test for expected and unexpected results

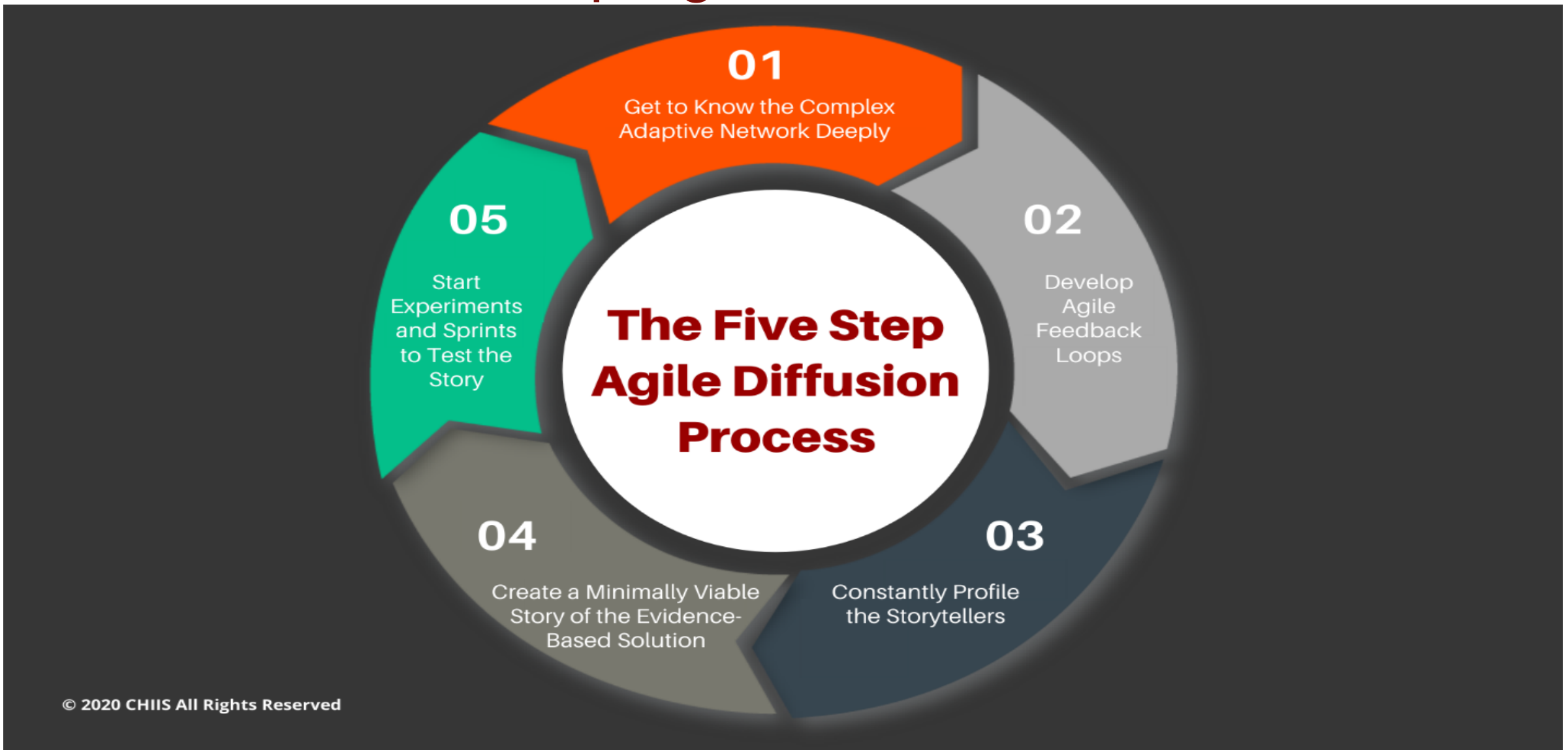
**8. Package for Launch**

Create hand-off package: business plan + MVP

# Agile Implementation (AI)



# The Five Step Agile Diffusion Process



# Agile Toolbox

# Agile Toolbox

1. Agile Framework
2. The Agile Units
3. Nine Principles of change
4. Agile Processes
5. Story telling
6. Innovation Forum

# Tasks

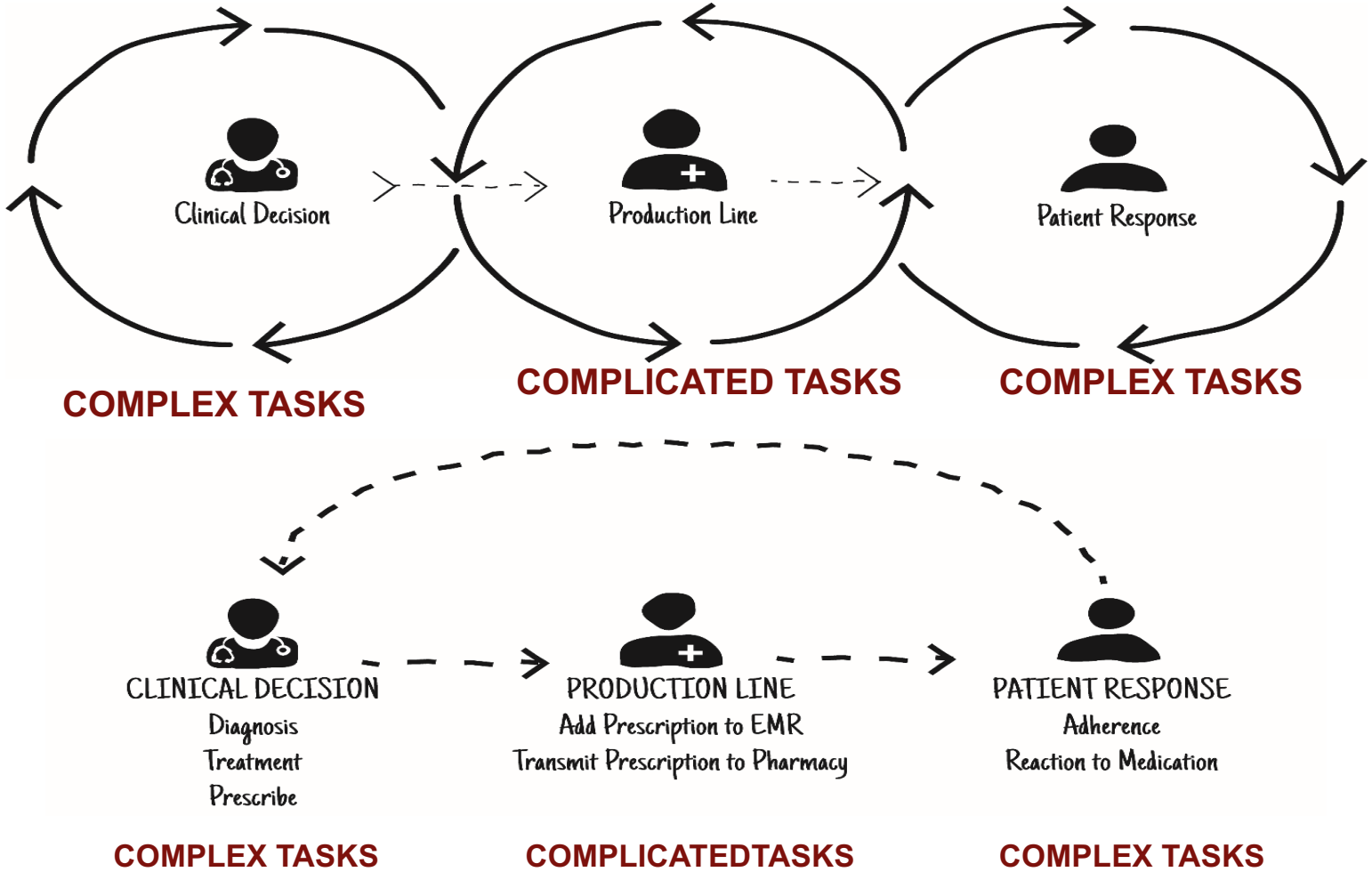
## Complicated

- Predictable
- Algorithmic
- Independent of worker personality and uniqueness

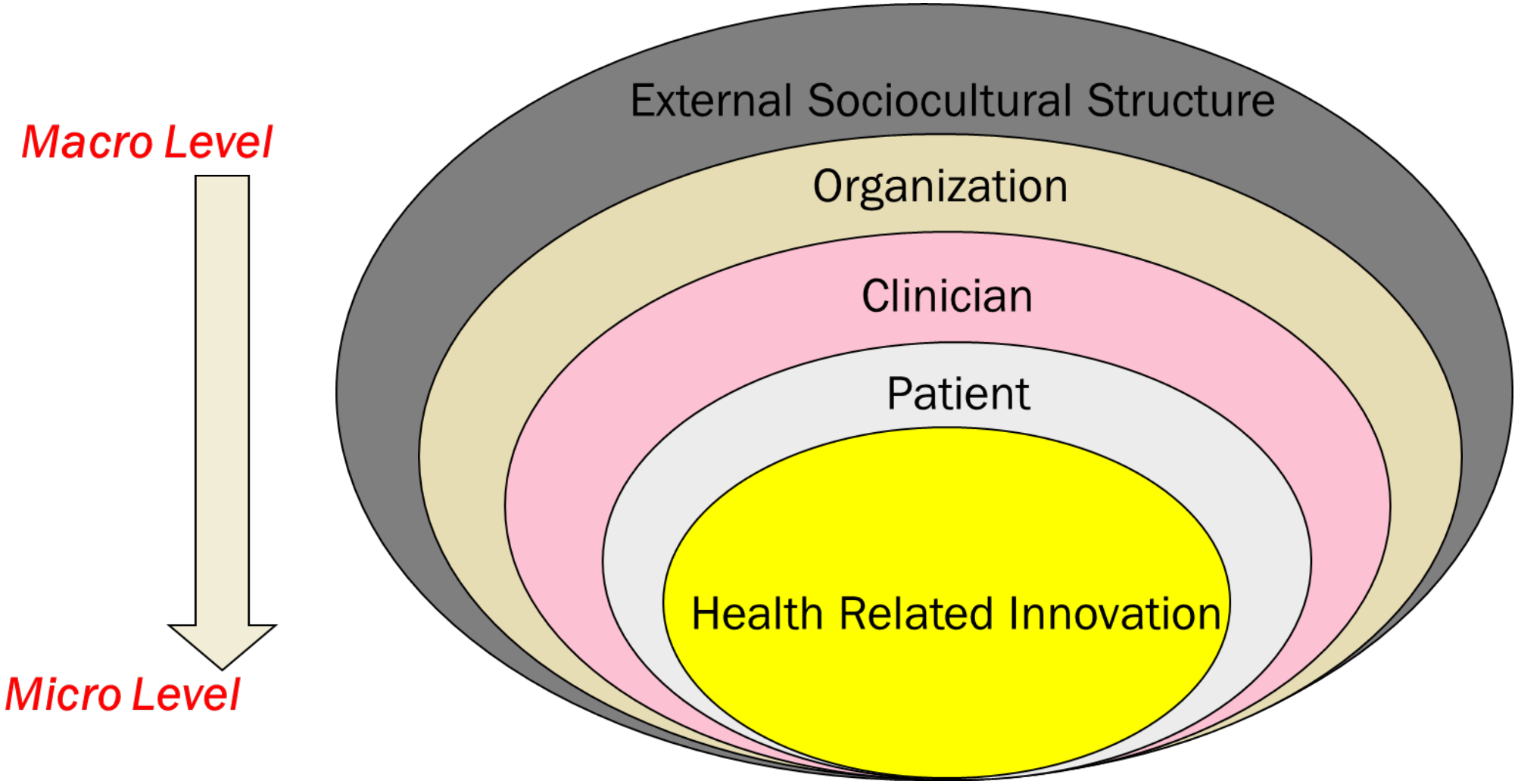
## Complex

- Unpredictable
- Heuristics
- Dependent on worker personality and uniqueness

# THREE SOURCES OF VARIATION

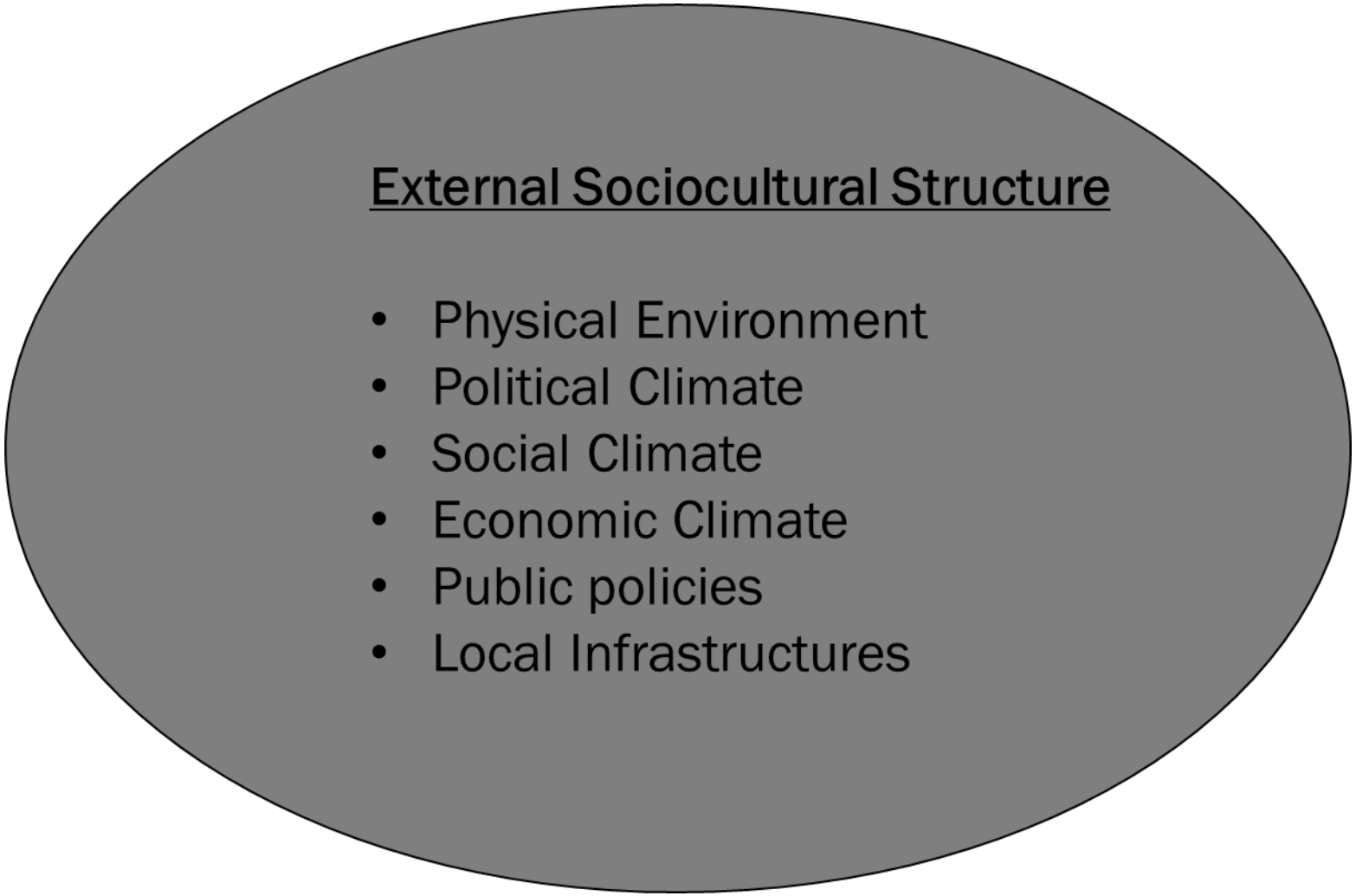


# The Five Factors Framework




Chaudoir et al, Implementation Science 2013; 8:22

# The Five Factors Framework Impacting Implementation Outcomes

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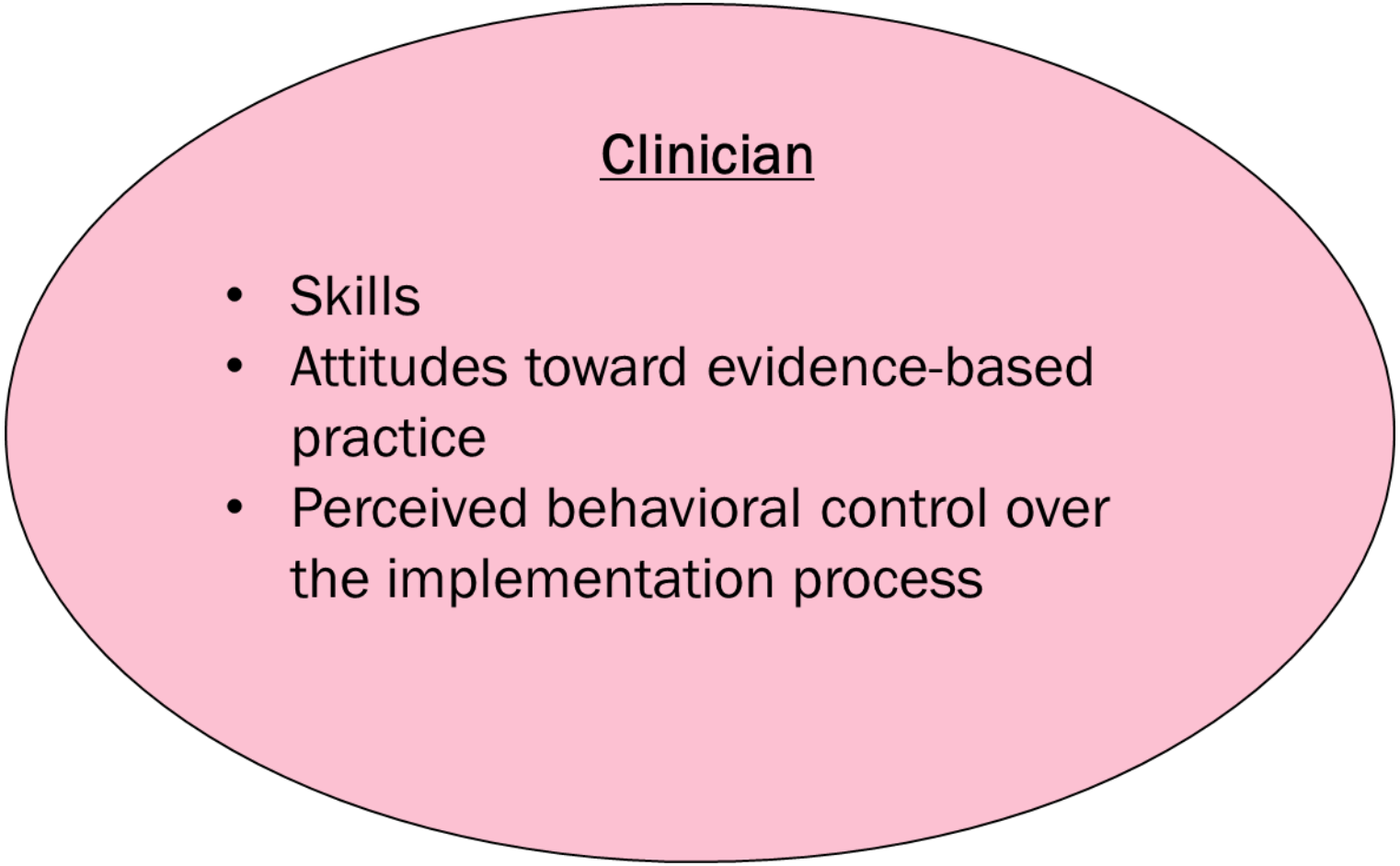


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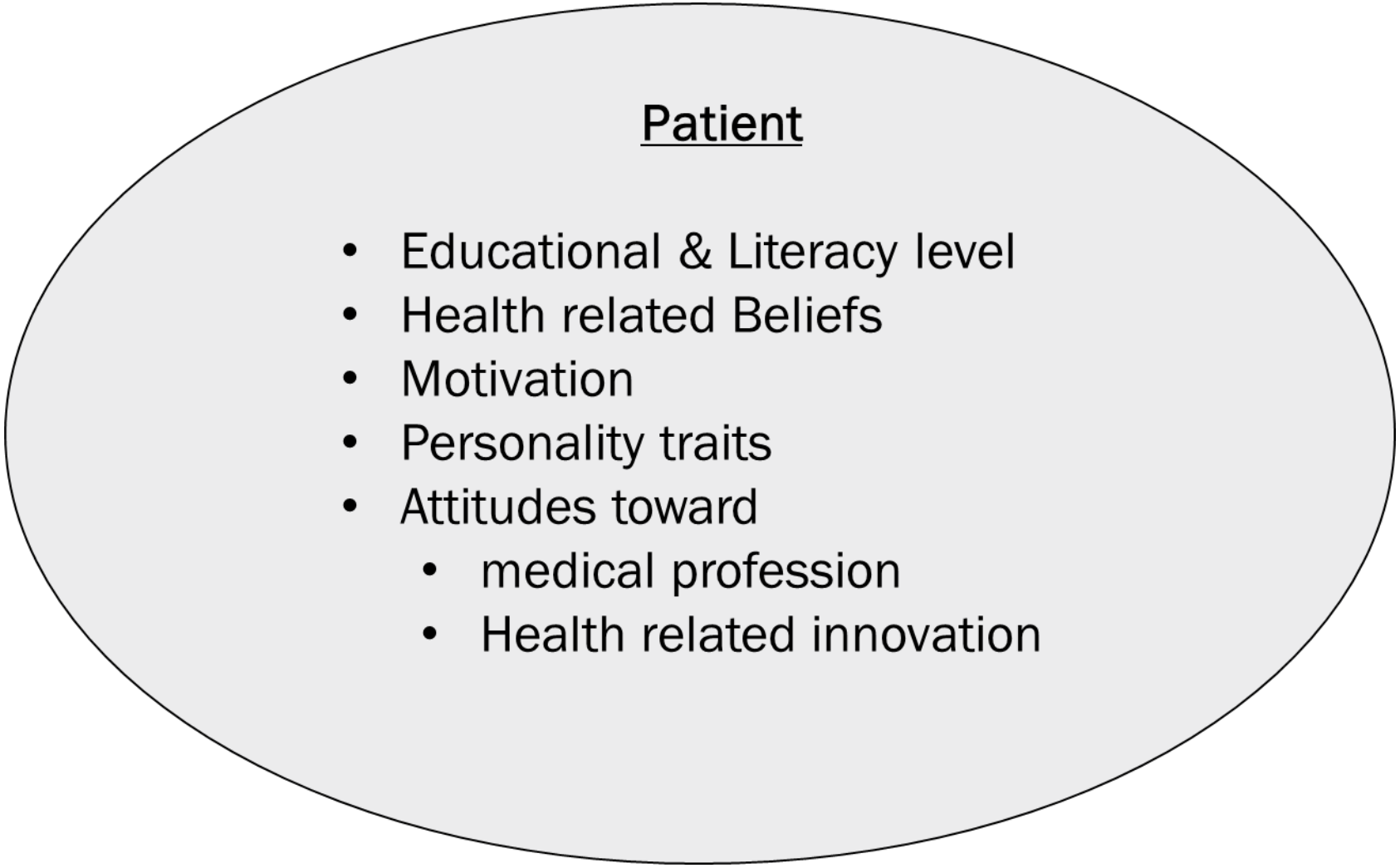


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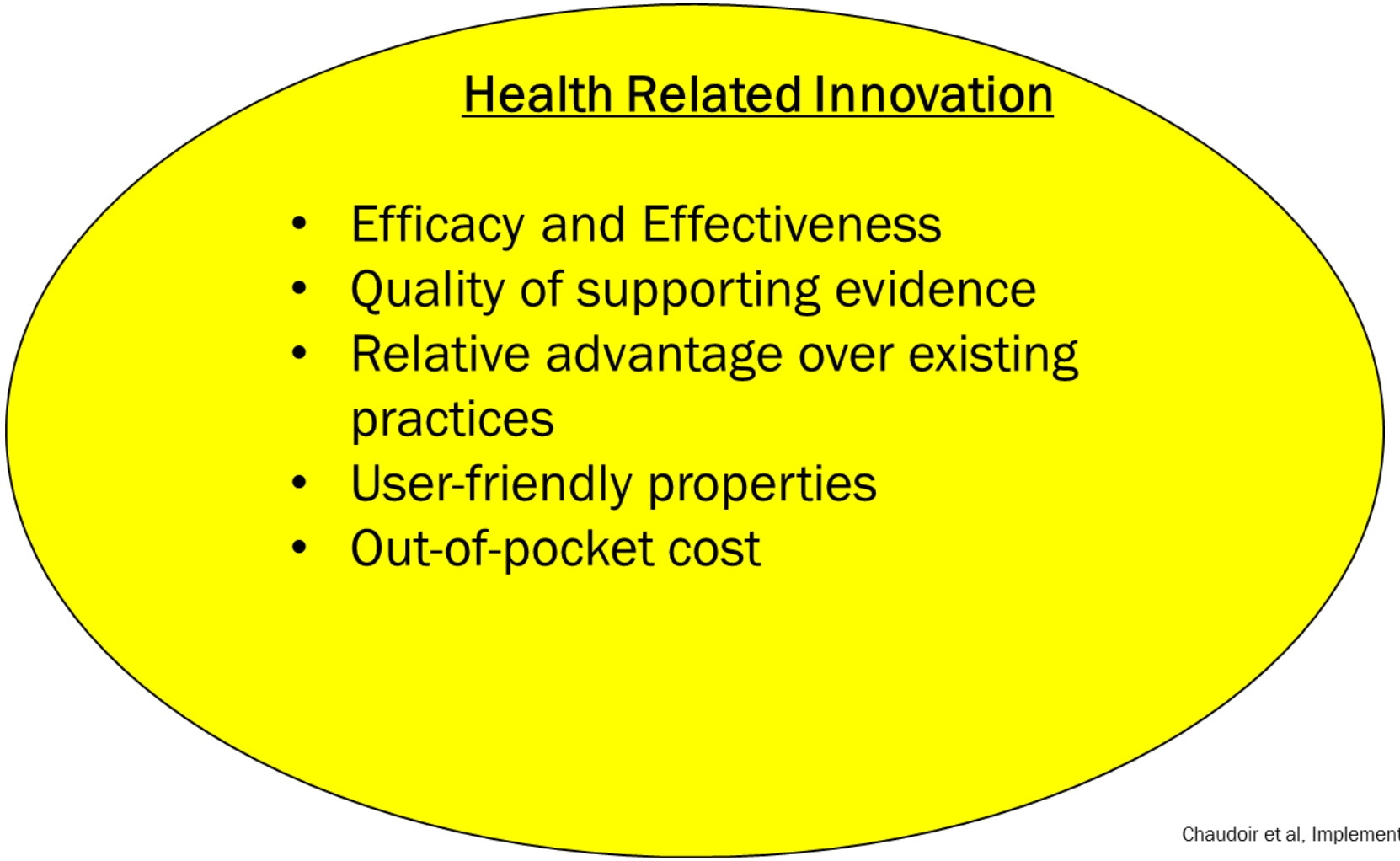


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# Nine Principles of Introducing a Change in CAS

1. View your system through the lens of complexity
2. The “good enough” vision with minimum specifications
3. Balance between clock ware and swarm ware:
    - Data and intuition
    - Planning and acting
    - Safety and risk

# Nine Principles of Introducing a Change in CAS

4. Foster the “right” degree of information flow, diversity and difference (the edge of chaos)
5. Uncover and work with paradox and tension
6. Go for frequent experimentations, let direction arise

*You don’t have to be "sure" before you proceed with anything*

# Nine Principles of Introducing a Change in CAS

7. Listen to and be aware of the “shadow system”:
   - Informal relationships
   - Gossip
   - Rumors
   - Hallway conversations
8. Allow emerging behaviors to grow out of your complex systems
9. Build a community of members who collaborate and compete

# INNOVATION FORUM

Group-based engagement and problem solving platforms

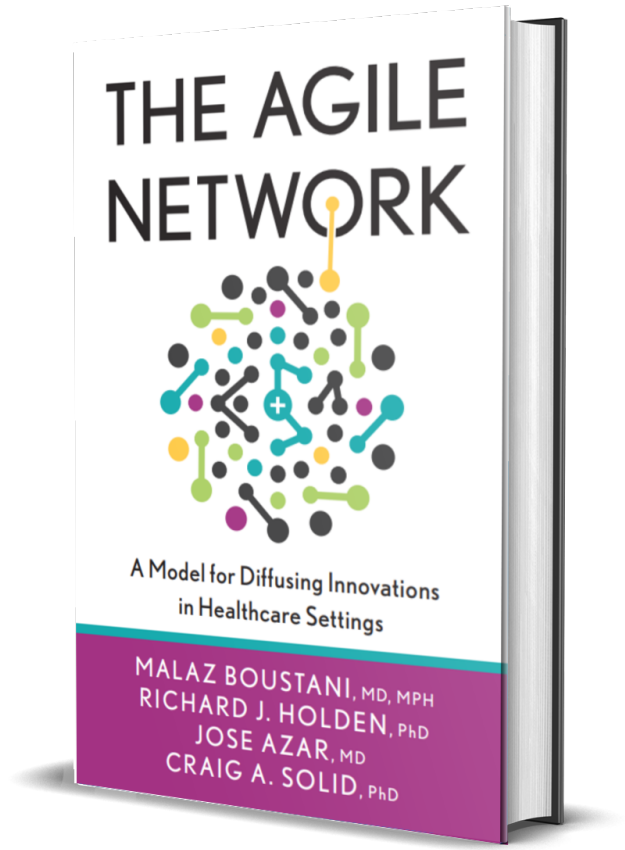
- Short presentation
- Clarifying questions
- Solution Generation
- Summarize Feedback
- Open Discussion

# INNOVATION FORUM RULES

1. The presenter is no longer allowed to speak
2. This is a time for solution generation, not theoretical discussion
3. Everyone will get a turn to provide a solution
4. Please do NOT interrupt another person
5. We are looking for POSITIVE solutions

# Reflective Adaptive Process (RAP)

- Supportive leadership
- Vision, mission, and shared values
- Diverse implementation team
- Time and space
- Tension and discomfort
- Continuous and timely feedback loop
- Facilitator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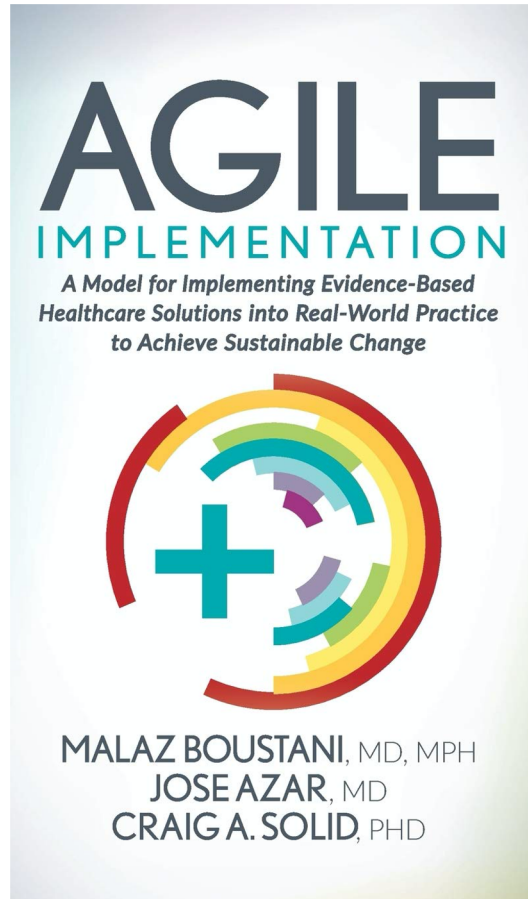
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