Practice Systems Thinking in Product Development Organization

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Agenda

- Learning Organization of Product Development
  1. From LeSS to Learning Organization
  2. Product Learning and Process Learning

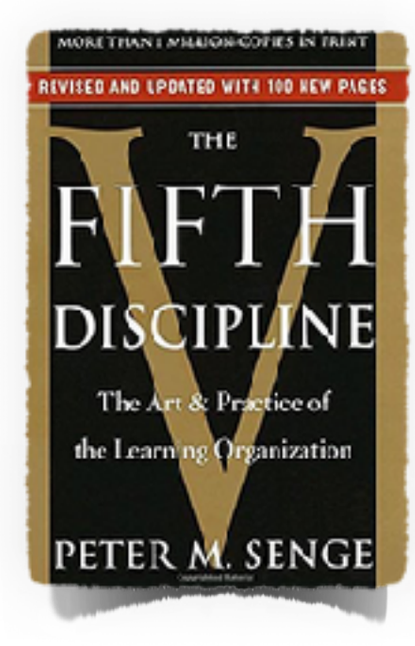
- Practice Systems Thinking for Learning
  1. Learn about Systems Thinking
  2. From Impact Mapping to System Modeling
  3. From Root Cause Analysis to System Modeling

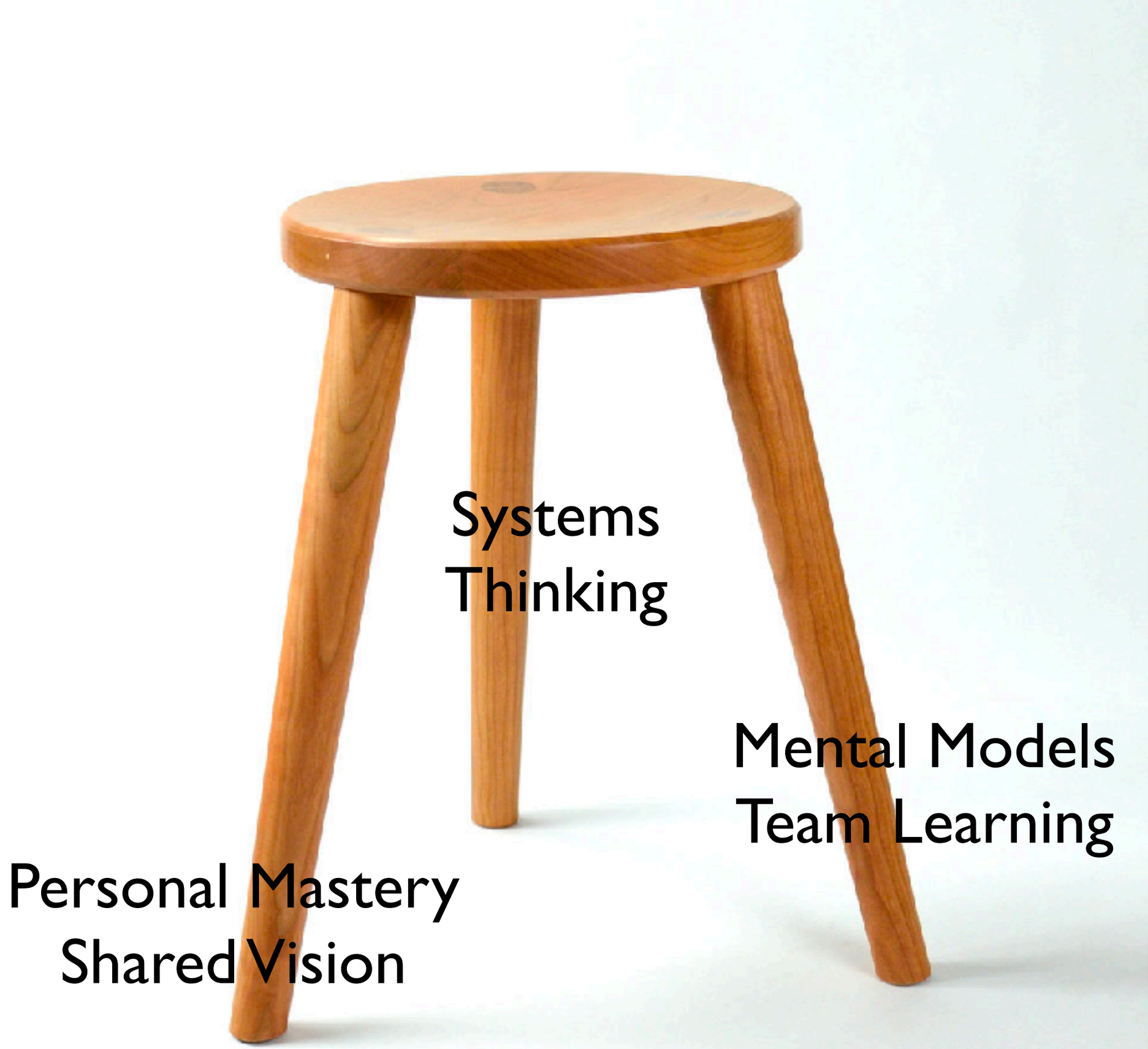
Learning Organization of Product Development

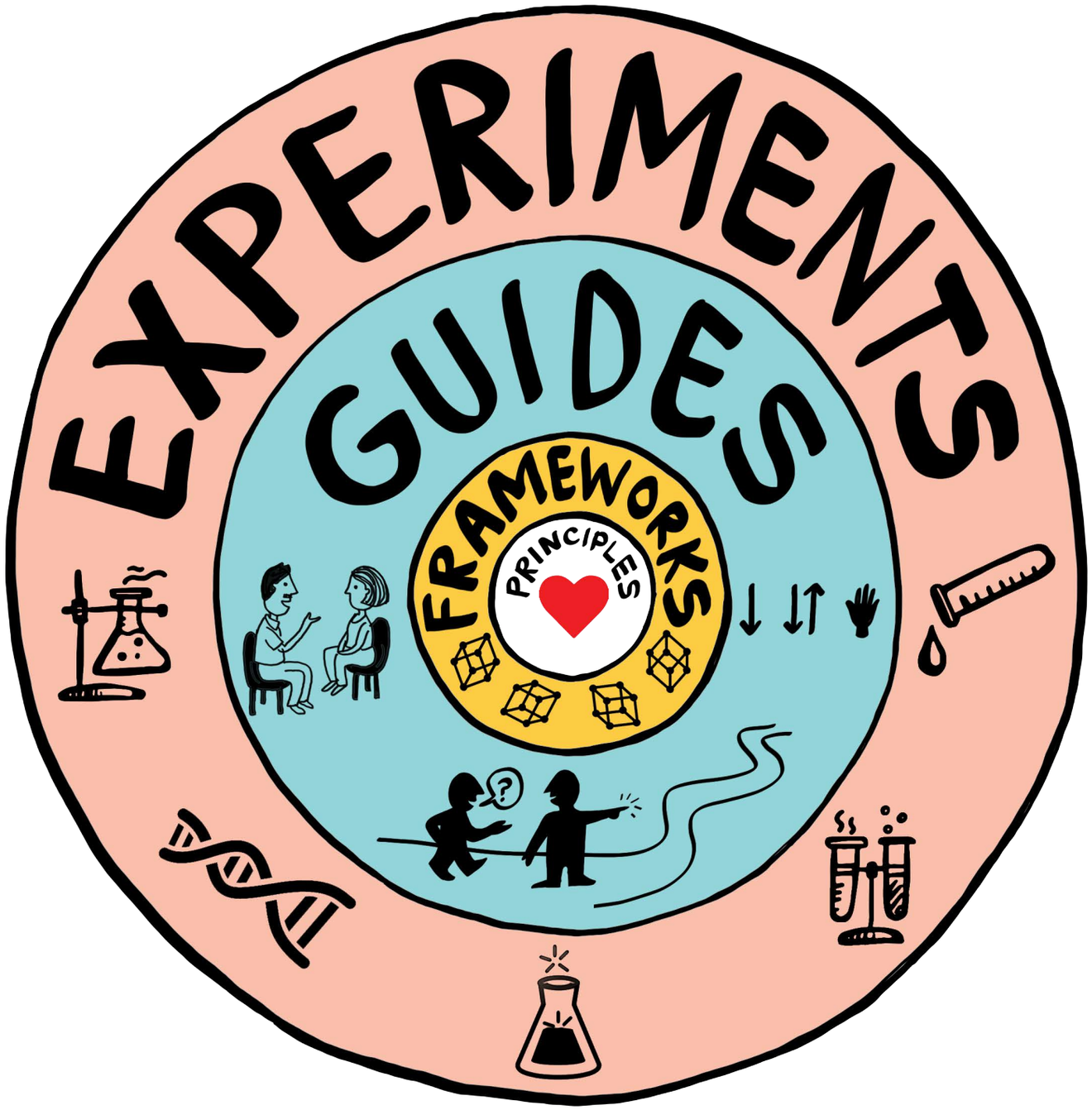
1. From LeSS to Learning Organization


Learning Organization
Mental Models
Team Learning
Systems Thinking
Personal Mastery
Shared Vision
critical thinking
experiments
agile & adaptive
informed consent
One PO vs. many POs
One PBL vs. many PBLs
Feature vs. Component
Team vs. Group
a series of choices

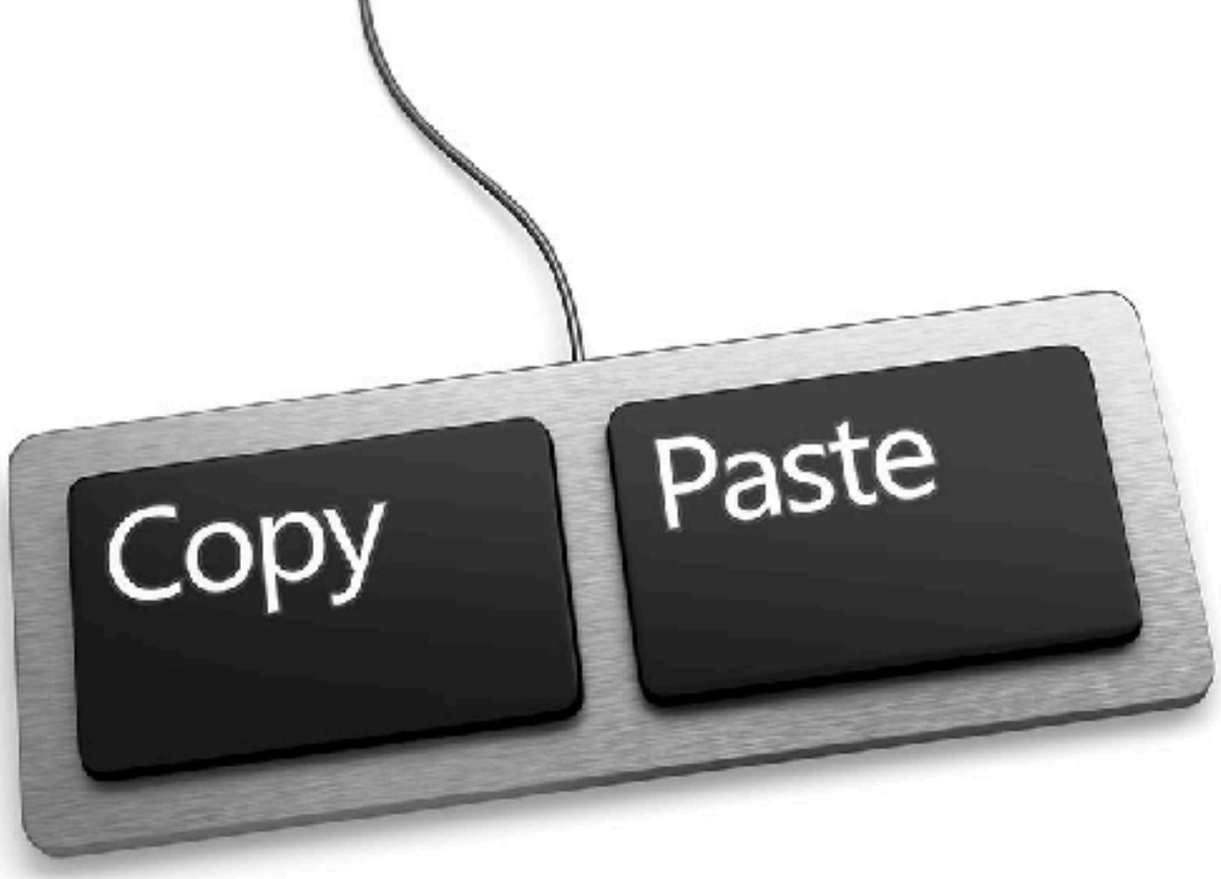
"…organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together."




Systems
Thinking
Mental Models
Team Learning
Personal Mastery
Shared Vision



Reasoning is at the heart of Experiments

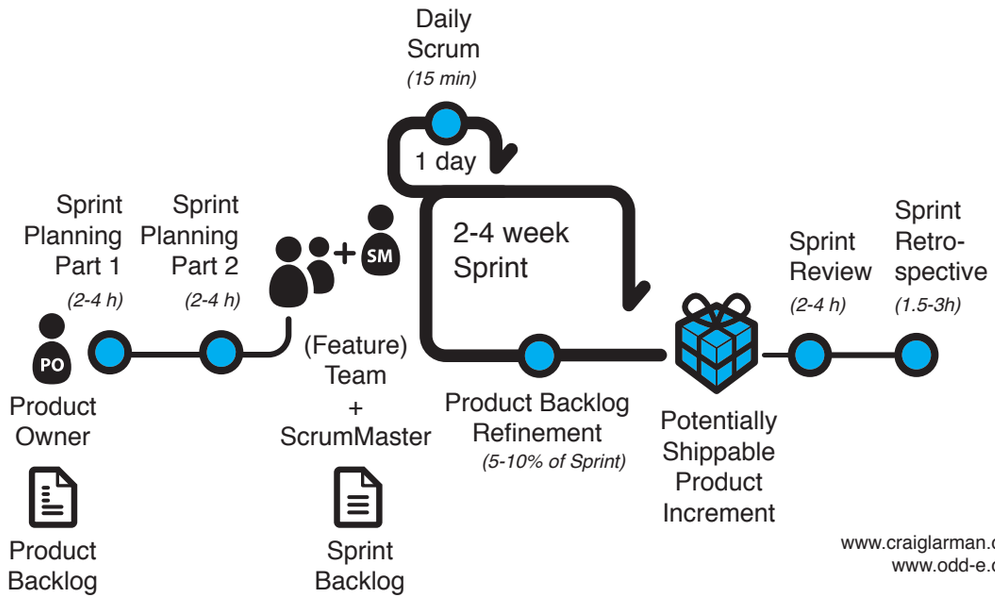


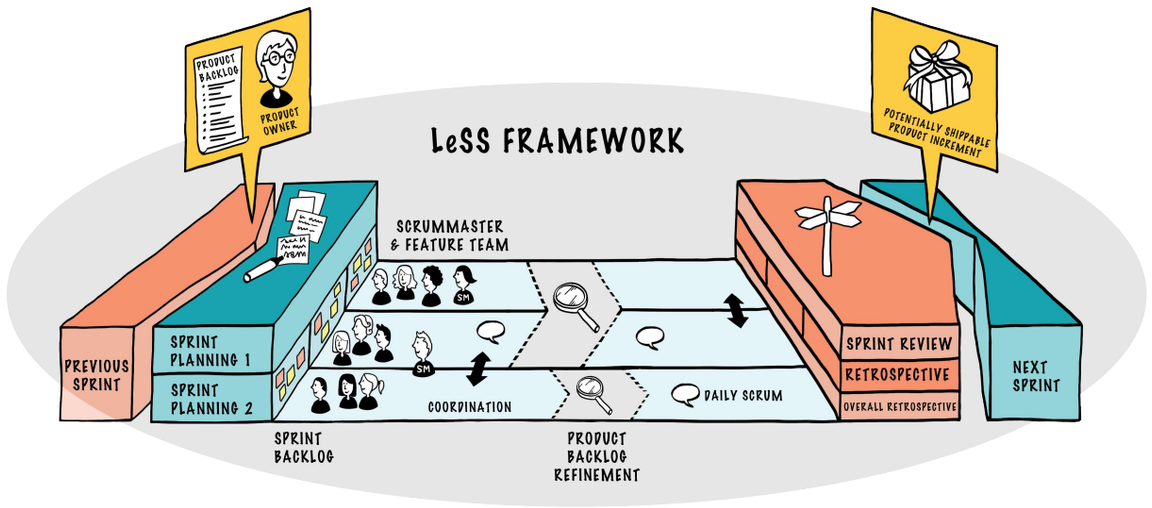
less copying, more learning

Learning Organization of Product Development

2. Product Learning and Process Learning

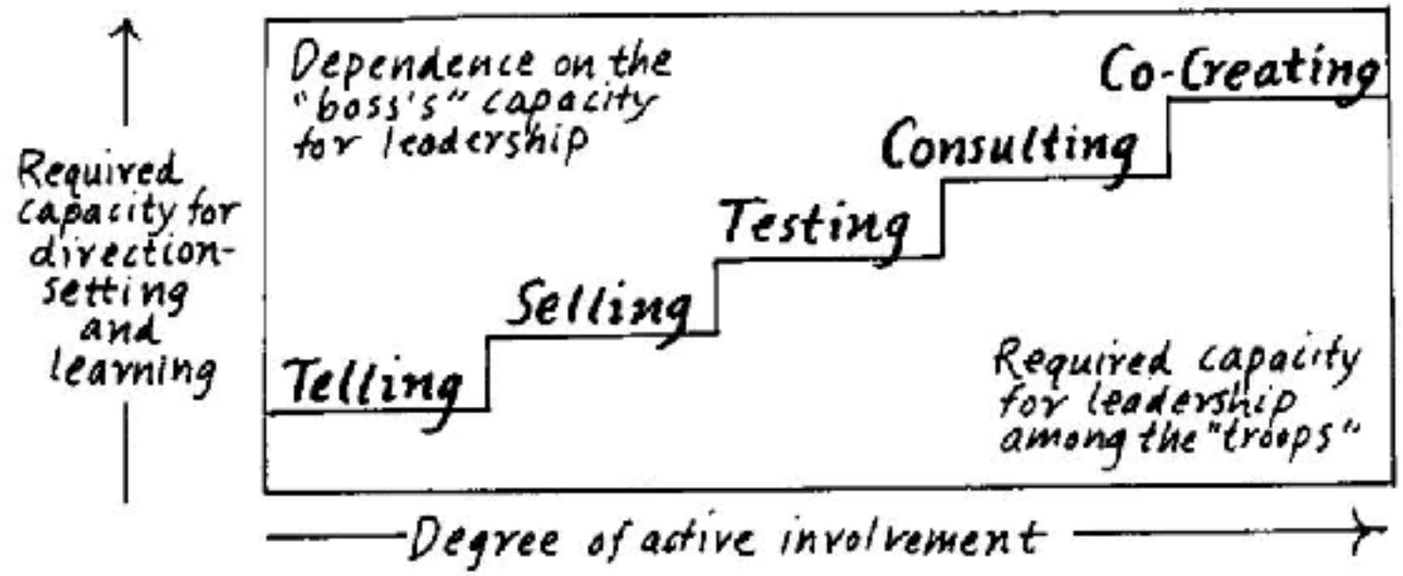
Iterative Product Development



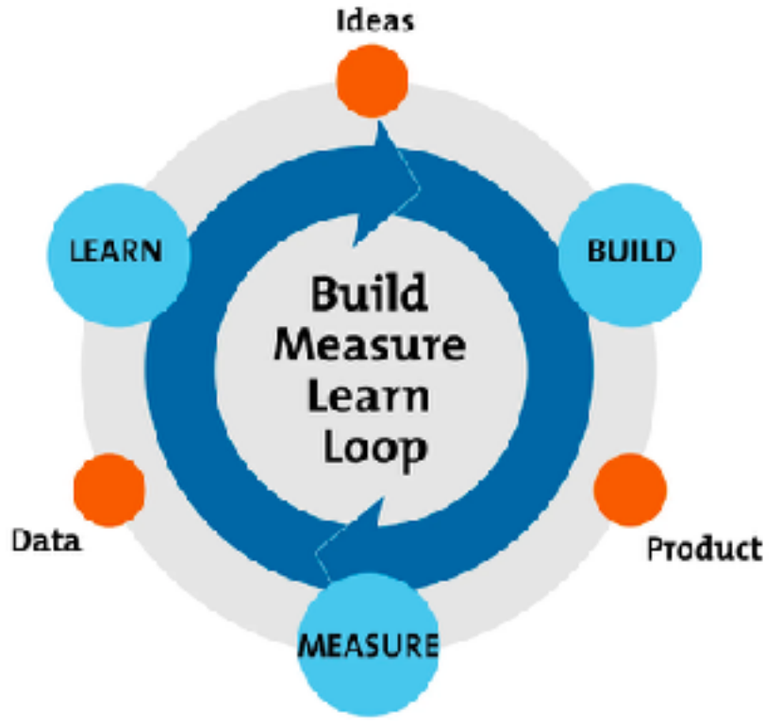


Product Learning and Process Learning

Shared Vision - Product

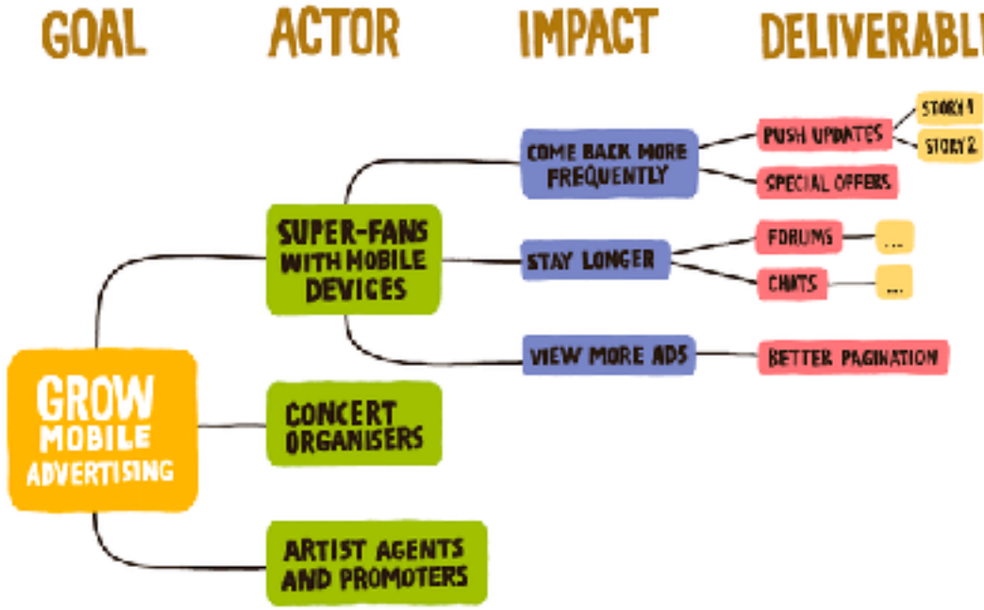


Team Learning - Product



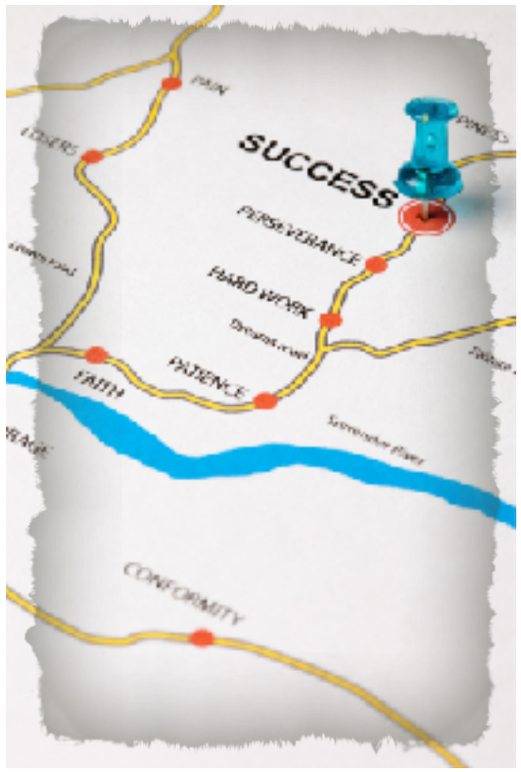
PBR & Sprint Review

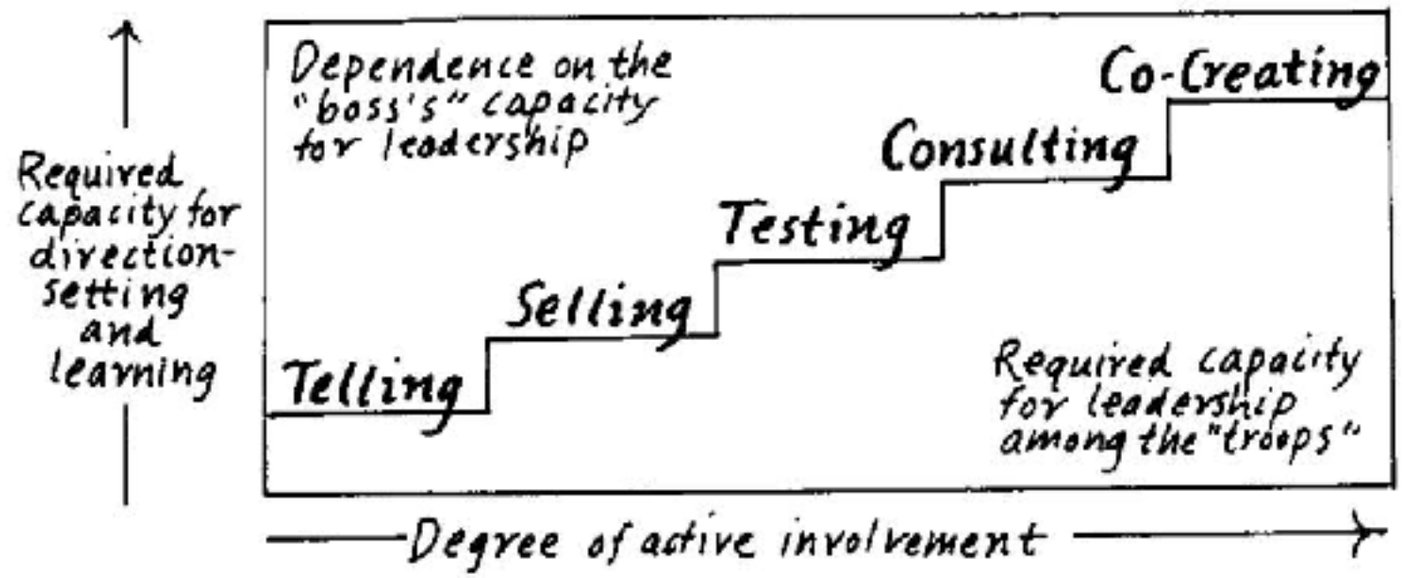
Team Learning - Product



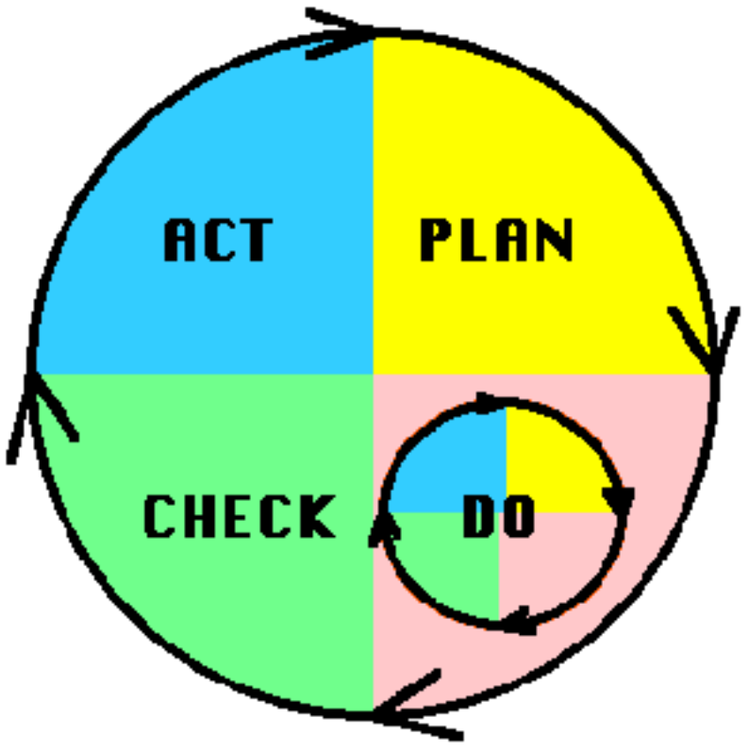
(multi-team) PBR &
(one product) Sprint Review

Shared Vision - Process/Team/Organization



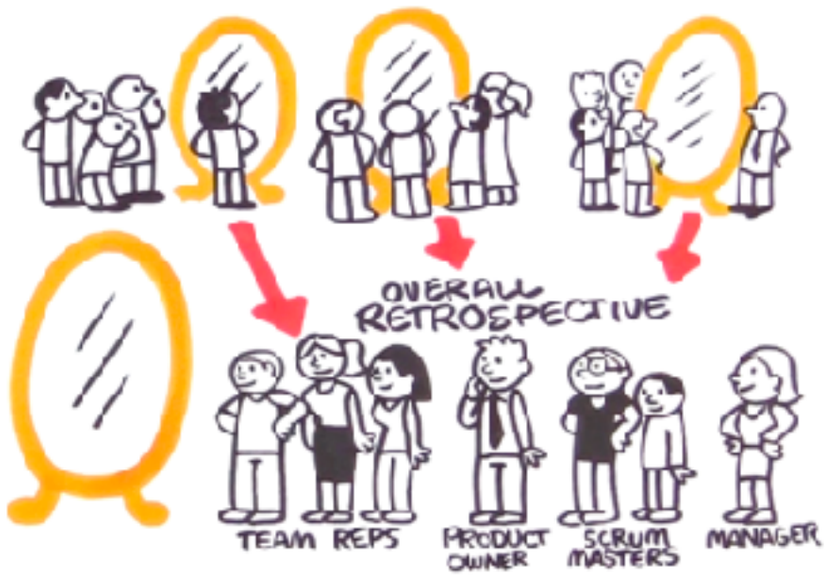


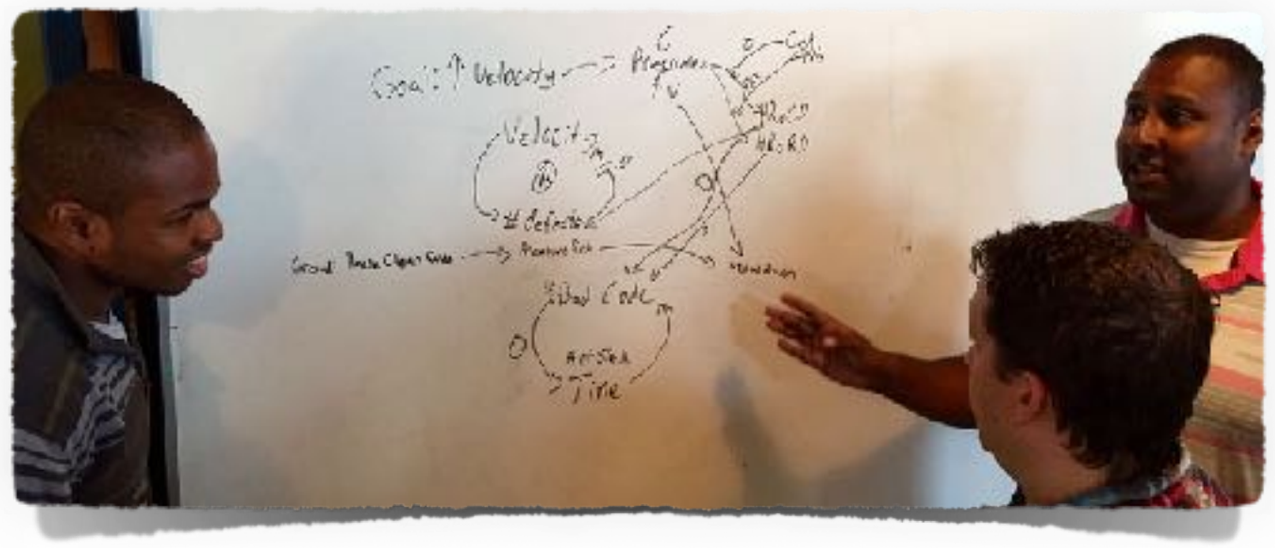
Team Learning - Process/Team



Sprint Retrospective

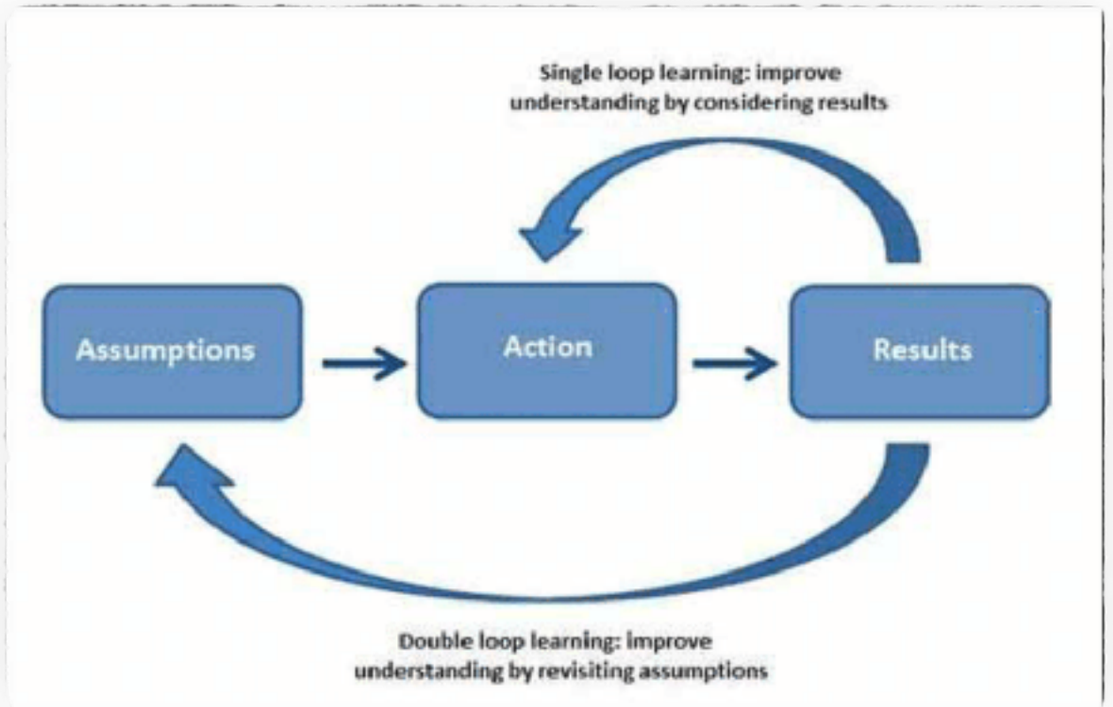
Team Learning - Process/Organization





Team & Overall Retrospective

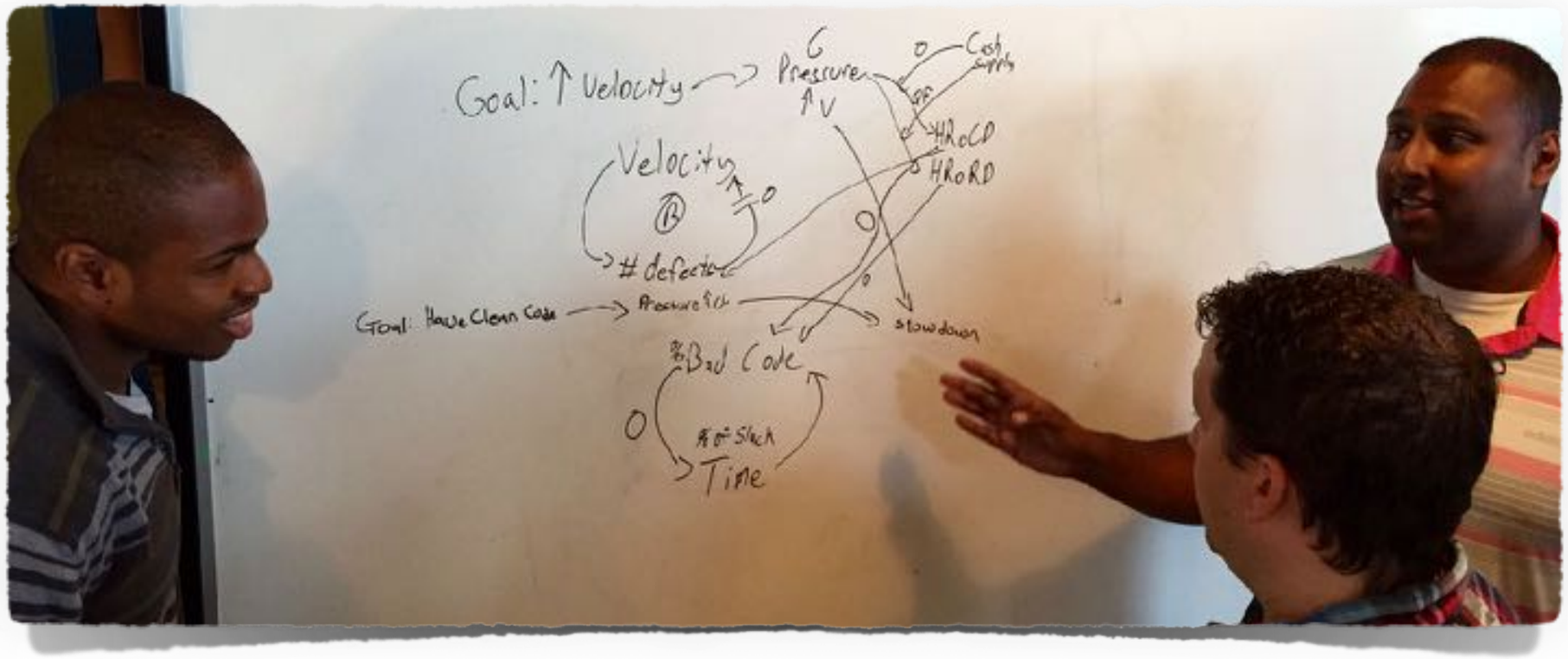
Team Learning goes deeper
- Mental Models & Systems Thinking



Practice Systems Thinking for Learning

1. Learn about Systems Thinking

System Modeling with CLD



Here is my view…

1. Reason about causality
2. Expand time and space
3. See mutual causality

- Balance advocacy and inquiry

Lv Yi

Systems Thinking Primer

By Lv Yi on August 31, 2020 9:31 PM

I have written a series of articles that apply systems thinking to explore various organizational design options and change strategies. The goal of this primer is to prepare you for understanding and practicing systems thinking. Besides describing basic concepts, we shall use examples in product development organization to help see the significance of systems thinking in the context of large-scale product development organization. Meanwhile I shall share insights through my own practicing.

1. Systems Thinking

Why do we choose to apply systems thinking to explore and guide organizational design and change? Peter Senge in his book "The Fifth Discipline: The Art & Practice of The Learning Organization" makes the distinction between detail complexity and dynamic complexity. Detail complexity is characterized as having many variables, while dynamic complexity is characterized as the subtlety between cause and effect. Cause and effect may not happen in the same time and space, which brings high dynamic complexity. Systems thinking can help us better understand such problems thus enable more effective intervention. The design and change of large-scale product development organizations not only have detail complexity, but also dynamic complexity. Thus, systems thinking is a good fit there.

Many definitions of systems thinking can be found by various authors. The concepts and tools I use in my articles are borrowed from system dynamics, founded by professor Jay Forrester from MIT. There are four main tools: Causal Loop Digram (CLD), Behavior over Time Diagram (BoT), Stock & Flow Diagram (SFD) and Computer Simulation. Many insights from systems thinking are counter-intuitive. Therefore, quantitative analysis based on computer simulation enables us to generate new insights and further change our mental models. However, considering that 1) approaches to make quantitative analysis through mathematical modeling for the topic of organizational design and change are not mature, and 2) qualitative analysis and critical thinking based on CLD are already helpful in enabling us to change our mental models (i.e. shift the thinking of cause and effect from linear to loop-based), I shall use CLD as the main tool for system modeling and analysis in this primer.

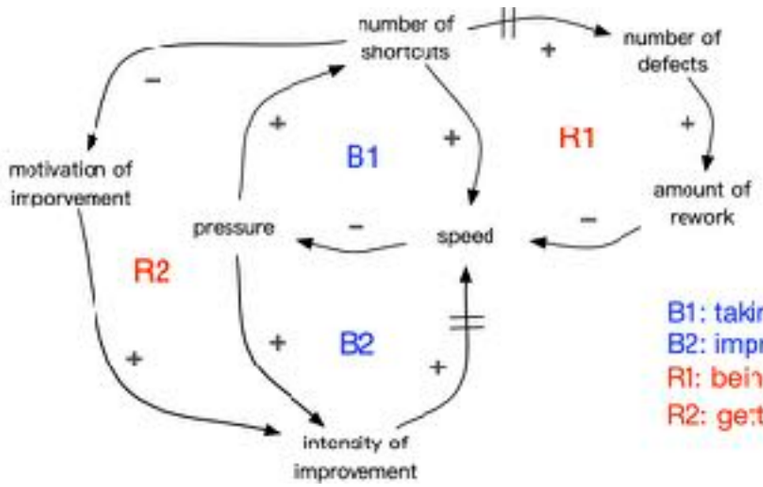
2. Causal Loop Diagram

You can find introductions to CLD in any general systems thinking book, e.g. "Seeing the Forest for the Trees: A Manager's Guide to Applying Systems Thinking" or "Systems Thinking Basics: From Concepts to Causal Loops". Its basic elements include: variable, link and loop. Let's introduce them one by one.

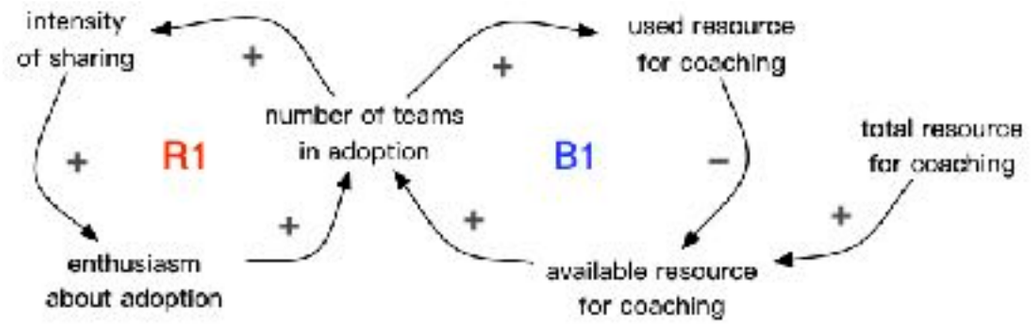
Variable

Variable is a factor in the system structure we are trying to model. Its value changes over time. In product development organization, common variables include: number of people, amount of requirements, cycle time for delivery, velocity, flexibility, quality, value, morale, satisfaction, etc.

When defining variables, it is worth mentioning the following:



B1: taking shortcuts to speed up
B2: improving efficiency to speed up
R1: being slowed down by defects
R2: getting addicted to taking shortcuts



R1: sharing to inspire enthusiasm
B1: being limited by coaching resource

Practice vs. Performance

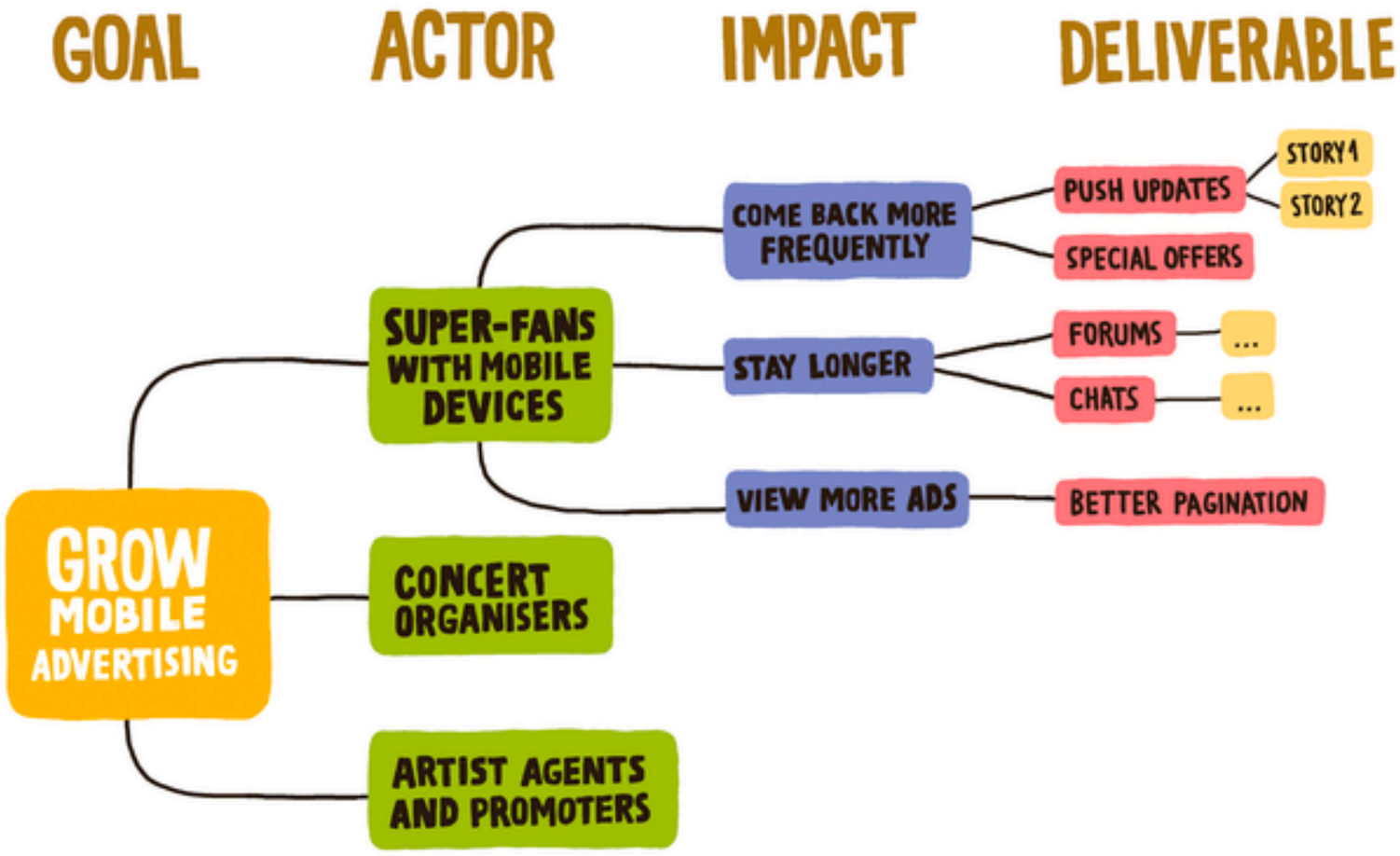
Systems Thinking Dojo

Practice in the Work

Practice Systems Thinking for Learning

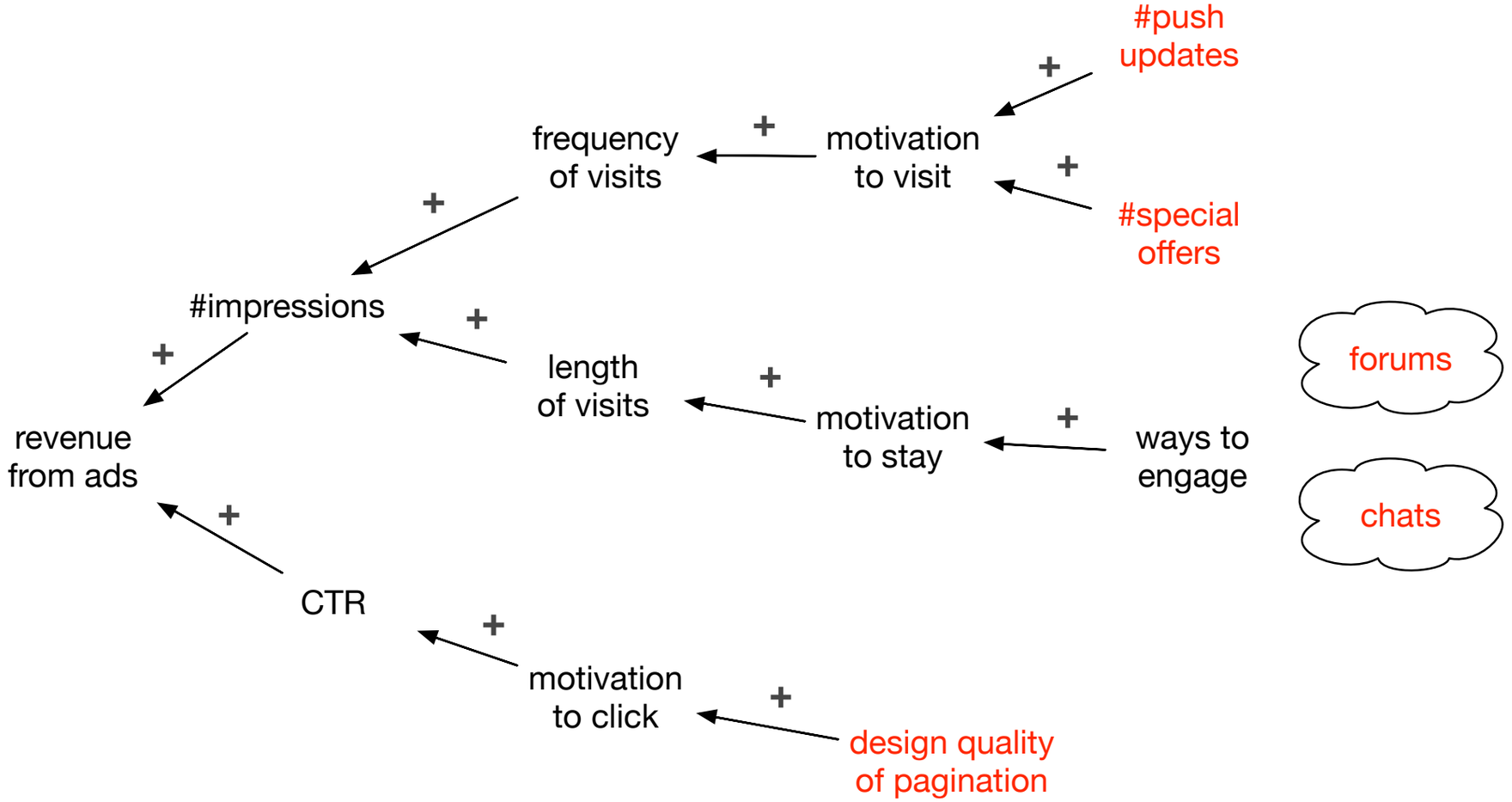
2. From Impact Mapping to System Modeling

Impact Mapping

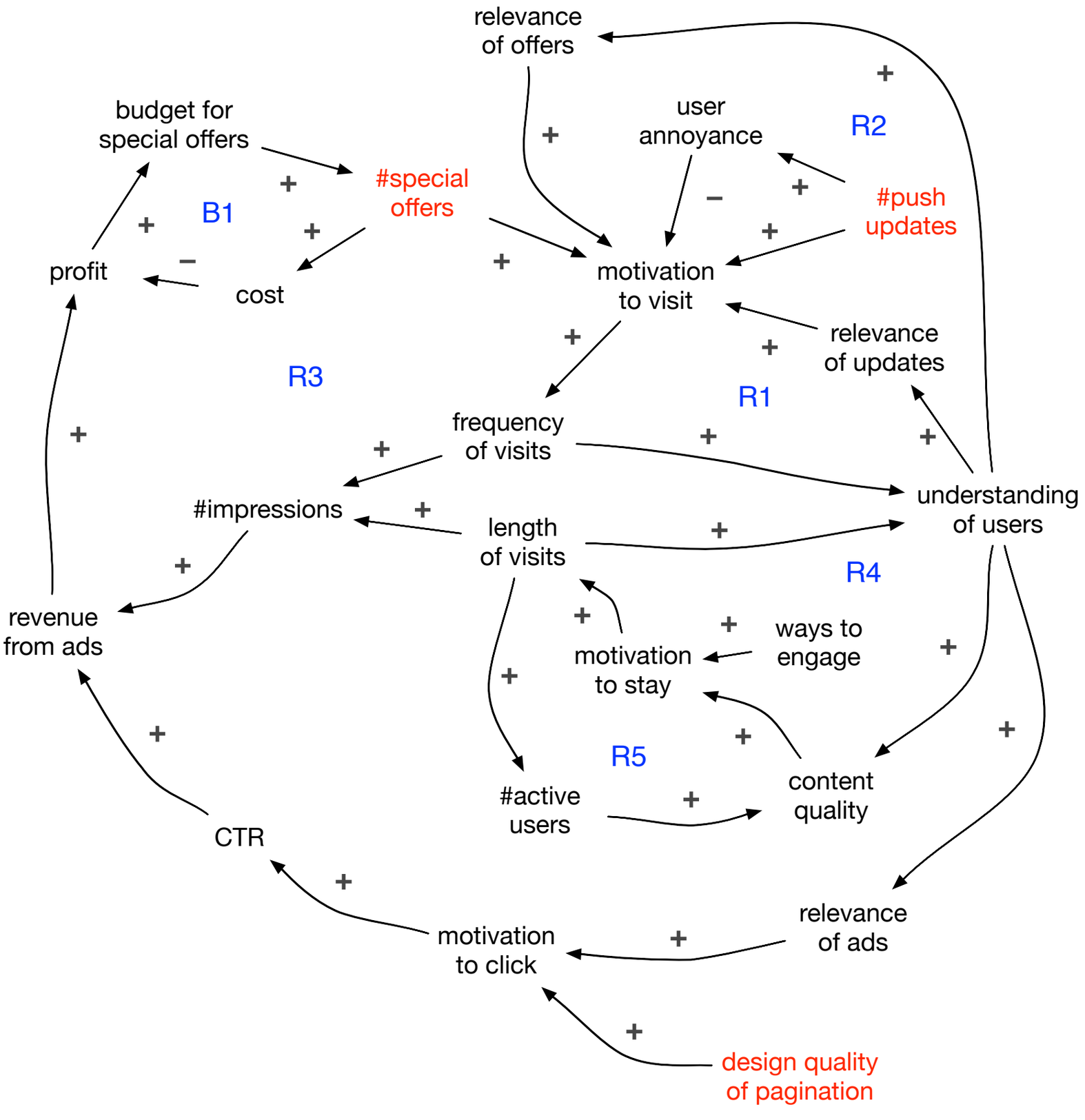


System Modeling

- Convert



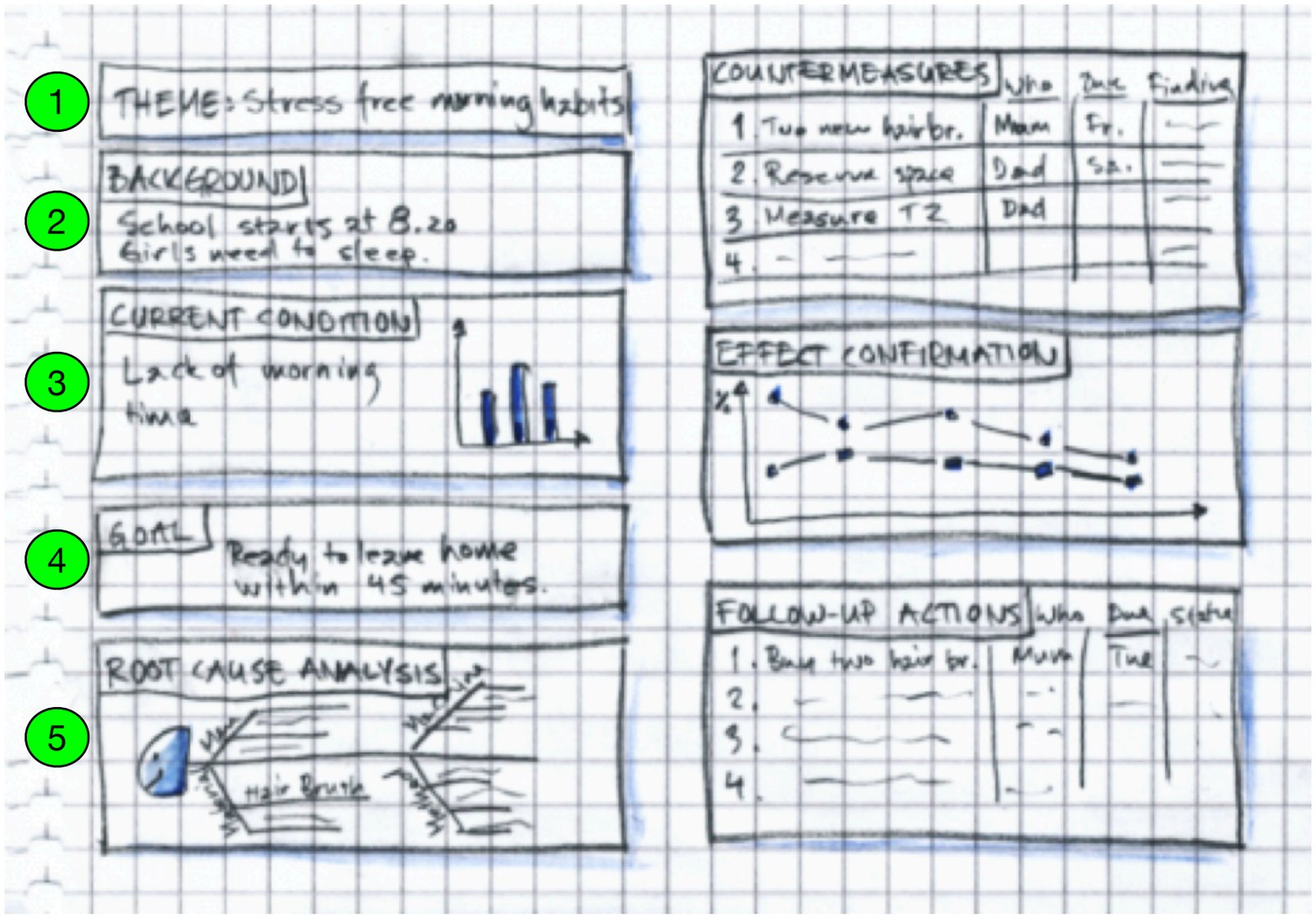
System Modeling
- Expand



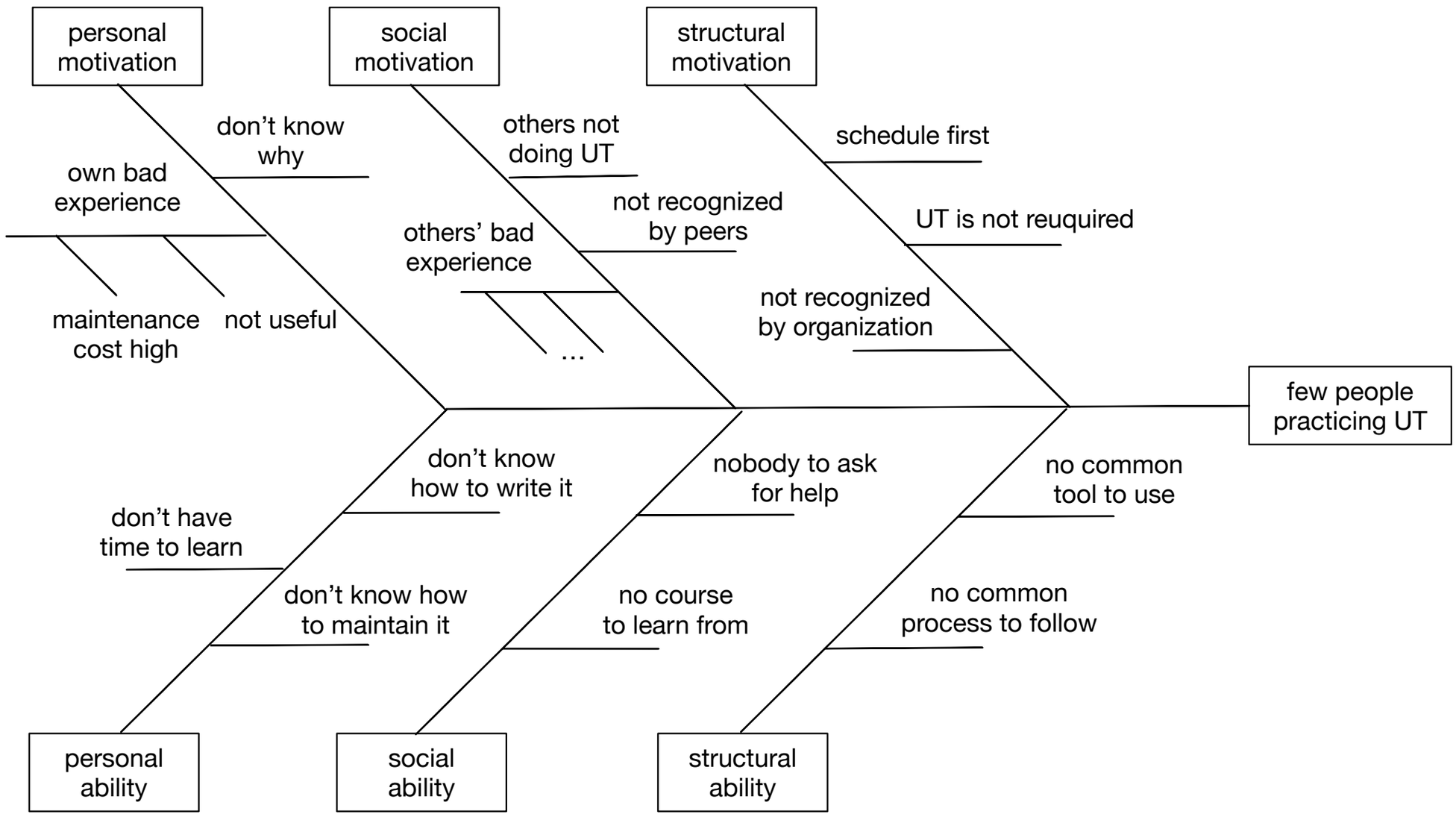
Practice Systems Thinking for Learning

3. From Root Cause Analysis to System Modeling

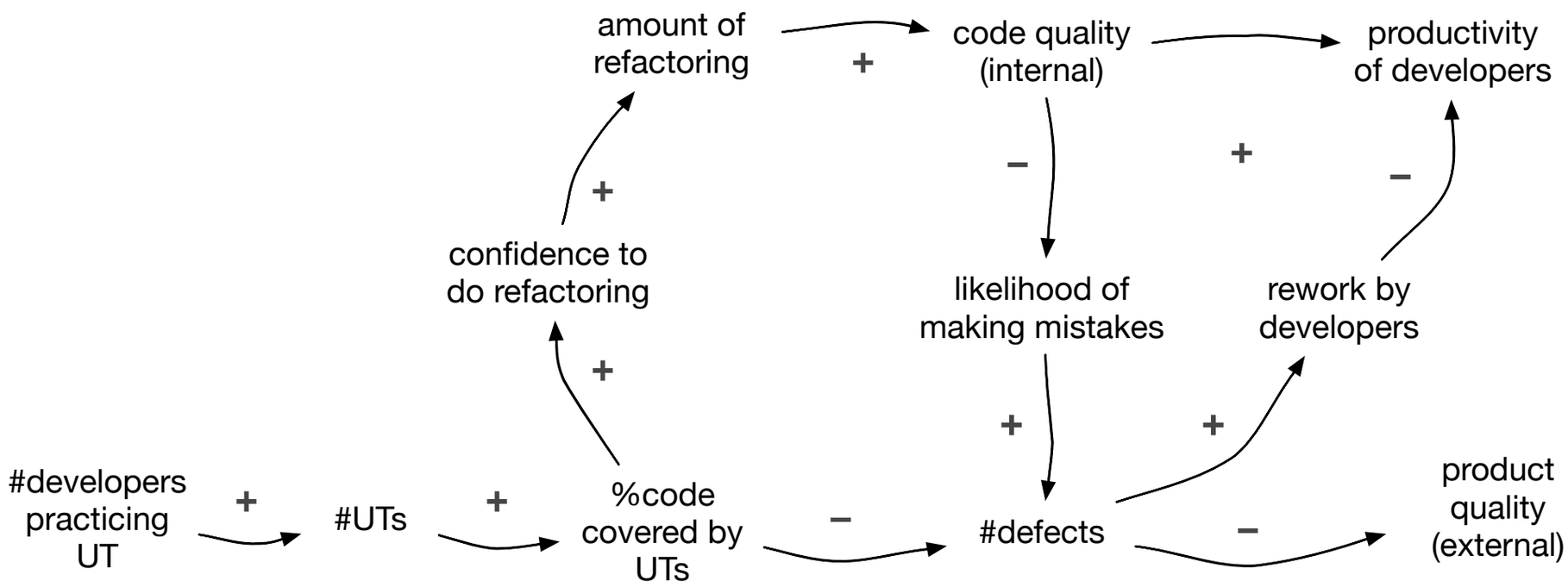
A3 Report and RCA



1. Theme: adopt UT (Unit Test) practice
2. Background: Why UT? better product quality with fewer defects; higher developer productivity due to less rework
3. Current condition: few people practicing UT in our development organization
4. Goal: all people practicing UT in our development organization
5. RCA: see the following fishbone diagram

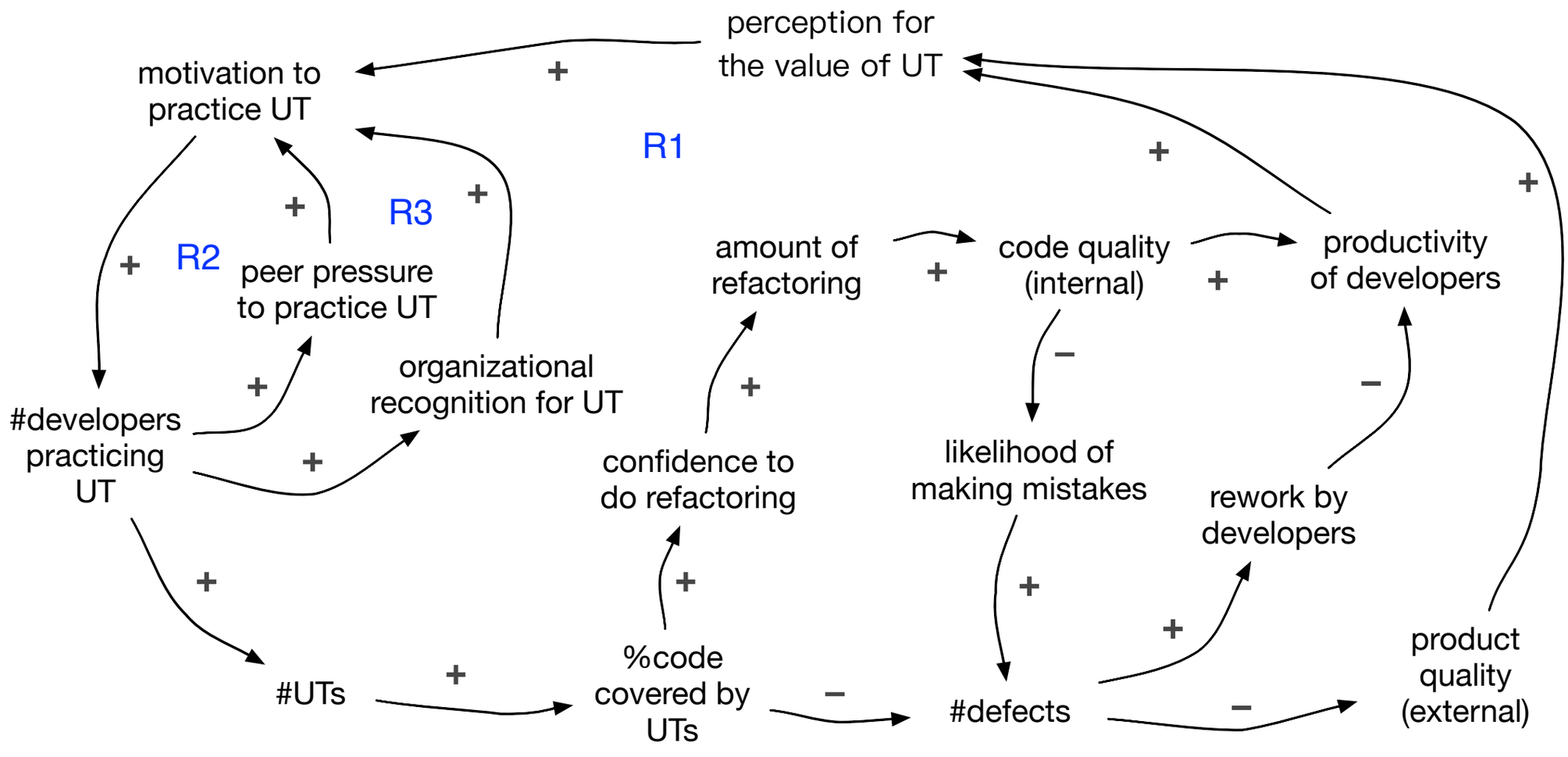


System Modeling
- Effects



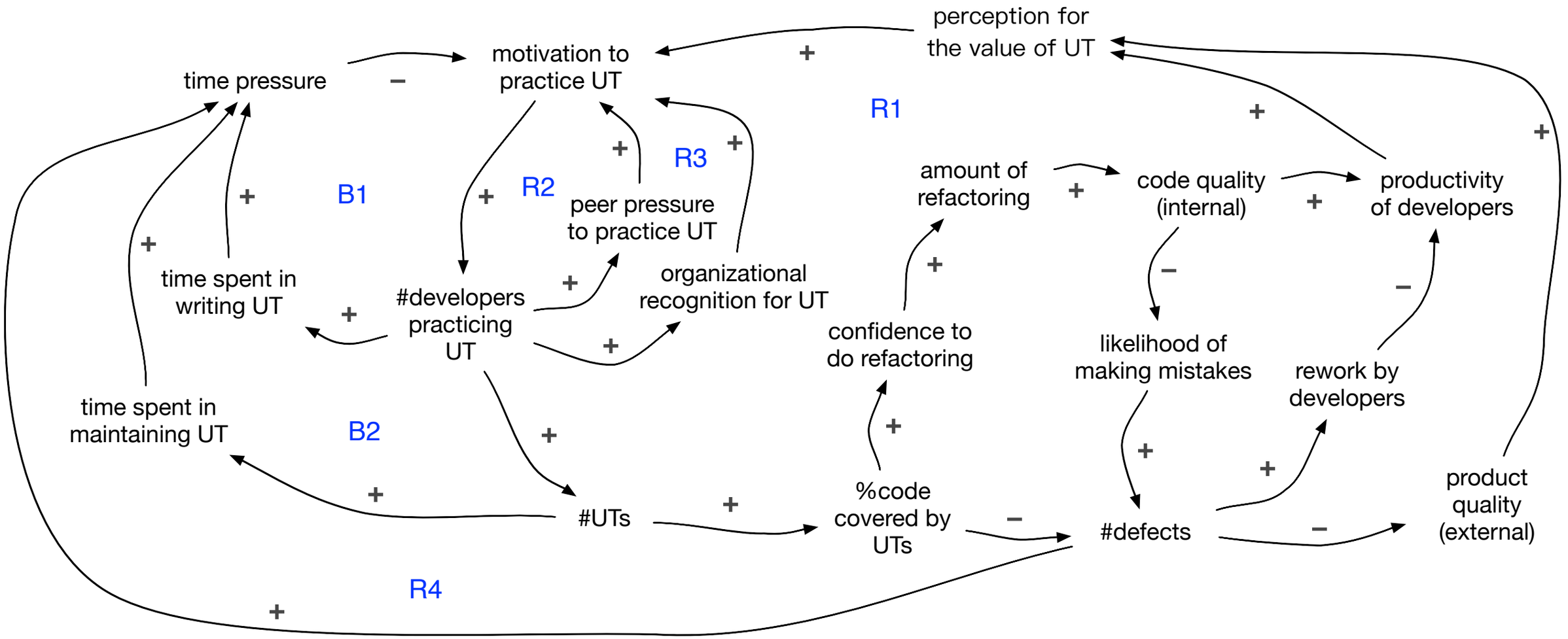
System Modeling

- Causes: Motivation



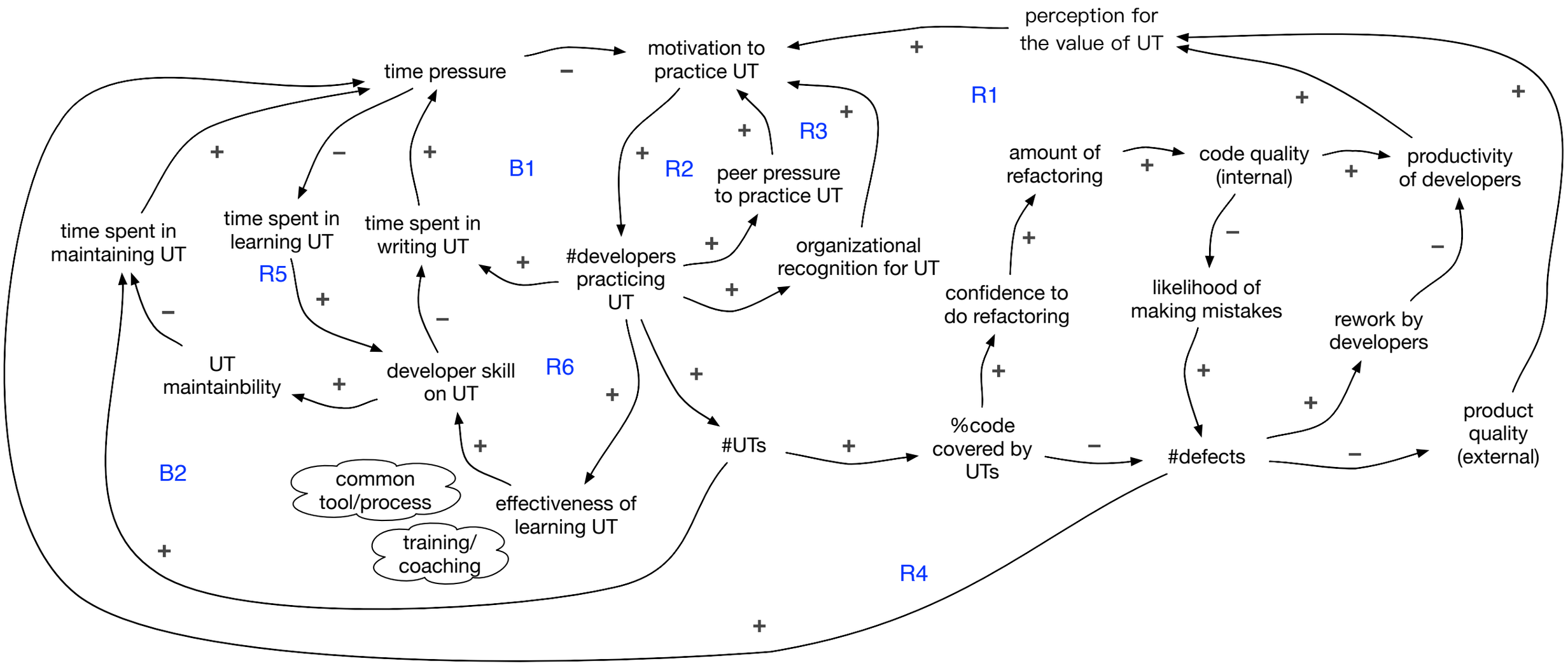
System Modeling

- Causes: Time



System Modeling

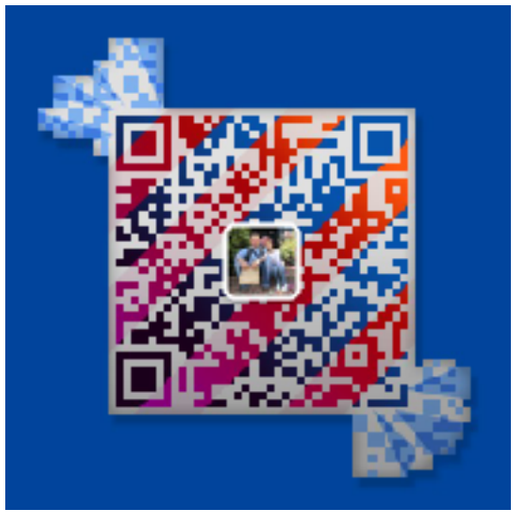
- Causes: Ability



References

- My view of LeSS
- Experiments are at the heart of LeSS
- How does LeSS optimize organizational ability to learn?
- Shared vision on product
- Shared vision on organization
- Systems Thinking Primer
- Practice Systems Thinking: 1) from Impact Map to Causal-Loop Diagram
- Practice Systems Thinking: 2) from Fishbone Diagram to Causal-Loop Diagram

Contact



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