

# Organizational Design: Lean, Agile, Scrum, LeSS, & Scaling



1

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v.26

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Opening Topics

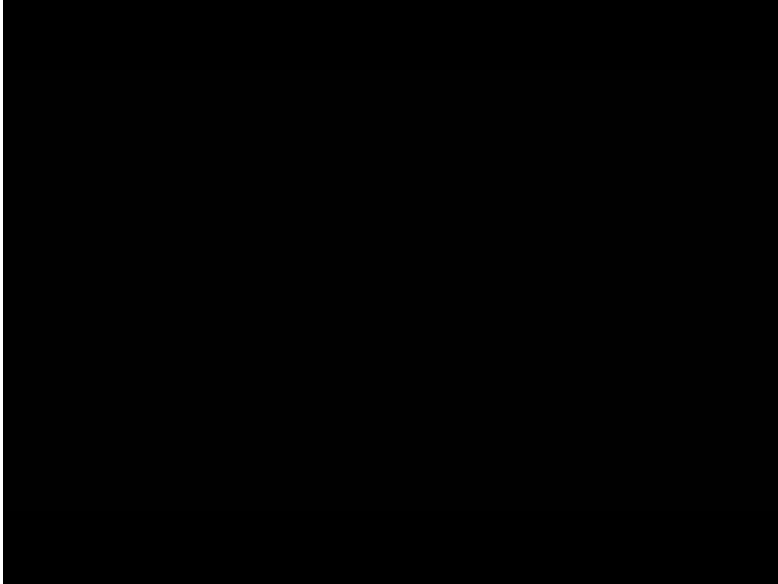
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3

the Scrum video...

4

4



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## Macro Schedule

1. core topics
2. deep-dive Q&A

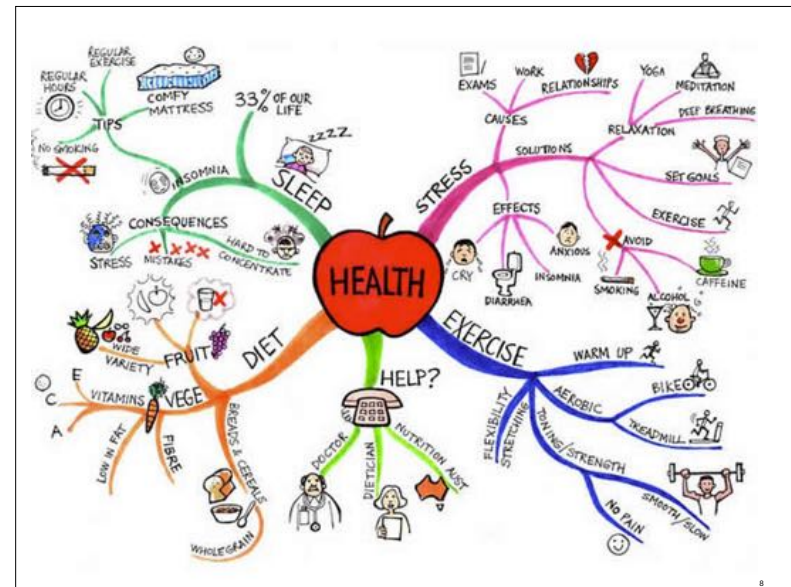
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## Core Topics

- |   |                              |
|---|------------------------------|
| 1. variability & complexity                       | 5. empirical process control |
| 2. agile  | 6. Scrum                     |
| 3. systems thinking, local vs system optimization | 7. adoption & change         |
| 4. lean thinking                                  | 8. scaling & LeSS            |

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# Preparation



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## Prerequisites

- completed the pre-readings

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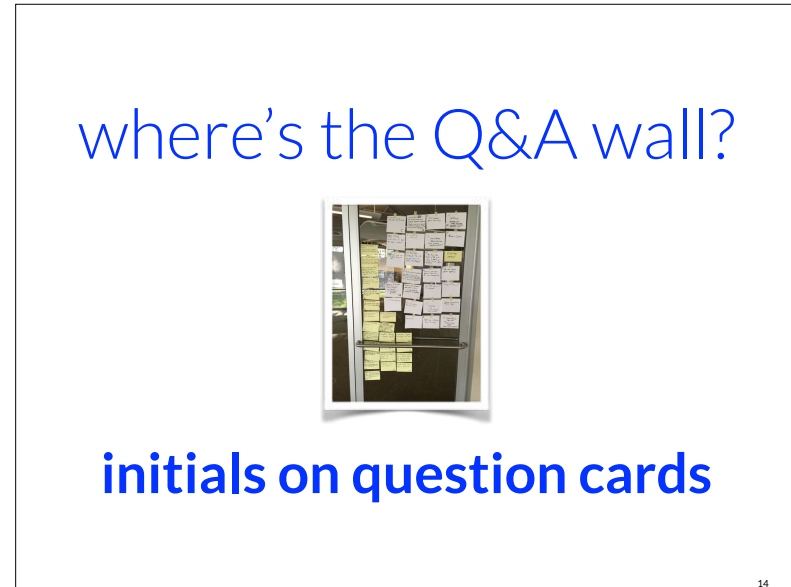
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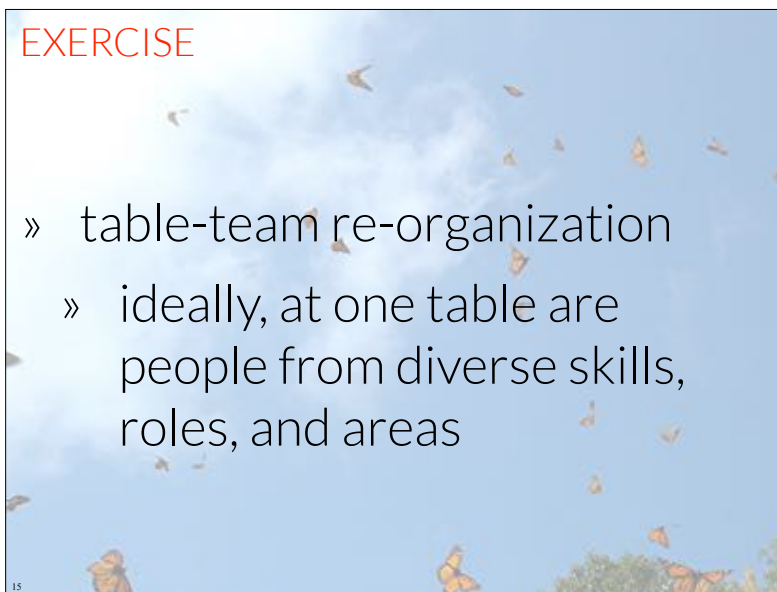
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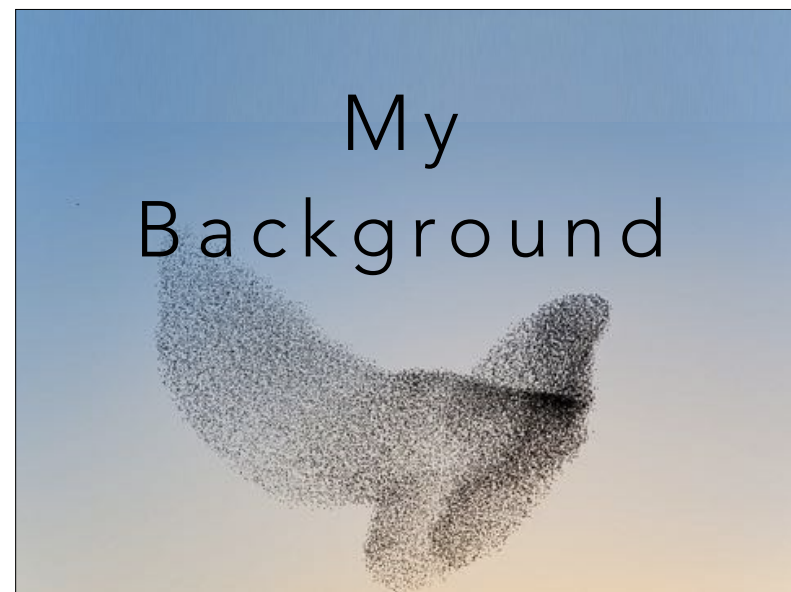
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15



16



don't believe  
anything i say

17

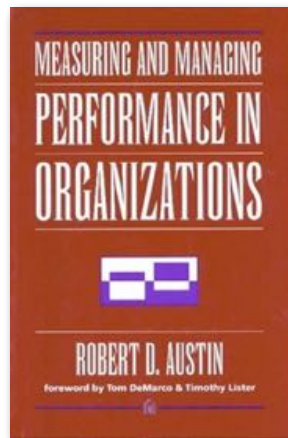
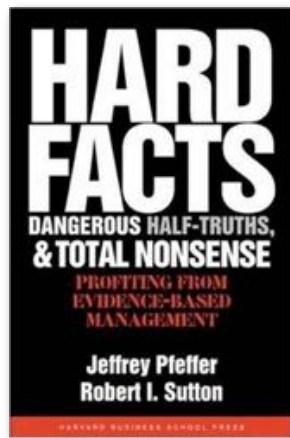
my biases...

18

evidence-based management

Stanford Business School

Harvard Business School



19

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evidence-based management

Harvard  
Business  
School

1986

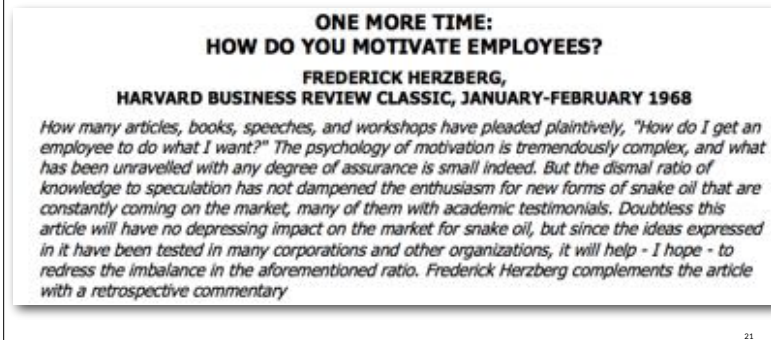


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## “Old School” & Evidence-Based

Harvard Business School: 1968



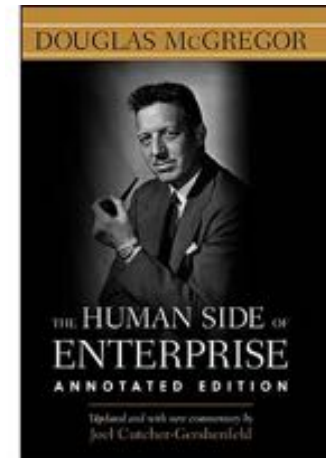
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## “Old School” & Evidence-Based

MIT Sloan School of Management

1960-present

“... good management requires a Theory Y orientation.”  
— MIT Sloan

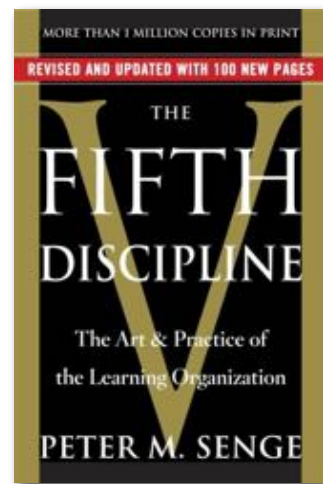


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## Systems Thinking & Evidence-Based

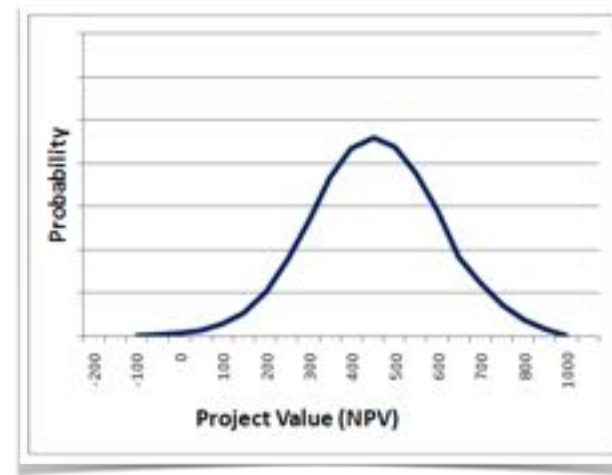
MIT Sloan School of Management

1958-present



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## Probabilistic (not deterministic) Modeling



24

my work...

25

Craig Larman

co-creator of LeSS (with Bas Vodde)

large + multisite + 'offshore'  
large-scale financial systems  
large-scale embedded systems  
large-scale telecom systems

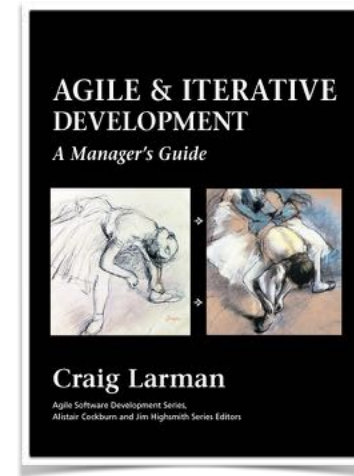
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first two scaling agile books...



27

one of the first agile books...

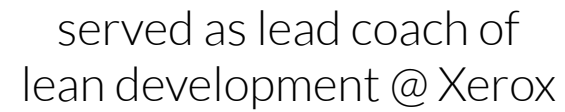


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28



29



3

- Ericsson
- JPMorgan
- Vodafone
- BAML
- Nokia Networks
- bwin.party
- UBS
- CISCO (Tandberg)
- Xerox, ...

3



31

# Variability

33

33

what are we  
about to learn?

34

34

## EXERCISE

- » individual do:
  - » write on 3 pieces of labeled paper:
    - » **E vs A%**: % variation of original effort **estimate** versus '**actual**' (per project)
    - » **RC%**: % **requirements change** or refinement after "start designing & implementing" (per project)
    - » **#F of P**: # **factors** that influence **productivity** variability?

35

35

## EXERCISE

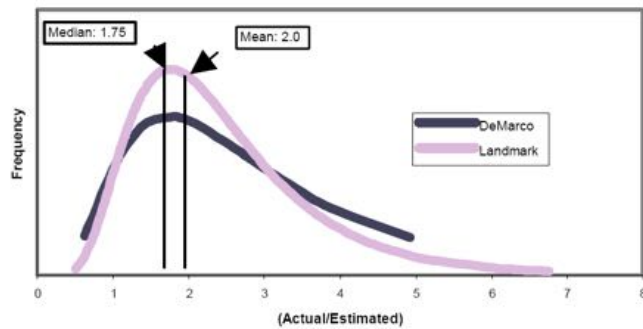
- » coach do:
  - » organize the papers in a physical histogram

36

36

p50 of actual = 2 x estimate, p90 = 3.25 x estimate  
Original estimates have a 10% chance or less of equaling actuals.

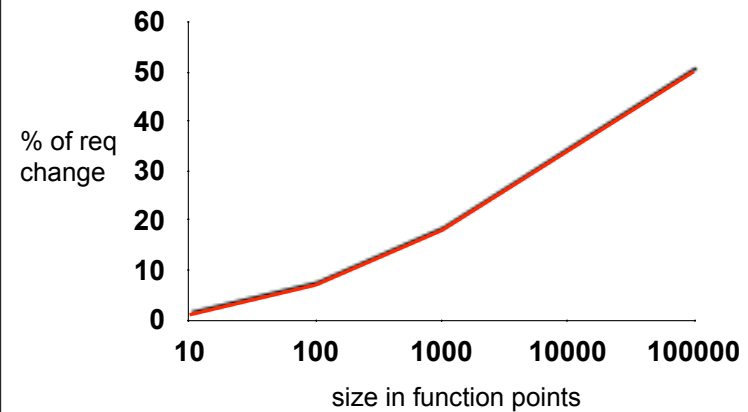
Figure 4: Probability Distribution Curve of Actual/Estimated



[DeMarco82, Little04]

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sample size: 6,700 product releases [Jones97]

38

38

“we’re better than that”  
the story of Budapest

39

39

## EXERCISE

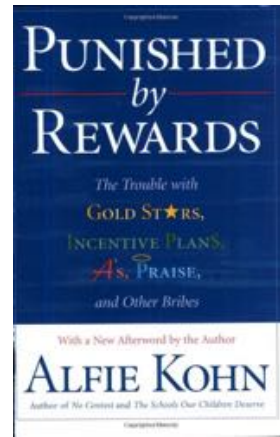
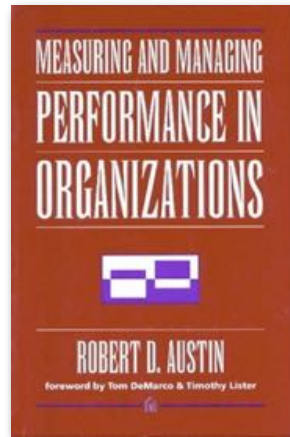
- » (table) team do:
- » how did the project managers get their bonus every quarter?

40

40



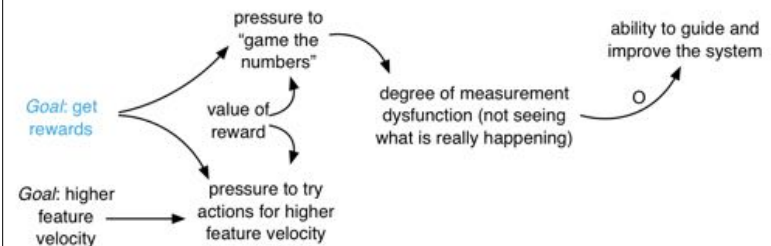
## Punished by Rewards



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41

## Your System Dynamics?



42

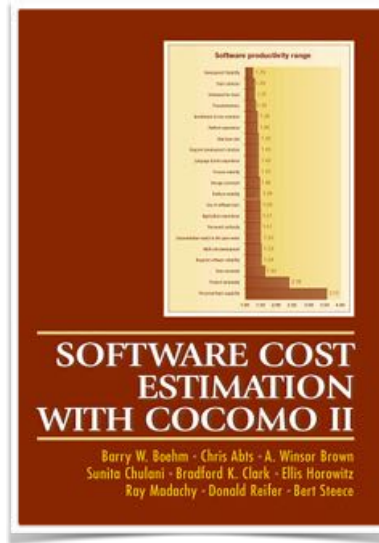
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# major factors influencing overall 'productivity' variability?

-> 21

and most of the major factors have 3+ sub-factors

-> "60" factors



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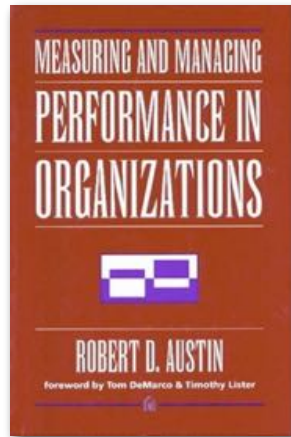
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what are your variability levels? ...

44

44

you have no accurate idea, and your so-called  
“actuals tracking” system is FAR from accurate



45

can you ascertain the  
source of your  
productivity variation  
from reports  
summarizing LOC or  
FPs or “feature-  
complete velocity”? ...

46

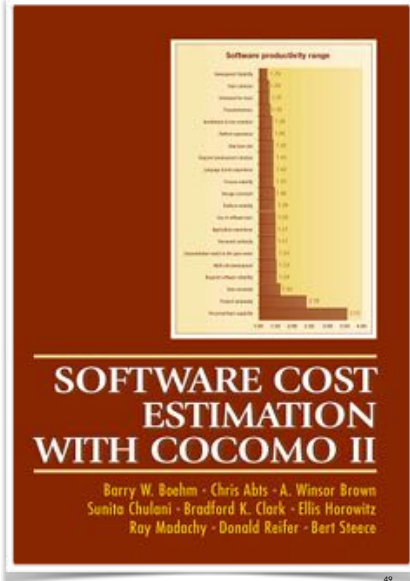
“they’re really fast”  
  
the story of Rochester  
  
the India Outsourcer

47

“they deliver a lot of  
features”  
  
the story of the 80%  
unused-features  
product

48

you have no accurate idea what are the causes (and their weights) of your productivity variance, or what side-effects “going faster” are creating



49

Shewert & Deming:

natural variability

manipulatable variability

50

**per definition,  
natural variability  
can't be reduced;  
planning & analysis  
do not help**

51

%

in Manufacturing?

in Development (R&D)?

52

hiding or “punishing”  
variability  
versus ...

53



**transparency  
& manage  
variability**

54

Business School  
planning...

55

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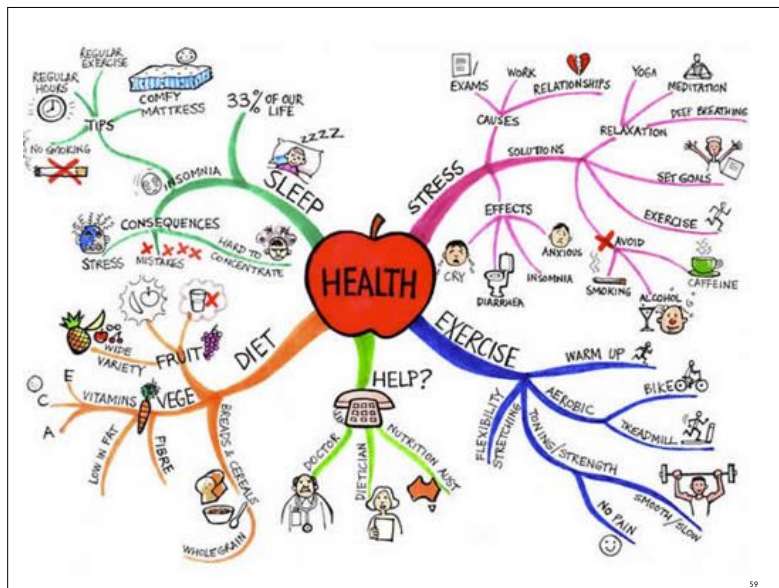
learn & educate  
why

57

## EXERCISE

- » team: standing: round robin
- » share aspects of the “variability story”

58



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## Complexity & Learning

60

what are we  
about to learn?

61

61

where does natural  
variability come from in  
development? ...

62

62

### EXERCISE

- » team: standing:
  - » list different sources of or kinds of **complexity** in development
  - » list different sources of or kinds of **learning** in development

63

63

### EXERCISE

- » coach:
  - » collect counts of kinds of **complexity & learning**

64

64



A lightbulb is centered in the frame, with the word "BIG" in large, white, block letters in the background. The text "significant complexity & learning in development" is overlaid in blue.

**significant  
complexity &  
learning in  
development**

65

bank story

“we don’t pay  
people to learn”

66

Managing Variability,  
Complexity, & Learning

67

what are we  
about to learn?

68

the assumptions of  
traditional  
management regarding  
**predictability, control,  
& variability?**

69

how to manage  
variability, complexity,  
& learning

70

different 'control'  
models depending on  
degree of variability &  
the need for feedback  
loops

71

lowering  
the  
cost of change &  
cost of learning &  
cost of feedback

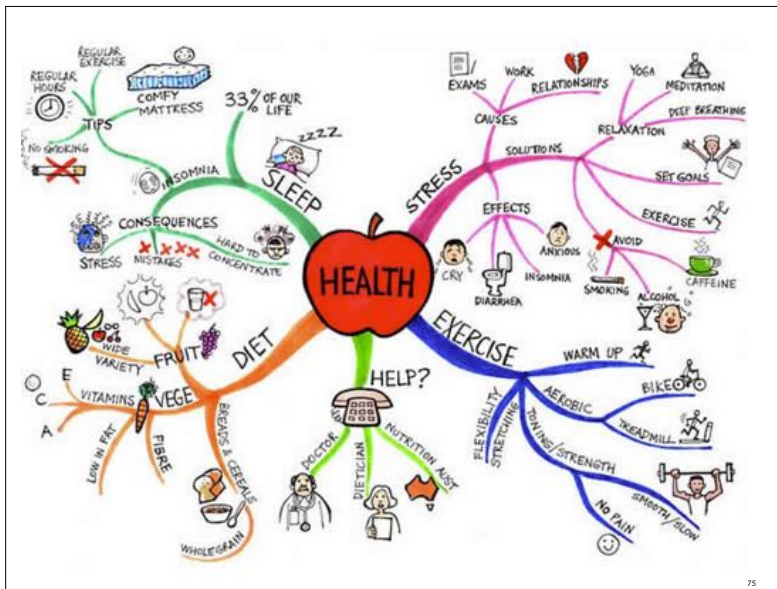
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# transparency & manage variability

73

learn & educate  
why

74



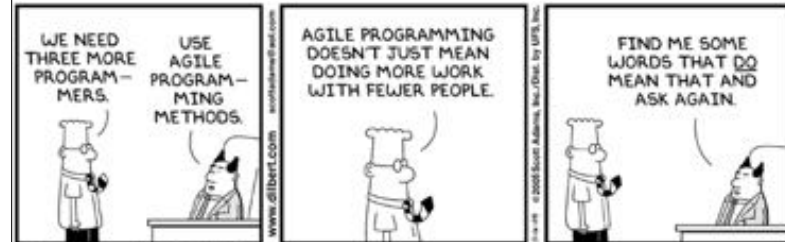
Agile?

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what are we  
about to learn?

77

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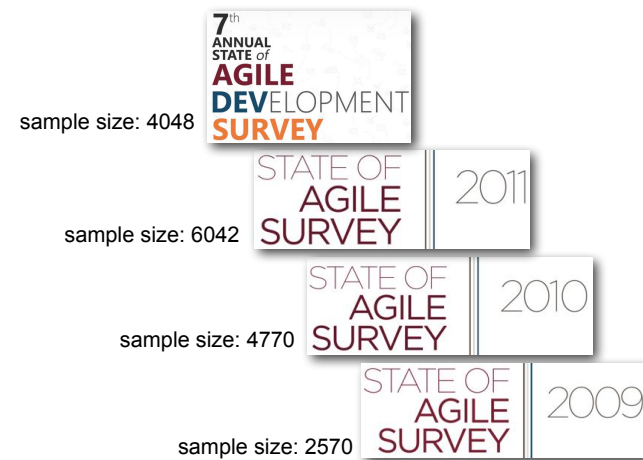
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the implications of  
“agile” management?...

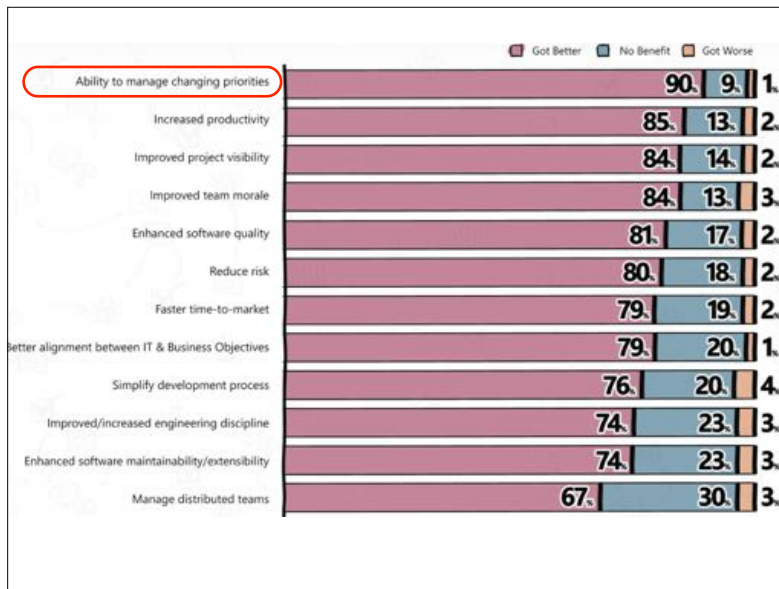
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80

80



81

'agile' ->  
lowering  
the  
cost of change &  
cost of learning &  
cost of feedback

82



83



84

... and implies  
‘agile’ is for  
**learning & adapting**

85

the  
**Agile Values ...**

86

### Manifesto for Agile Software Development

We are uncovering better ways of developing software by doing it and helping others do it.  
Through this work we have come to value:

**Individuals and interactions** over processes and tools  
**Working software** over comprehensive documentation  
**Customer collaboration** over contract negotiation  
**Responding to change** over following a plan

That is, while there is value in the items on the right, we value the items on the left more.

87

### EXERCISE

- » one person in team do:
- » What are agile frameworks for?

88



notice that 'agile'  
is **not a practice**

it is a set of **4 values...**

89

## Manifesto for Agile Software Development

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90

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What does a typical old-generation MANAGER or AUDITOR look for?

- **Processes and tools** over individuals and interactions
- **Comprehensive documentation** over working software
- **Contract negotiation** over customer collaboration
- **Following a plan** over responding to change

91

## EXERCISE

- » team: standing: round robin
- » a concrete change in your organization to support each of the agile values?

92

'agile' is **not a practice**

also a set of **12 principles...**

93

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## The 12 Agile Principles

1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
2. Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter time scale.
4. Business people and developers must work together daily.
5. Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.
6. The most effective method of conveying information to and within a development team is face-to-face conversation.

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## The 12 Agile Principles

7. Working software is the primary measure of progress.
8. Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
9. Continuous attention to technical excellence and good design enhances agility.
10. Simplicity—the art of maximizing the amount of work not done—is essential.
11. The best architectures, requirements, and designs emerge from self-organizing (self-managing) teams.
12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

95

95

## EXERCISE

- » coach:
- » for each principle, some concrete change in your organization to realize the principle?

96

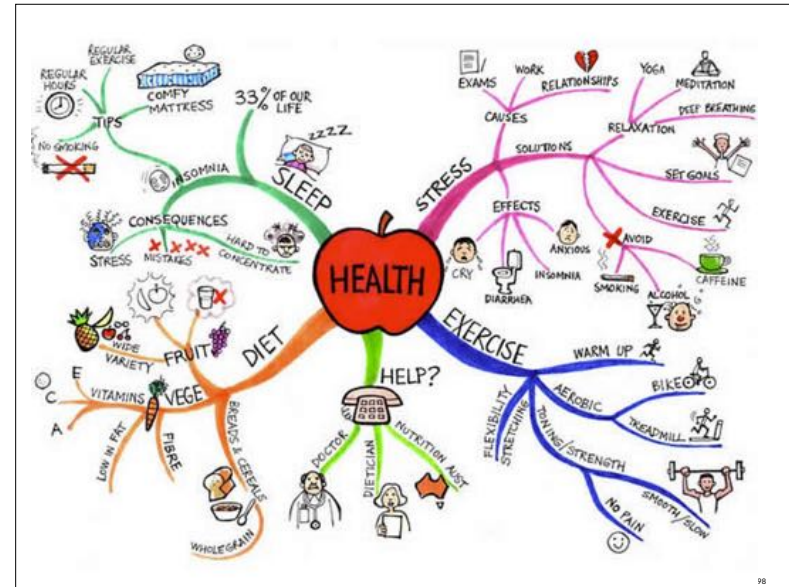
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'agile' is **not a practice**

an agile organization  
expresses the  
**4 values & 12 principles**

97

97



98

98

Systems Thinking:  
Local Optimization  
&  
System Optimization

99

99

what are we  
about to learn?

100

100

in traditional large-scale organizational design, the overarching and repeating theme is **local optimization**

101

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Local Optimization, Local Efficiency

“it’s more **efficient/productive** when a person/group does one thing”

102

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Local Optimization, Local Efficiency

“everyone is busy and doing their best on their task, yet the system is delivering slow and not delighting the user”



103

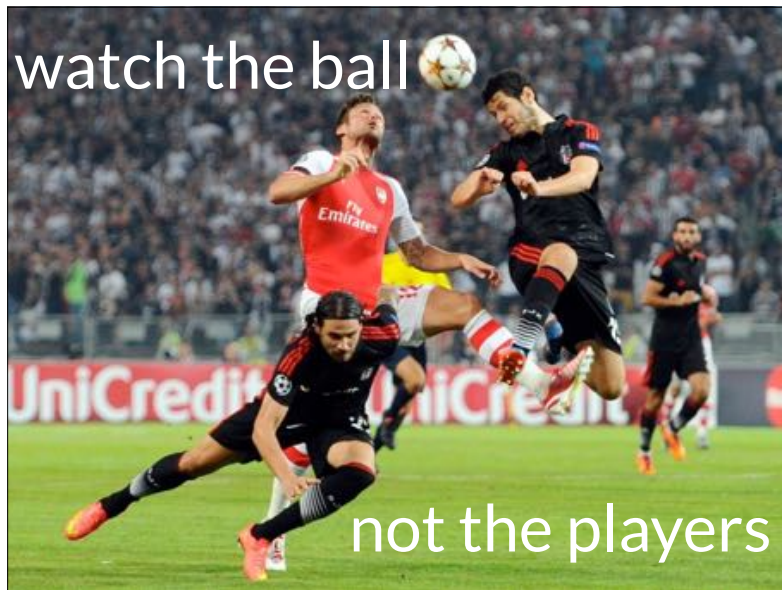
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system optimization? ...

(a part of systems thinking)

104

104



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## EXERCISE

- » individual:
  - » write 1 example of **local optimization** you've seen
- » coach:
  - » review some examples. impact on "concept-to-cash" cycle time, and customer delight?

106

106

learn & educate  
**why**

107

107

Local Optimization  
in Planning:  
The Contract Game



108

what are we  
about to learn?

109

109

the  
**Contract Game**

110

110

## EXERCISE

- » team: standing:
- » list negative consequences of the Contract Game?

111

111

the Contract Game  
**hides** variability  
rather than  
**manages** variability

112

112



## End of the Contract Game

- The change implications only become clear in **large-scale**
- ... because it's in large-scale that **there are “baked in” major contract-game structures creating a resistant “status quo”**

113

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## EXERCISE

- » team:
  - » what's needs to change to fix the root causes of the Contract Game?
- » coach:
  - » review & elaborate

114

114

## the Agile Values ...

115

115

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remove local optimization of  
planning with...

**ship every Sprint, with  
adaptive planning steered by a  
business-side Product Owner**

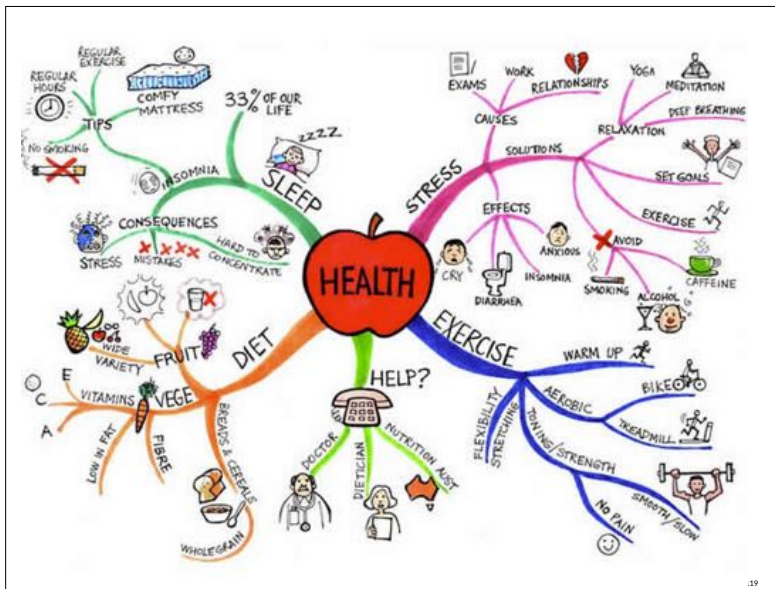
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117

learn & educate  
**why**

118

118



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want to see the explanation again?

LeSS More with LeSS

Large-Scale Scrum Courses & Events Coaching Case Studies Resources

Profile Courses Event Company

LeSS Resources

Articles

Books & LeSS Chapters

Book images

Videos

Discussion Groups

Graphics

### Videos

The following videos are available related to LeSS:

- 2015 Feb - Systems Optimization & Organizational Design: a LeSS Perspective - Craig Larman
- 2015 Feb - In-depth: Component Teams Issues (at 14:15), after short LeSS intro - Craig Larman - Oslo
- 2015 Feb - Introduction to LeSS (short video) - Craig Larman
- 2015 Jan - Dave Prior from Projects@Work interview with Bas Vodde (Audio) And on SoundCloud at
- 2014 Nov - Large-Scale Scrum (LeSS) - Bas Vodde - Agile Singapore
- 2013 Nov - Principles of Managing Software Development - Bas Vodde - Agile Singapore
- 2013 Feb - Scaling Lean & Agile Development - Craig Larman - Valtech France
- 2013 Mar - Practices for Scaling Lean & Agile Development - Craig Larman - Agile India 2013
- 2012 Nov - Scaling Agile with Large-Scale Scrum - Craig Larman - Keynote @ Ericsson Agile Conference
- 2012 Aug - Large-Scale Scrum Scaling Agile - Challenges of Adoption - Craig Larman
- 2012 May - Large Product Development with Large-Scale Scrum - Craig Larman - BSC Agile Methods SG (London)
- 2011 Jun - Large-Scale Scrum - Bas Vodde - Interview by InfoQ
- 2011 Mar - Scaling Agile with Large-Scale Scrum - Craig Larman - Keynote QCon London
- 2011 Jan - Large-Scale Software Development - Bas Vodde - Podcast on Software Engineering Radio

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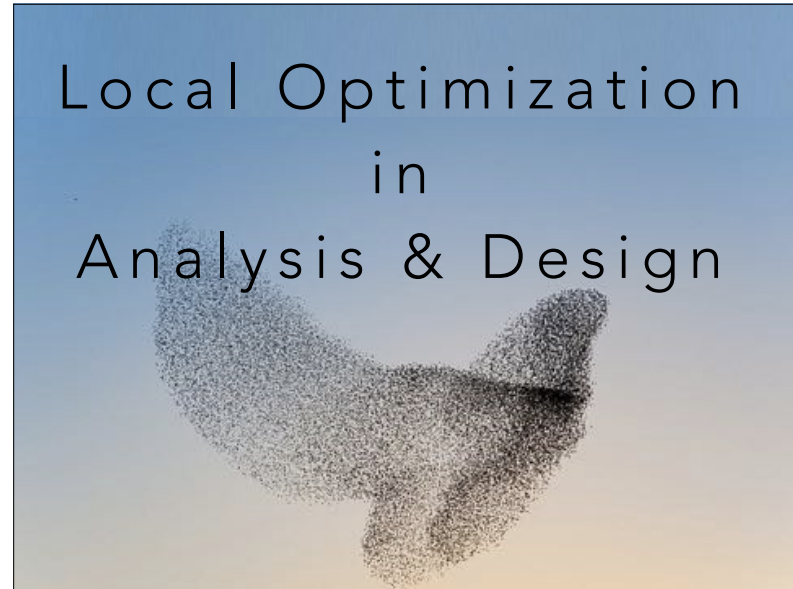
video

## Contract Game & Experts

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## Local Optimization in Analysis & Design



122

what are we  
about to learn?

123

123

## Lean Wastes

1. **Over-production**—of intermediate, WIP, or finished things; sooner, faster, greater than demand
2. **Inventory**—intermediate, WIP, or finished things
3. **Over-processing**—& extra processes, rediscovery
4. **Conveyance**—& handoff
5. **Motion**—& task switching
6. **Waiting**—& delay
7. **Defects & finding/correcting**—tasks to find & correct: test, inspect, review, modify
8. **Not using people's full potential**—working to title, not multi-skilling
9. **Knowledge/information scatter/loss**—& connection to handoff & inventory & rediscovery; communication barriers: indirection, 1-way flows
10. **Wishful thinking**—[design/spec/estimate] is correct, learning & feedback is only mildly important, what said=what heard, ...

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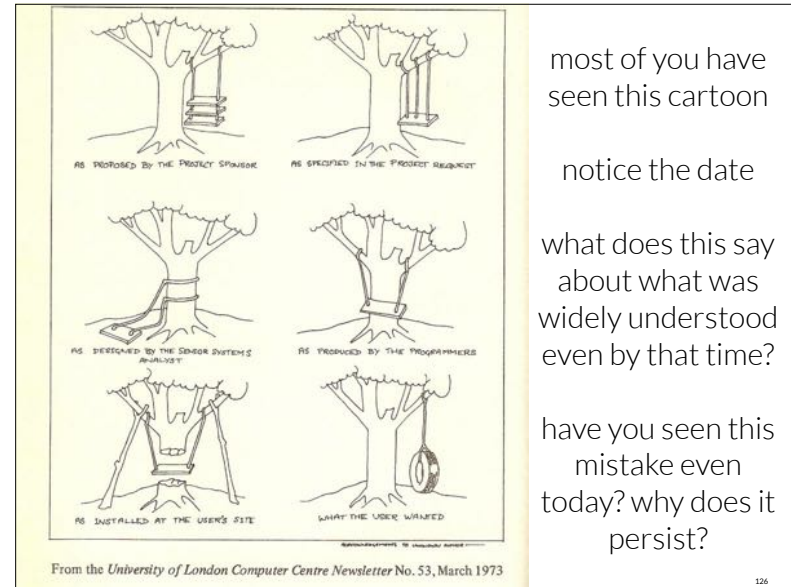
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## EXERCISE

- » team: standing: list
  - » **why** are these waste in the eyes of paying customers or investors?
    - » Over-production
    - » Inventory
    - » Over-processing
    - » Conveyance—& handoff
    - » Motion—& task switching
    - » Waiting—& delay
    - » Defects & finding/correcting
    - » Not using people's full potential
    - » Knowledge/information scatter/loss
    - » Wishful thinking
- » coach: review answers

125

125



126

most of you have  
seen this cartoon

notice the date

what does this say  
about what was  
widely understood  
even by that time?

have you seen this  
mistake even  
today? why does it  
persist?

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## Lean Wastes

1. **Over-production**—of intermediate, WIP, or finished things; sooner, faster, greater than demand
2. **Inventory**—intermediate, WIP, or finished things
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## EXERCISE

- » team: at wall/flipchart
- » write: what lean wastes are implied by the cartoon?

128

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## EXERCISE

- » coach:
  - » relationship of local-optimization thinking & wastes?

129

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## EXERCISE

- » coach:
  - » relationship of local-optimization thinking & “tree swing organization”?

130

130

what is really going on  
during “**analysis**”?

131

131

analysis is **learning**

we are specifying  
requirements

we are learning

132

132

## EXERCISE

- » coach:
  - » what **role** ultimately hands-on **applies** the learning to **create running software**?

133

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“intermediate analysts talk to users, clarify and write requirements for developers”

**local optimization**  
**many wastes**

134

134

*we're not lean & agile* 🥵

**intermediate analysts** talk to users, clarify and write **requirements** for developers

135

135

*now we're lean & agile!* 😄

~~intermediate analysts~~  
**Product Owners** talk to users, clarify and write ~~requirements~~ **stories** for developers

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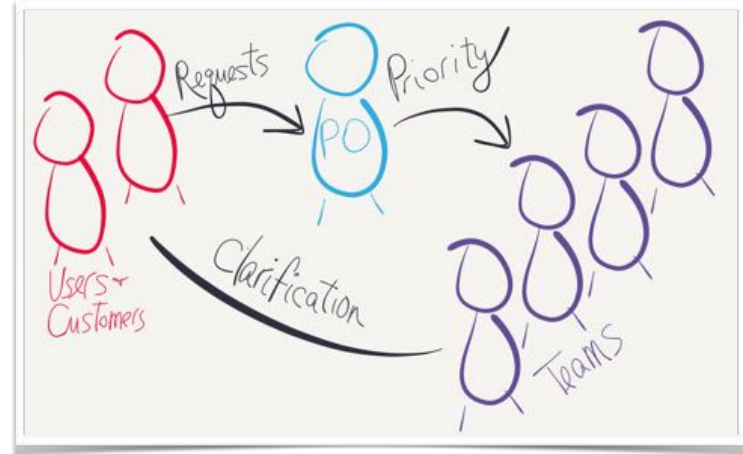
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therefore...

137

137

## Clarification vs Prioritization



138

138

remove local optimization of  
analysis with...

**hands-on developers learning/  
clarifying with hands-on users**

139

139

remove local optimization of  
architecture/design with...

**hands-on developers doing  
architecture/design**

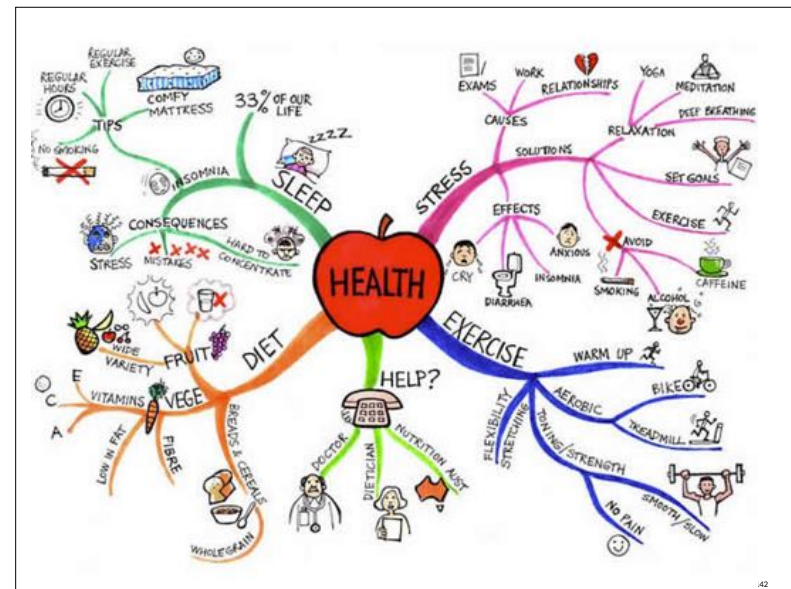
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learn & educate  
why

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video  
the analyst manger

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Local Optimization  
in  
Programming

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what are we  
about to learn?

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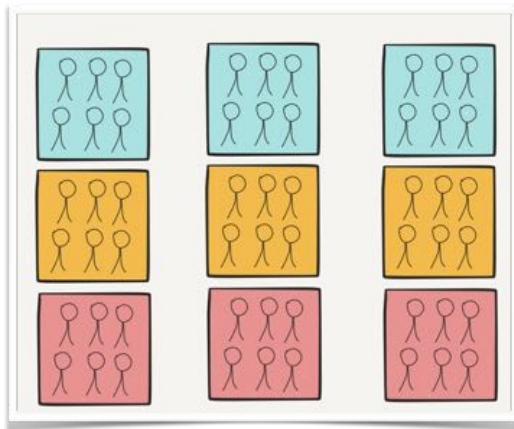
the One True  
system optimizing goal?

146

145

146

## Component Teams



147

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## EXERCISE

- » team: standing
- » one person explain some of the consequences of having component teams

148

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want to see the explanation again?

The screenshot shows the LeSS website with a navigation bar at the top. The main content area is titled "Videos" and lists several videos related to LeSS. The first video in the list is "2015 Feb - Systems Optimization & Organizational Design: a LeSS Perspective - Craig Larman", which is highlighted with a red underline. Other videos include "2015 Feb - In-depth: Component Teams Issues (at 14:15), after short LeSS intro - Craig Larman - Oslo", "2015 Feb - Introduction to LeSS (short video) - Craig Larman", "2015 Jan - Dave Prior from Projects@Work interview with Bas Vodde (Audio) And on SoundCloud at", "2014 Nov - Large-Scale Scrum (LeSS) - Bas Vodde - Agile Singapore", "2013 Nov - Principles of Managing Software Development - Bas Vodde - Agile Singapore", "2013 Feb - Scaling Lean & Agile Development - Craig Larman - Valtech France", "2013 Mar - Practices for Scaling Lean & Agile Development - Craig Larman - Agile India 2013", "2012 Nov - Scaling Agile with Large-Scale Scrum - Craig Larman - Keynote @ Ericsson Agile Conference", "2012 Aug - Large-Scale Scrum Scaling Agile - Challenges of Adoption - Craig Larman", "2012 May - Large Product Development with Large-Scale Scrum - Craig Larman - BSC Agile Methods 5G (London)", "2011 Jun - Large-Scale Scrum - Bas Vodde - Interview by InfoQ", "2011 Mar - Scaling Agile with Large-Scale Scrum - Craig Larman - Keynote QCon London", and "2011 Jan - Large-Scale Software Development - Bas Vodde - Podcast on Software Engineering Radio".

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The book cover for "Scaling Lean & Agile Development" by Craig Larman and Bas Vodde features a dark red background with the title in white. Below the title is a photograph of several human heads in profile, some of which are connected by a network of lines, suggesting a complex system or network. The authors' names are listed below the photograph.

**Table of Contents**

1. Introduction

**Thinking Tools**

2. Systems Thinking
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6. Be Agile

**Organizational Tools**

7. Feature Teams
8. Teams
9. Requirement Areas
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11. Large-Scale Scrum

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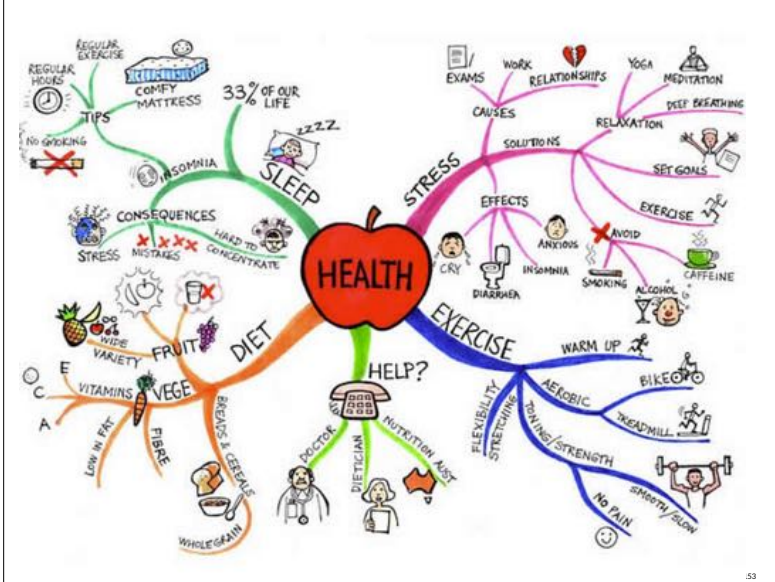
remove local optimizations  
of programming with...

**feature teams**  
**coding cross-components**

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learn & educate  
**why**

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154

what are we  
about to learn?

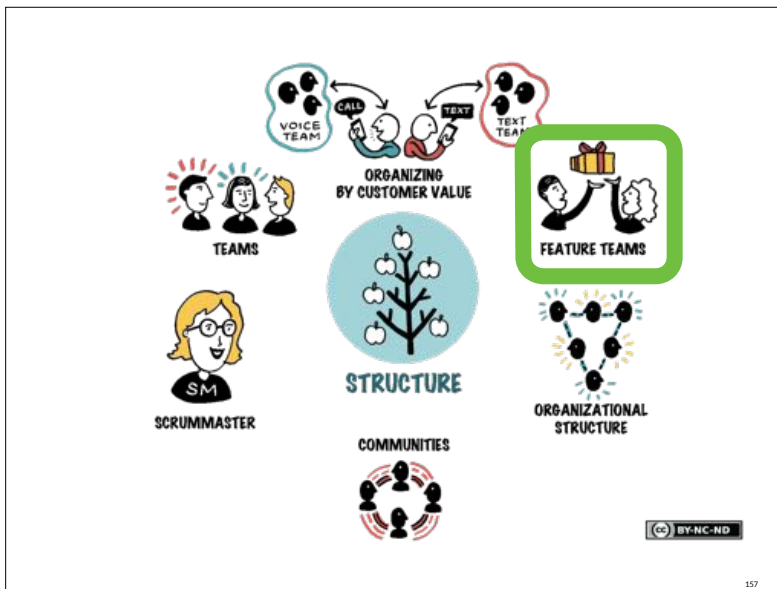
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Decaling with LeSS

remove local  
optimizations of single-  
specialist groups with

**feature teams**

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## Only Feature Teams?

### LeSS Rule:

*The **majority** of the teams are customer-focused feature teams.*

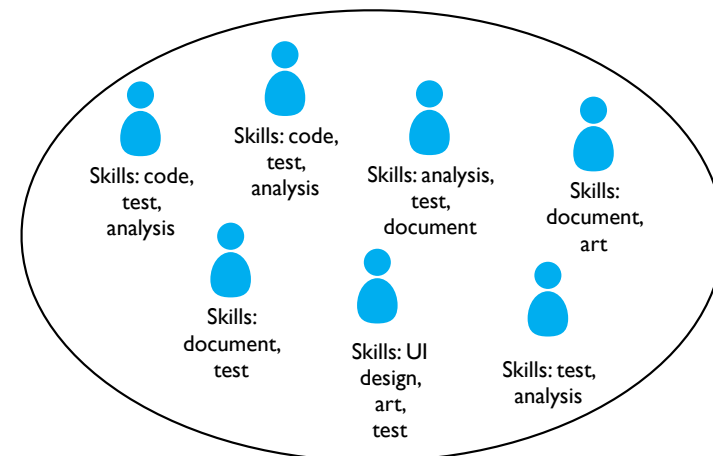
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## Team-Based Organization

- Structure using **real teams** as building block
- (1) **Dedicated**, (2) **Cross-functional**, (3) **Co-located**, (4) **Stable, long-lived** (for years)
- Teams (not individuals) as unit of 'resourcing'
- Give work to long-lived teams that create, don't create short-term teams for work

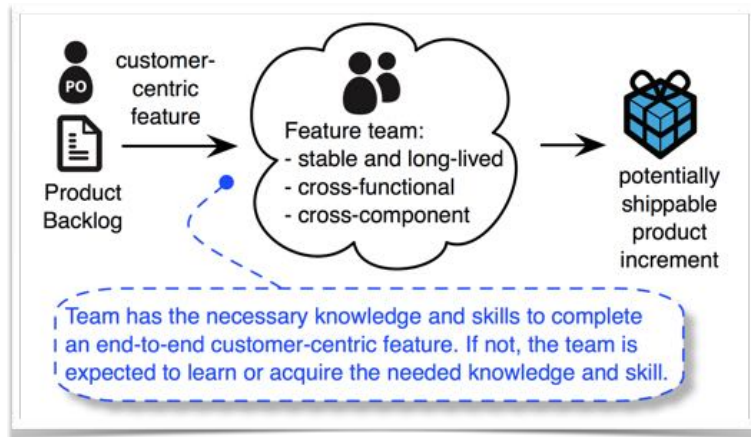
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## Learning, Multi-Functional People



160

## Feature Teams



161

## Feature Teams: Change

- seems straightforward
- but change implications seen only at large-scale...

162

analysts and/or  
UX/UI designers



DBAs



architects



component-1  
programmers



component-2  
programmers



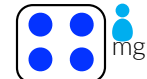
test/QA  
group



a likely traditional  
large-scale  
organizational  
structure before  
adopting Scrum

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analysts and/or  
UX/UI designers



DBAs



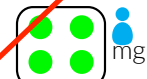
architects



component-1  
programmers



component-2  
programmers



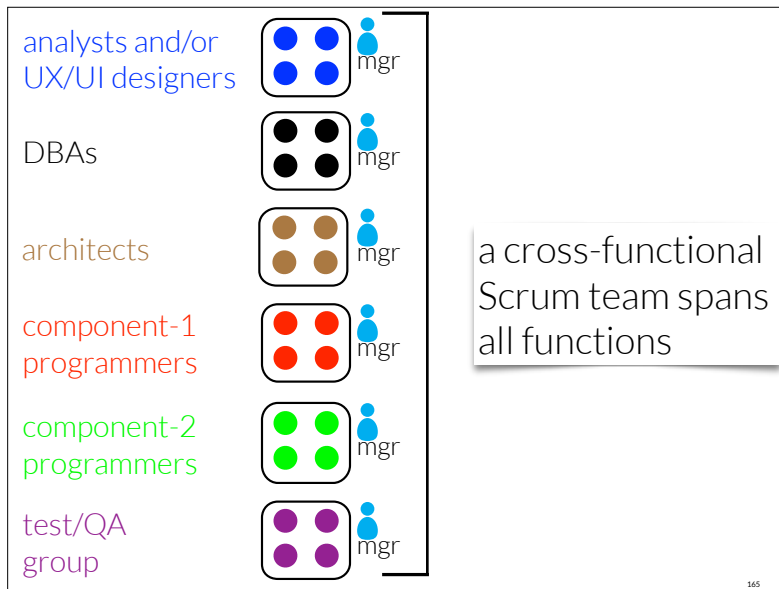
test/QA  
group



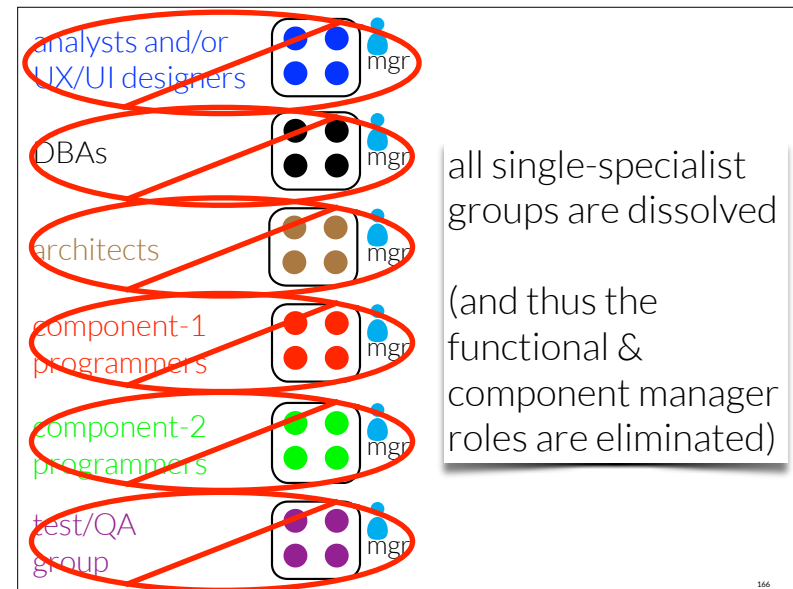
Scrum is not  
for just these  
(or any other)  
subgroups

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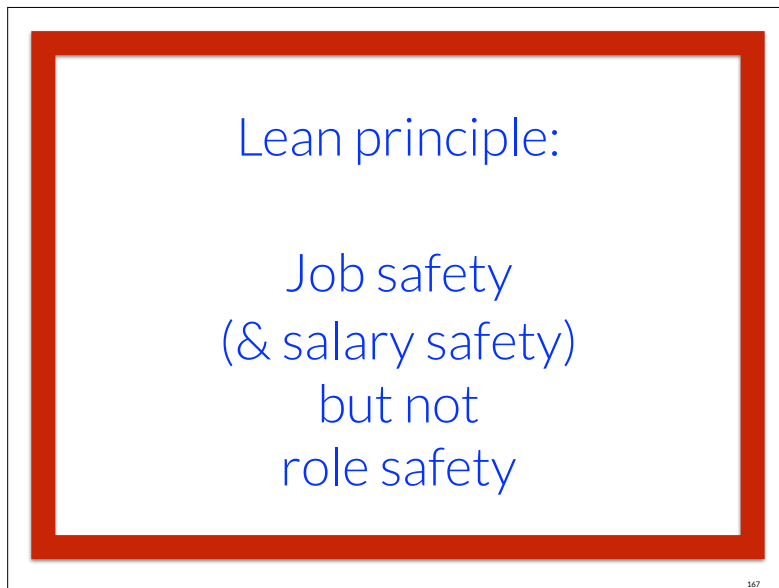




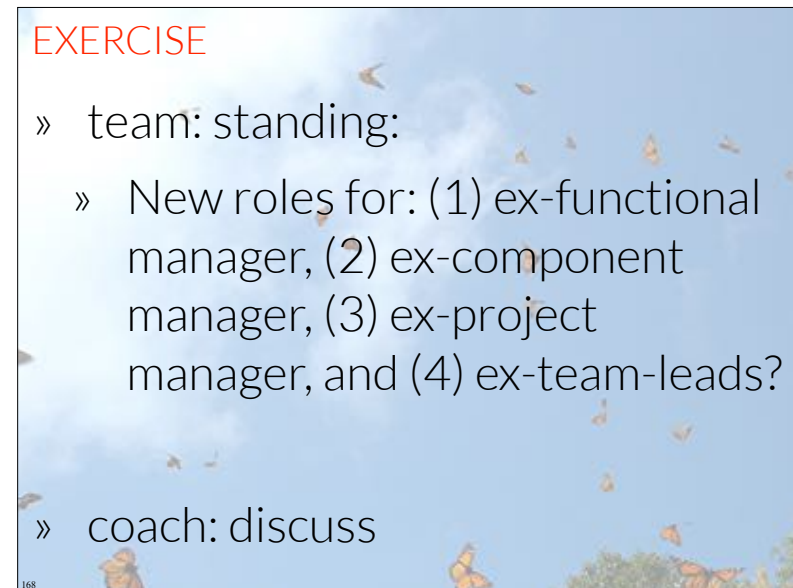
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Only Title: (Product) Developer

*Scrum Guide:*

“Scrum recognizes no titles for Development Team members other than Developer, regardless of the work being performed by the person; **there are no exceptions to this rule.**”

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EXERCISE

» coach: Why?

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don't wait for  
the org chart

171

171

Not a Team of Single-Specialists

*Scrum Guide:*

“Team does not contain sub-teams dedicated to particular domains such as testing or analysis”

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## EXERCISE

» coach: Why?

173

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## Managers/Leads Don't Direct Workers

*Scrum Guide:*

“...the Team isn't allowed to act on what anyone else says [except the Product Owner] ... Teams are self-organizing...”

hence, no assigned **team/tech leads**

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## EXERCISE

» coach: Why?

175

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reminder...

1 “50 person” group

not entire company

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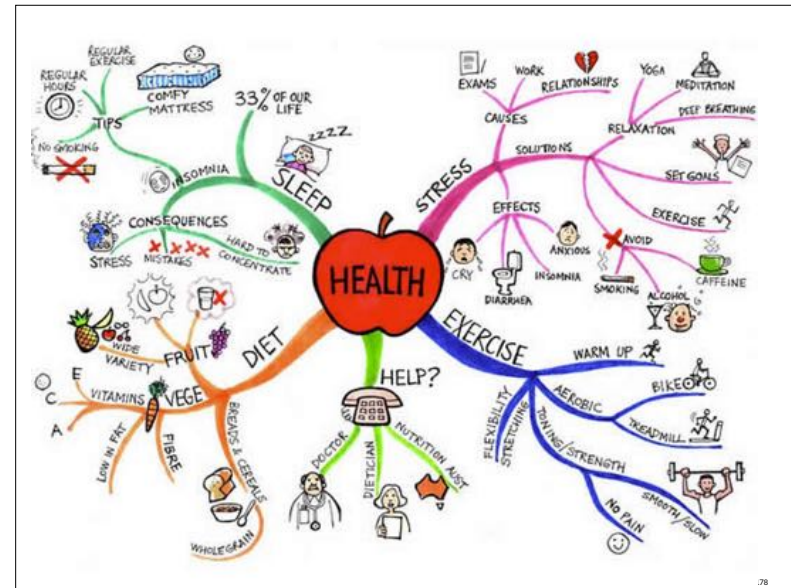
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## EXERCISE

- » individual:
- » briefly review this module

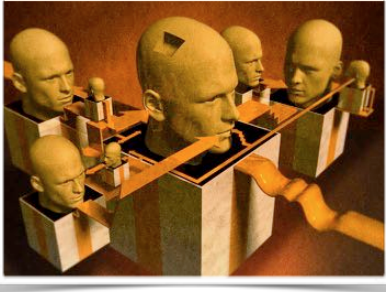
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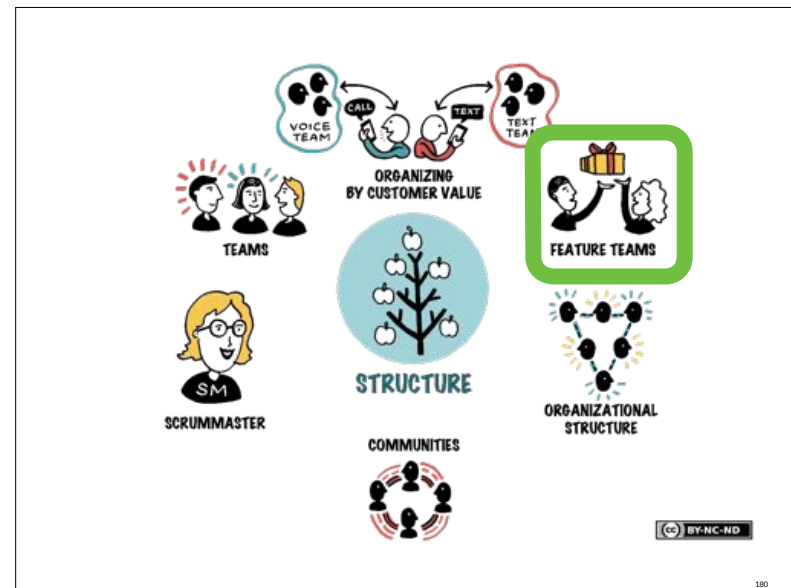


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<p><b>Scaling Lean &amp; Agile Development</b></p> <p>Thinking and Organizational Tools for Large-Scale Scrum</p> <p>Craig Larman Bas Vodde</p> 	<p><b>Table of Contents</b></p> <ul style="list-style-type: none"> <li>1. Introduction</li> </ul> <p><b>Thinking Tools</b></p> <ul style="list-style-type: none"> <li>2. Systems Thinking</li> <li>3. Lean Thinking</li> <li>4. Queueing Theory</li> <li>5. False Dichotomies</li> <li>6. Be Agile</li> </ul> <p><b>Organizational Tools</b></p> <ul style="list-style-type: none"> <li><b>7. Feature Teams</b></li> <li>8. Teams</li> <li>9. Requirement Areas</li> <li>10. Organization</li> <li>11. Large-Scale Scrum</li> </ul>
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video

team work

181

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# Larman's Laws of Organizational Behavior



182

why so much?...

fake **Lean**

fake **Scrum**

fake **Kanban**

fake **DevOps**

fake **AnyChangeIdea**

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## Larman's 4 Laws of Organizational Behavior

1. Organizations are implicitly optimized to avoid changing the status quo middle- and first-level manager and "specialist" positions & power structures.
2. As a corollary to (1), any change initiative will be reduced to overloading or redefining the new terminology to mean basically the same as status quo.
3. As a corollary to (1), any change initiative will be derided as "purist", "theoretical", and "needing pragmatic customization for local concerns" — which deflects from addressing weaknesses and manager/specialist status quo.
4. Culture follows structure (or culture follows system)

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## Culture follows Structure

- has change implications
- most applicable in large, established organizations
- conversely, in a start-up with 5 people, “**structure follows culture**” is a strong pattern

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## Lean Thinking

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186

what are we  
about to learn?

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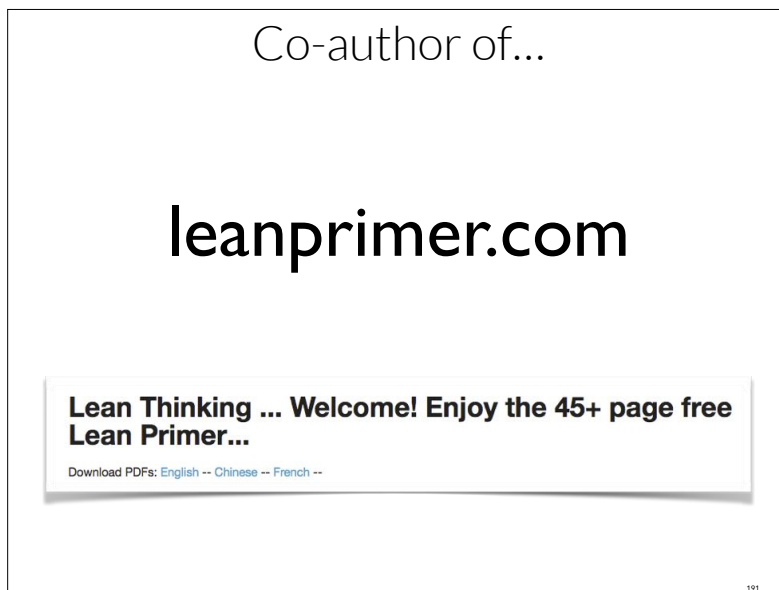
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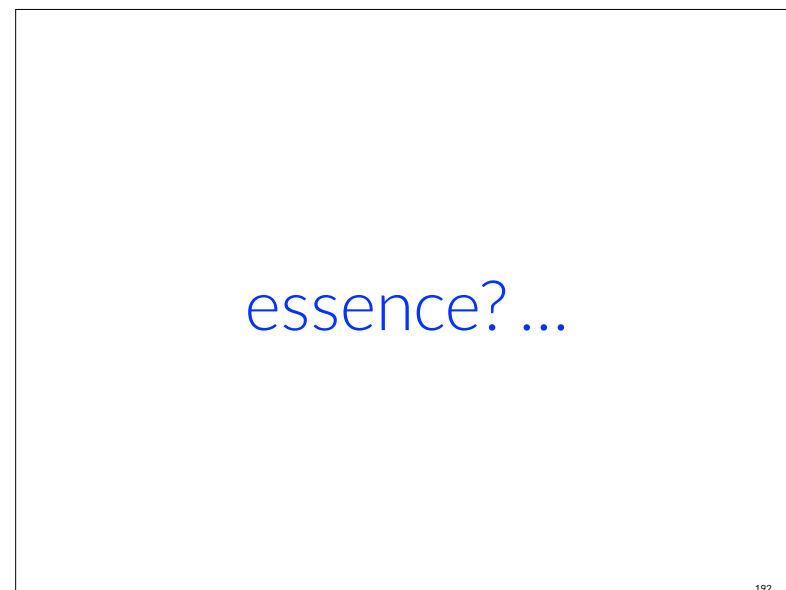
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*The essence of [the Toyota Way] is that each individual employee is given the opportunity to find problems in his own way of working, to solve them and to make improvements.*

— Wakamatsu & Kondo

*The root of the Toyota Way is to be dissatisfied with the status quo; you have to ask constantly, “Why are we doing this?”*

— Watanabe (Toyota CEO)

*Standards are not developed and then communicated from headquarters. ...We must let individuals decide what they will do to fix their problems and close gaps. We cannot have someone from corporate saying you need to do X, Y, Z, because this is completely contrary to Toyota problem solving.*

— Toyota manager [LH08]

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193

people/teams own  
their own processes &  
continuously  
experiment with  
improving them

194

194

conform to  
centralized standards  
& “best practices”

195

195

external “lean consultants”  
who identify problems and  
plan the solutions

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essence? ...

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“Build people, then build products”



— classic Toyota quotes

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“job safety, but not role safety”

### Toyota Tries To Avoid Layoffs, Wage Freezes And Shorter Work Weeks Instead

Joe Weisenthal | February 13, 2009 | 🔥 55 | 💬 2

Thursday April 21, 2011

#### Toyota's behavior is commendable

Page 2 of 2

But the remaining 15 percent come from Japan. Like other car companies - including Chrysler, Ford and Nissan - Toyota must slow production in North America to preserve parts.

Toyota's corporate behavior is remarkable.

It is trying to keep its doors open and its employees working - cutting hours of operation, but trying to avoid layoffs.

Advertiser

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laying people off

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## EXERCISE

- » 1 person in each team:
- » some essentials of lean thinking?
- » misconceptions?

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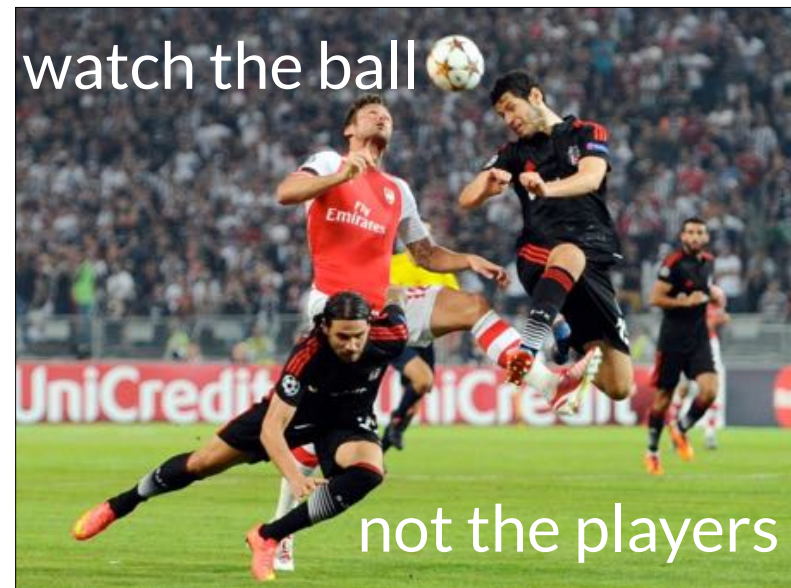
more? ...

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Sustainable shortest lead time, best quality and value (to people and society), most customer delight, lowest cost, high morale, safety		
<b>Respect for People</b> <ul style="list-style-type: none"> <li>- don't trouble your 'customer'</li> <li>- "develop people, then build products"</li> <li>- no wasteful work</li> <li>- teams &amp; individuals evolve their own practices and improvements</li> <li>- build partners with stable relationships, trust, and coaching in lean thinking</li> <li>- develop teams</li> </ul>	<b>Product Development</b> <ul style="list-style-type: none"> <li>- long-term great engineers</li> <li>- mentoring from manager-engineer-teacher</li> <li>- cadence</li> <li>- cross-functional</li> <li>- team room + visual mgmt</li> <li>- entrepreneurial chief engineer/product mgr</li> <li>- set-based concurrent dev</li> <li>- create more knowledge</li> </ul>	<b>Continuous Improvement</b> <ul style="list-style-type: none"> <li>- Go See</li> <li>- kaizen</li> <li>- spread knowledge</li> <li>- small, relentless</li> <li>- retrospectives</li> <li>- 5 Whys</li> <li>- eyes for waste                             <ul style="list-style-type: none"> <li>* variability, overburden, NVA ... (handoff, WIP, info scatter, delay, multi-tasking, defects, wishful thinking...)</li> </ul> </li> <li>- perfection challenge</li> <li>- work toward flow (lower batch size, Q size, cycle time)</li> </ul>
<b>14 Principles</b> long-term, flow, pull, less variability & overburden, Stop & Fix, master norms, simple visual mgmt, good tech, leader-teachers from within, develop exceptional people, help partners be lean, Go See, consensus, reflection & kaizen		
Management applies and teaches lean thinking, and bases decisions on this long-term philosophy		

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~~local optimization/  
efficiency~~

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value stream

perfection goal:  
value flow to customer  
without pause or impediment

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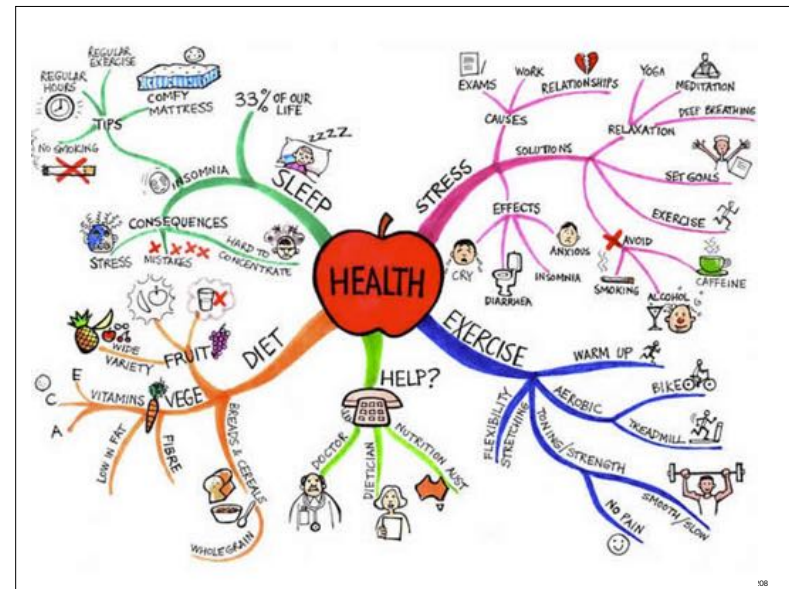
Better Value Stream Ratio? **Subtractive**

Total task time of worker



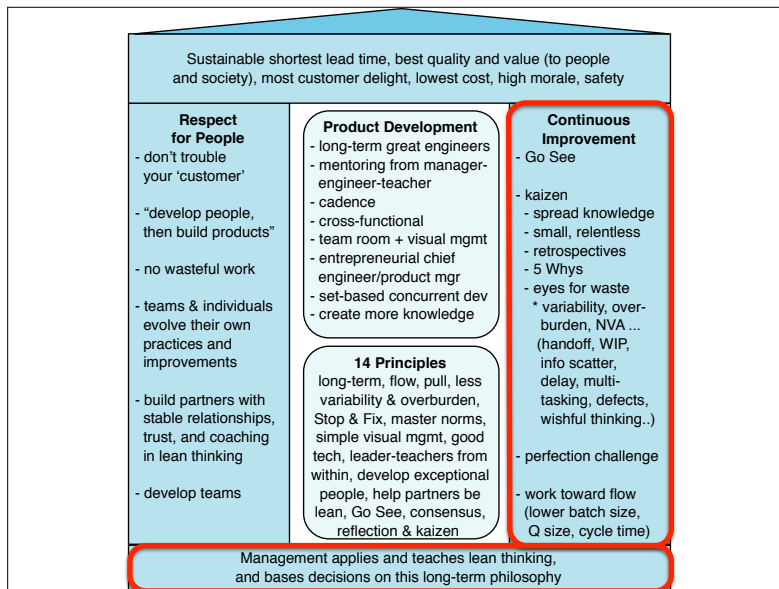
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## Managers: Go See at Gemba



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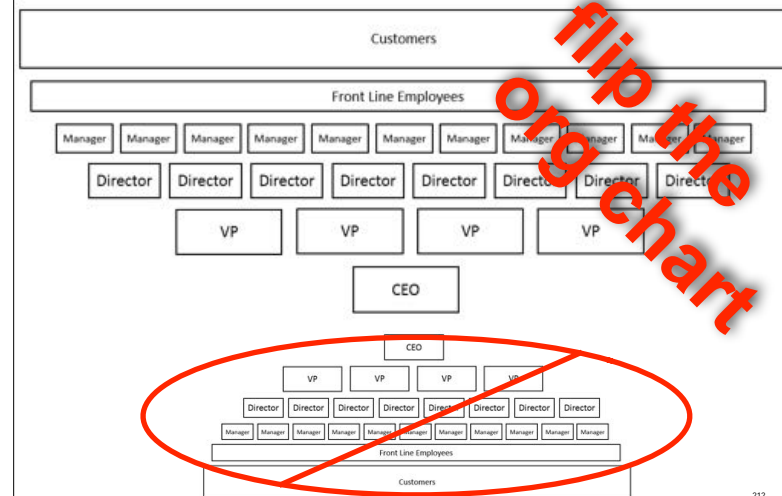
## EXERCISE

- » coach:
  - » where is gemba in software development?
  - » why Go See?
  - » is it micro-management?

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## Managers: Go See at Gemba & Help



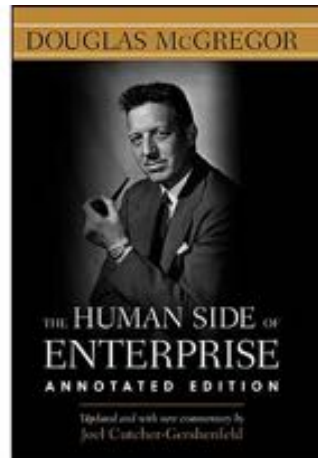
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## Theory Y Management Culture

“... good management requires a Theory Y orientation.”

— MIT Sloan School of Management



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## Managers: Go See at Gemba & Help

### Decoding the DNA of Toyota

Harvard  
Business  
Review

Sept. 1999

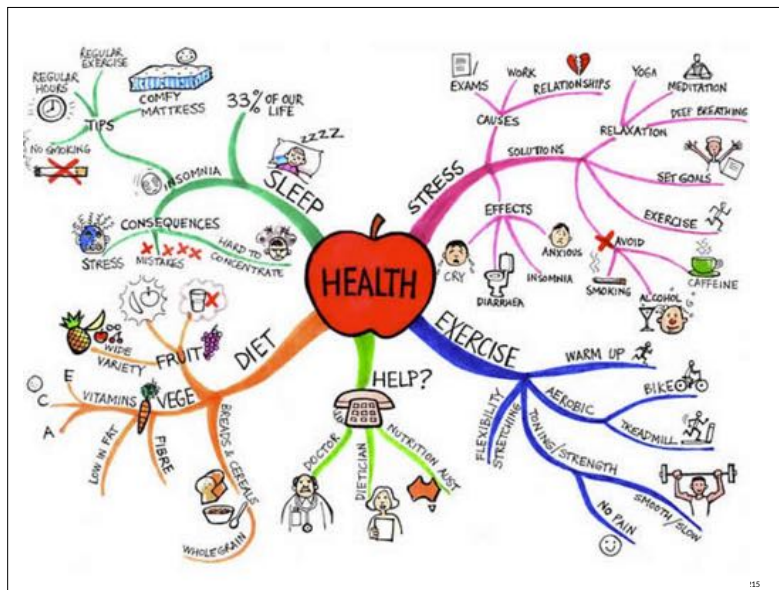
“Frontline workers make the improvements to their own jobs, and their supervisors provide assistance and teaching.”

“That’s why at these organizations all managers are expected to be able to do the jobs of everyone they supervise.”

“My manager can do my job better than me.”

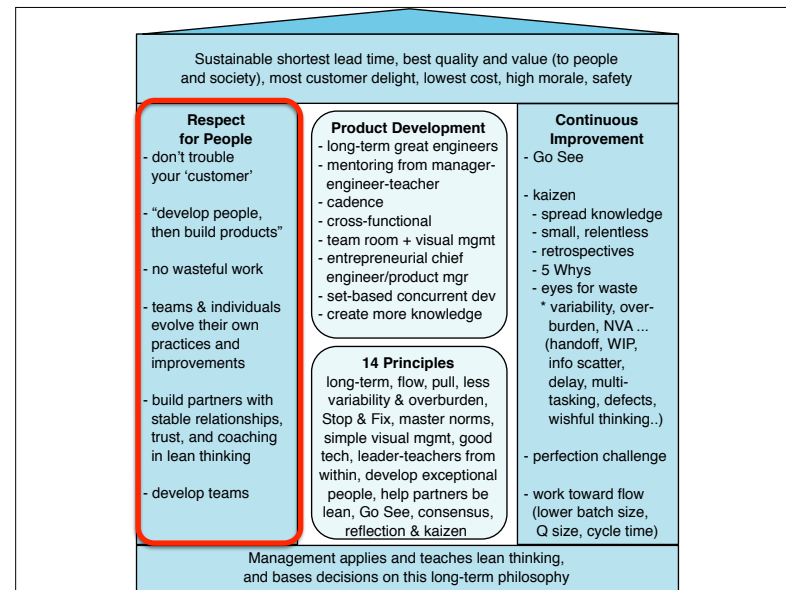
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**People:** Experiment, Learn, Many Skills; not “Resources”



VS



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## Respect for People

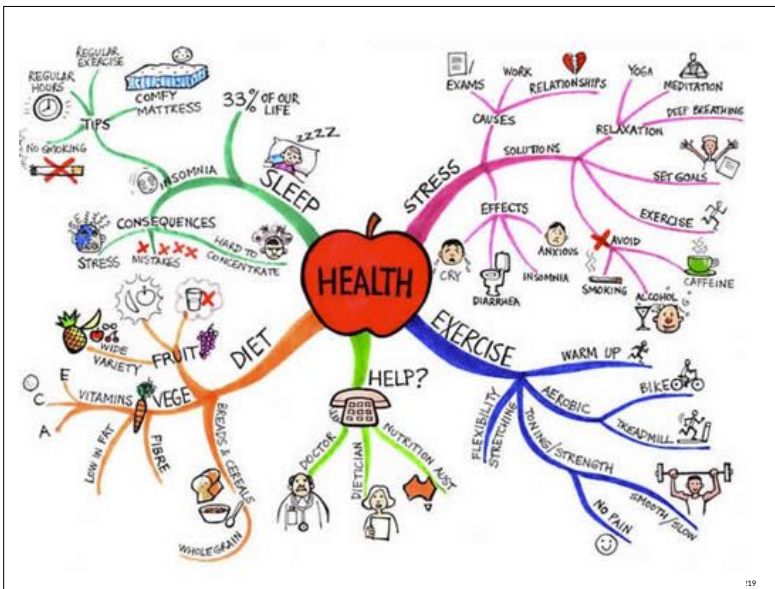


Job Safety  
(but not role safety)



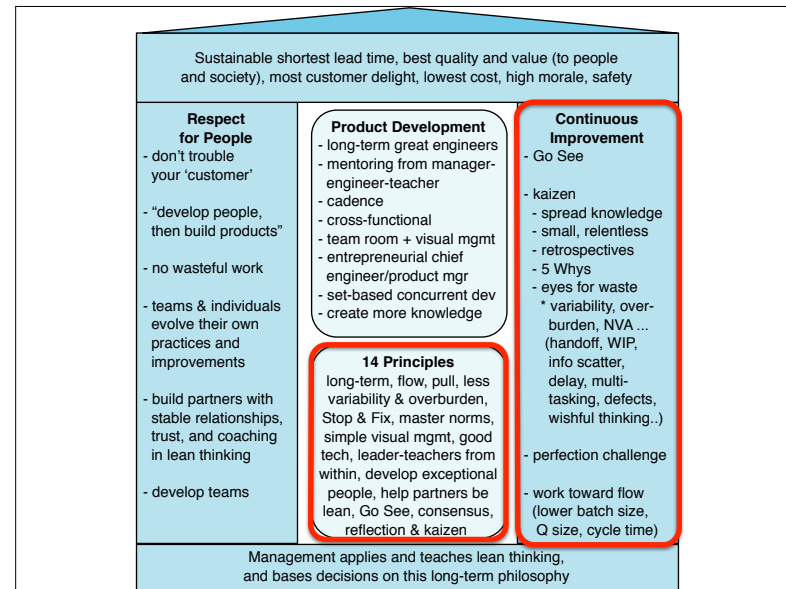
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## Continuous Improvement towards Perfection



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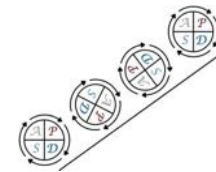
## PDSA & Scientific Method by Workers

### Decoding the DNA of Toyota

Harvard  
Business  
Review

Sept. 1999

“the scientific method  
is so ingrained at Toyota”



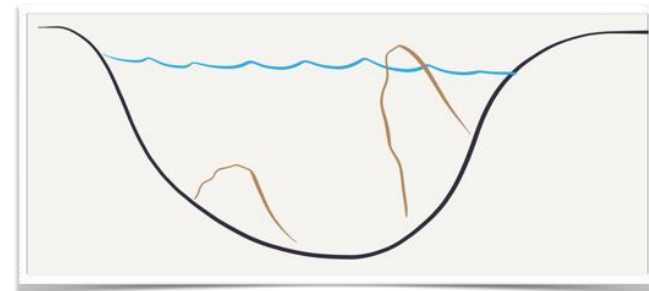
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## Continuous Improvement towards Perfection



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## “Lowering the Waters” Dynamic



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## EXERCISE

- » class:
  - » Fact: introducing “lowering the water” will “make things worse”.
  - » Therefore, what does management need to support to move from “it’s worse” to “it’s better”?

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225



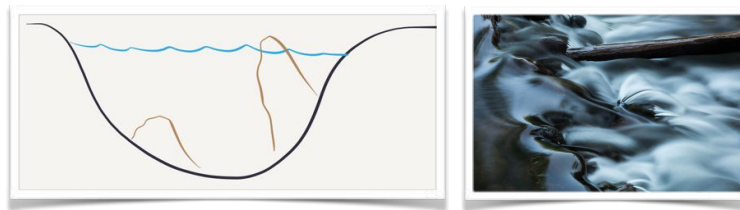
## Stop & Fix (all forms of imperfection)

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## Smaller & Smaller Batch Sizes

**Goal: One-Piece Flow in a Value Stream from “concept to cash” with no pause or impediment**



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## Seeing the Wastes via Lower Waters

1. **Over-production**—of intermediate, WIP, or finished things; sooner, faster, greater than demand
2. **Inventory**—intermediate, WIP, or finished things
3. **Over-processing**—& extra processes, rediscovery
4. **Conveyance**—& handoff
5. **Motion**—& task switching
6. **Waiting**—& delay
7. **Defects & finding/correcting**—tasks to find & correct: test, inspect, review, modify
8. **Not using people's full potential**—working to title, not multi-skilling
9. **Knowledge/information scatter/loss**—& connection to handoff & inventory & rediscovery; communication barriers: indirection, 1-way flows
10. **Wishful thinking**—[design/spec/estimate] is correct, learning & feedback is only mildly important, what said=what heard, ...

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## EXERCISE

- » individual:
- » briefly review the **wastes**

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## EXERCISE

- » team: round robin
- » charades for the wastes

230

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## EXERCISE

- » team: standing:
- » list 3 concrete, specifically-named examples of **inventory** (intermediates, WIP, or finished) in your environment?
- » the causes? (roles, processes, ...)
- » coach: review

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## EXERCISE

- » team: standing:
- » list 3 concrete, specifically-named examples of **handoff** and **knowledge scatter** in your environment?
- » the causes? (roles, processes, ...)
- » coach: review

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## EXERCISE

- » team:
  - » How do single-function groups that can do one step “efficiently” and “fast” lead to more over-processing and more inventory?
- » coach: review

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reduced wastes by ...

**intensive**  
**task/job rotation**  
(multi-functional workers)

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Lean Thinking is NOT a focus on...

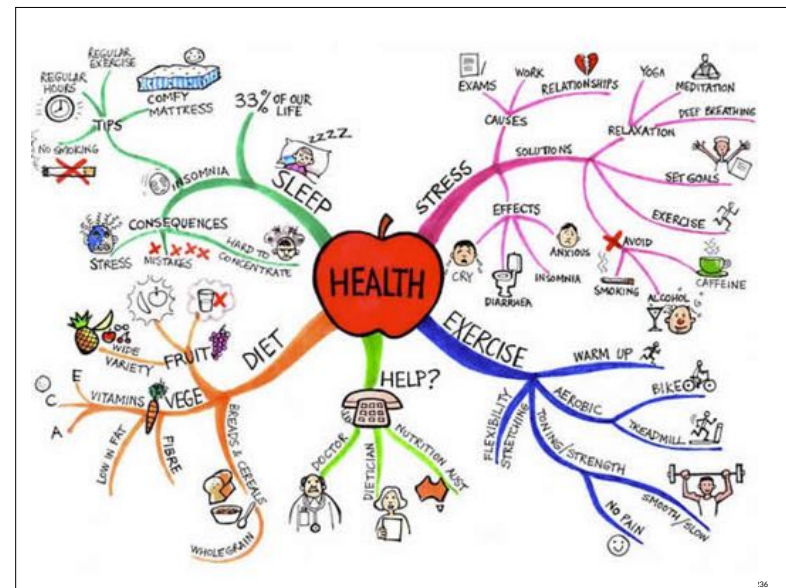


24.37%



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235



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## optional exercises

237

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## EXERCISE

- » team: round robin: In your company...
  - » **Are teams taught and encouraged to do continuous learning & experiments for improvement? Do they have lots of slack?**
    - » consistent with what lean element?
  - » **Any “central processes/best practices to conform to”?**
    - » inconsistent with what lean element?
  - » **Are there “lean consultants” who tell people how to improve?**
    - » inconsistent with what lean element?
  - » **Are there “lean consultants” who are involved in generating layoffs?**
    - » inconsistent with what lean element?
  - » **Any groups and processes involved in local optimization/efficiency?**
    - » inconsistent with what lean element?

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## EXERCISE

- » team: round robin: In your company...
  - » **Do managers spend significant time in the source code, and doing pair-development, teaching programmers?**
    - » consistent with what lean element?
  - » **Do managers focus on “How can I help?” and teaching, and don’t do planning & tracking & directing?**
    - » consistent with what lean element?
  - » **Does anyone use the phrase “resources”?**
    - » inconsistent with what lean element?
  - » **Any groups/people that ‘receive’ waste (intermediate documents, WIP, handoff, things to test for defects, delay, info scatter, ...)**
    - » inconsistent with what lean element?
  - » **Do teams have lots of encouragement, slack time, and teaching for experimenting with improvement?**
    - » consistent with what lean element?

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## EXERCISE

- » team: round robin: In your company...
  - » **When any weakness or imperfection is discovered (in processes, products, people, ...) do managers teach people to “stop & fix” and spend less time on new customer work?**
    - » consistent with what lean element?
  - » **Is there a strong focus on reducing the batch size of requirements (programs & projects) down to very small “one piece flow” single features, from “concept to cash”?**
    - » consistent with what lean element?
  - » **When more problems/weaknesses are seen when reducing batch size, WIP levels, and ship-cycle-time, is the focus on more investment and slack to fix the weaknesses? (rather than avoiding them by increasing batch size)**
    - » consistent with what lean element?
  - » **Any groups and processes involved in creating the wastes?**
    - » inconsistent with what lean element?

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## EXERCISE

- » team: round robin: In your company...
  - » **Any groups involved in the wastes (creating inventory of intermediate documents, WIP for downstream groups, handoff, delay, over-processing, information scatter, things to be inspected or tested for defects, ...) that incorrectly classify their activity as 'value'?**
    - » inconsistent with what lean element?
  - » **Are people in one role with one specialized task?**
    - » inconsistent with what lean element?
  - » **Any "lean experts" that teach it means tools & metrics?**

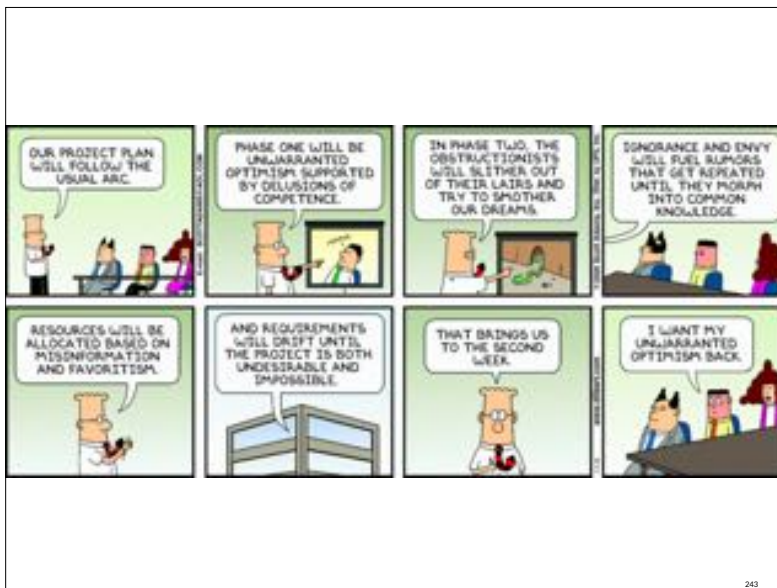
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## Empirical Process Control

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what DEFINED  
process recipe has  
consistently worked  
really well for large-  
scale development  
over the last 50 years?

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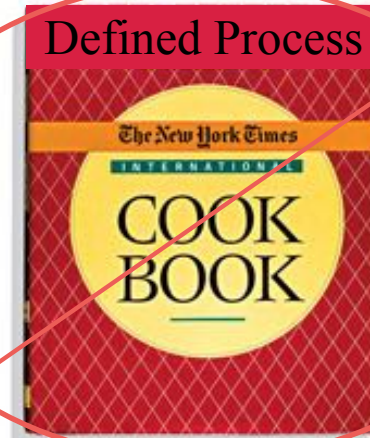


high levels of inherent complexity,  
variability, learning, context in R&D



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Defined Process



246



247

and that's scary or  
uncomfortable for...

248



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“we don’t pay you  
people to learn here”

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all we need is...


more defined steps & techniques  
more specialization & managers  
more clear requirements  
more careful plans  
more control  
and then! ...

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once we have finally given up the  
belief we will eventually find  
**The Recipe**, we are left with...

**i give up**

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empirical process control


transparency  
inspection  
adaptation

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**empirical  
process  
control**

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**EPC =  
transparency  
inspection  
adaptation**

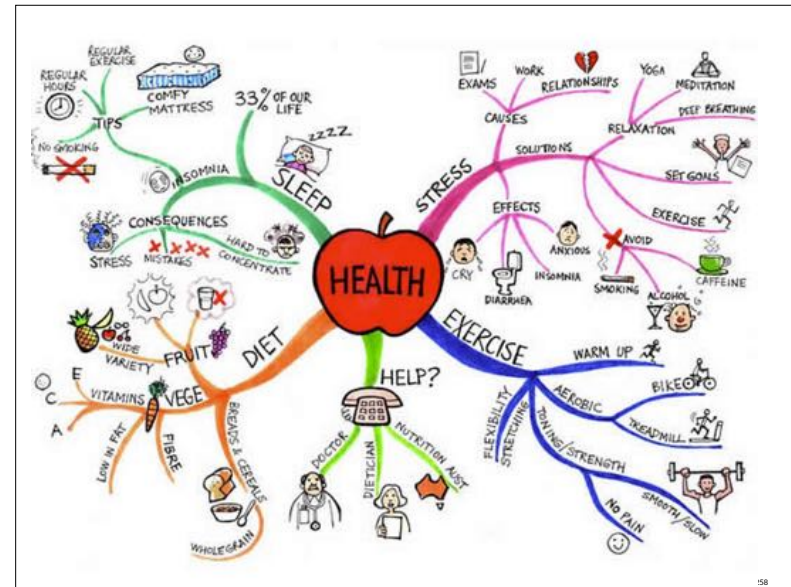
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## EXERCISE

- » 1 person in team:
  - » summarize empirical process control: what & why in development
- » coach:
  - » is there any connection between empirical process control and lean thinking?

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Scrum

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what are we  
about to learn?

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one of the first Certified Scrum Trainers,  
mentored by the creator of Scrum



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evidence-based management

Harvard  
Business  
School

1986



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~~Scrum !=  
iterative development~~

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## Scrum at-a-glance

- a framework for empirical process control and agility: transparency, inspection, adaptation
- ship live every Sprint, completely done
- Product Owner is a hands-on lead user from business who owns the product ROI, not an IT manager, project manager, business analyst, or change manager
- Product Owner has autonomy to decide direction, each Sprint
- Product Owner does adaptive planning each Sprint based on inspection
- no Contract Game with IT - no more IT-managed projects or programs
- project/program centric -> product centric
- Team serves the business-side Product Owner, not IT managers
- Team is cross-functional & cross-component and does everything, from analysis to delivery
- no separate analysis, design, architecture, or testing groups
- multi-functional "Product Developer"; no single specialists
- Team is self-managing — independent during the Sprint, no reporting to or direction from manager or with a (fake) ScrumMaster-manager
- "flat" Team — no team lead or manager that directs the team
- ScrumMaster is Scrum expert who teaches Scrum to Product Owner & Team, serves Team; not a team manager

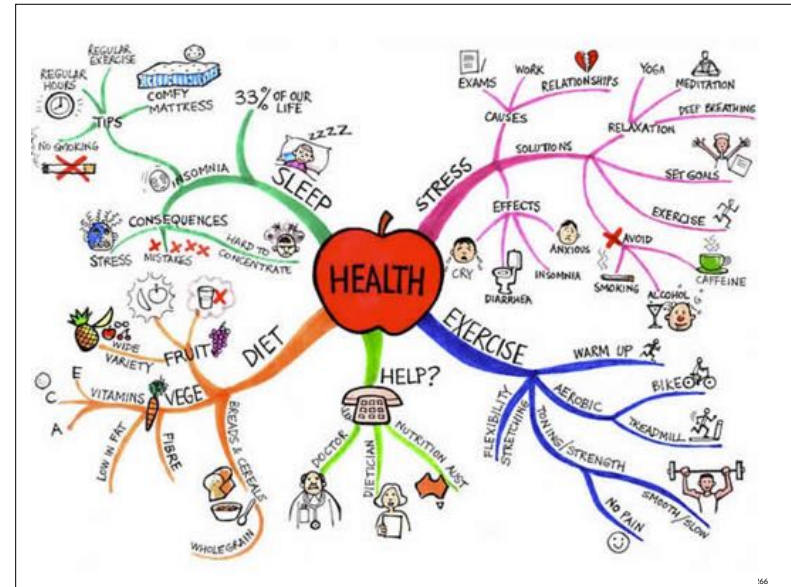
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## EXERCISE

- » coach
- » explore the degree of realization of Scrum in the organization

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## A View of LeSS



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## Sprint Planning One in LeSS



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## Coordinating via Open Space in LeSS Huge



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## Multi-team PBR in LeSS



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## Sprint Review “Bazaar” in LeSS



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## Overall Retrospective in LeSS (multisite)



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## Another View: less.works (explore it)



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274

what are we  
about to learn?

275

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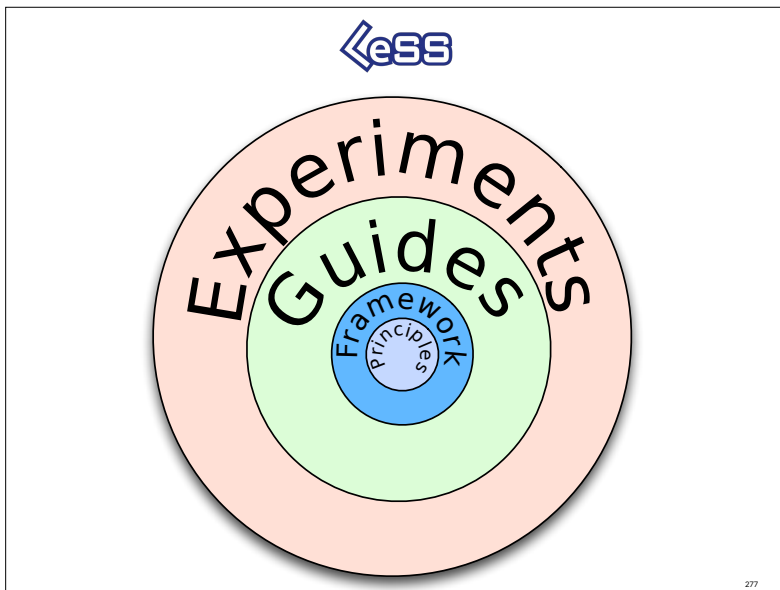
## EXERCISE

» preparation: at end of section,  
you will be sharing “all” of its  
ideas with others, without  
referring to notes 😊

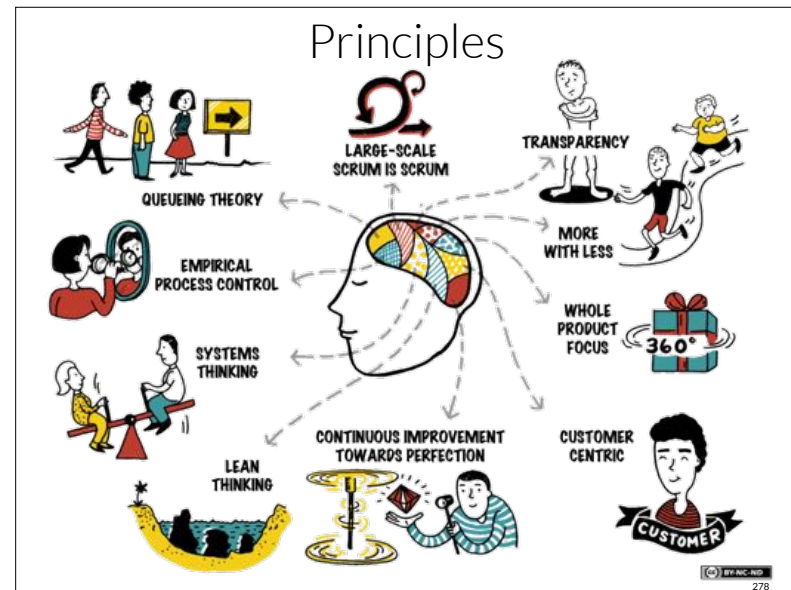
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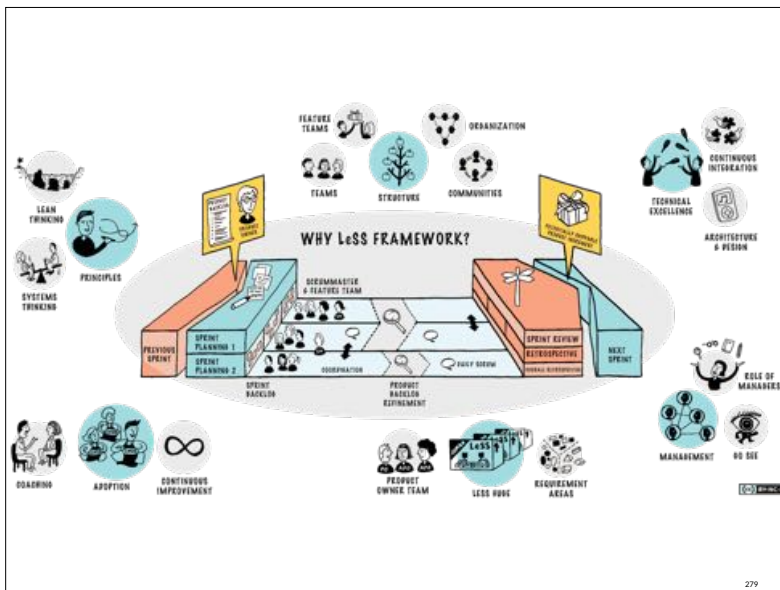




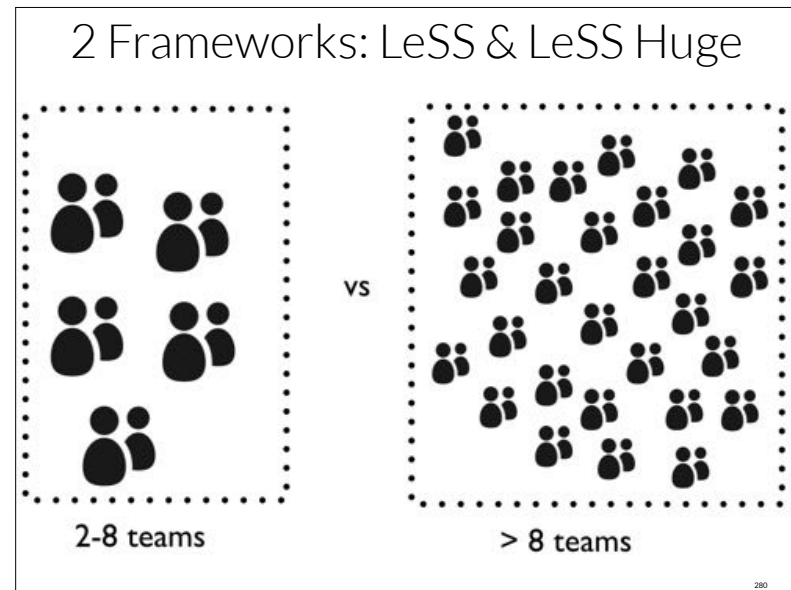
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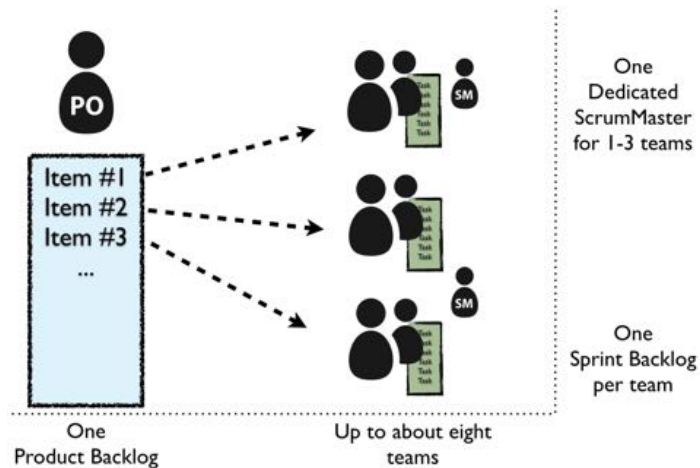


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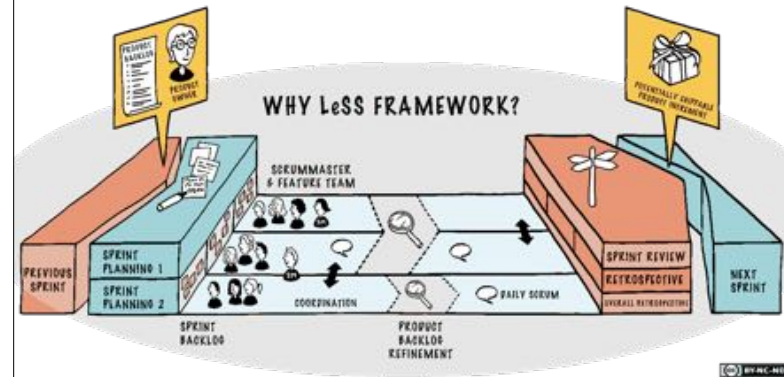
## (smaller) LeSS Framework



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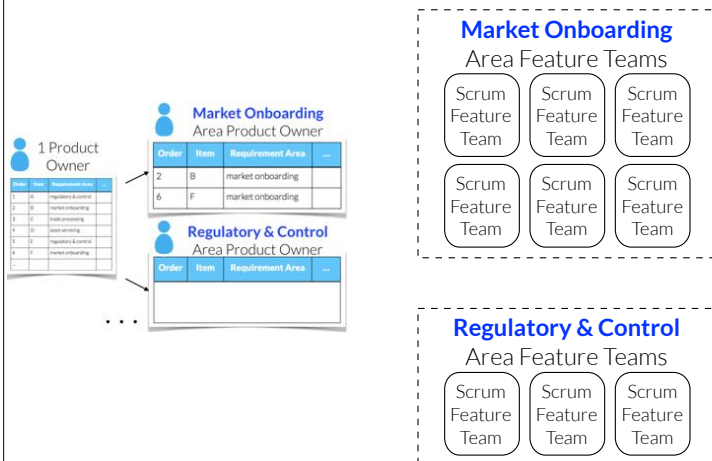
## One Common Sprint, Shippable Product



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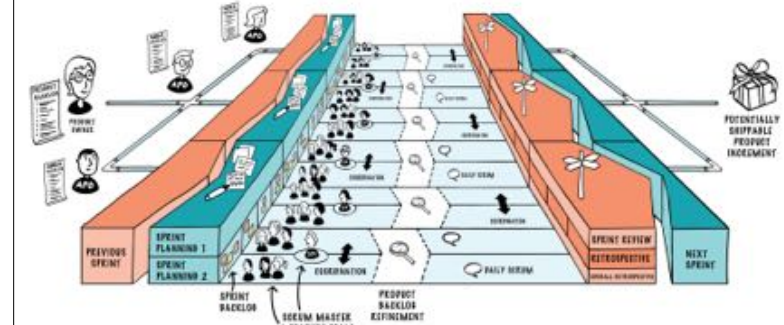
## LeSS Huge: Requirement Areas



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## LeSS Huge: "Stack of LeSS"



284

## EXERCISE

- » individual:
  - » briefly review this module

285

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## EXERCISE

- » pairs: standing:
  - » without referring to notes, teach the ideas in this section to your partner, by... **talking and writing the ideas (on flip chart paper)**
  - » “hide paper”, then reverse

286

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## EXERCISE

- » team: standing:
  - » **why** is there one **common** Sprint ending in a **shippable** product?
- » coach: review

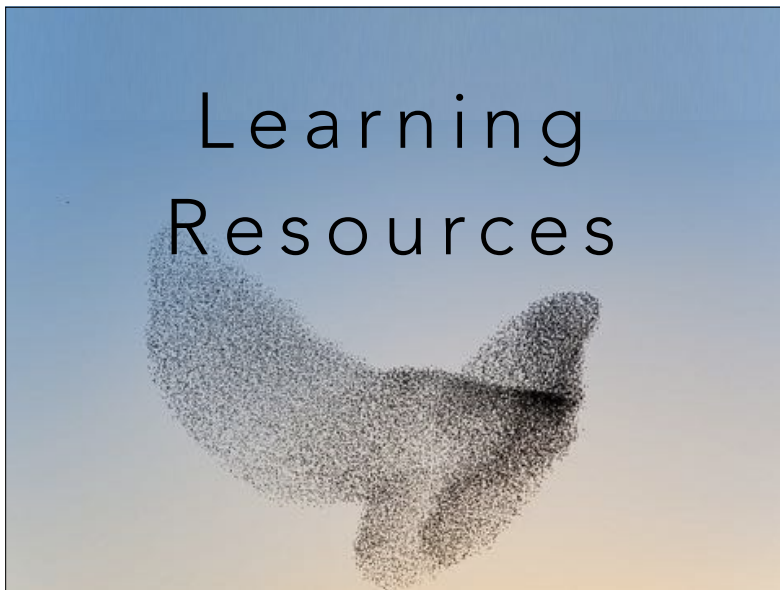
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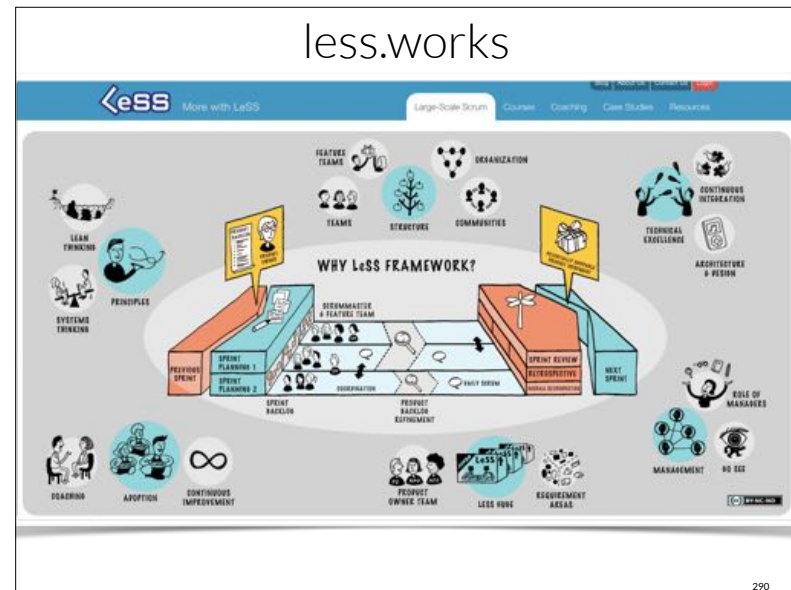
educate: **why**

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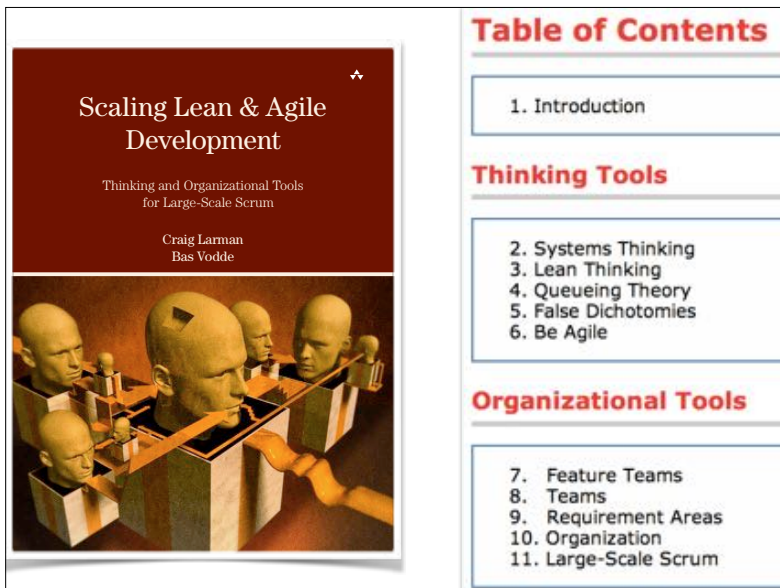
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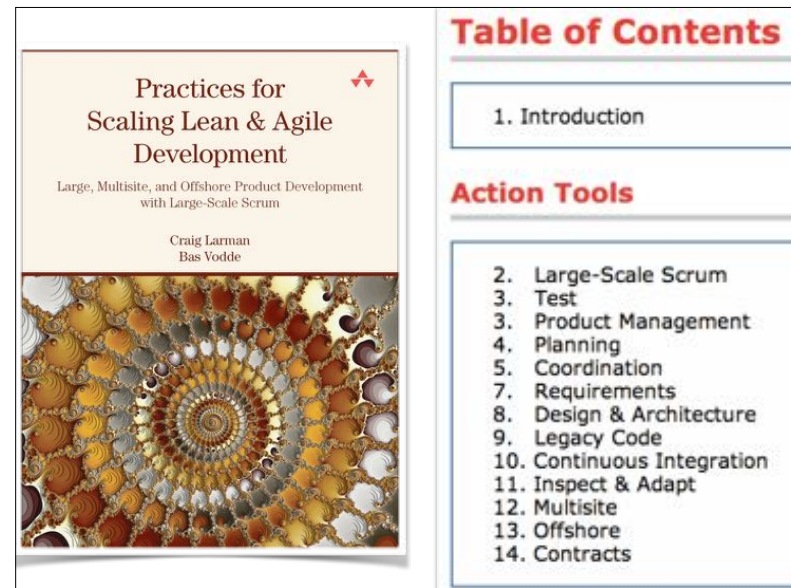
### 1. Introduction

## Thinking Tools

2. Systems Thinking
3. Lean Thinking
4. Queueing Theory
5. False Dichotomies
6. Be Agile

## Organizational Tools

7. Feature Teams
8. Teams
9. Requirement Areas
10. Organization
11. Large-Scale Scrum



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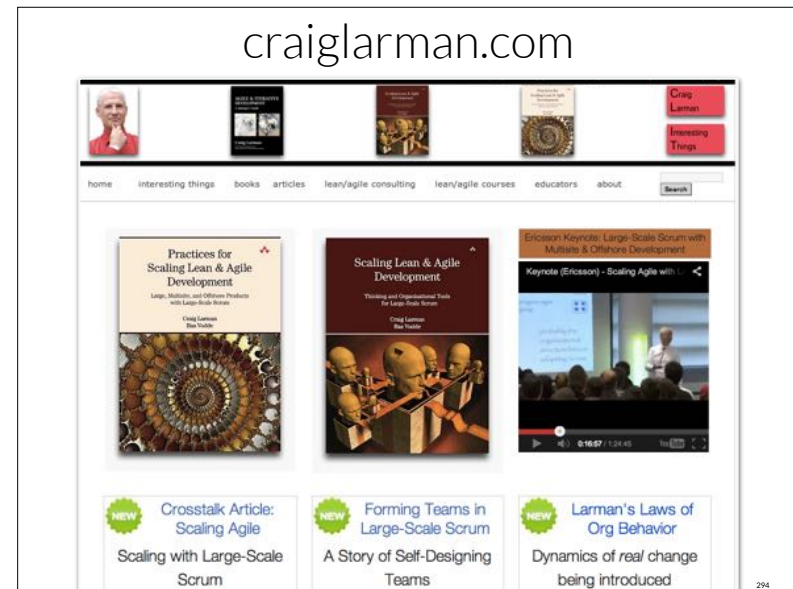
## Action Tools

2. Large-Scale Scrum
3. Test
3. Product Management
4. Planning
5. Coordination
7. Requirements
8. Design & Architecture
9. Legacy Code
10. Continuous Integration
11. Inspect & Adapt
12. Multisite
13. Offshore
14. Contracts

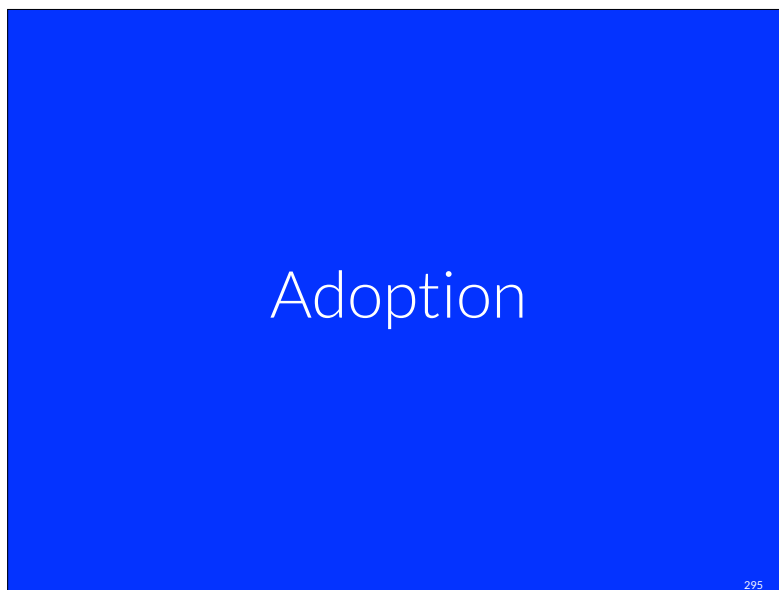


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what are we  
about to learn?

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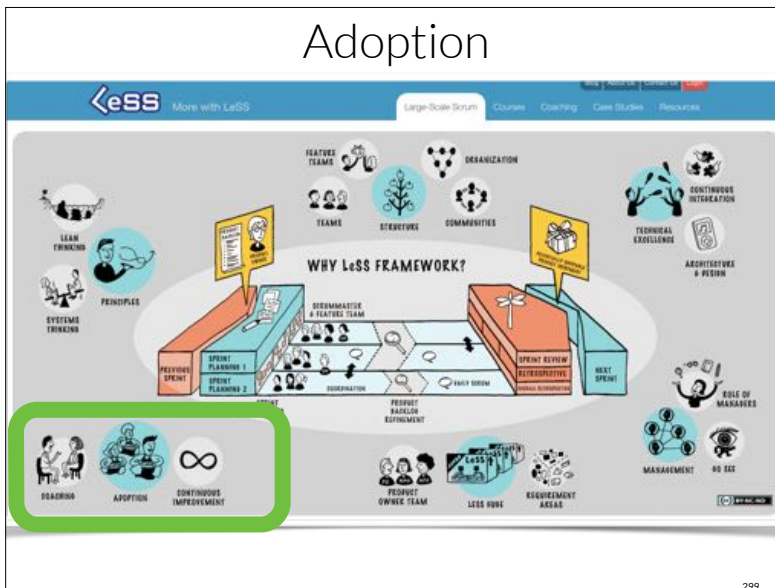
## EXERCISE

» preparation: at end of section,  
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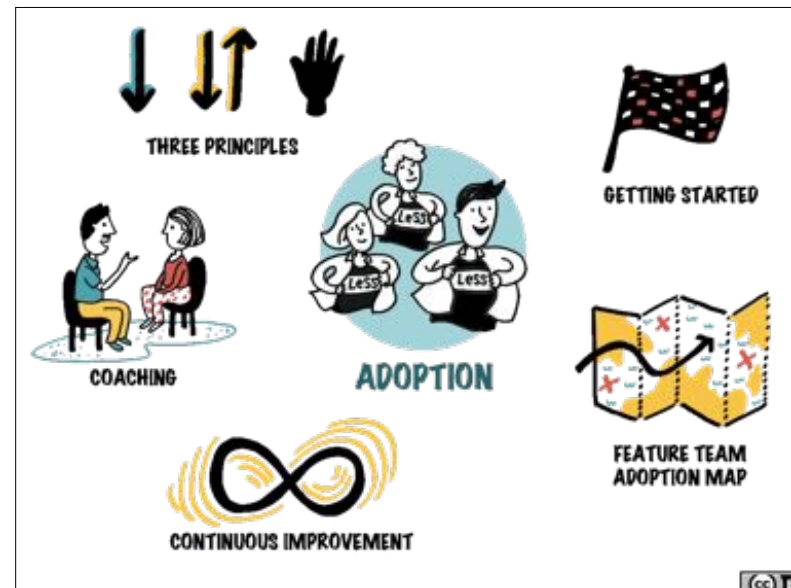
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## Adoption



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300





## 1. Deep and narrow over broad and shallow

Don't drown your organization, first learn to swim



No fun!



Real learning!

301

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## Scope of First Adoption

8- teams on **1 and only 1** product  
preferably 1 site

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## 2. Top-Down & Bottom-Up

Top Down:  
Provide  
needed  
support



Bottom-up:  
understanding why,  
volunteering, energy  
of engagement



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303



## 3. Use Volunteering

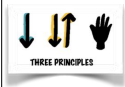


versus



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## 2. Top-Down & Bottom-Up

Top Down:

Provide  
needed  
support



communication plan &  
strong “on message”

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## Getting Started

0. Educate Everyone: **why**

1. ...

306

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## Educate Everyone

**why**

readings

educate **together** (not by role)

courses: (1) **Scrum**, (2) **LeSS**

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## Getting Started

0. ...

1. Define/choose product for  
first LeSS adoption: **8- teams**  
**on 1 product**

2. ...

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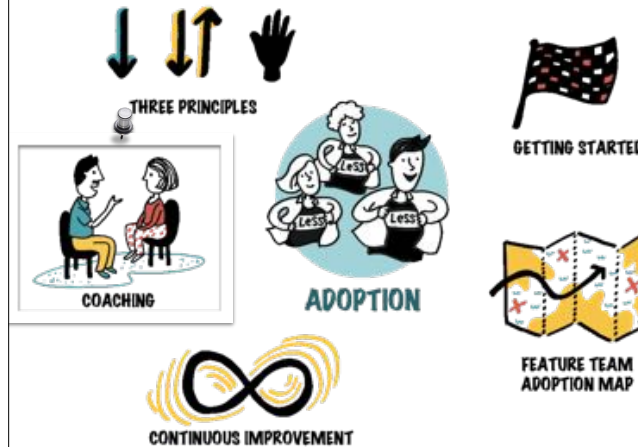
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## LeSS Rules

*For the product group, establish the complete LeSS structure “at the start”; this is vital for a LeSS adoption.*

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## First Group: INTENSIVE Coaching



310

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## Coaching & Coaches in LeSS



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## LeSS Coaching Activities for Adoption

1. Informed Consent for LeSS
2. LeSS Preparation
3. LeSS Sprint 1

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prepare for shippable &  
**shipping awesomeness**

by first public Sprint 1

why?...

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**shipping  
speaks louder  
than words**

314

314

**ship  
every  
Sprint**

315

315

street cred

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Early Street Credibility

significant  
product

317

317

Early Street Credibility

prepare, even  
for 1-2 months

318

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Early Street Credibility

1+ **private** Sprints with  
Temporary Fake  
Product Owner



319

319

Early Street Credibility

real Product  
Owner who  
sells success

320

320

Early Street Credibility

sell early success

literally, a  
**marketing plan**

321

321

## EXERCISE

- » individual:
- » briefly review this module

322

322

## EXERCISE

- » team: round robin:
  - » without referring to notes, do  
**“charades” for LeSS  
adoption ideas**

323

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## EXERCISE

- » individual:
  - » fact: in the “Inspect & Adapt” chapter of LeSS book2, there are 47 adoption experiments
  - » divide these up amongst the entire class, and create cards for “your” experiments, writing the experiment tagline (or a few words for the gist)
  - » stand when finished writing

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## EXERCISE

- » individual:
  - » read **your** experiments in the book

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## EXERCISE

- » class: round robin:
  - » **briefly**, share all your experiments with the class, and for each, summarize **why**

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before? ...

327

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## Pre-Adoption: **Build Interest**

- “LeSS 1” **book** to key people
- send LeSS **video** links to people
- **internal champions**? agile coach & senior manager
- outside **expert** — “you’re never a prophet in own land”
- **events** to build interest:
  - LeSS Practitioner (preferred), LeSS for Executives, and/or Less LeSS
  - Deep-Dive LeSS Q&A session with key people



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during? ...

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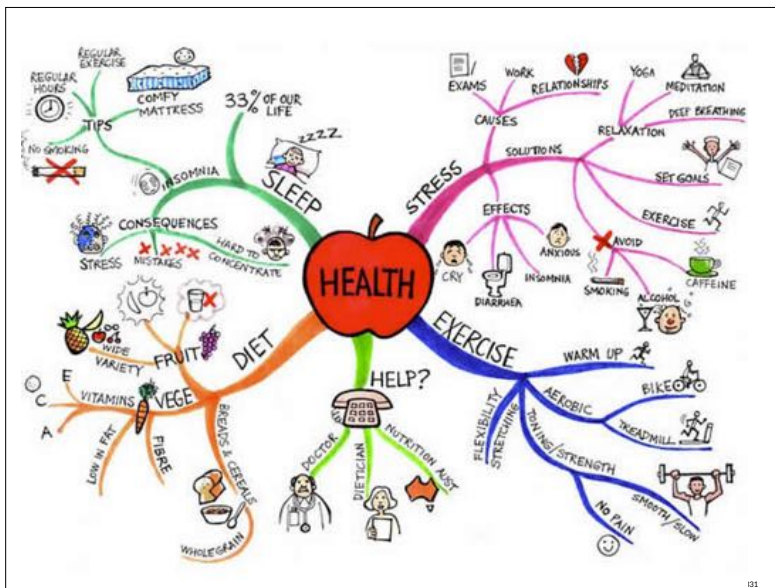
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## LeSS LASD Programme

- LeSS LASD: **Lean & Agile Software Development**
- **LASD-1 to LASD-5**
  - 3.5 weeks over “3 months”, 2 teams per ‘wave’
  - from **Impact Mapping** to **Story Mapping** to **User-Centered Design** to **Specification-by-Example** to **Acceptance TDD** to **Agile Modeling & Design Patterns** to **Agile Modeling Design Workshops** to **Clean Code** to **Legacy TDD** to **Current-Architecture Agile Learning workshop**

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## LeSS Stories



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## 3 Types & the Case Studies



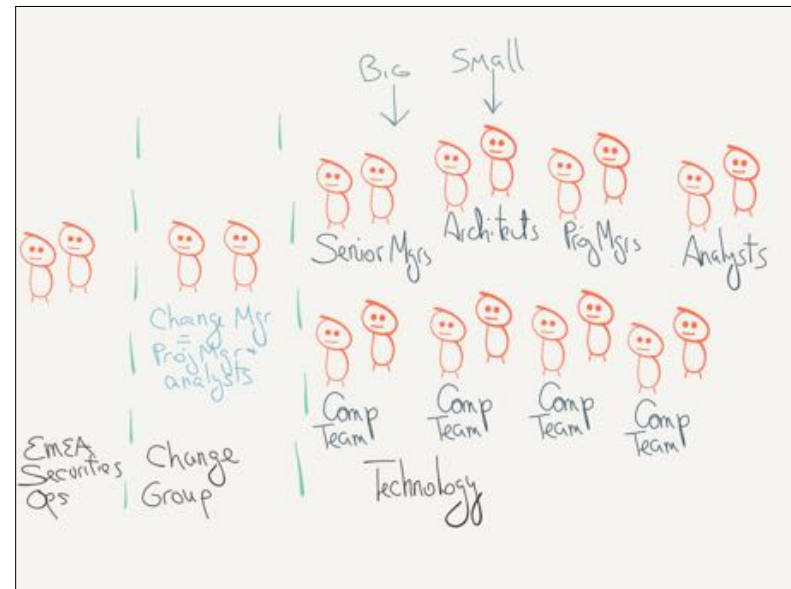
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type & fireside story...

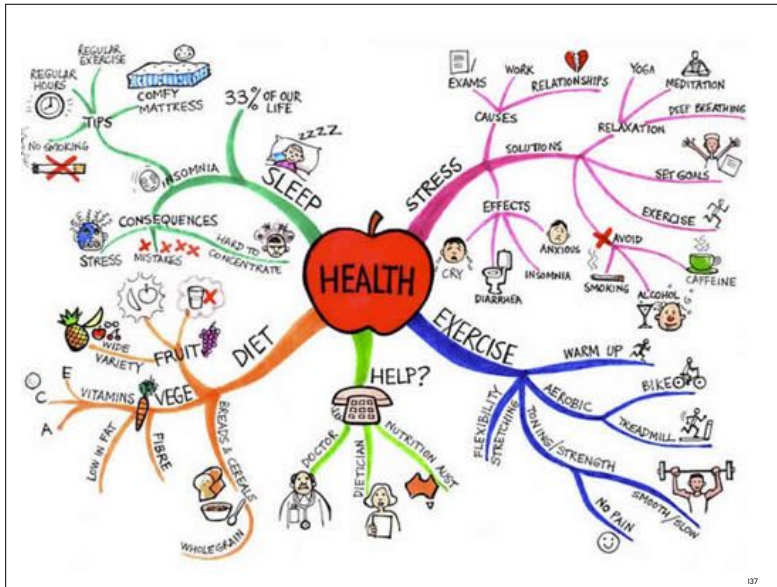
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what are we  
about to learn?

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## Systems Thinking

a SYSTEM

see the whole, especially its dynamics across time

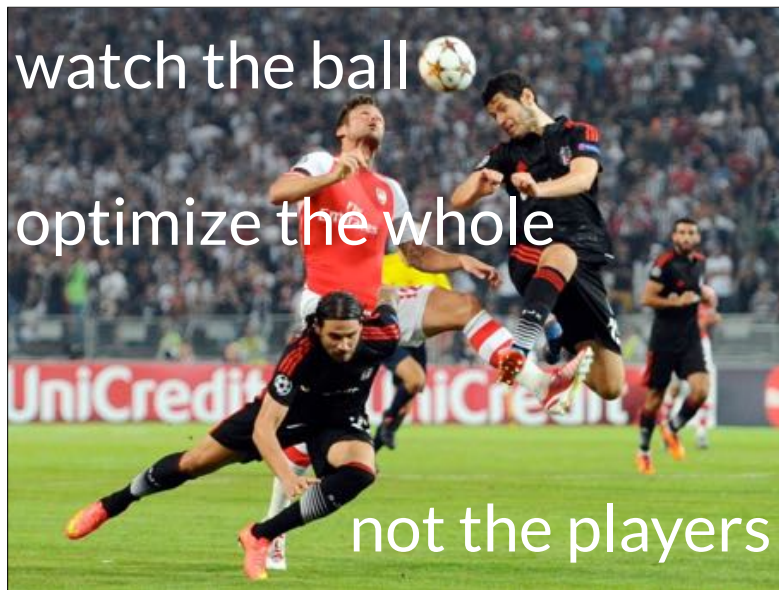
optimize the whole (not local optimization or local efficiency)

see delays

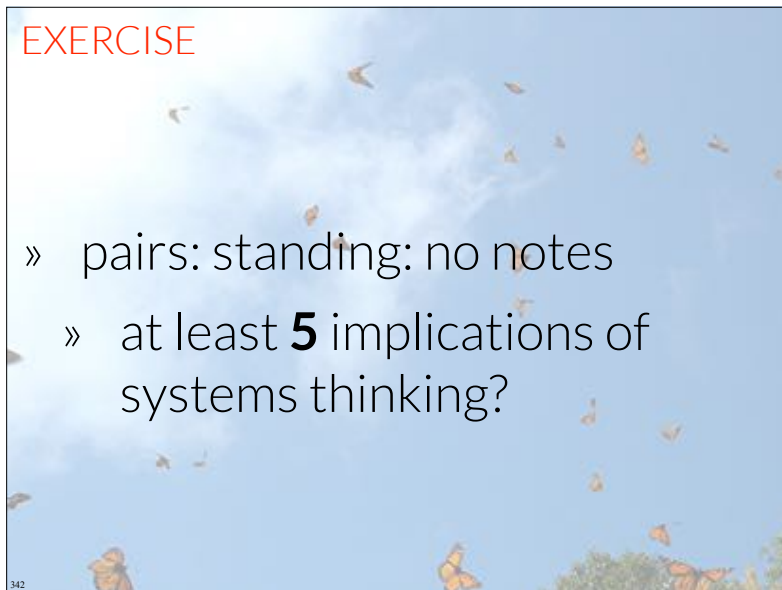
see mental models

understand system dynamics with causal loop models

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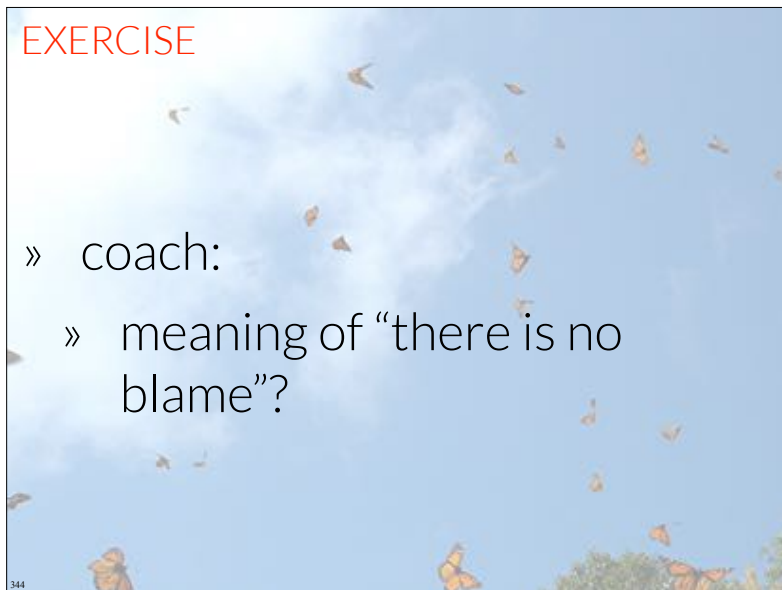


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## 11 Laws of Systems Thinking

1. Today's problems come from yesterday's "solutions."
2. The harder you push, the harder the system pushes back.
3. Behavior grows worse before it grows better.
4. The easy way out usually leads back in.
5. The cure can be worse than the disease.
6. Faster is slower.
7. Cause and effect are not closely related in time and space.
8. Small changes can produce big results... but the areas of highest leverage are often the least obvious.
9. You can have your cake and eat it too—but not all at once.
10. Dividing an elephant in half does not produce two small elephants.
11. There is no blame.

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# talk about & visualize system dynamics with causal loop diagrams

345

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## EXERCISE

- » coach:
  - » model the system dynamics for some theme
  - » variables, links, mental models, “Weinberg-Brooks Law”, balancing & reinforcing loops, delays, goals, pressure & action variables, quick fixes, inter-link influence

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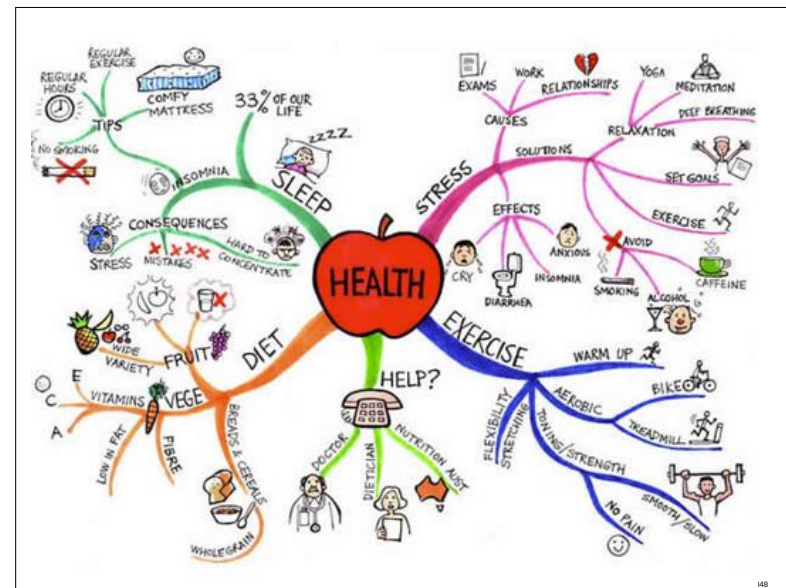
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## EXERCISE

- » team:
  - » model the system dynamics for the theme requested
- » class: debrief

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## Discovery & Learning in a Double-Loop System

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what are the  
3 hardest words  
for a manager to say?

351

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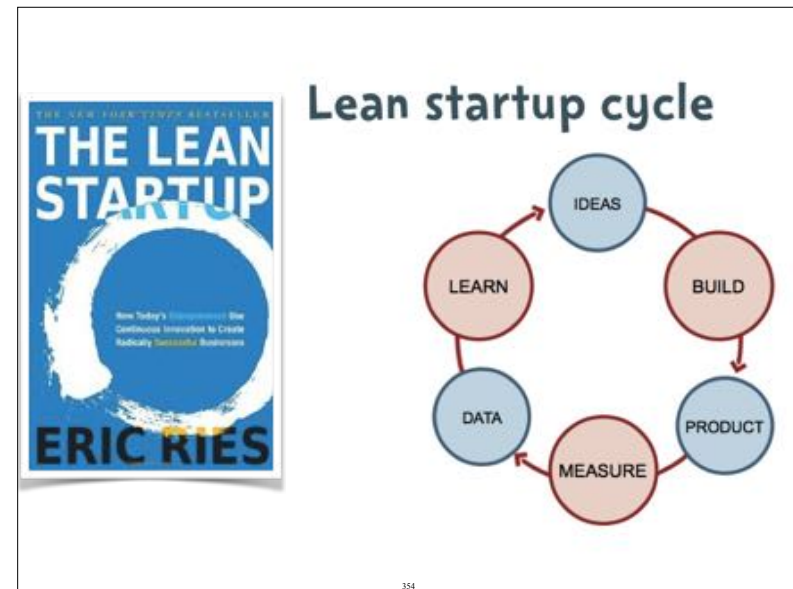
double-loop learning  
organization &  
management system

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354

the scientific method  
applied to business

355

355

## EXERCISE

- » team do:
- » sketch a double-loop management system

356

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Outcomes, not Outputs

357



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outcomes, not outputs

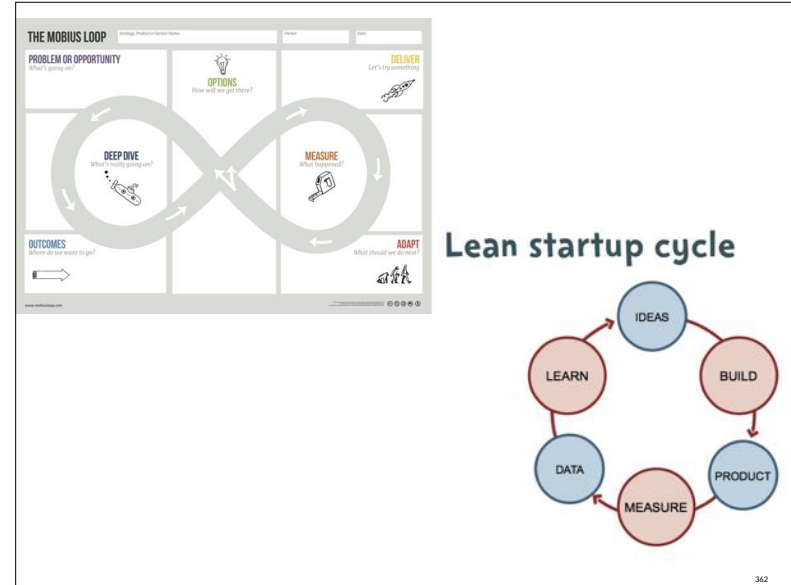
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every speculated  
output/solution/  
deliverable may be the  
wrong one

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# Outcomes, not Outputs in a Discovery & Learning Double-Loop System

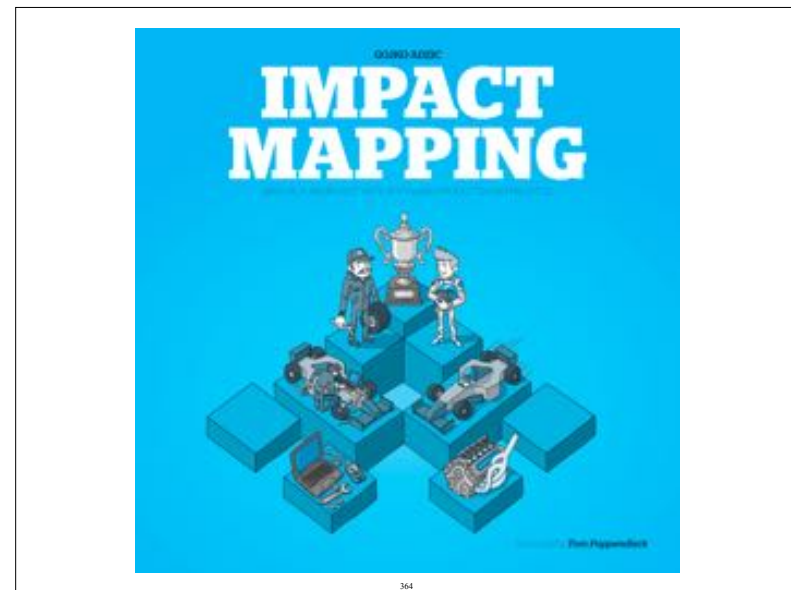
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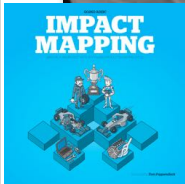
outcomes, not outputs

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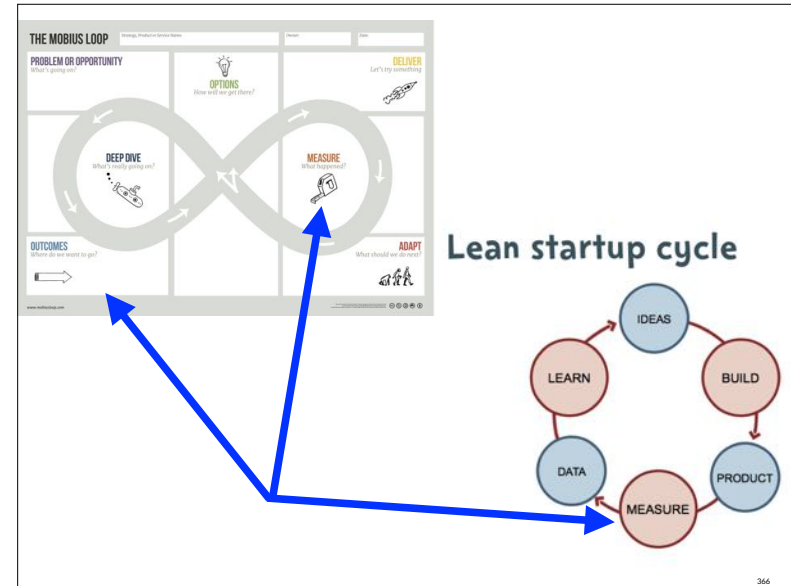


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## Impact Mapping: **Always** with Others



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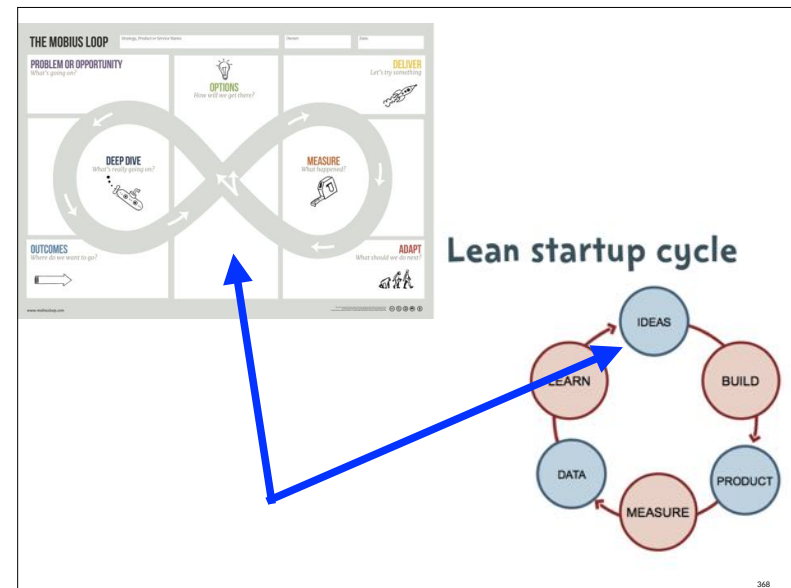


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outcome: quantification

Goal: ↓ cash breaks  
 Scale:  $\frac{\text{(unrec net Flow breaks)}}{\text{\# net Flows}}$  per day  
 meter: (new report) "Cash Breaks", created by a Scrum Team  
 -run at Sprint Review  
 benchmark: -7% mean - rate deriv, M. Gleed Apr 12 2013  
 \* 10% " across Products - M. Gleed, "WAG - informed guess  
 target: 9% July 12 2013, 8% Oct 12 2013

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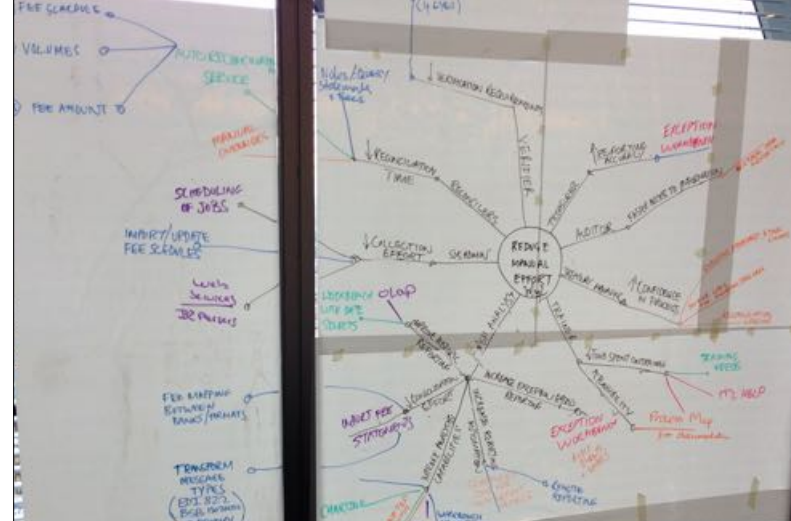
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## Speculated Options: Impacts & Outputs



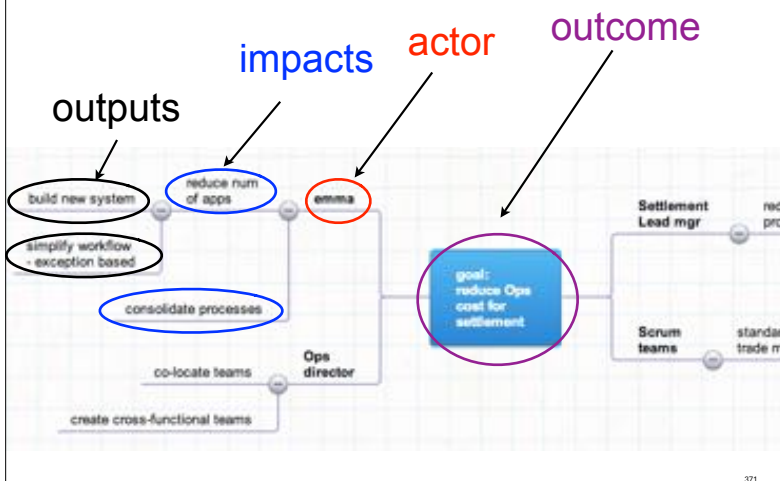
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## Speculated Options: Impacts &amp; Outputs



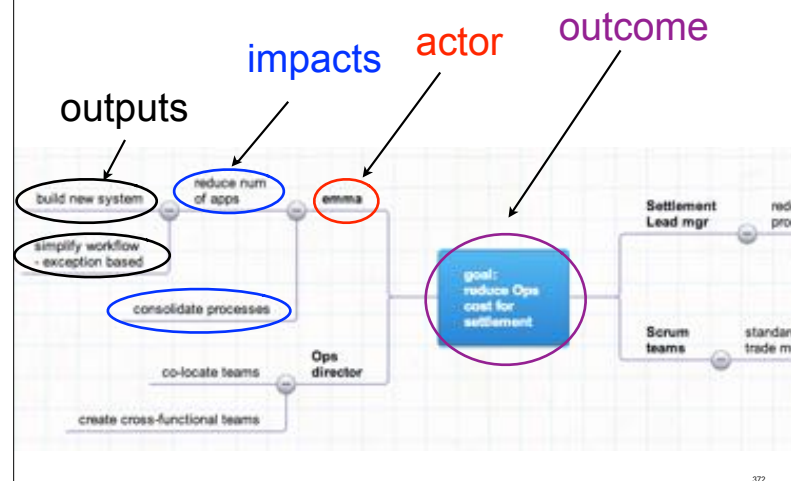
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## Impact Map Elements



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## Many Speculated Impacts & Outputs



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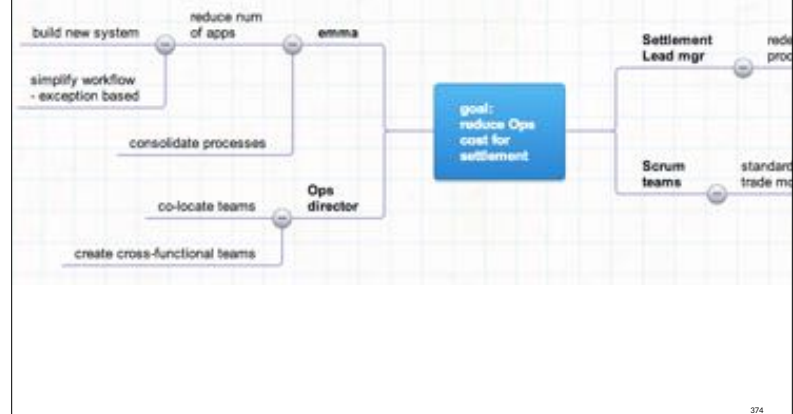
## EXERCISE

- » one person per team do:
  - » with respect to the next slide, describe the elements of an impact map

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## Impact Map



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## EXERCISE

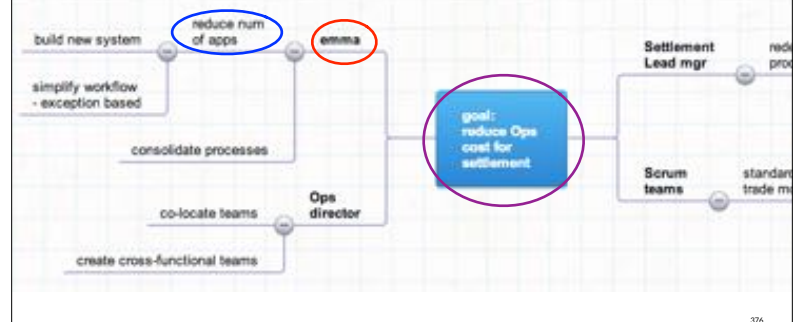
- » same person do:
  - » explain to your team how an impact map is created

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## Enterprise Backlog: Impact Epic

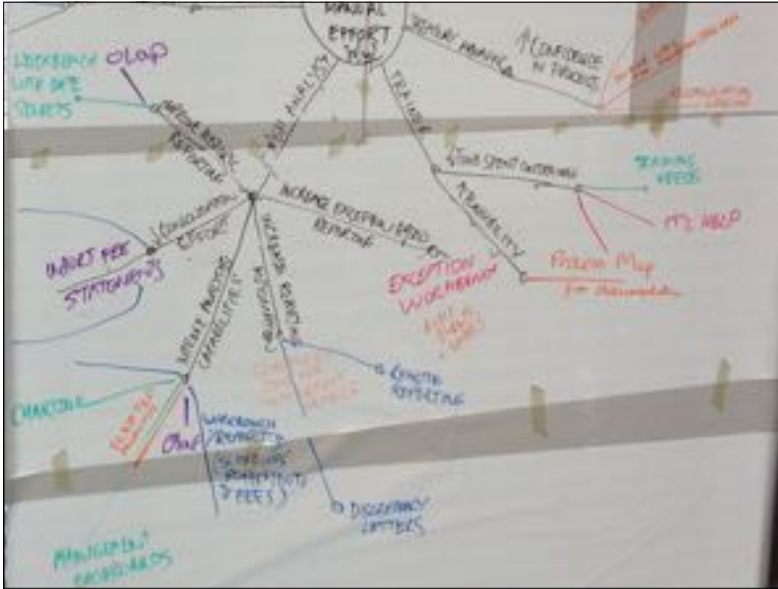
to reduce Ops cost for settlement,  
as Head of Biz Unit (emma),  
I want a reduced number of apps



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for a goal, only add the  
current-best  
speculated impact &  
outputs on a backlog

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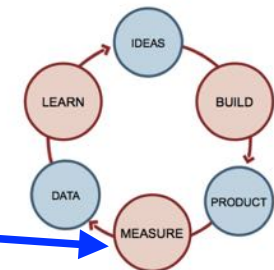
the first speculated  
output might not work

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383



Lean startup cycle



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impact/outcome: measurement

Goal: ↓ cash breaks  
Scale:  $\frac{(\text{unrec net Flow breaks})}{\text{unadvised \# net Flows}}$  per day  
meter: (new report) "Cash Breaks", created by a Scrum Team  
- trending  
- run at Sprint Review  
benchmark: -7% mean - rate deriv, M. Gleed  
\* 10% " across Products  
- M. Gleed, "WAG"  
Apr 12 2013  
- informed guess  
target: 9% July 12 2013, 8% Oct 12 2013

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every Sprint, you  
measure the impact of  
delivering an output

this requires delivering  
early and often, and  
measuring impacts

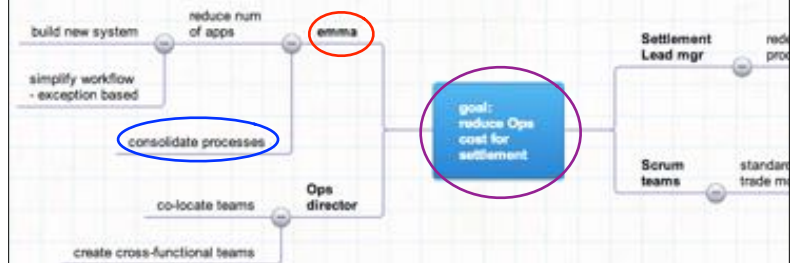
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the speculated output  
didn't work,  
so...

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Enterprise Backlog: Next Alternative

to reduce Ops cost for settlement,  
as Head of Biz Unit (emma),  
I want consolidated processes

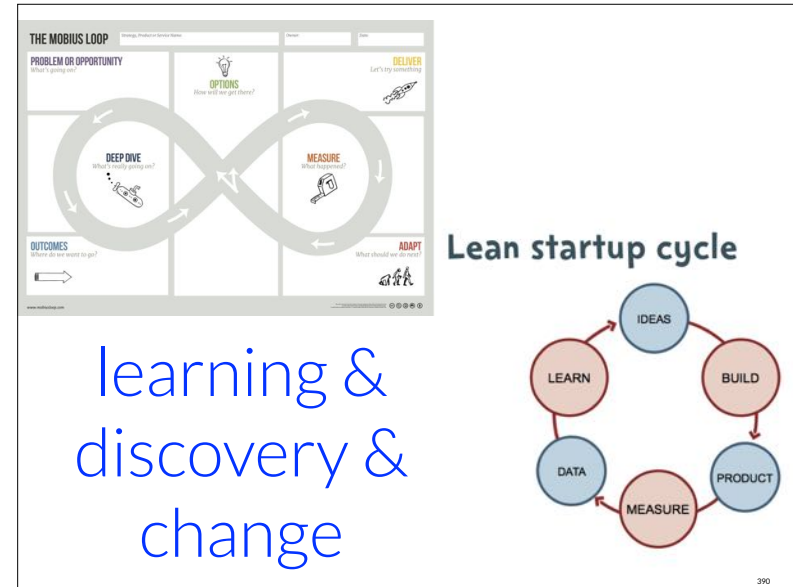


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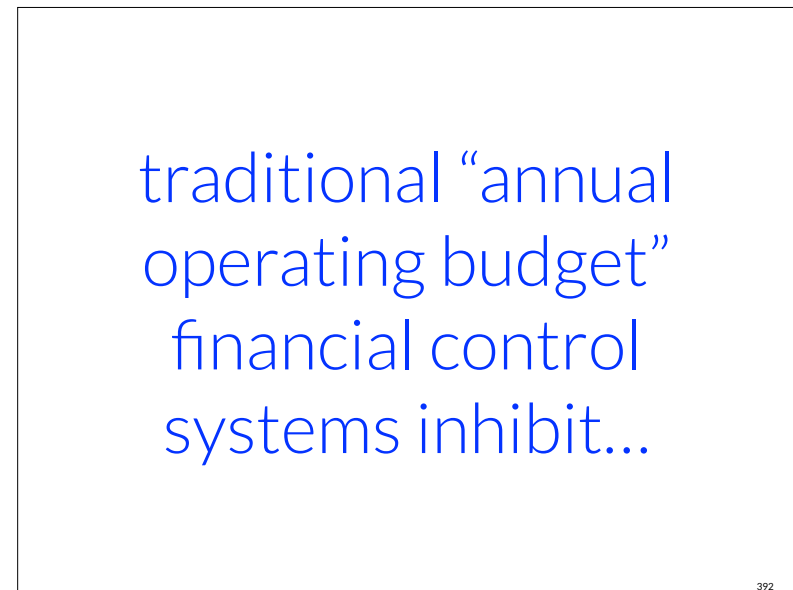
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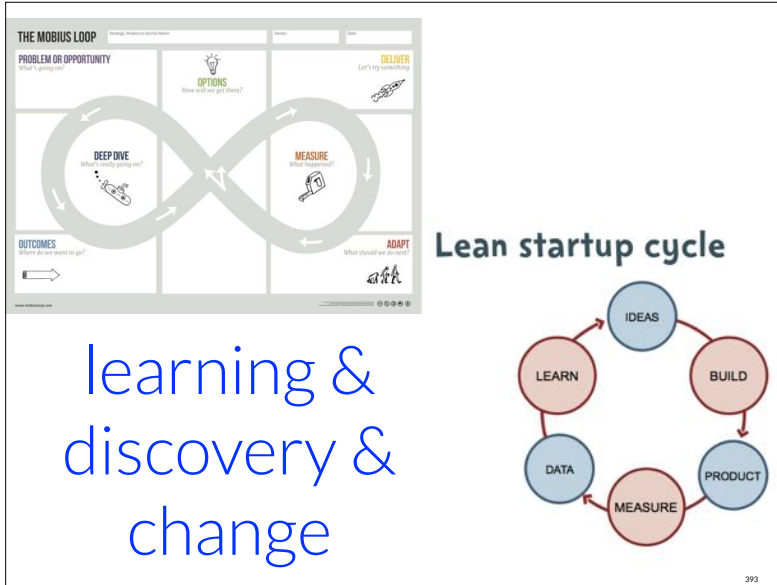


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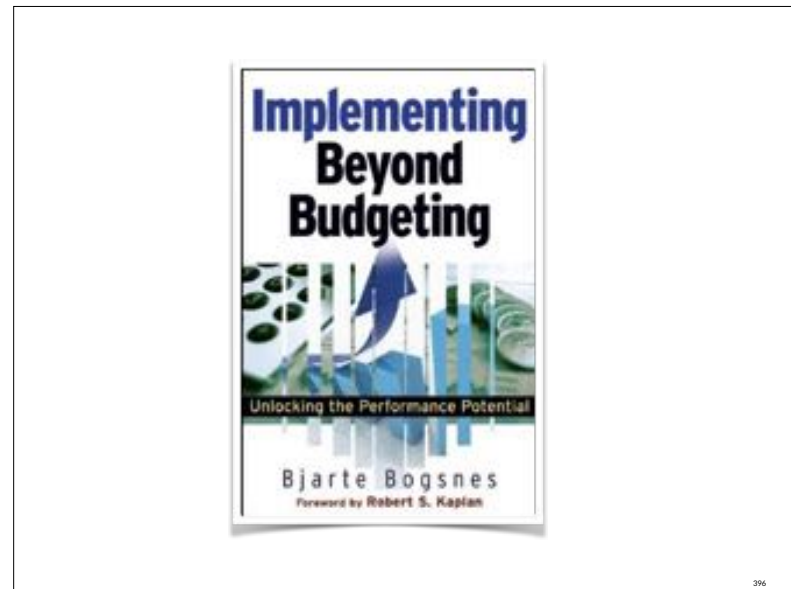
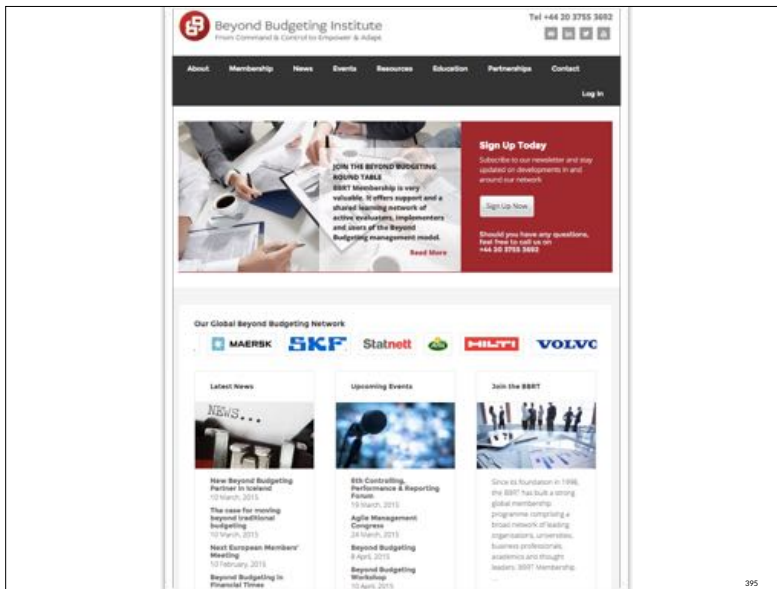
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there's a growing body of CFOs and other financial leaders who recognize there is another way...

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**Story:**  
**Taking reality seriously - towards a more self-regulating management model at Statoil**

By Bjarte Bogsnes - Vice President - Performance Management Development at Statoil  
 November 28, 2011 at 5:18am

376 Likes 36 Comments

beyond budgeting bbrt statoil experimentation disaggregation openness  
 change management adaptability decision-making allocating resources  
 measuring performance strategy finance energy

**Moonshots**

- Reinvent the means of control
- Develop holistic performance measures
- Stretch management timeframes and perspectives

**Summary**

At Statoil, we try to take reality seriously, not just a dynamic and unpredictable business environment, but also all the competent and responsible people in the company. It sounds obvious, but requires fundamental changes in how we lead and manage. In 2005 we started on a journey of radically changing our management processes, which included abolishing traditional budgeting. In 2010 we also decided to "kick out the calendar". These were both key steps towards a more dynamic, flexible and self-regulating management model.

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## Beyond Budgeting: Sample Practices

Separate budget purposes: (1) target setting, (2) forecasting & (3) resource allocation

Redesign each on its base purpose

Remove calendar rhythms wherever possible (e.g., remove annual operating budget, ...)

Remove individual bonus

relative measures

rather than budget cost limits, monitor costs and adapt/intervene if necessary; educate and trust "financially responsible people"

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## Beyond Budgeting: Sample Principles

Trust teams to regulate their performance; don't micro-manage them

Make planning a continuous and inclusive process; not a top-down annual event

Coordinate interactions dynamically; not through annual budgets

Make resources available just-in-time; not just-in-case

Base controls on fast, frequent feedback; not budget variances

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## EXERCISE

- » one person per team do:
  - » recall 1 Beyond Budgeting...
    - » organization name
    - » book name
    - » practice
    - » principe

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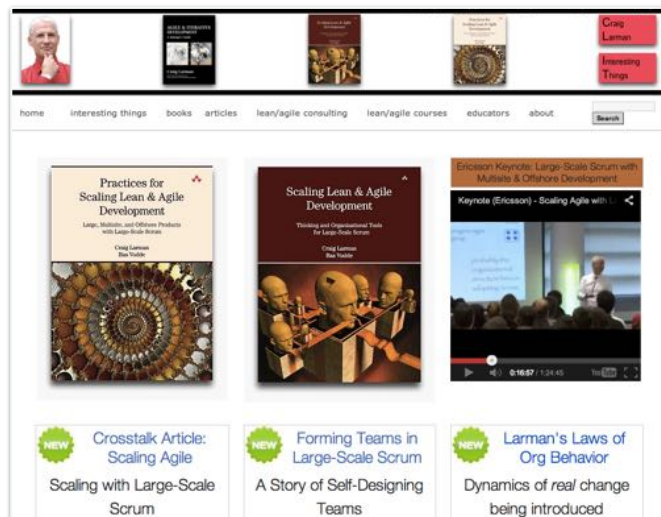
closing

401

thank you!

402

craiglarman.com



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403