Process Improvement Theory and Application

Brandon Bennett

HST 184 Health Information Systems to Improve Quality of Care in Resource Poor Settings

MIT

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Agenda

- Brief History of Quality Improvement
- System of Profound Knowledge
- Systems thinking
- Model for Improvement

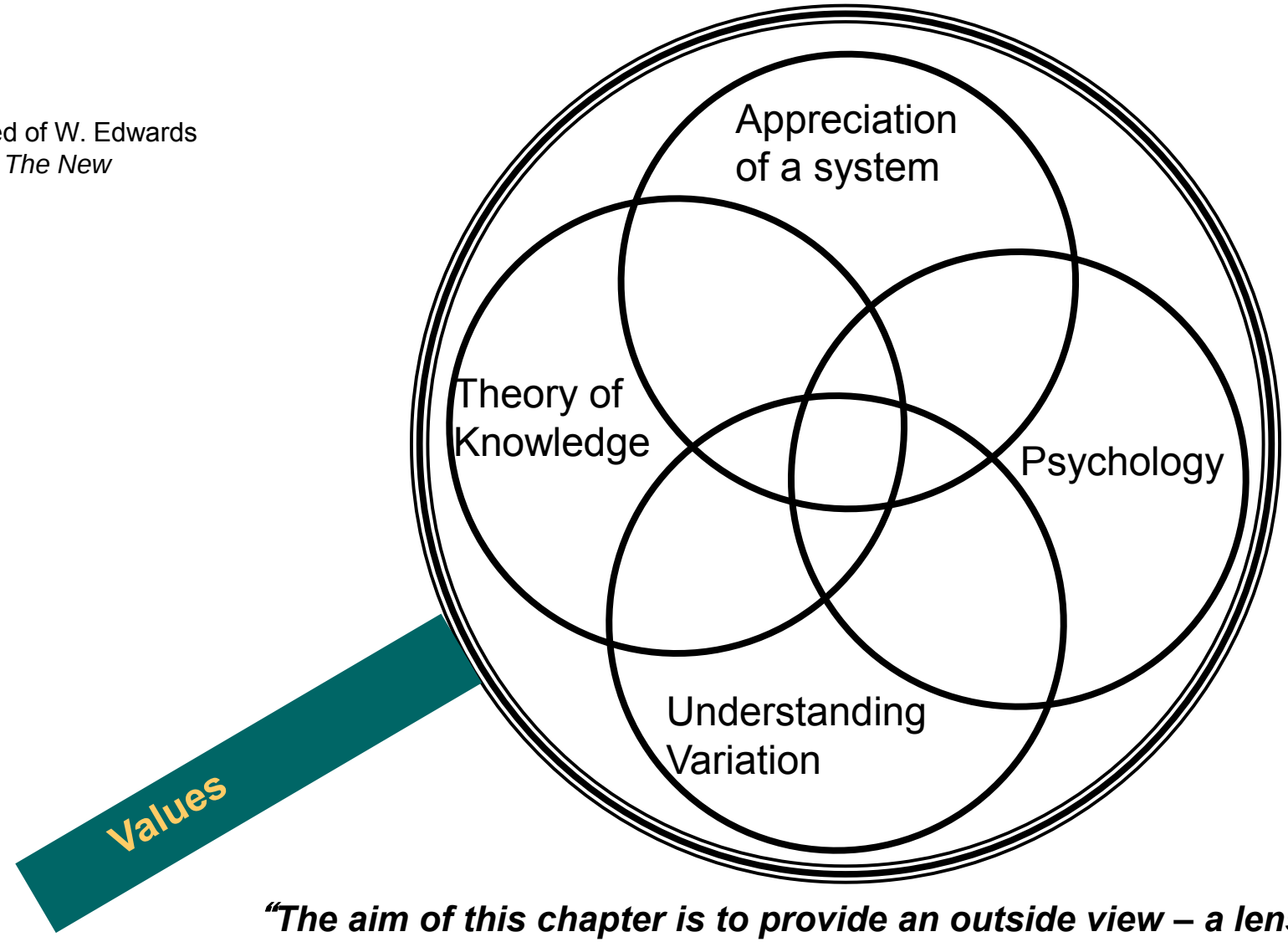
Quality Improvement – A brief History

Three key influences:

- W.E. Deming's - System of Profound Knowledge
- Walter Shewhart's – understanding variation through Statistical Process Control
- Joseph Juran – Juran's Quality Trilogy

Deming's System of Profound Knowledge

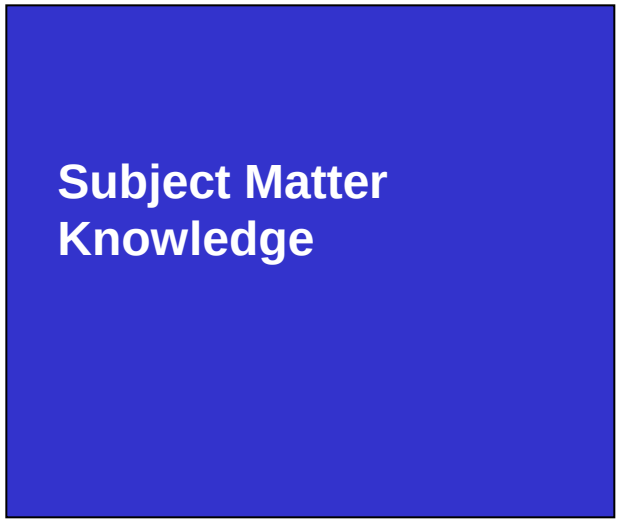
Image removed of W. Edwards Deming book, *The New Economics*.

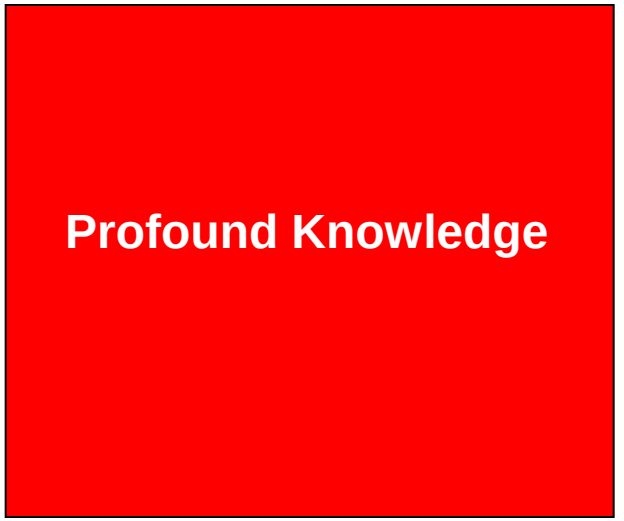


"The aim of this chapter is to provide an outside view – a lens – that I call a system of profound Knowledge. It provides a map of theory by which to understand the organizations that we work in."

Two Types of Knowledge

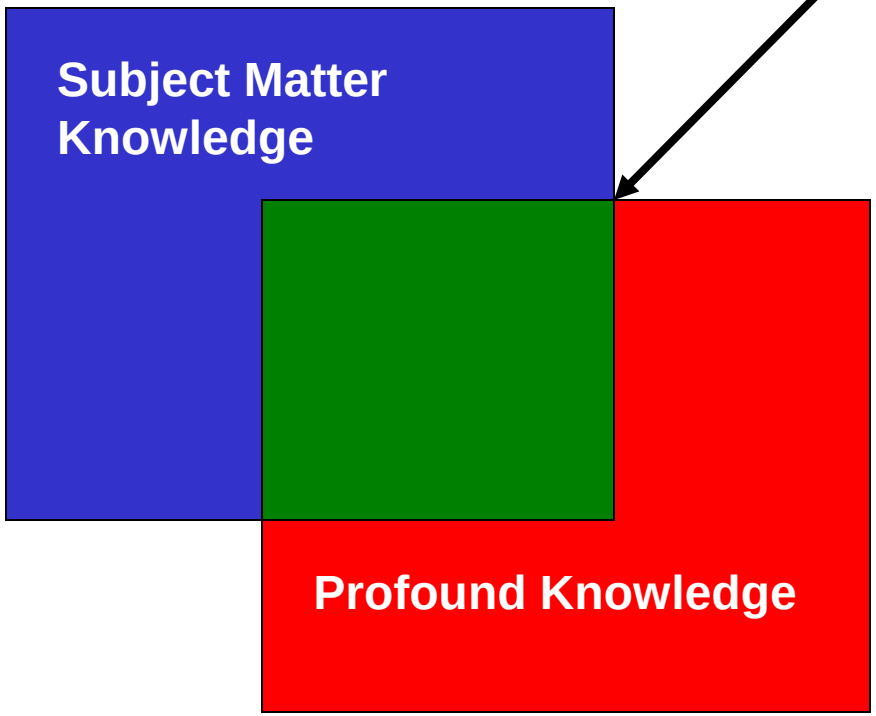
Subject Matter Knowledge: Knowledge basic to the things we do in life. Professional knowledge.





Profound Knowledge: The interaction of the theories of systems, variation, knowledge, and psychology.

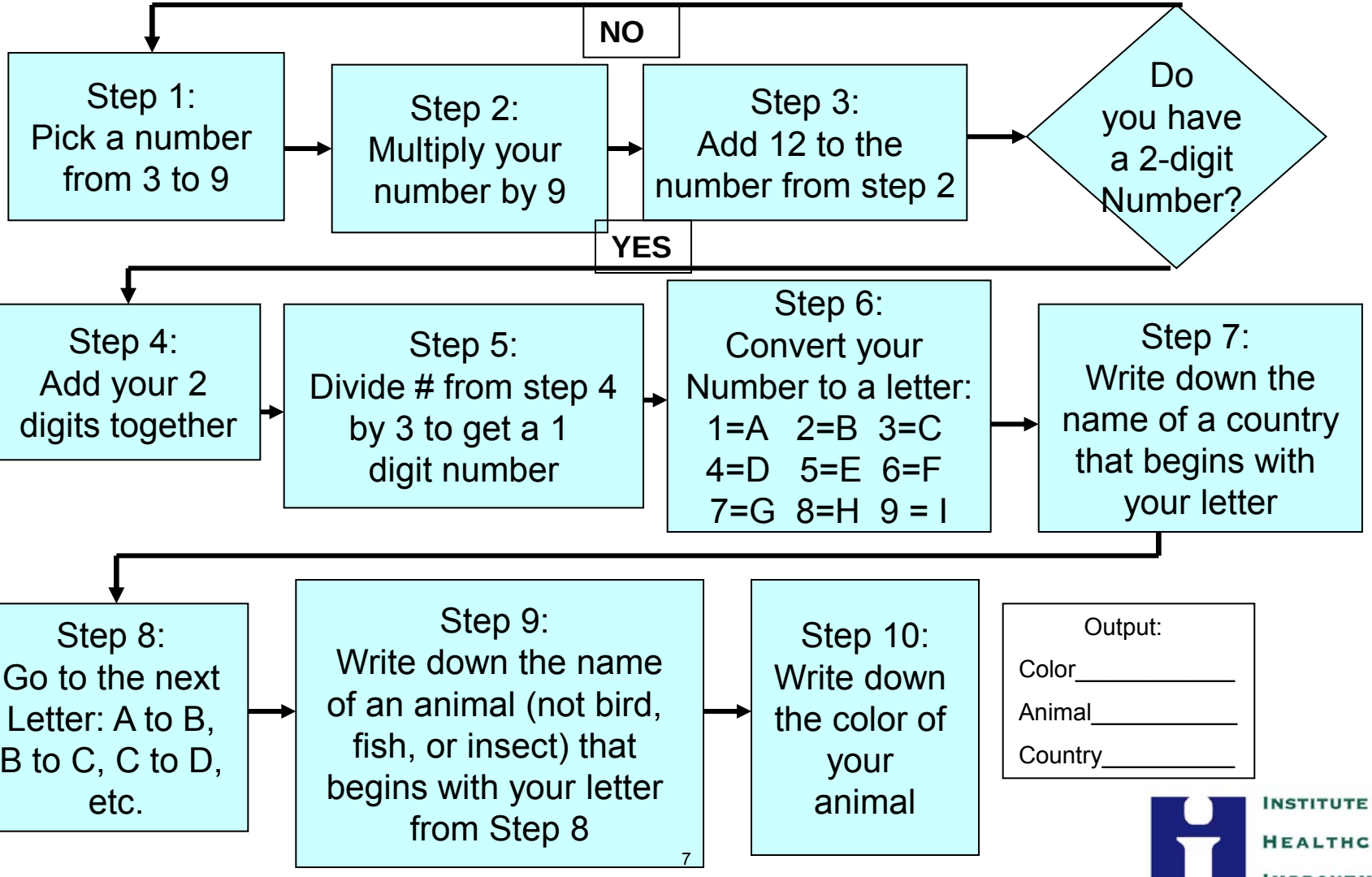
Knowledge for Improvement



***Improvement*: Learn to combine subject matter knowledge and profound knowledge in creative ways to develop effective changes for improvement.**

Langley: 76

Activity 1



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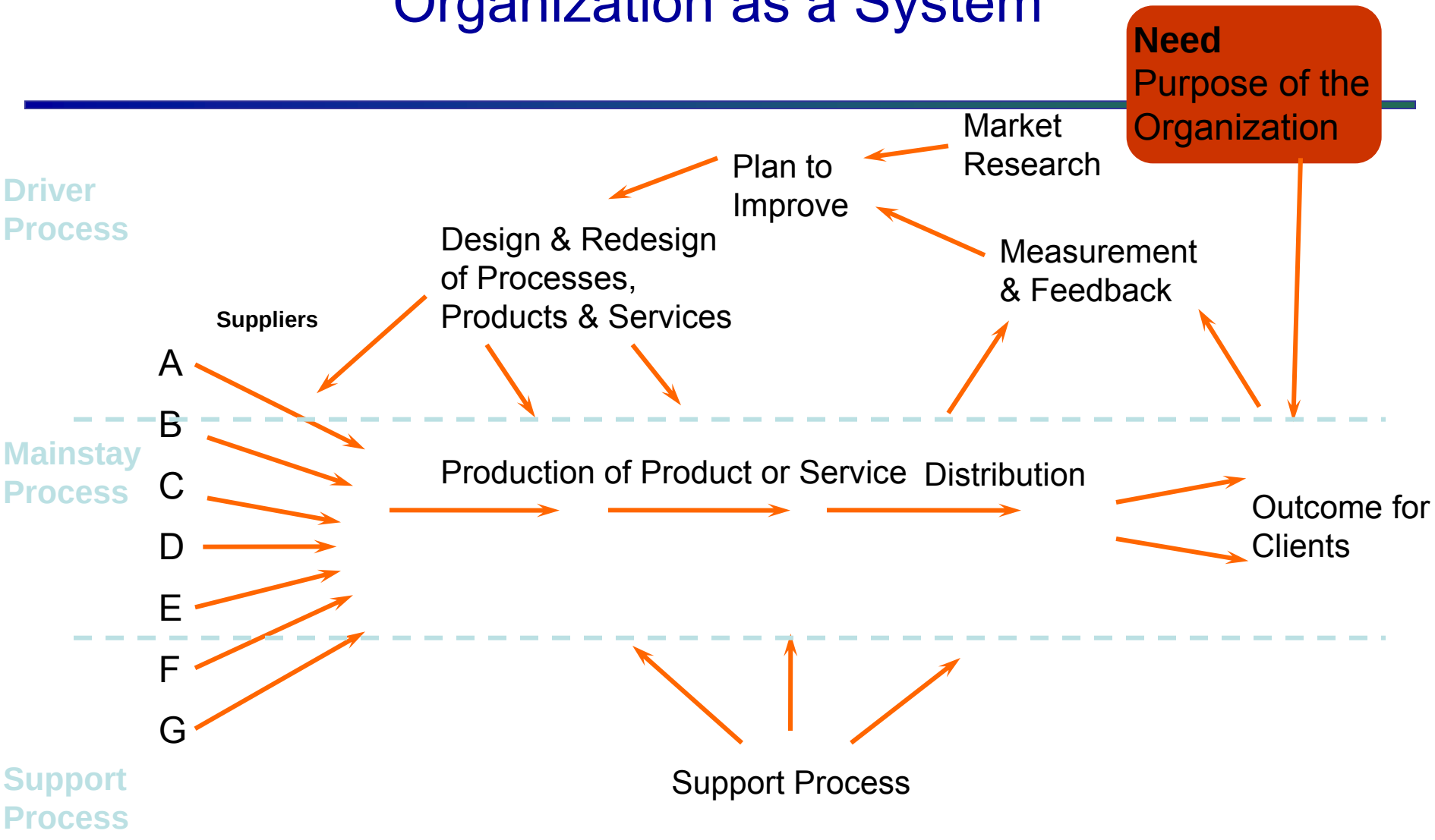
Understanding Systems

- What is a system?
  - —System = a collection of processes working together to produce a defined output

- "Every system is perfectly designed to achieve the results it gets"
  - » Paul Batalden – Dartmouth

Linkage of Process

Organization as a System



Courtesy of Cliff Norman. Used with permission.

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Process Mapping

- What is a process map?

- Simply put, it is a way of visualizing all the steps which make up a process

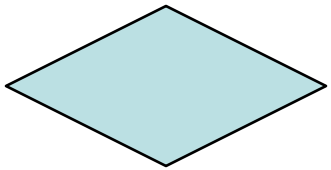
Process Map

- Related Terms/Tools
  - Flow Chart/Diagram
  - Causal Loop Diagram
  - Value Stream Analysis
  - Swim Lane diagram (Matrix/Group Flow Diagram)
  - Others?

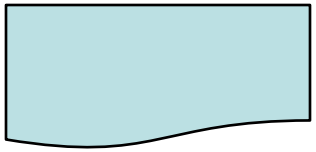
Nomenclature

Fig 10-2, Improvement Handbook

A Rectangle indicates that an activity is being performed. A description is usually displayed inside the rectangle

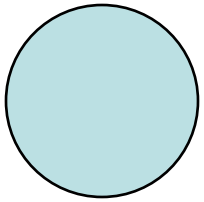


A Diamond represents a decision point in the process. Usually a question is displayed inside the decision symbol. Possible answers to that question then form exit routes from the diamond



A Document symbol represents a document that is either an input or an output of a process. A description of the document is displayed inside the symbol

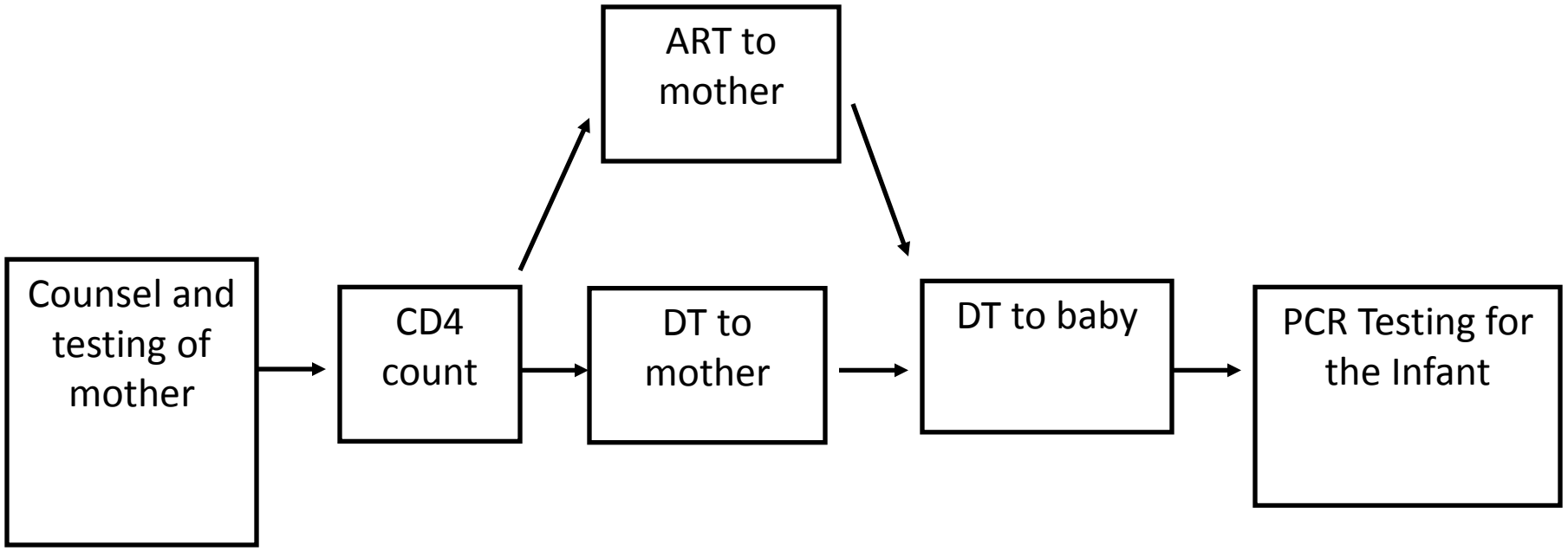
A Terminal symbol identifies the “Start” or “End” of a process



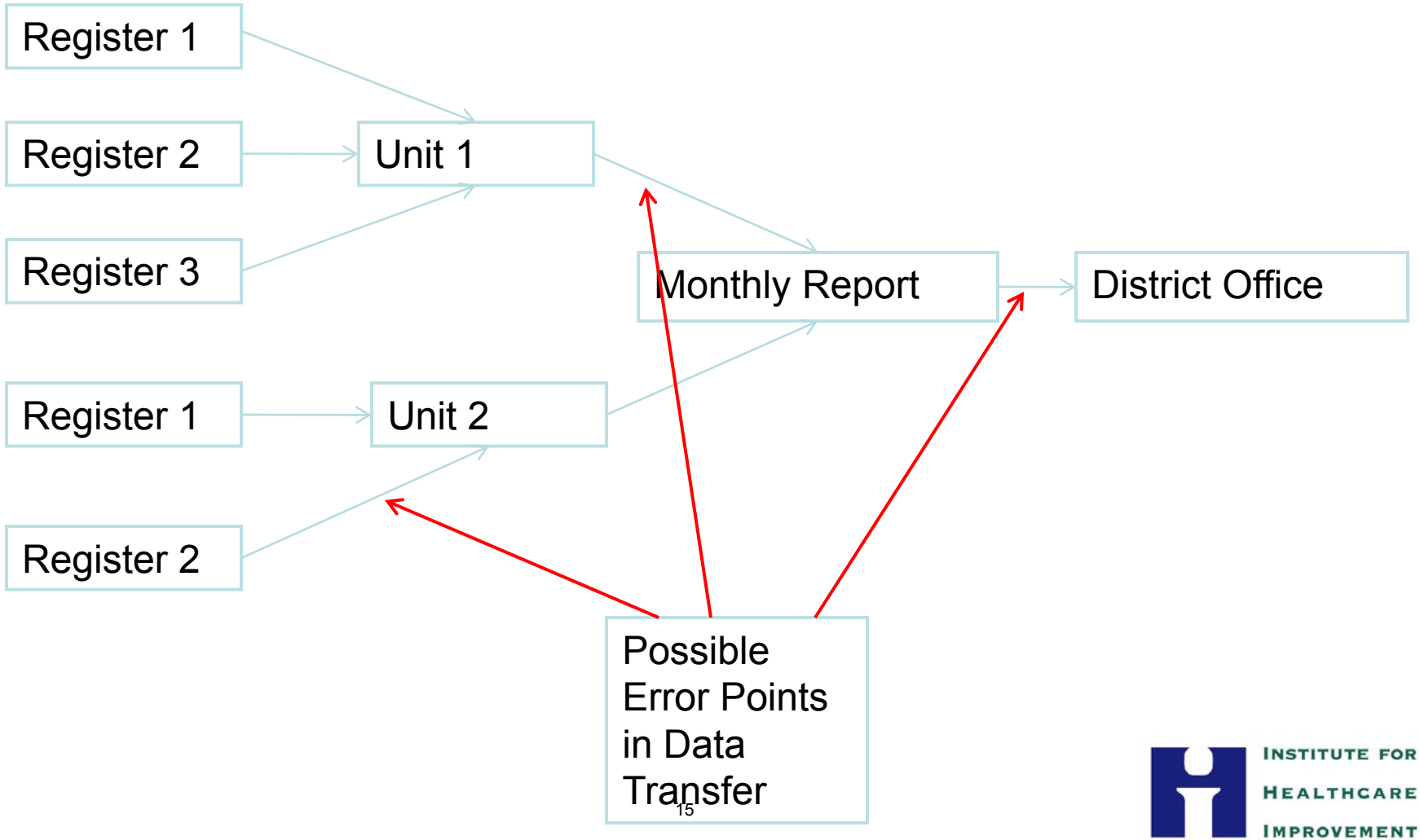
A Connector Symbol is used to show a branch or extension of a flow diagram

Arrows represent the direction of flow for a process

Simple Example



Data Flow Diagram



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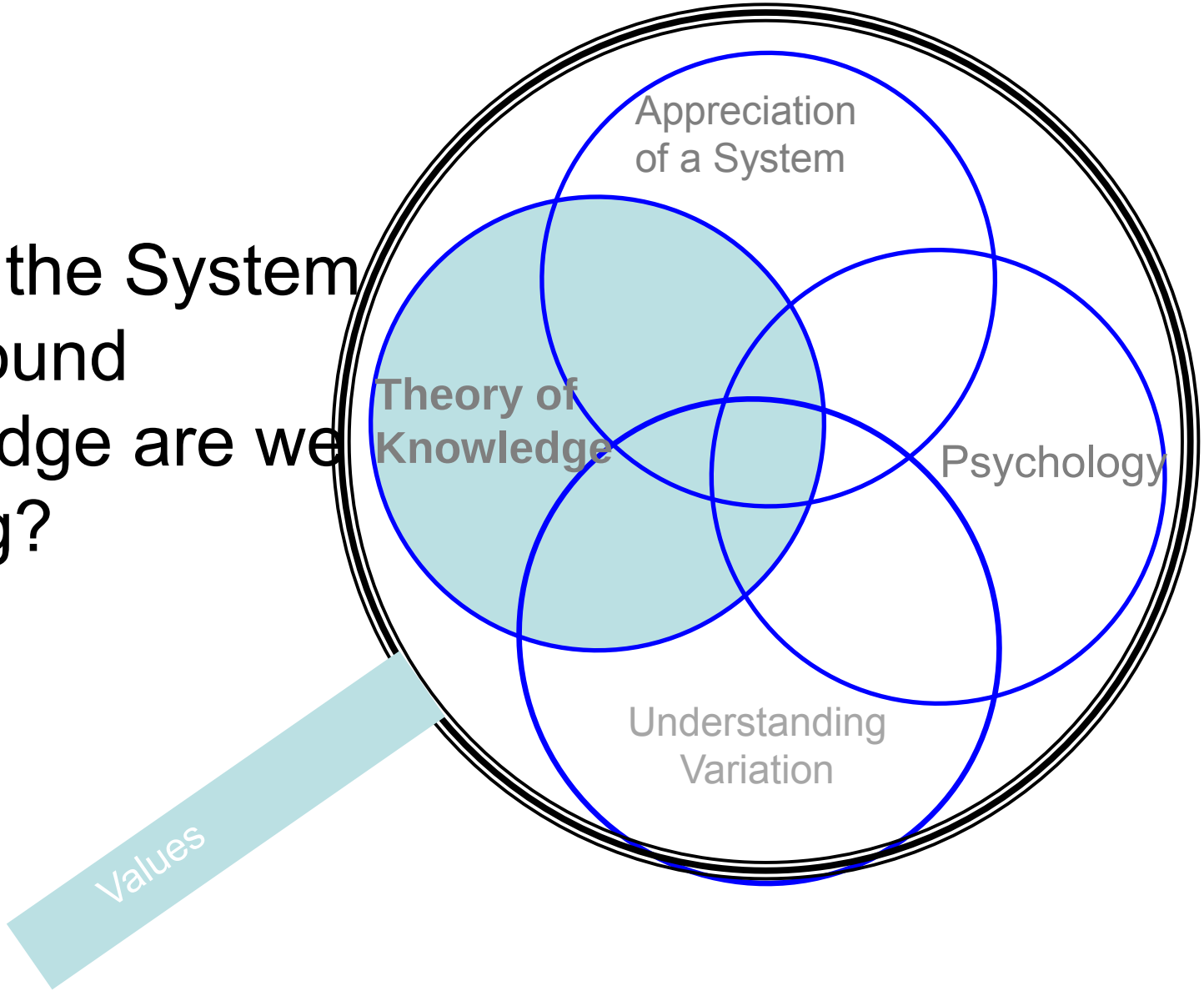
Setting Aims

Where in the System of Profound Knowledge are we learning?



Setting Aims

Should be impossible within the current framework of how our system functions

Should embody these key elements

- Ambitious
- Measurable
- Time Limited
- Very Specific

Setting an Aim

- First answering the Question
  - "What are you trying to accomplish?"

- Appreciation of the destination
  - Take advantage of these questions
  - "How much?"
  - "By when?"

Langley et. al.

With Your Project Teams

- Each Team could develop and write an aim statement related to your project

Reviewing our Aim Statements

- Are the key questions addressed (how much and by when?)
- Is the aim specific?
- Is it ambitious?
- Is it clear to anyone who will read it?
- Where could it be improved/made more simple?

The Model for Improvement

Shewhart
Deming
Langley et. al.

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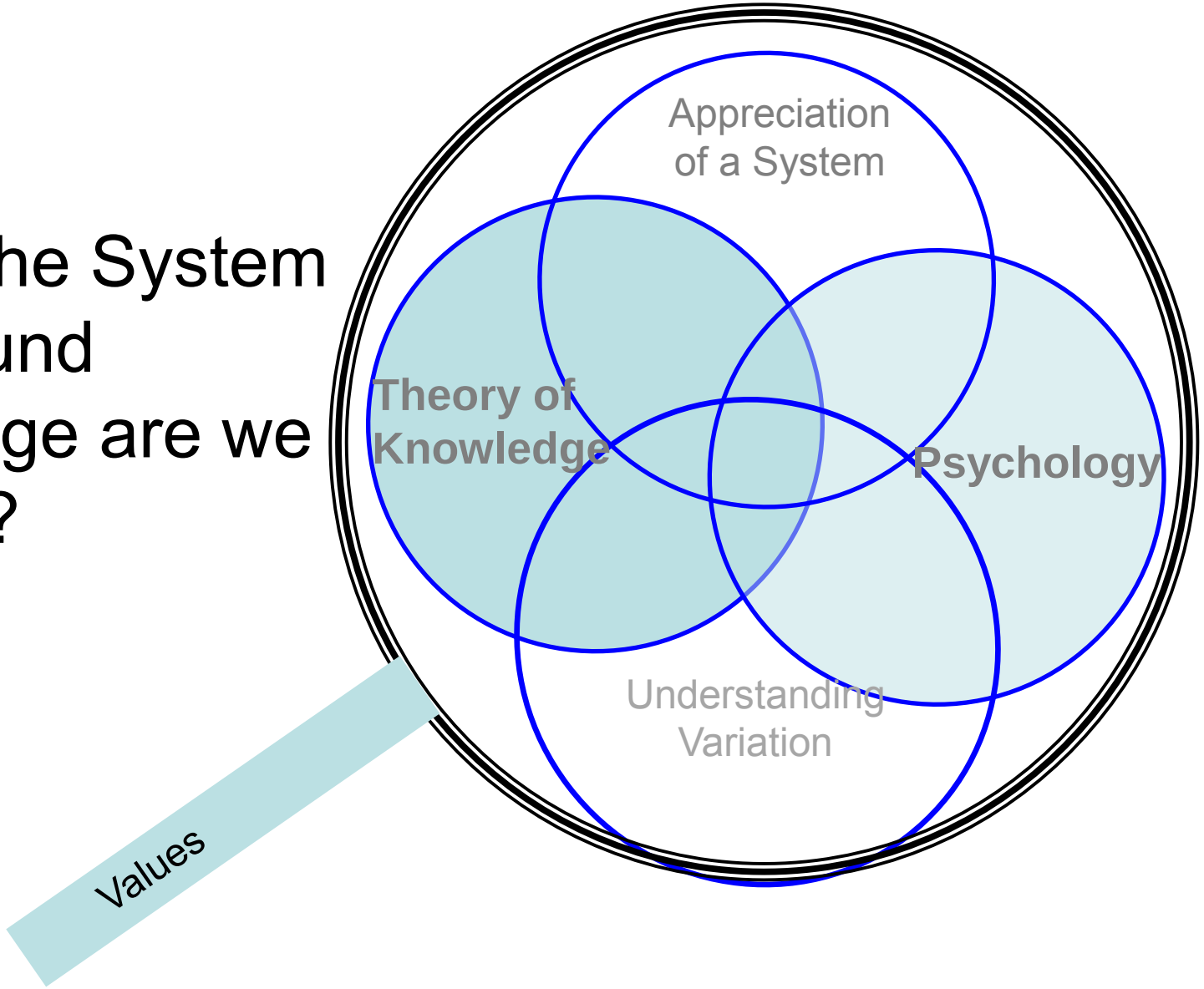
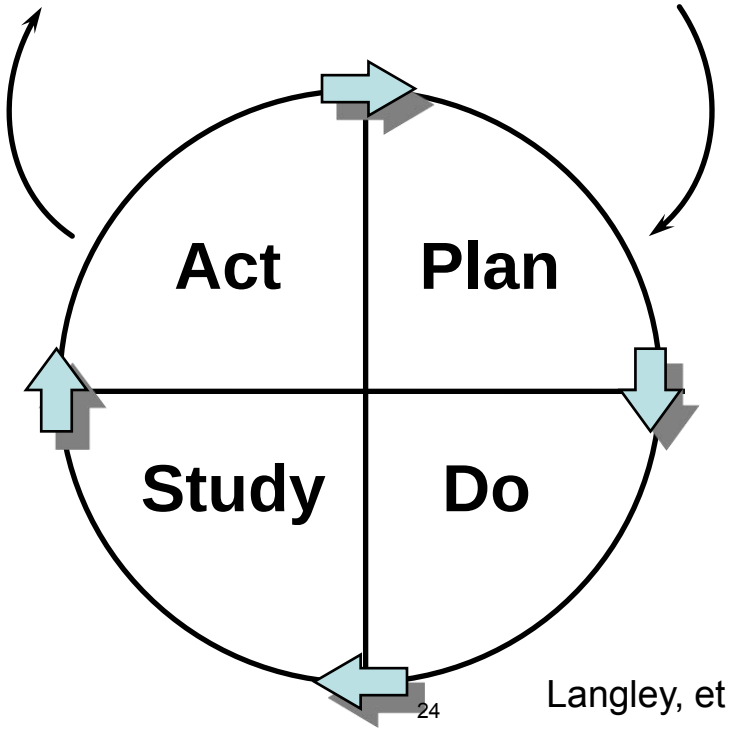


Model for Improvement

What are we trying to accomplish?

What change can we make that will result in improvement?

How will we know that a change is an improvement?



Langley, et al.

Question 1:
What are we trying to accomplish?

- In the context of project planning this might be your overall aim, however, when used to introduce a change through the PDSA cycle, a PDSA specific aim should be identified

- As with setting our initial aim, we should answer this question as specifically as we can

Question 2:
What change can we make that will result in an improvement?

Sources of Change Ideas

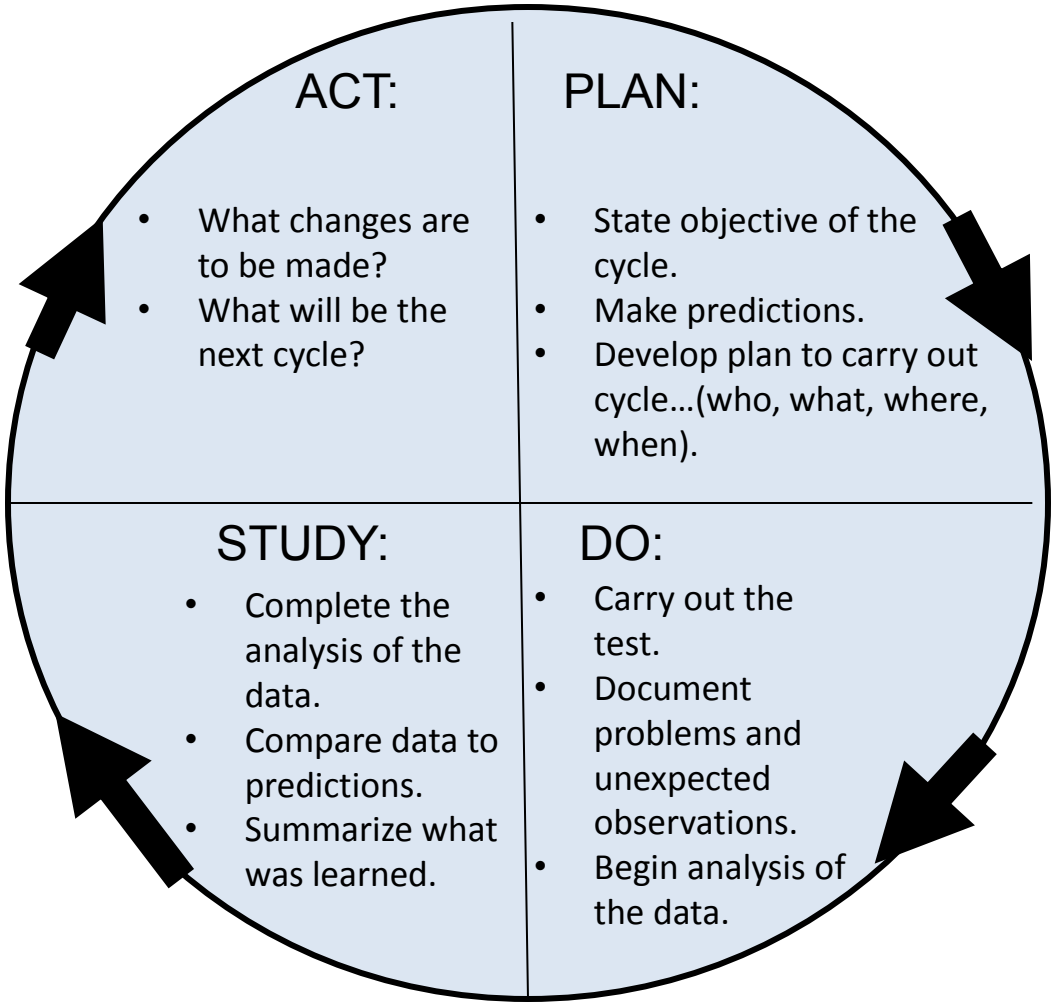
- people providing the service
- Clients
- best practice
- Guidelines
- change ideas/concepts
- novel ideas developed through creativity methods
- identifying underlying challenges (root cause analysis)

Question 3:
How will we know a change is an improvement?

Measurement is critical to tracking change

- "no data, no improvement"

- measurement may differ from process/outcome measures, meaning an individual PDSA may capture data about performance at one step in a process that you normally do not collect



Langley et. al

PDSA Cycles

- Gives you a way to try out your ideas to improve the system before deciding to implement
- Allows you to know quickly whether your change will work
- Gather data to convince your colleagues that the change will work
- Focus on small steps (will not disrupt your work)

Key Points in PDSA cycles

- Every plan has a prediction – what you think will happen
- Be as specific and as small as possible
- Should be measurable with data collection being very important
- Should be analyzed for success and acted upon through a new plan or a scaled up cycle

With your team

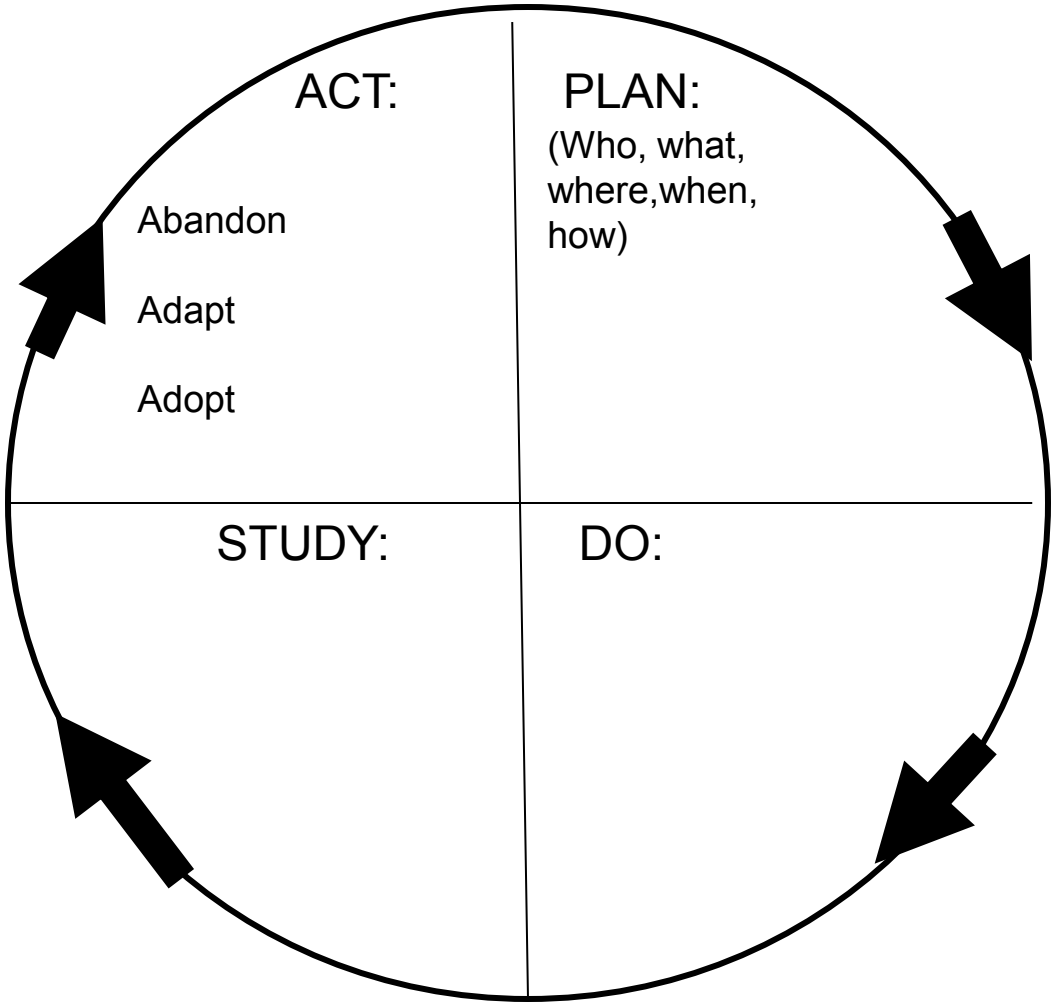
- Develop your first PDSA

- Create a plan for your initial PDSA Cycle, something you can test next week
  - What do you believe about why things are the way they are?
  - What do you want to learn?
  - What can you test quickly?

Problem:

Aim of this change:

The Change:



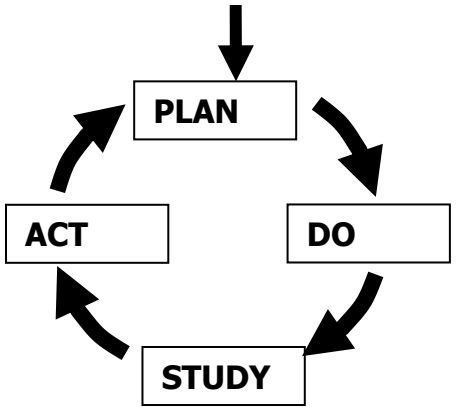
Measurement

Prediction:

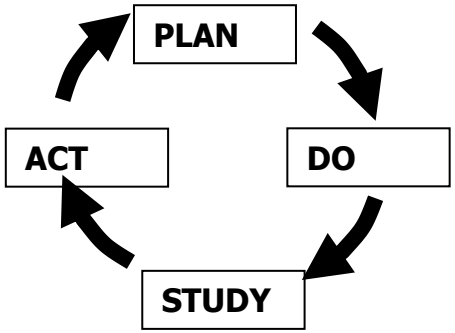
Rapid Cycle Change

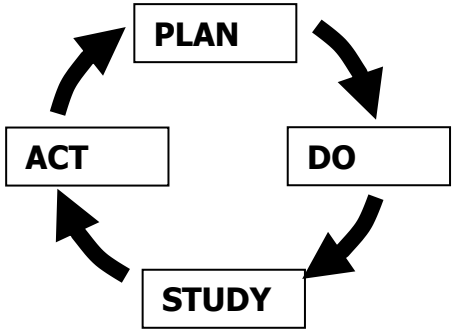
What are we trying to accomplish?

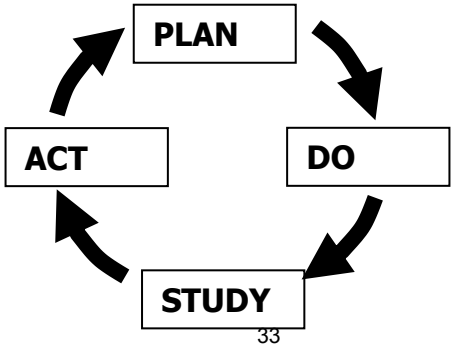
What can we change that will result in an improvement?



How will we know that a change is an improvement?







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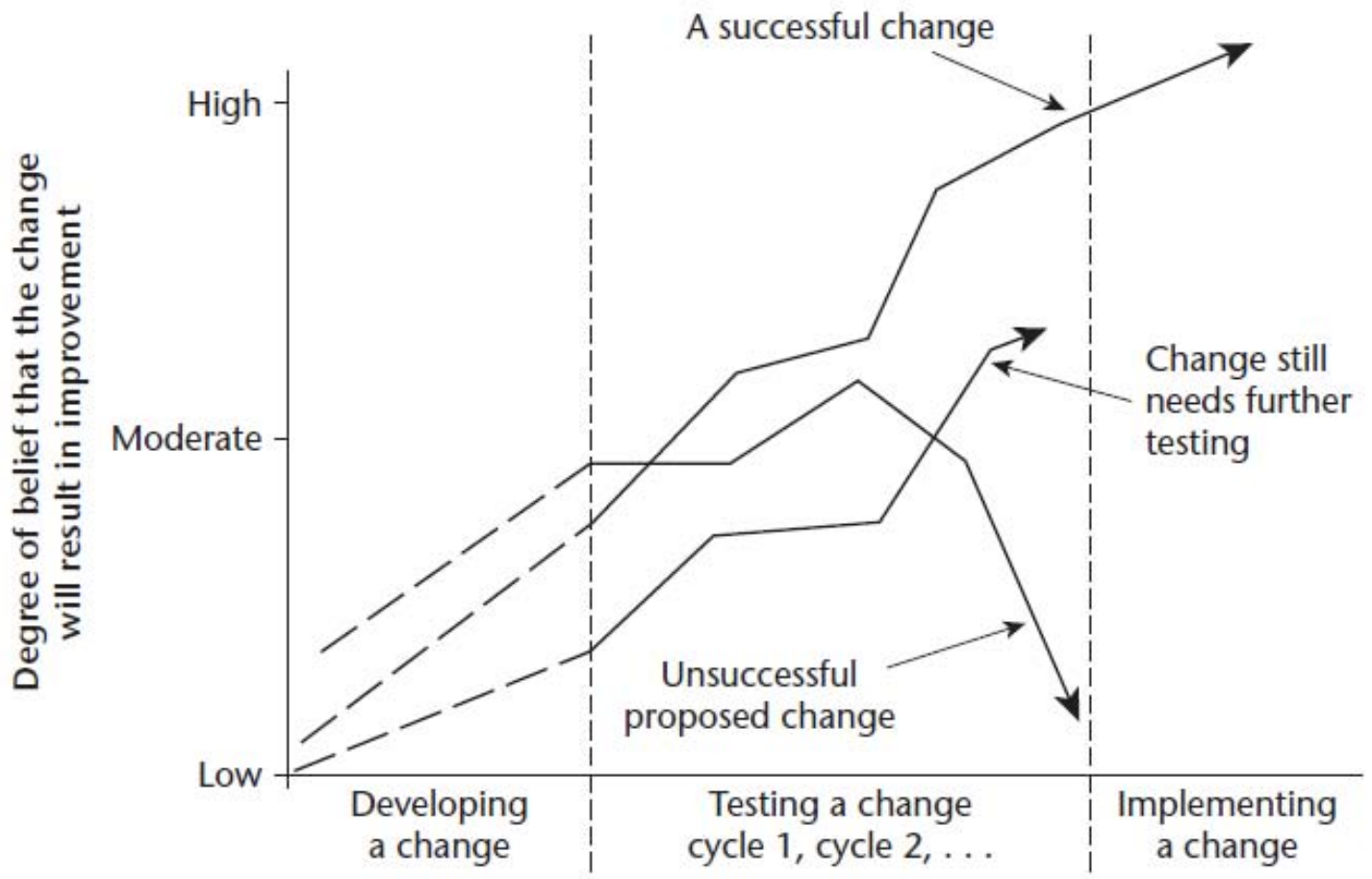
With your Team

- With your team think about how you would use the PDSA cycle method to build confidence
- Think 2 or 3 cycles ahead – what problems might you anticipate?
- Will this change work only for a few patients or for all patients?
- Who needs to be engaged from leadership for this to succeed?

Knowing when to implement a change

Degree Belief and Next PDSA

FIGURE 7.1. DEGREE OF BELIEF WHEN MAKING CHANGES TO IMPROVE.



Improvement Guide, 2009, p. 144

Appropriate Scope for a PDSA Cycle

Current Situation		Staff Readiness to Make Change: Resistant	Indifferent	Ready
Low Confidence that change idea will lead to Improvement	Cost of failure large	Very Small Scale Test	Very Small Scale Test	Very Small Scale Test
	Cost of failure small	Very Small Scale Test	Very Small Scale Test	Small Scale Test
High Confidence that change idea will lead to Improvement	Cost of failure large	Very Small Scale Test	Small Scale Test	Large Scale Test
	Cost of failure small	Small Scale Test	Large Scale Test	Implement

Improvement Guide, 2009

Final Thoughts and Questions

Questions for Discussion:

- What are the most significant barriers to improvement in health-care organizations?
- What is the PDSA cycle?
- What are the key ingredients for success in making rapid cycle change?

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