Nine Immutable Principles of Lean-Agile Development

Values, Principles, and Practices
Drive Business Results

AGILE2015 **AUG 3-7**
WASHINGTON, D.C.

By Dean Leffingwell

V3.0.2

The Management Challenge

It is not enough that management commit themselves to quality and productivity, they must know what it is they must do.
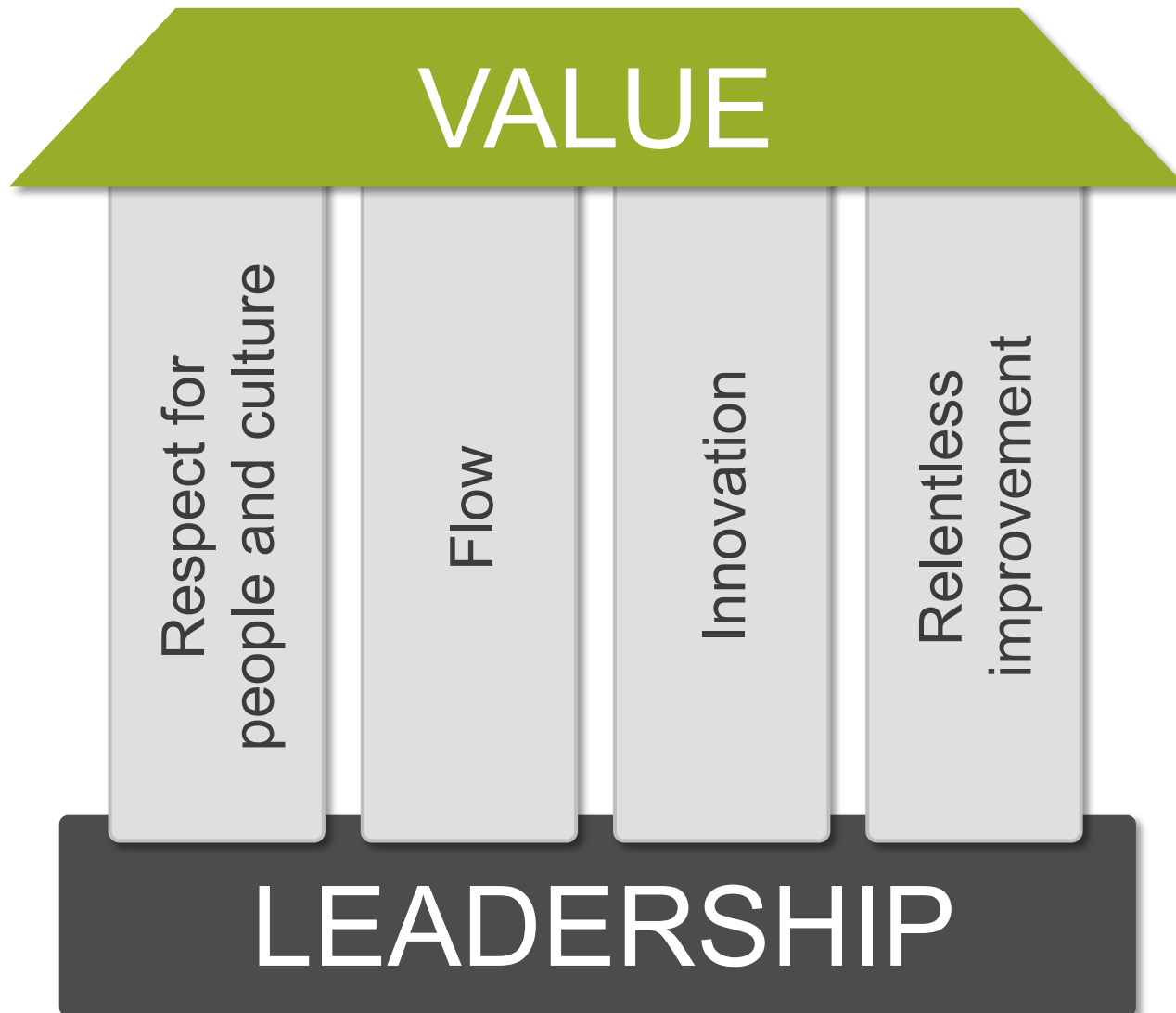
Such a responsibility cannot be delegated.

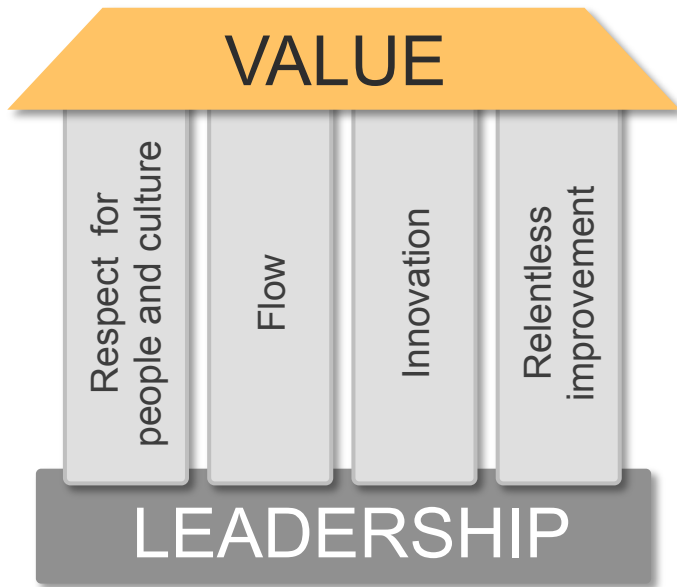*—W. Edwards Deming*

"…and if you can't come, send no one"
   —Vignette from Out of the Crisis, Deming,1986

Values Come First

Purpose

VALUE

Respect for people and culture | Flow | Innovation | Relentless improvement

LEADERSHIP

- Achieve the sustainably shortest lead time with

    - Best quality and value to people and society

    - High morale, safety, customer delight

There is only one boss. The customer. And he can fire everybody in the company.

—Sam Walton

Respect for People and Culture

VALUE

Respect for people and culture · Flow · Innovation · Relentless improvement

LEADERSHIP
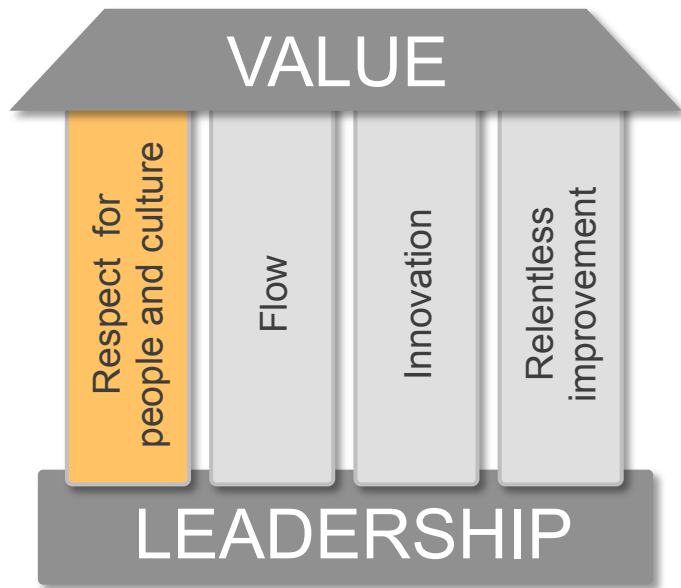
Culture eats strategy for breakfast.

—Peter Drucker

- ‣ People do all the work

- ‣ Your customer is whomever consumes your work
  - ‣ Don't overload them
  - ‣ Don't make them wait
  - ‣ Don't force them to do wasteful work
  - ‣ Don't impose wishful thinking

- ‣ Build long-term partnerships based on trust

- ‣ Cultural change comes last, not first

- ‣ To change the culture, you have to change the organization

The Agile Manifesto

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.

agilemanifesto.org

Nine Immutable Principles of Lean-Agile Development at Enterprise Scale

The Management Challenge

The notion that "our problems are different", is a disease that affects western management.

They may be different, to be sure, but the principles that will help to improve quality of product and service are universal in nature.

—W. Edwards Deming

SAFe® Lean-Agile Principles

#1-Take an economic view

#2-Apply systems thinking

#3-Assume variability; preserve options

#4-Build incrementally with fast, integrated learning cycles

#5-Base milestones on objective evaluation of working systems

#6-Visualize and limit WIP, reduce batch sizes, and manage queue lengths

#7-Apply cadence, synchronize with cross-domain planning

#8-Unlock the intrinsic motivation of knowledge workers
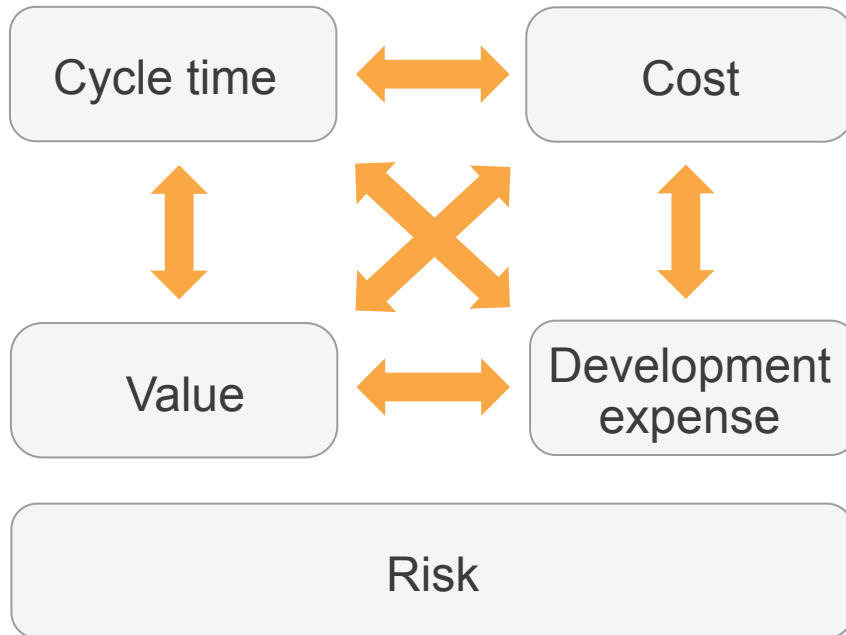
#9-Decentralize decision-making

#1 - Take an economic view

Base Decisions on Economics

Develop an economic framework for decision-making

```
┌──────────────┐        ┌──────────────┐
│  Cycle time  │ ◄────► │     Cost     │
└──────────────┘        └──────────────┘
       ▲          ╲  ╱          ▲
       │           ╲╱           │
       ▼           ╱╲           ▼
┌──────────────┐        ┌──────────────┐
│    Value     │ ◄────► │ Development  │
│              │        │   expense    │
└──────────────┘        └──────────────┘

┌─────────────────────────────────────┐
│                 Risk                 │
└─────────────────────────────────────┘
```

- ‣ Empower local decision making

- ‣ Do not consider money already spent

- ‣ Sequence jobs for maximum benefit

- ‣ If you only quantify one thing, quantify the cost of delay

"Understanding economics requires understanding of the interaction amongst multiple variables."

—Don Reinertsen, *Principles of Product Development Flow*

Is it Only About Making Money?

CHILDREN INTERNATIONAL

| How We Help Children | Success Stories | About Us | FAQ | Privacy Notice |

Watch a video from Joel Lambert of Discovery Channel's Lone Target. Joel is a former Navy SEAL and a Children International sponsor.

Find out if sponsorship is right for you. We'll rush you the photo and family history of a special boy or girl who desperately needs your love and support.

THERE'S NO COST, NO RISK and NO OBLIGATION.

Sponsor This Child Now
Change His Life Forever

Francisco Javier Desperately Needs Your Help!

His family's monthly income is only $267. At 13 years of age, he has so much potential but needs your love and support.

Sponsor Francisco Javier Now

Your monthly sponsorship gift of $28 will change Francisco Javier's life! Sponsorship will provide him with:

- Medical and Dental Care
- Educational Support
- Family Assistance
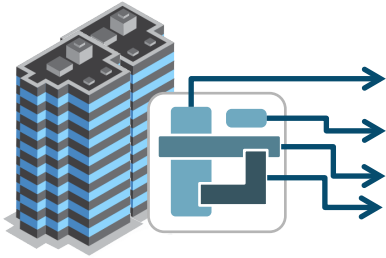- Emergency Food as Needed
- Clothes, Shoes and More!

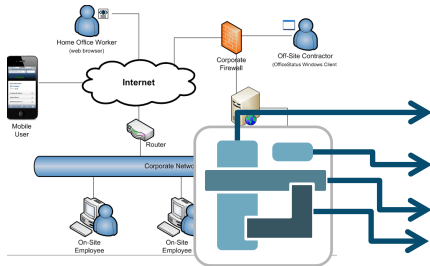**Please sponsor Francisco Javier so he can escape poverty and achieve his dreams.**

Name: Francisco Javier
Country: Mexico
Age: 13 (3/6/2002)
Lives with: Parents

#2 - Apply systems thinking

Systems Thinking

The enterprise that builds systems is, itself, a system

The systems the enterprise builds are systems, too

▸ Complex systems development requires disciplined, systematic, systems thinking

▸ Optimizing a component does not optimize the system

▸ The value of a system passes through its interconnections

▸ A system can evolve no faster than its slowest integration point
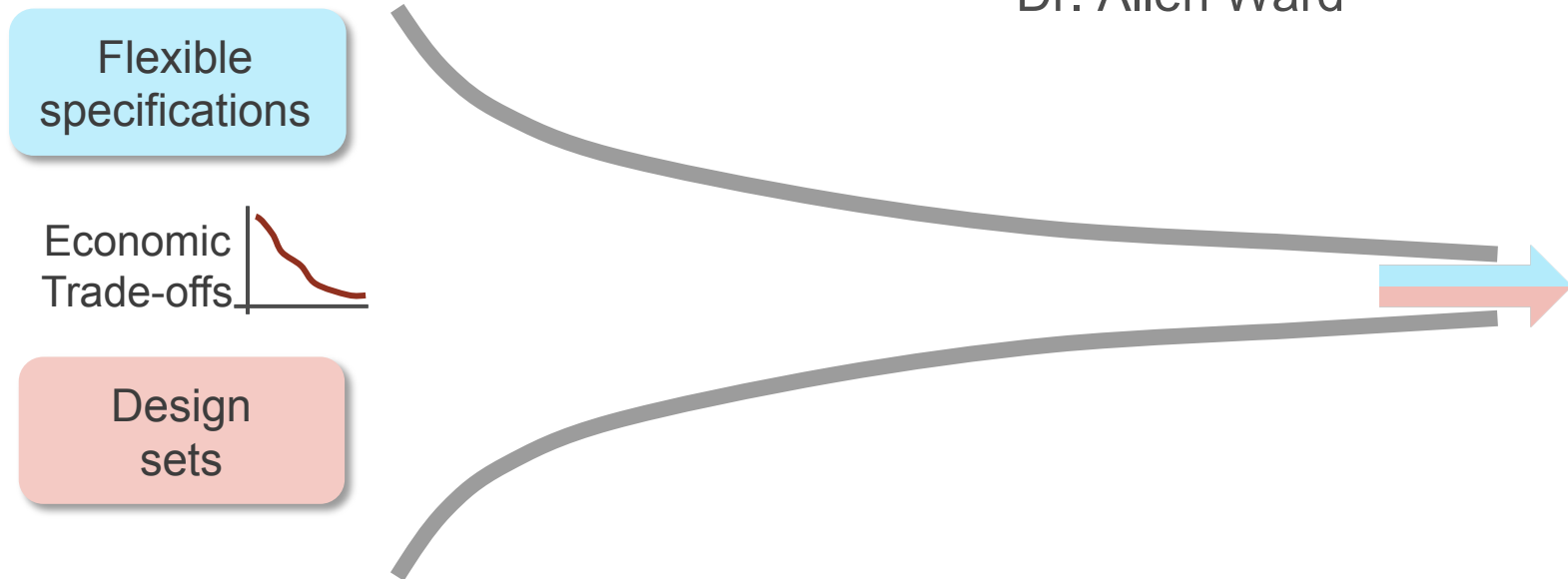
▸ Understand and optimize the full value stream
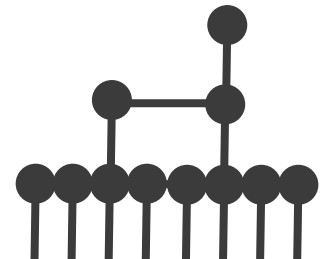
#3 - Assume variability; preserve options

Development Occurs in an Uncertain World

Aggressively evaluate alternatives.
Converge specifications and solution sets.

—Dr. Allen Ward

Flexible specifications

Economic Trade-offs

Design sets

- ▸ You cannot possibly know everything at the start
- ▸ Requirements must be flexible to economic design choices
- ▸ Designs must be flexible to changing requirements
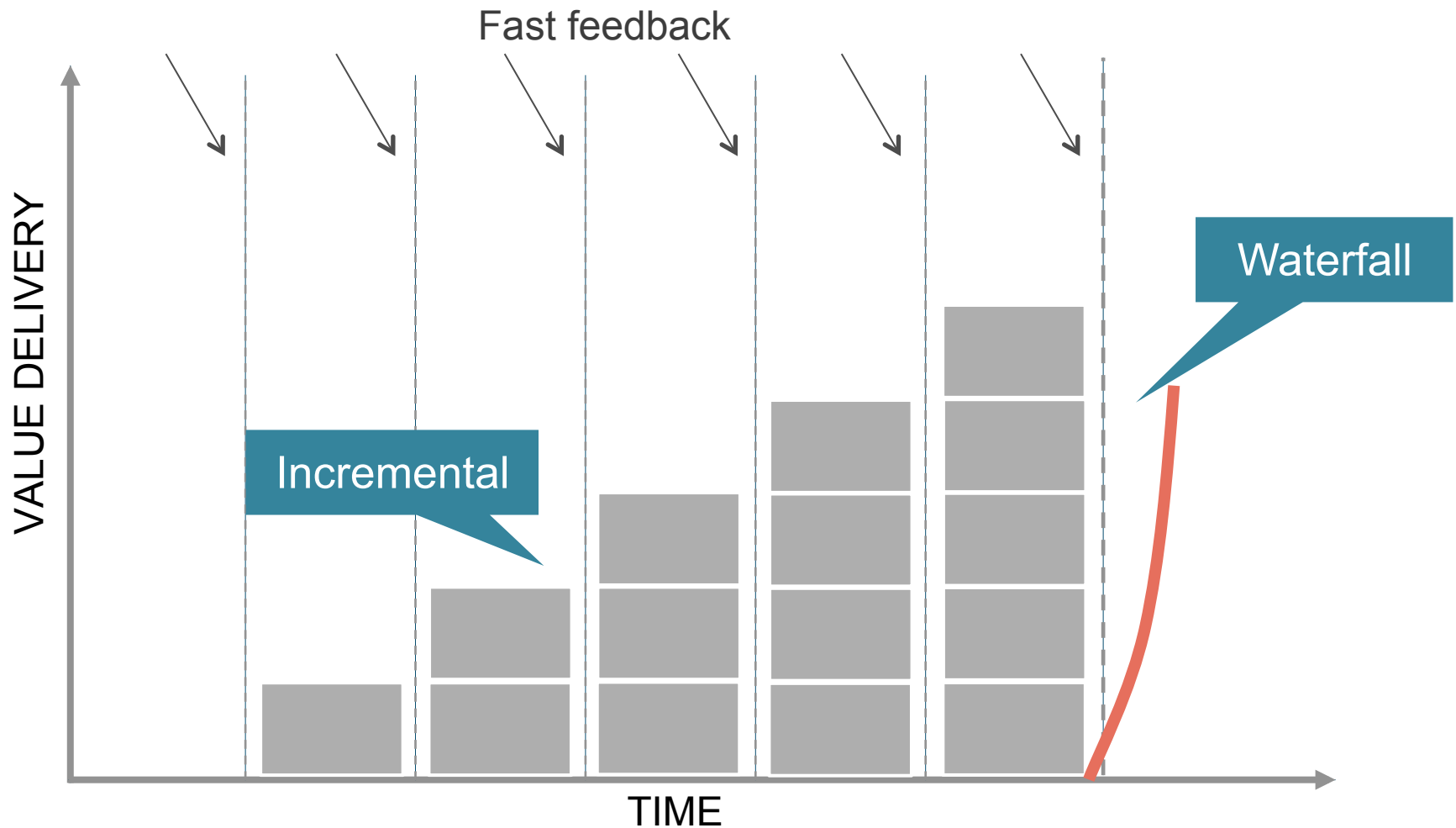- ▸ Preservation of options improves economic results

#4 - Build incrementally with fast, integrated learning cycles

Build Incrementally. Accelerate Value Delivery.
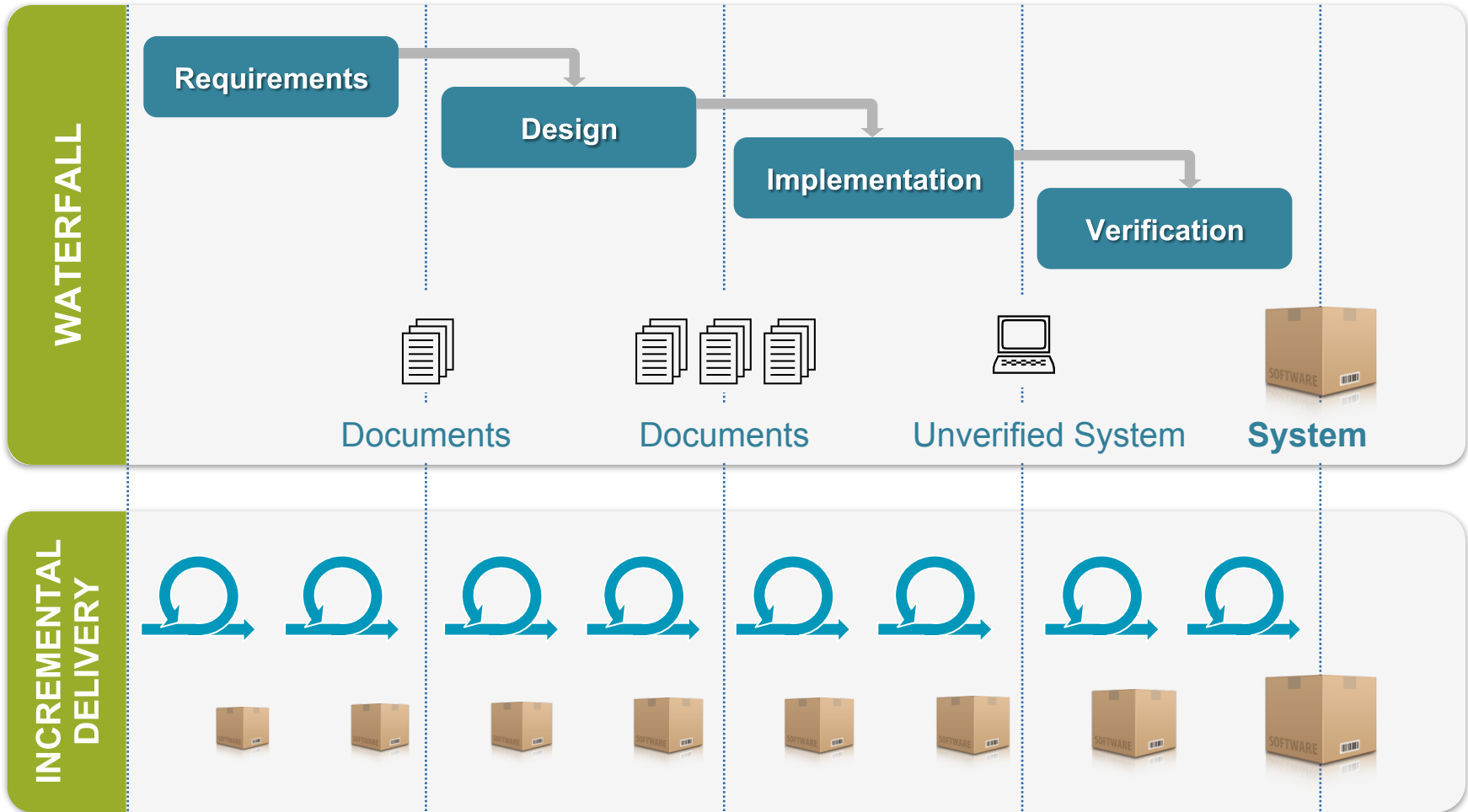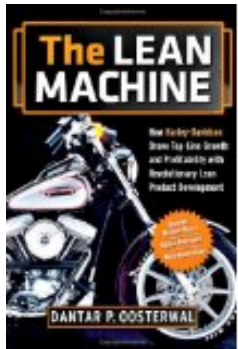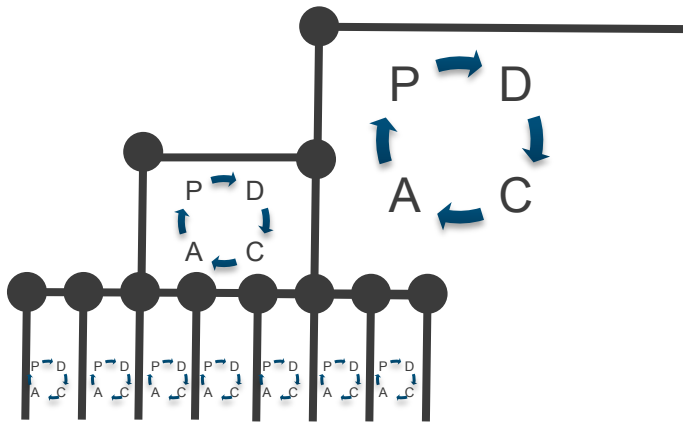
Achieve Better Economic Value

Early delivery provides fast value with fast feedback

Integrate and Test Frequently

*Integration points control product development*
—Dantar P. Oosterwal

The Lean Machine:
How Harley Davidson Drove Top-Line Growth and Profitability with Revolutionary Lean Product Development

—Dantar P. Oosterwal

▶ Integration points are pull events that accelerate learning

- Routine communication

- Reduce variation

- Objective evaluation

▶ Development can proceed no faster than the slowest learning loop

▶ Improvement comes through *synchronization* of design loops and *faster learning cycles*

Reduce Risk
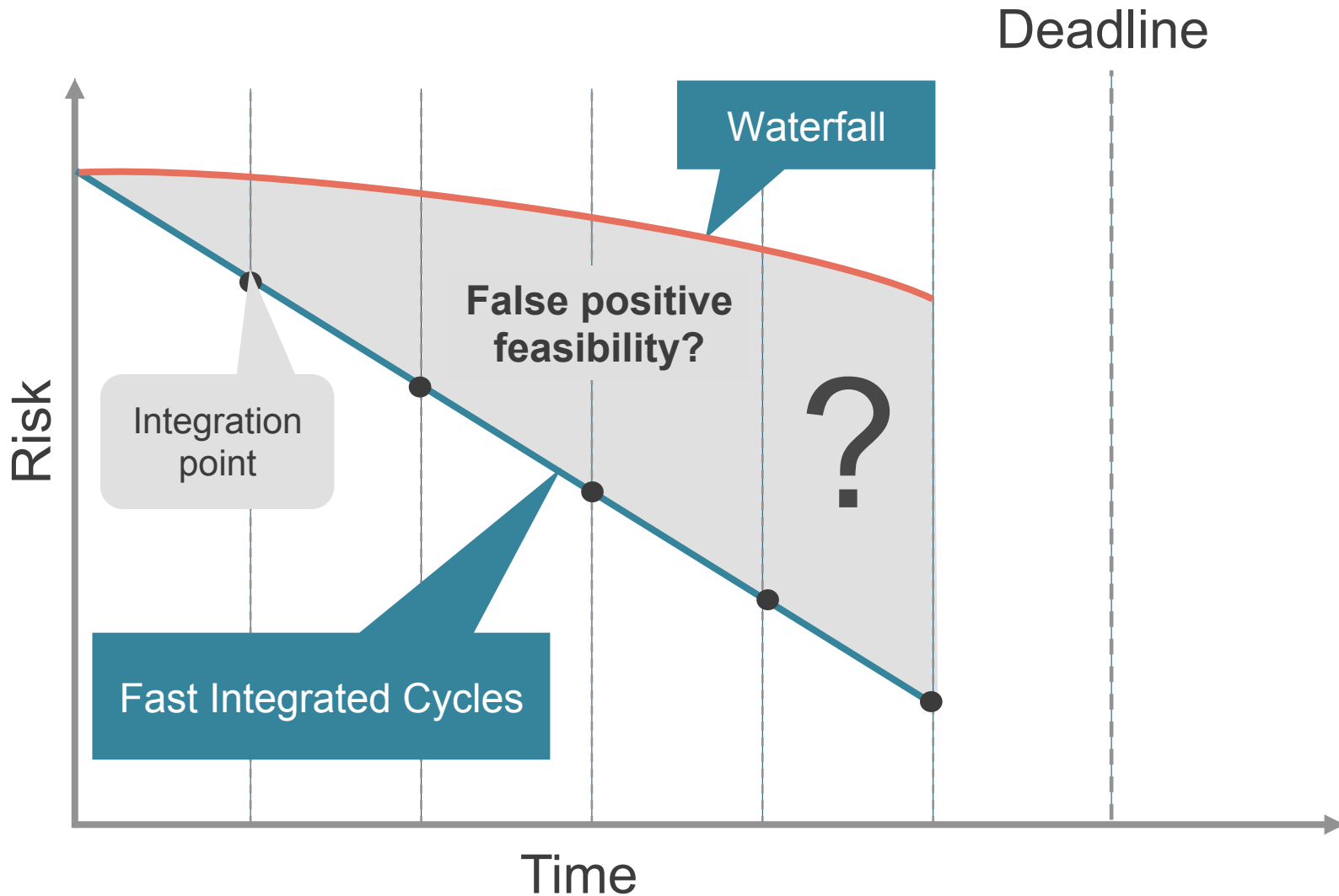
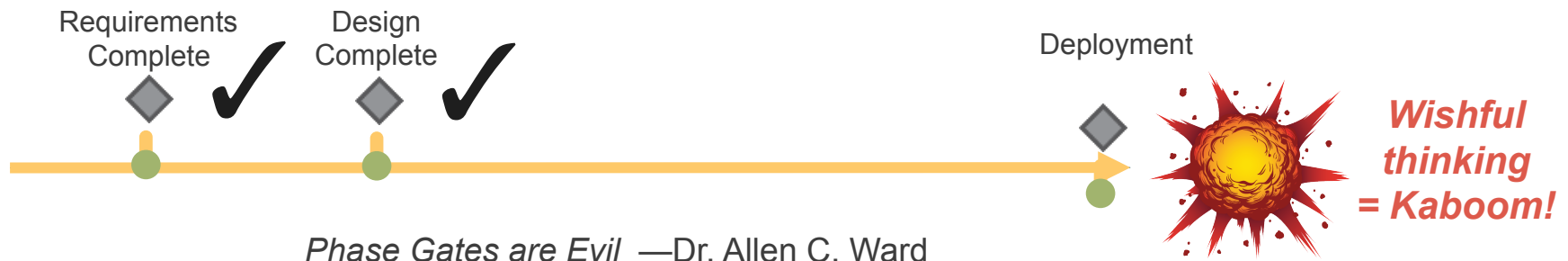# #5 - Base milestones on objective evaluation of working systems

The Problem of Phase-Gate Milestones

There was in fact no correlation between exiting phase gates on time and project success…the data suggested the inverse might be true.
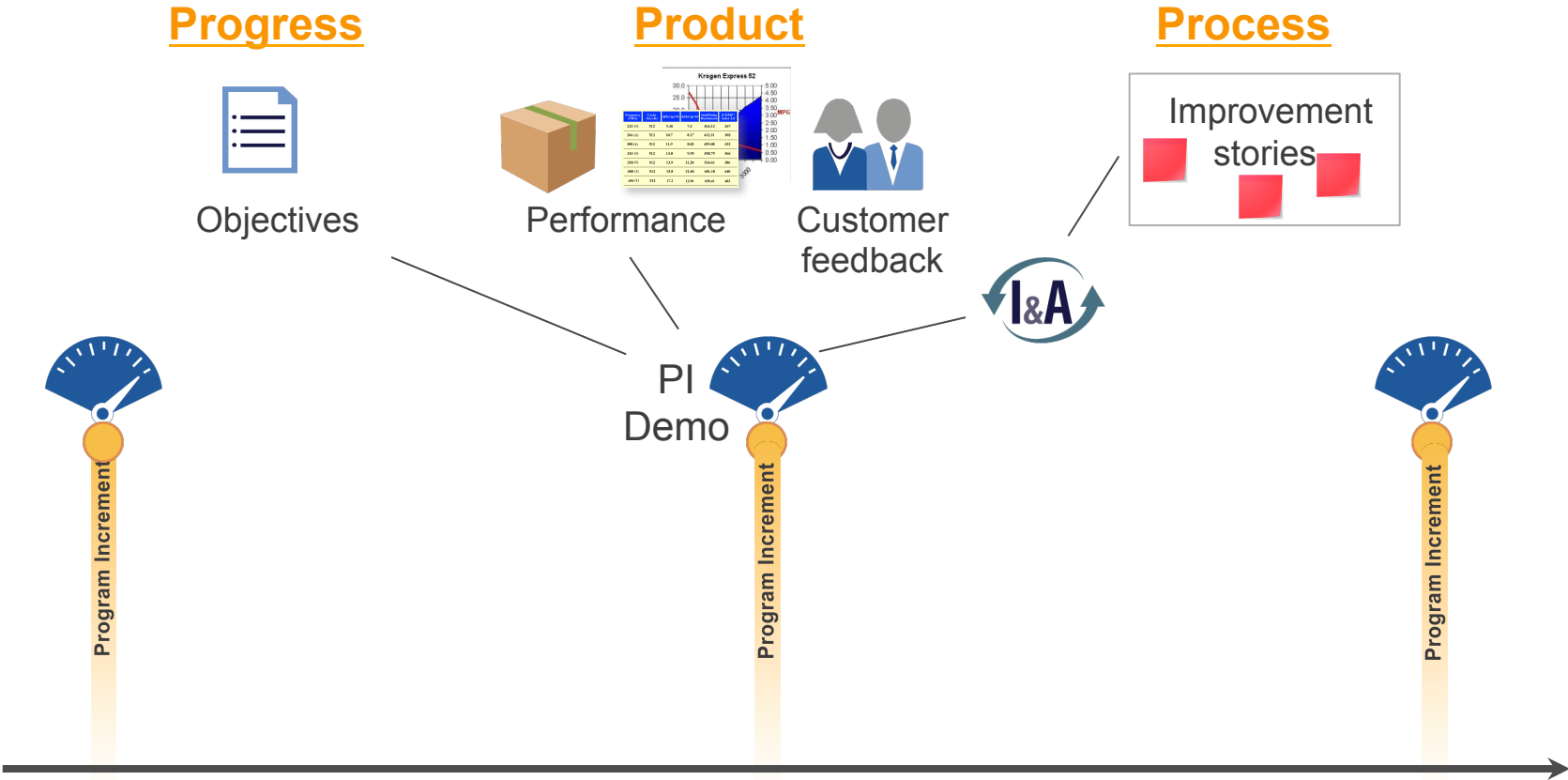
—Lean Machine

- ▸ Force too early design decisions; encourages false positive feasibility

- ▸ Assumes a "point" solution exists and can be built right the first time

- ▸ Creates huge batches and long queues; centralizes requirements and design in program management

You probably have them; the question is how to start to eliminate them, or how to control the damages

Requirements Complete ✔   Design Complete ✔   Deployment   **Wishful thinking = Kaboom!**

Phase Gates are Evil —Dr. Allen C. Ward
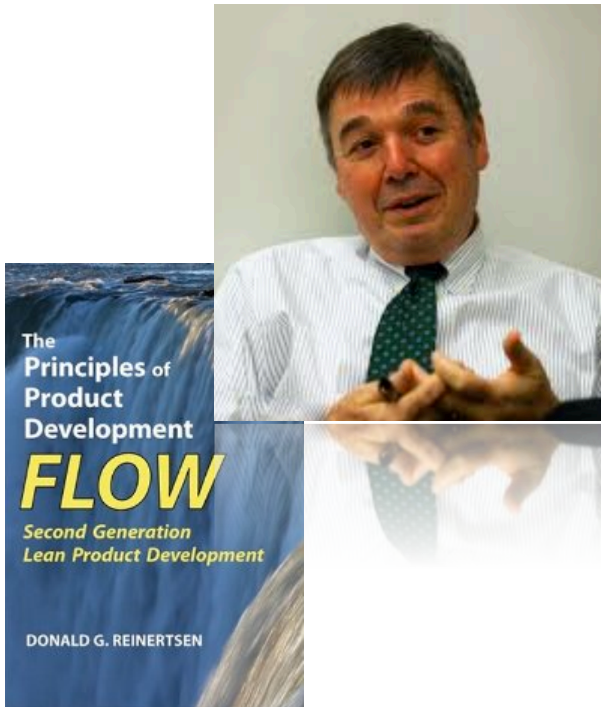
Scaled Agile Framework   SCALED AGILE™

Apply Objective Milestones

PI Demos are orchestrated to deliver objective metrics

#6 - Visualize and limit WIP, reduce batch sizes, and manage queue lengths

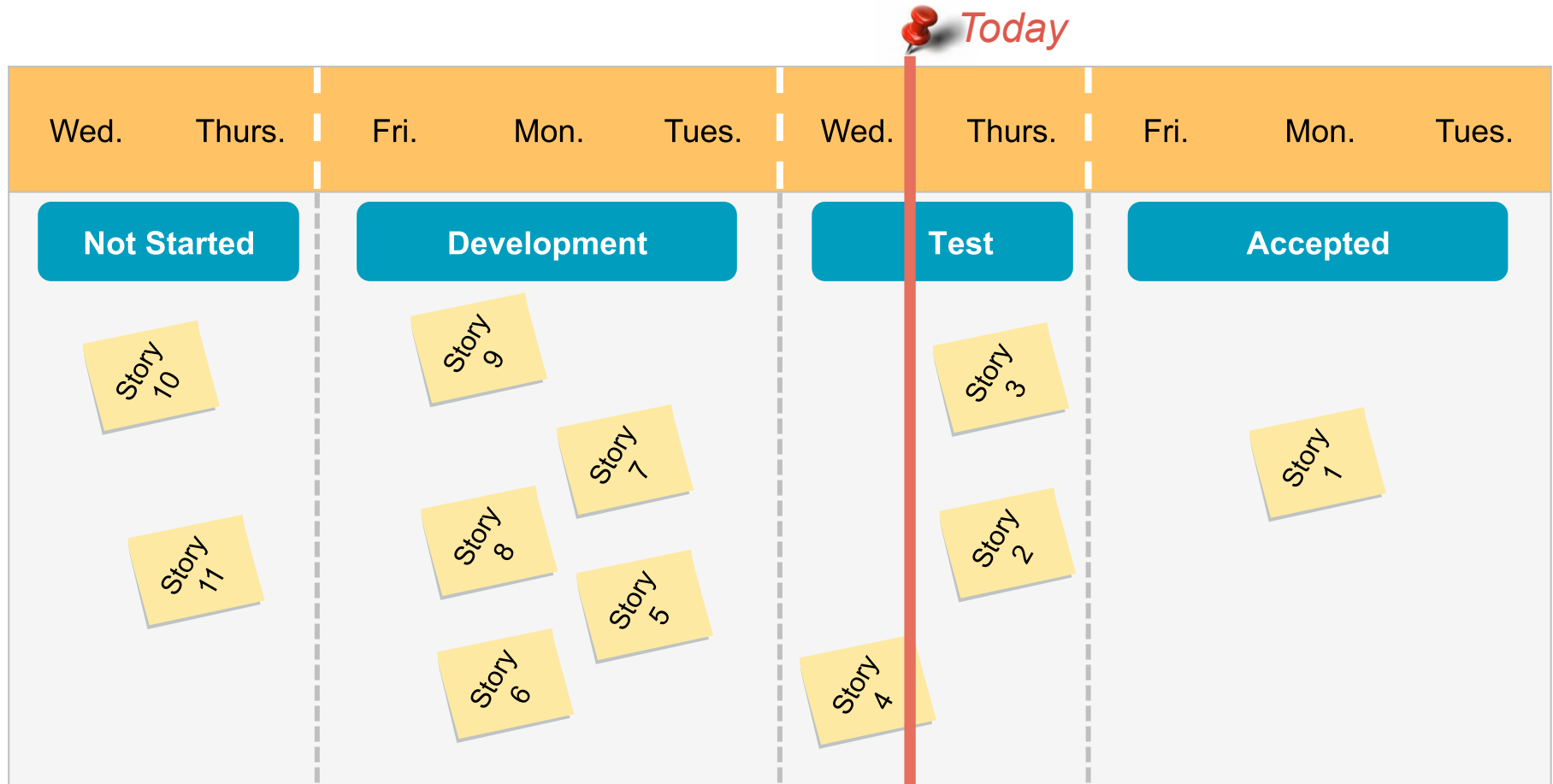# Product Development Flow

Principles of Product Development Flow,
Don Reinertsen

Today's development processes typically deliver information asynchronously in large batches. Flow-based processes deliver information in a regular cadence of small batches.

—Don Reinertsen

Visualize and Limit WIP

One team's Big Visible Information Radiator

How is this team doing? How do you know that?

Exercise – WIP Constraints

Consider the *BVIR* on the prior page, then discuss:

1. What would the effect be of a three-story WIP constraint on Development and Test?

2. You are a developer. You just finished story 6. What would you do if:
   a. There is no WIP constraint
   b. The three-story WIP constraint is in place

3. Which scenario has the highest throughput?

5 min
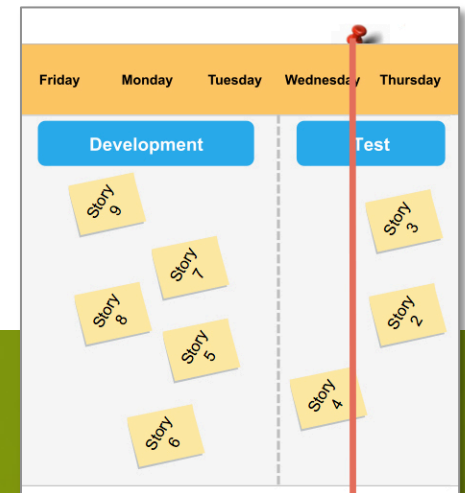
#7-Apply cadence; synchronize with cross-domain planning

Control Variability with Planning Cadence

Cadence-based planning limits variability to a single interval

Asynchronous planning

Emergency re-planning

Max Deviation (3X)

Cadence-based planning

Max Deviation

Cadence-based planning

Time
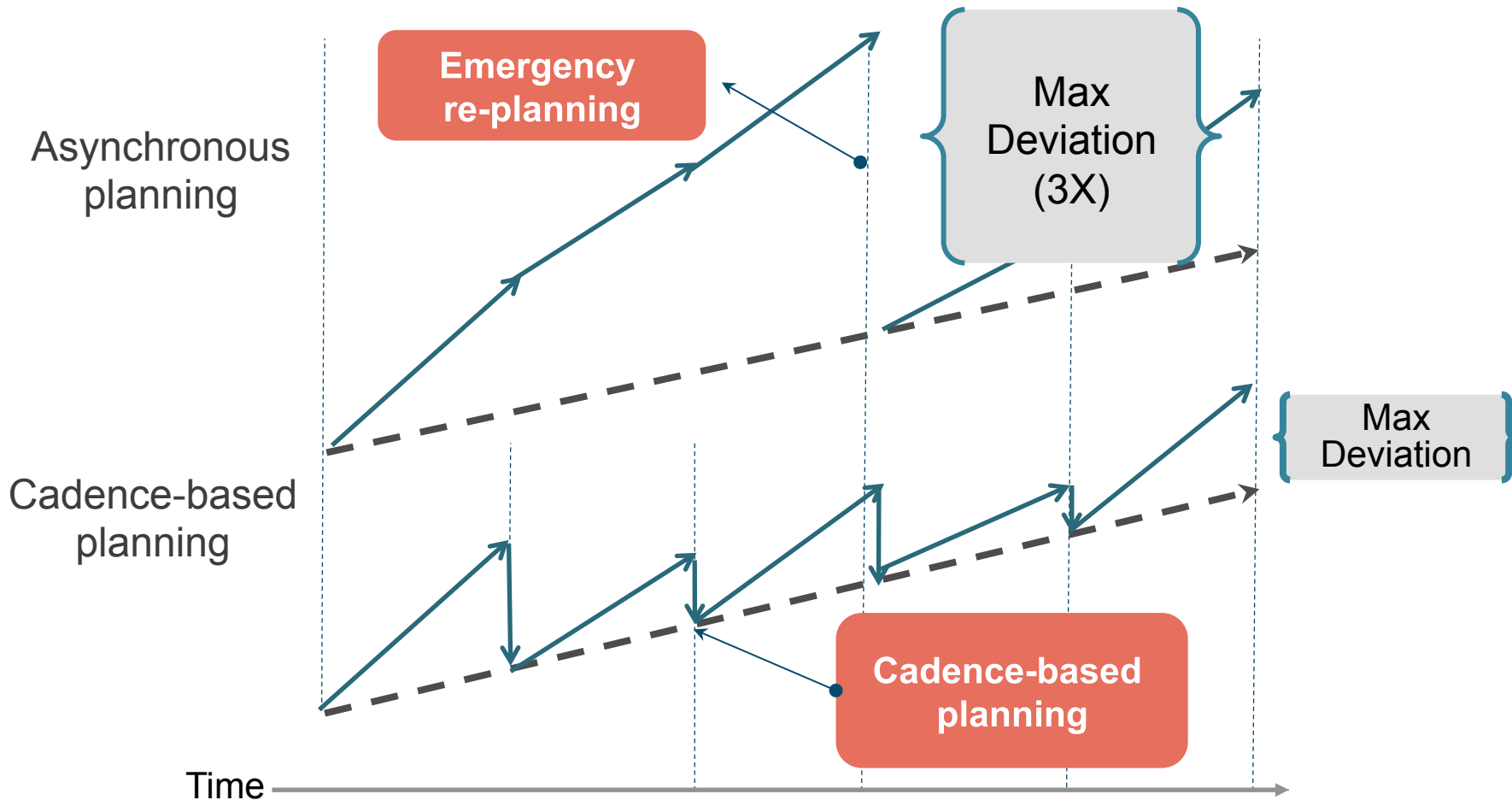
Principles of Product Development Flow, Don Reinertsen

Future product development tasks can't be pre-determined. Distribute planning and control to those who can understand and react to the end results.
— Micheal Kennedy, Product
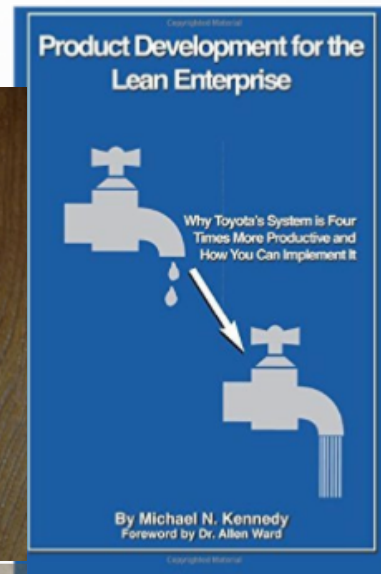
Synchronize with Cross-Domain Planning

▸ All stakeholders face-to-face, (but typically multiple locations)

▸ Management sets the mission, with minimum possible constraints

▸ Requirements and design happen

▸ Critcal stakeholder decisions are accelerated

▸ Teams create—and take responsibilty for—plans

Can You do it in One Minute?

[Video: "Release Planning in One Minute]

Watch for the video to be posted by Agile Alliance.

#8 - Unlock the intrinsic motivation of knowledge workers

It's a Volunteer Workforce!

Workers are knowledge workers if they know more about the work they perform than their bosses.

—Peter Drucker
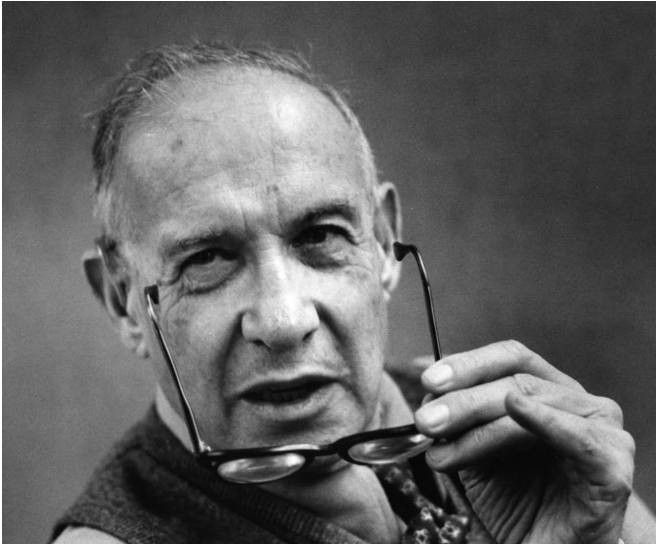
Permission: The Drucker Institute at Claremont Graduate University

▸ Workers themselves are best placed to make decisions about how to perform their work.

▸ To effectively lead, the workers must be heard and respected.

▸ Knowledge workers have to manage themselves. They have to have autonomy.

▸ Continuing innovation has to be part of their work, the task, and the responsibility of knowledge workers.

Drive: The Puzzling Puzzles of Harry Harlow

The 1949 Experiment

▸ Eight rhesus monkeys for a two week experiment on motivation and learning

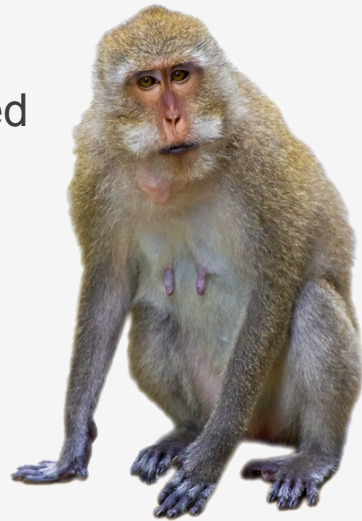▸ Puzzles were placed in their cages

Results

▸ Unprompted, the monkeys solved the puzzles on their own

▸ An interesting and not understood phenomenon

▸ As a motivator, raisins were added as rewards

▸ **Result:** the monkeys made more errors and solved the problems less frequently

"It appears that the performance of the task provides its own intrinsic reward … this drive … may be as basic as the others … "

Source: *Drive: The Surprising Truth About What Motivates Us,* Daniel H. Pink.

#9 - Decentralize decision-making

Decentralize Decision-Making

Empowerment is the ability to responsibly make decisions

- Centralize decisions that:
    - Are infrequent, long-lasting and have significant economies of scale

- Decentralize others:
    - Frequent and time critical decisions require rapid response
    - Local decisions have better local information

- Define the economic logic behind a decision; empower individuals and teams to actually make them

Any inefficiency of decentralization costs less than the value of faster response time.

—Principles of Product Development Flow, Don Reinertsen

Try this at home!

1. Consider three significant decisions you are currently facing

2. Rate each item using the table below

3. Would you centralize or decentralize the decision?

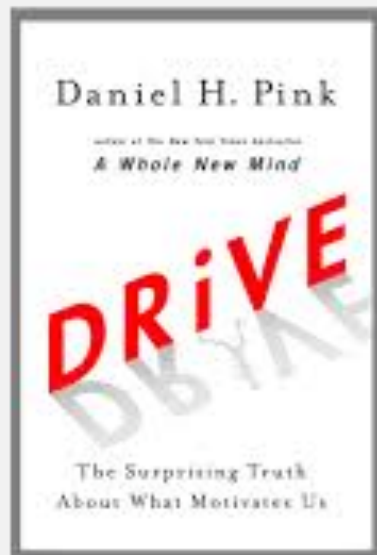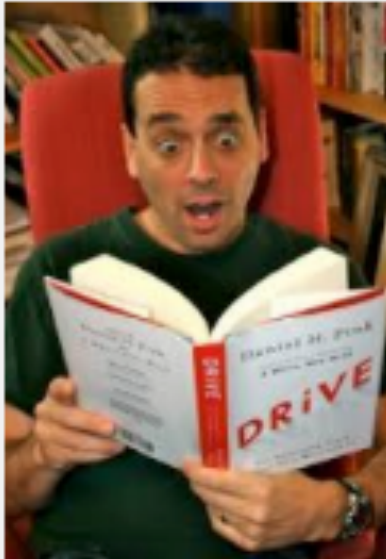| Decision	Frequent? Y=2 N=0	Time-critical? Y=2 N=0	Economies of scale? Y=0 N=2	Total

Scale: 0-2 (Low to high)
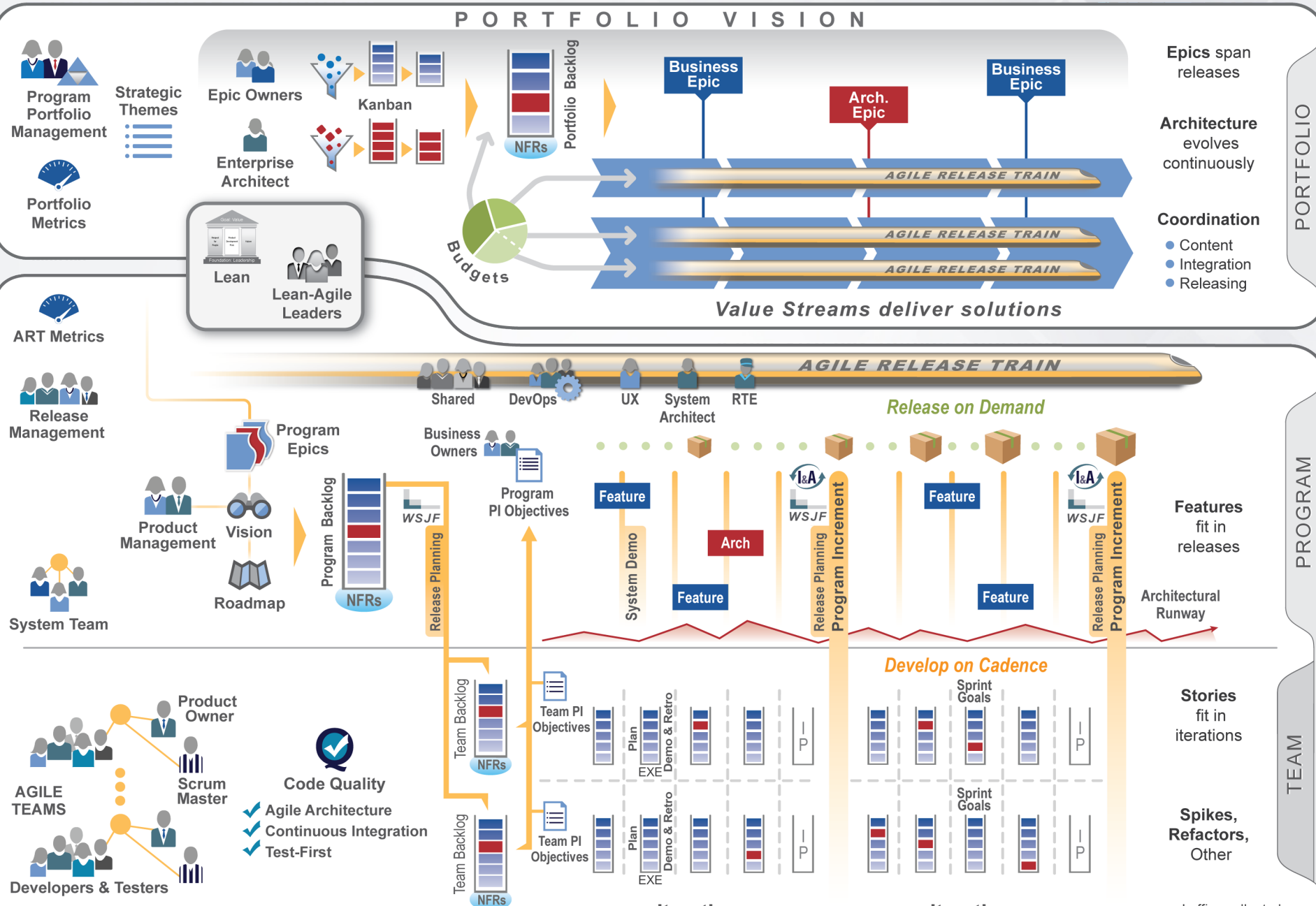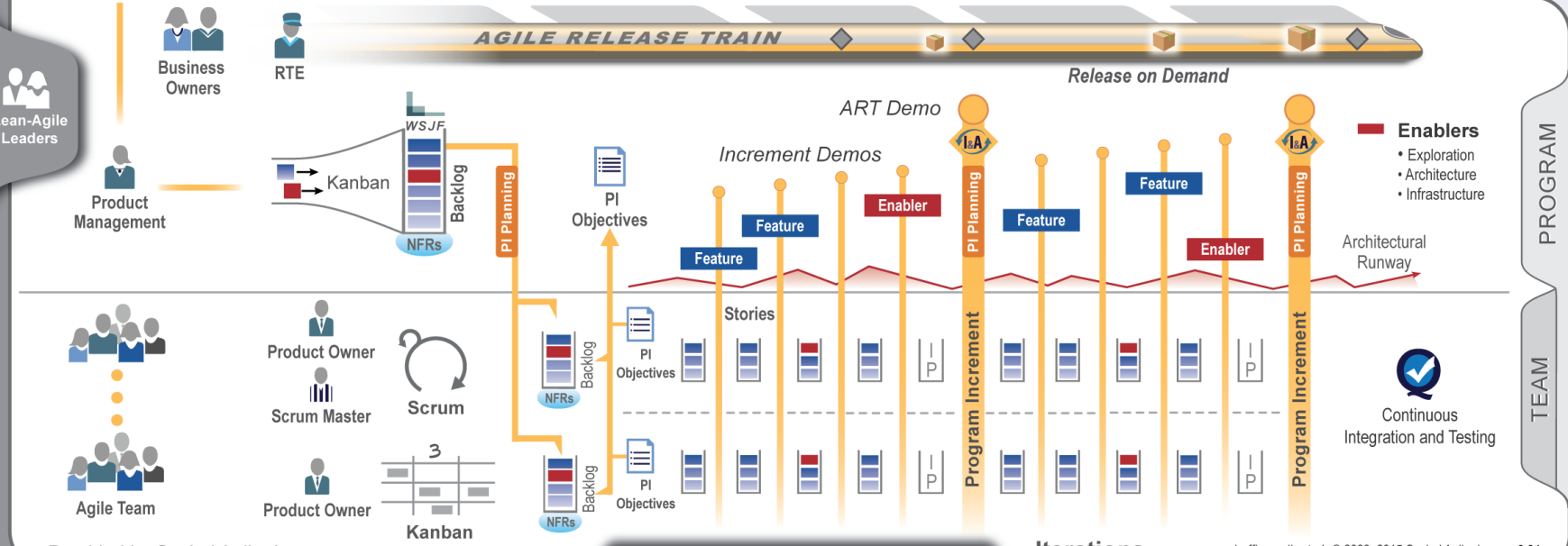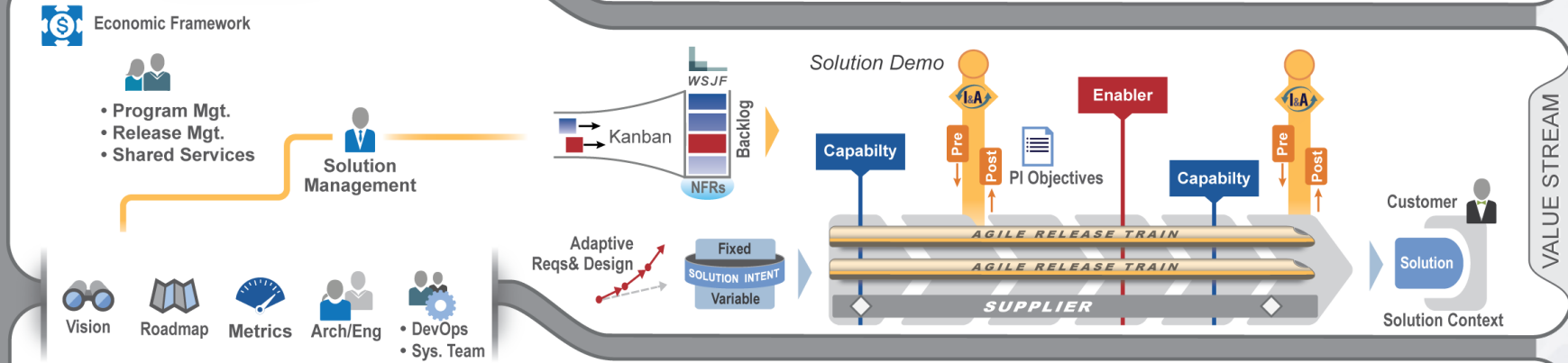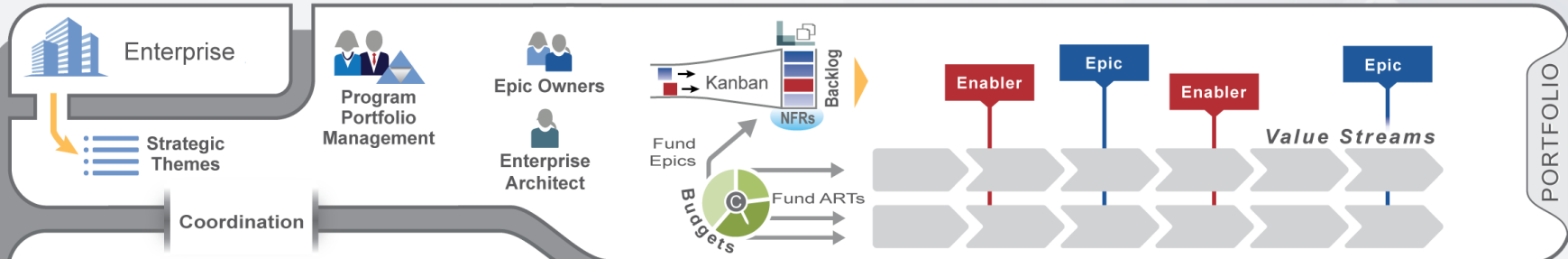Then add the total: 0-3: Centralize; 4-6: Decentralize

10 min

Principles are great, but…

Clarity on how to think, without clarity on how to act, leaves people unmoved.

—Dan Pink

Scaled Agile Framework®

SAFe®

PORTFOLIO VISION

Program Portfolio Management

Strategic Themes

Portfolio Metrics

Epic Owners

Kanban

Enterprise Architect

NFRs

Portfolio Backlog

Business Epic

Arch. Epic

Business Epic

Lean

Lean-Agile Leaders

Budgets

AGILE RELEASE TRAIN

AGILE RELEASE TRAIN

AGILE RELEASE TRAIN

Epics span releases

Architecture evolves continuously

Coordination
- Content
- Integration
- Releasing

Value Streams deliver solutions

PORTFOLIO

ART Metrics

Release Management

System Team

Product Management

Vision

Roadmap

Program Epics

Program Backlog

NFRs

Release Planning

Business Owners

Program PI Objectives

WSJF

AGILE RELEASE TRAIN

Shared   DevOps   UX   System Architect   RTE

Release on Demand

Feature

I&A
WSJF

Feature

Arch

Feature

System Demo

Release Planning
Program Increment

I&A
WSJF

Feature

Release Planning
Program Increment

Features fit in releases

Architectural Runway

Develop on Cadence

PROGRAM

AGILE TEAMS

Product Owner

Scrum Master

Developers & Testers

Code Quality
- ✓ Agile Architecture
- ✓ Continuous Integration
- ✓ Test-First

Team Backlog

Team PI Objectives

NFRs

Plan

EXE

Demo & Retro

IP

Sprint Goals

IP

Team Backlog

Team PI Objectives

NFRs

Plan

EXE

Demo & Retro

IP

Sprint Goals

IP

Stories fit in iterations

Spikes, Refactors, Other

TEAM

Iterations

Iterations

Leffingwell, et al.

v 3.0

SAFe® for Lean Systems Engineering — Preview 2

SAFe® LSE

Provided by Scaled Agile, Inc.

Leffingwell, et al. © 2008–2015 Scaled Agile, Inc. v 0.84

Coming Soon (ish) SAFe 4.0!

Questions?