Leading

SAFe®

Thriving in the Digital Age with Business Agility

SAFe® Course — Attending this course gives learners access to the SAFe Agilist exam and related preparation materials.

5.1.1

SA SAFe® 5

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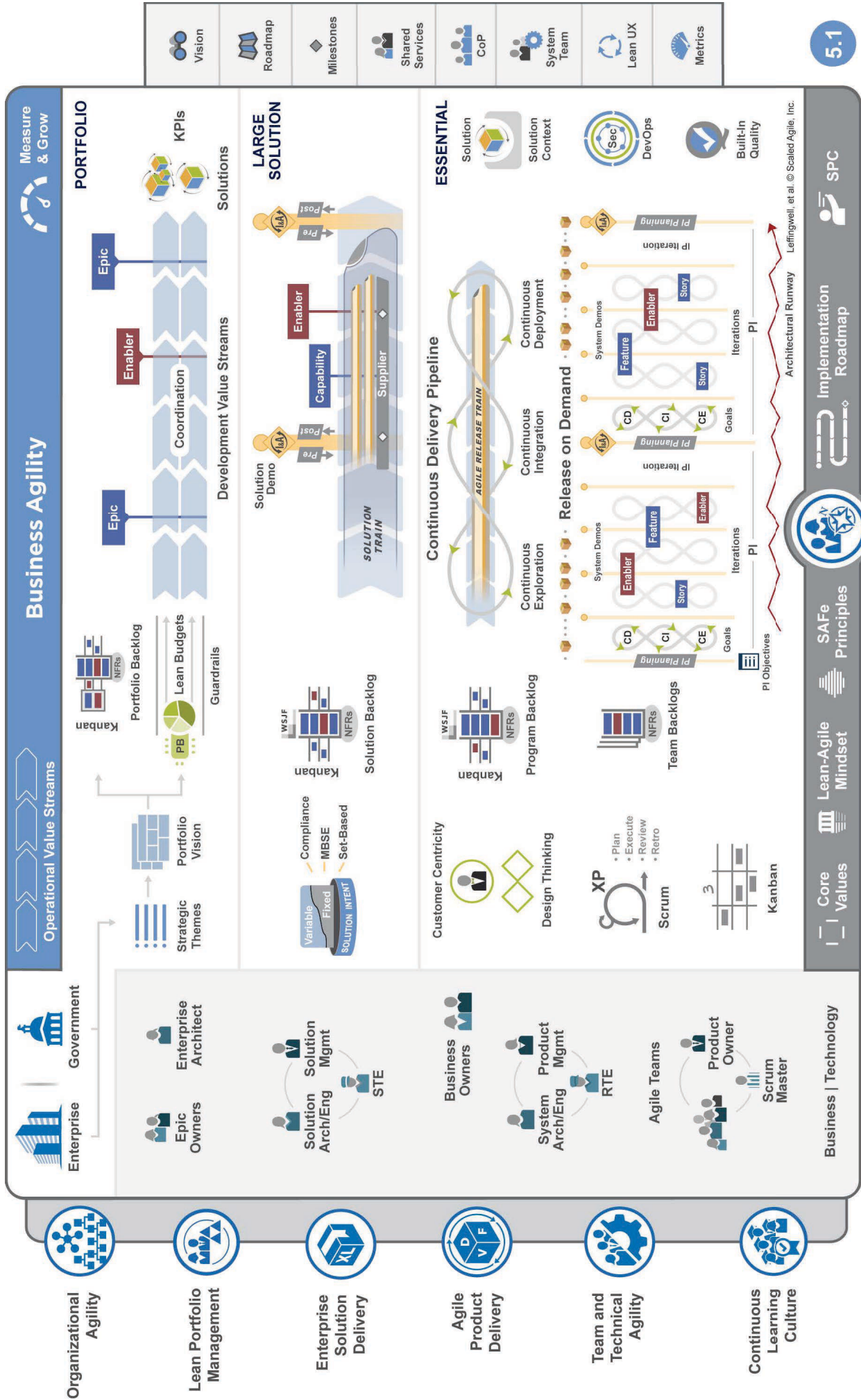
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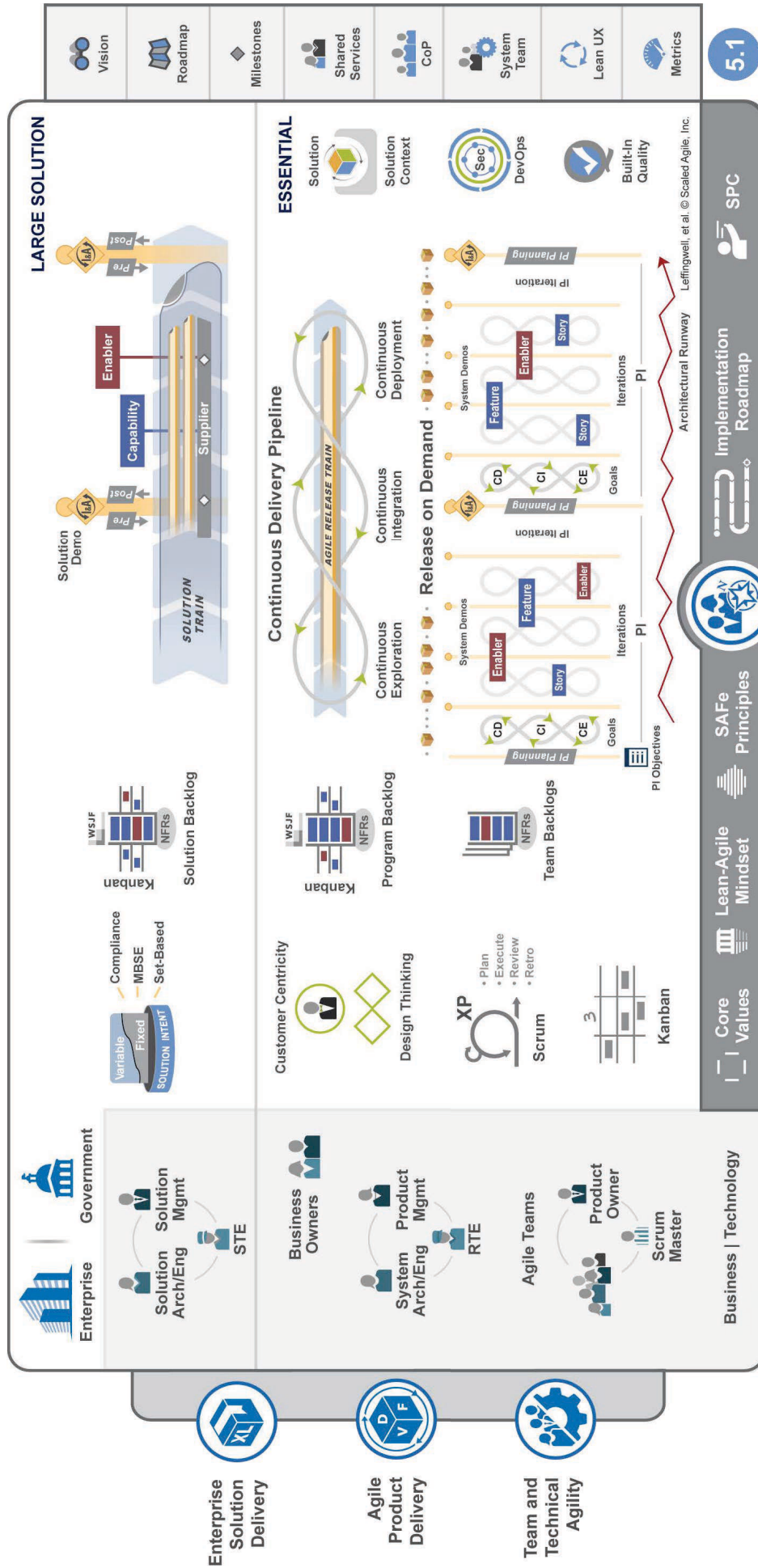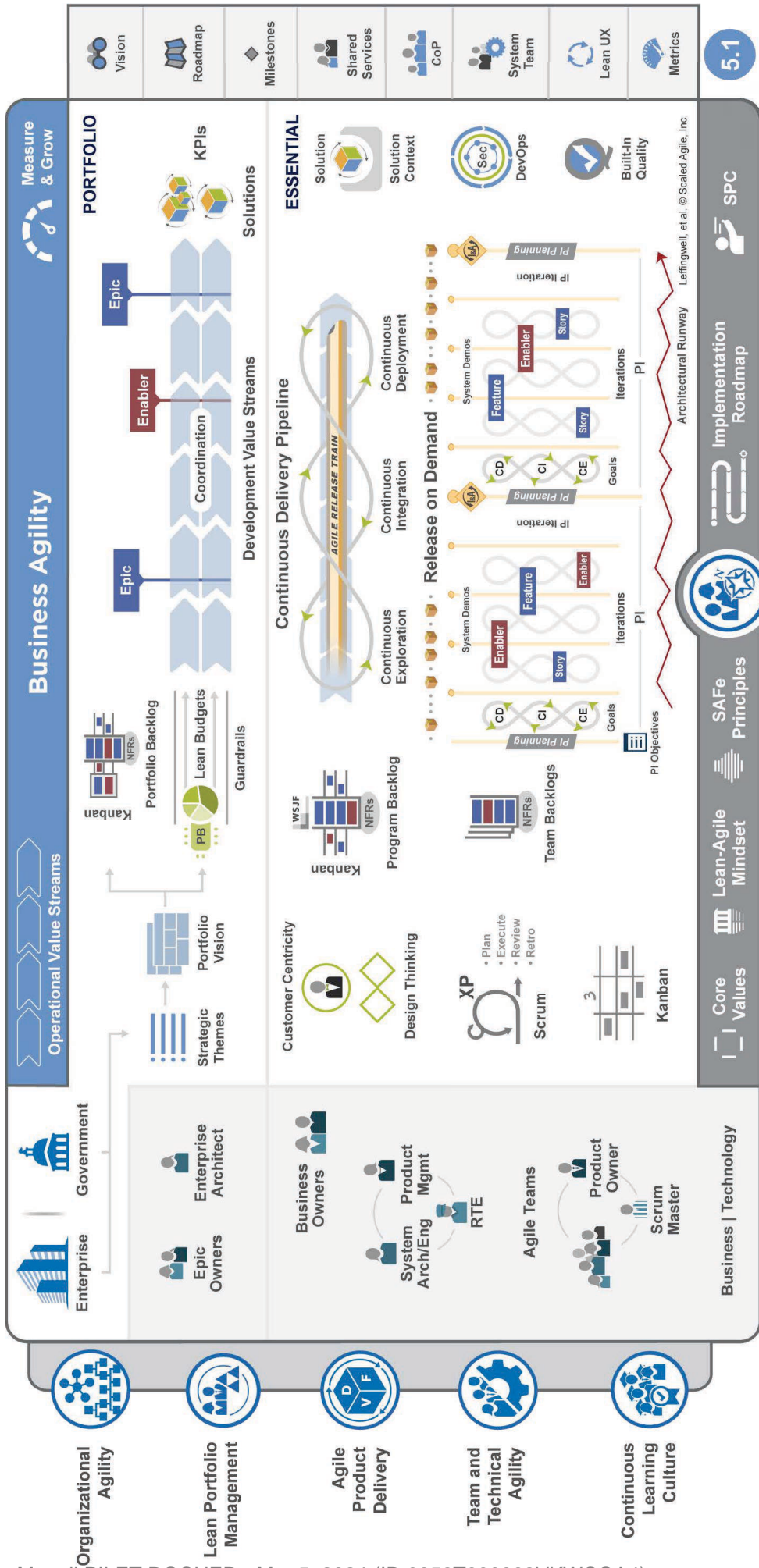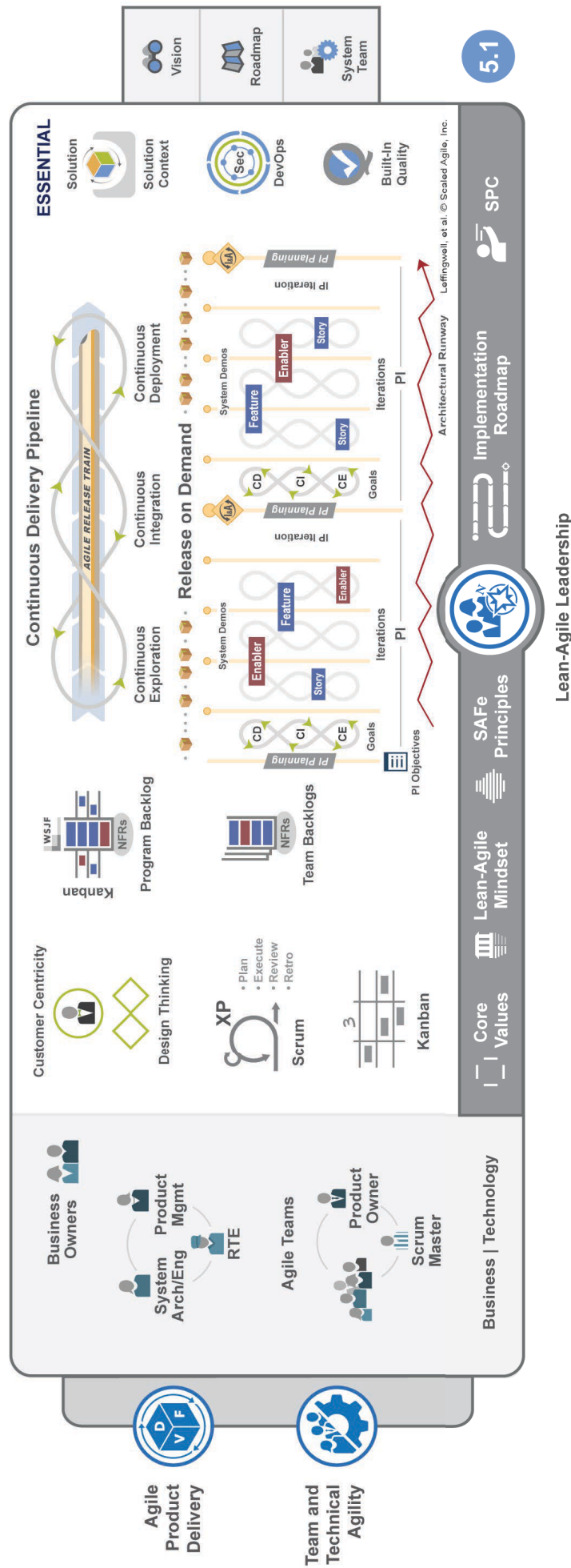
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Business Agility

Measure & Grow

Vision | Roadmap | Milestones | Shared Services | CoP | System Team | Lean UX | Metrics

5.1

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PORTFOLIO

KPIs
Solutions
Epic
Enabler
Epic
Coordination
Development Value Streams

Operational Value Streams

Kanban
Portfolio Backlog
NFRs
Lean Budgets
PB
Guardrails

Portfolio Vision
Strategic Themes

Enterprise | Government
Enterprise Architect
Epic Owners

LARGE SOLUTION

Solution Demo
Pre | Post
Enabler
Capability
Supplier
SOLUTION TRAIN

Kanban
Solution Backlog
WSJF
NFRs

Compliance
MBSE
Set-Based
Variable | Fixed
SOLUTION INTENT

Solution Mgmt
Solution Arch/Eng
STE

ESSENTIAL

Solution | Solution Context
Sec | DevOps
Built-In Quality

Continuous Delivery Pipeline
AGILE RELEASE TRAIN
Continuous Deployment
Continuous Integration
Continuous Exploration
Release on Demand

PI Planning
IP Iteration
System Demos
Feature | Enabler | Story
Iterations
PI
CD | CI | CE
Goals

PI Planning
IP Iteration
System Demos
Feature | Enabler | Story
Iterations
PI
CD | CI | CE
Goals
PI Objectives

Architectural Runway
Leffingwell, et al. © Scaled Agile, Inc.

Kanban
Program Backlog
WSJF
NFRs

Team Backlogs
NFRs

Customer Centricity
Design Thinking
XP
* Plan * Execute * Review * Retro
Scrum
Kanban

Business Owners
Product Mgmt
System Arch/Eng
RTE

Agile Teams
Product Owner
Scrum Master

Business | Technology

Implementation Roadmap
SPC

SAFe Principles
Lean-Agile Mindset
Core Values

Lean-Agile Leadership

Organizational Agility
Lean Portfolio Management
Enterprise Solution Delivery
Agile Product Delivery
Team and Technical Agility
Continuous Learning Culture

SAFe 5.1 — Scaled Agile Framework

Top toolbar: Vision, Roadmap, Milestones, Shared Services, CoP, System Team, Lean UX, Metrics

LARGE SOLUTION
- Solution, Solution Context
- Solution Demo
- Enabler, Capability, Supplier
- SOLUTION TRAIN
- Pre/Post I&A
- Kanban — WSJF, NFRs — Solution Backlog
- Compliance, MBSE, Set-Based
- Variable, Fixed — SOLUTION INTENT
- Government, Enterprise
- Solution Mgmt, Solution Arch/Eng, STE

ESSENTIAL
- Sec, DevOps, Built-In Quality
- Continuous Delivery Pipeline
- AGILE RELEASE TRAIN
- Continuous Exploration, Continuous Integration, Continuous Deployment
- Release on Demand
- PI Planning, IP Iteration, System Demos
- Feature, Enabler, Story
- Iterations, PI
- Goals — CE, CI, CD
- PI Objectives
- Architectural Runway
- Kanban — WSJF, NFRs — Program Backlog
- Team Backlogs — NFRs
- Customer Centricity, Design Thinking
- XP (Plan, Execute, Review, Retro), Scrum, Kanban
- Business Owners, Product Mgmt, System Arch/Eng, RTE
- Agile Teams, Product Owner, Scrum Master

Bottom:
- SPC
- Implementation Roadmap
- Lean-Agile Leadership
- SAFe Principles
- Lean-Agile Mindset
- Core Values
- Business | Technology

Core competencies:
- Enterprise Solution Delivery
- Agile Product Delivery
- Team and Technical Agility

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Lean Portfolio Management

- Align strategy, funding, and execution
- Optimize operations across the portfolio
- Lightweight governance empowers decentralized decision-making

Strategy & Investment Funding

Lean Governance

Agile Portfolio Operations

Organizational Agility

- Create an enterprise-wide, Lean-Agile mindset
- Lean out business operations
- Respond quickly to opportunities and threats

Lean-thinking People and Agile Teams

Lean Business Operations

Strategy Agility

Continuous Learning Culture

- Everyone in the organization learns and grows together
- Exploration and creativity are part of the organization's DNA
- Continuously improving solutions, services, and processes is everyone's responsibility

Learning Organization

Innovation Culture

Relentless Improvement

Enterprise Solution Delivery

- Apply Lean system engineering to build really big systems
- Coordinate and align the full supply chain
- Continually evolve live systems

Lean System and Solution Engineering

Coordinating Trains and Suppliers

Continually Evolve Live Systems

Agile Product Delivery

- The customer is the center of your product strategy
- Develop on cadence and release on demand
- Continuously explore, integrate, deploy, and innovate

Customer Centricity & Design Thinking

Develop on Cadence Release on Demand

DevOps and the Continuous Delivery Pipeline

Team And Technical Agility

- High-performing, cross-functional, Agile teams
- Business and technical teams build business solutions
- Quality business solutions delight customers

Agile Teams

Teams of Agile Teams

Built-in Quality

Lean-Agile Leadership

- Inspire others by modeling desired behaviors
- Align mindset, words, and actions to Lean-Agile values and principles
- Actively lead the change and guide others to the new way of working

Leading by Example

Mindset & Principles

Leading Change

Customer Centricity

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SAFe® Implementation Roadmap

Business results

- 30 – 75% Time-to-Market
- 25 – 75% Quality
- 20 – 50% Productivity
- 10 – 50% Engagement

Measure & Grow

Steps / Stages:

- Go SAFe
- Reach the tipping point
  - Leading SAFe®
  - SAFe® for Government (SGP)
- Train Lean-Agile Change Agents
  - Implementing SAFe® (SPC)
  - SCALED AGILE PARTNER NETWORK
- Train Executives, Managers, and Leaders
  - Leading SAFe® (SA)
  - Lean Portfolio Management (LPM)
- Create the Implementation Plan
- Identify Value Streams and ARTs
- Prepare for ART Launch
  - SAFe® for Architects (ARCH)
  - SAFe® Scrum Master (SSM)
  - SAFe® Product Owner/Product Manager (POPM)
  - Leading SAFe® (for ART stakeholders) (SA)
- Lean-Agile Center of Excellence
- Train Teams and Launch ART
  - SAFe® for Teams (SP)
- Coach ART Execution
  - Agile Product Management (APM)
  - SAFe® DevOps (SDP)
  - Agile Software Engineering (ASE)
  - PI Planning
- Launch More ARTs and Value Streams
  - Implementing SAFe® (more SPCs) (SPC)
- Extend to the Portfolio
  - Lean Portfolio Management (LPM)
- Accelerate
  - SAFe® Release Train Engineer (RTE)
  - SAFe® Advanced Scrum Master (SASM)

Waterfall/Ad hoc Agile

SAFe® Courses and Certifications

Course	Description	Certification	
Leading SAFe®	Thriving in the Digital Age with Business Agility	**SA** SAFe 5	with SAFe® 5 Agilist Certification
Implementing SAFe®	Achieving Business Agility with the Scaled Agile Framework	**SPC** SAFe 5	with SAFe® 5 Program Consultant Certification
SAFe® for Government	Applying Lean-Agile Practices in the Public Sector with SAFe®	**SGP** SAFe 5	with SAFe® 5 Government Practitioner Certification
Lean Portfolio Management	Aligning Strategy with Execution	**LPM** SAFe 5	with SAFe® 5 Lean Portfolio Manager Certification
SAFe® Product Owner/Product Manager	Delivering Value through Effective Program Increment Execution	**POPM** SAFe 5	with SAFe® 5 Product Owner/Product Manager Certification
Agile Product Management	Using Design Thinking to Create Valuable Products in the Lean Enterprise	**APM** SAFe 5	with SAFe® 5 Agile Product Manager Certification
SAFe® Scrum Master	Applying the Scrum Master Role within a SAFe® Enterprise	**SSM** SAFe 5	with SAFe® 5 Scrum Master Certification
SAFe® Advanced Scrum Master	Advancing Scrum Master Servant Leadership with SAFe®	**SASM** SAFe 5	with SAFe® 5 Advanced Scrum Master Certification
SAFe® Release Train Engineer	Facilitating Lean-Agile Program Execution	**RTE** SAFe 5	with SAFe® 5 Release Train Engineer Certification
SAFe® for Architects	Architecting for Continuous Value Flow with SAFe®	**ARCH** SAFe 5	with SAFe® 5 Architect Certification
SAFe® DevOps	Optimizing Your Value Stream	**SDP** SAFe 5	with SAFe® 5 DevOps Practitioner Certification
SAFe® for Teams	Establishing Team Agility for Agile Release Trains	**SP** SAFe 5	with SAFe® 5 Practitioner Certification
Agile Software Engineering	Enabling Technical Agility for the Lean Enterprise	**ASE** SAFe 5	with SAFe® 5 Agile Software Engineer Certification

Table of Contents

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Leading SAFe®

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5

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Logistics

► Course meeting times

► Breaks

► Facilities

► Technology requirements

► Working agreements

1-2

Discussion: Introductions

► **Step 1**: Introduce yourself to your group

► **Step 2:** Share something you know about SAFe and the role of the Lean-Agile leader

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1-3

Course outline

► Lesson 1: Thriving in the Digital Age with Business Agility

► Lesson 2: Becoming a Lean-Agile Leader

► Lesson 3: Establishing Team and Technical Agility

► Lesson 4: Building Solutions with Agile Product Delivery

► Lesson 5: Exploring Lean Portfolio Management

► Lesson 6: Leading the Change

► Lesson 7: Practicing SAFe

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1-4

Activity: Course outline overview

▶ **Step 1:** Review the course outline

▶ **Step 2:** Place a dot on the topics that are most relevant to you. You have three votes in total.

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1-5

Activity: Access the Class Page

▶ **Step 1:** Navigate to the Class Page on the SAFe Community Platform

▶ **Step 2:** Select Learn, then My Classes, then Leading SAFe

▶ **Step 3:** Click on the link to Download the Leading SAFe Digital Workbook
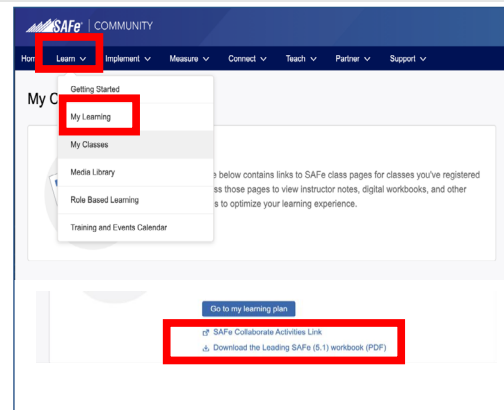
Visit the Leading SAFe class page to download the workbook.
https://bit.ly/Community-MyClasses

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1-6

Lesson 1

Thriving in the Digital Age with Business Agility

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Lesson Topics

1.1 Thriving in the digital age

1.2 SAFe as an operating system for Business Agility

1.3 The Seven Core Competencies of Business Agility

Learning objectives

At the end of this lesson, you should be able to:

► Describe what is necessary to thrive in the digital age

► Recognize SAFe as an operating system for Business Agility

► Summarize the seven core competencies of Business Agility

1.1 Thriving in the digital age

> " Those who master large-scale software delivery will define the economic landscape of the 21st century.
>
> —**Mik Kersten**

1-11

Five technological revolutions

	Installation Period ▼	Turning Point ▼	Deployment Period ▼
	1771	1793-1801	
Industrial Revolution	Canal Mania (UK)		Great British Leap
	1829	1848-1850	
Age of Steam & Railways	Railway Mania (UK)		The Victorian Boom
	1875	1890-1895	
Age of Steel & Heavy Engineering	London funded global market infrastructure build-up		Belle Epoque (Europe) Progressive Era (USA)
	1908	1929-1943	
Age of Oil & Mass Production	The Roaring Twenties		Post-War Golden Age
	1971	2000-?	
Age of Software & Digital	Dotcom and internet mania; Global finance and housing bubbles		?

Adapted from Technological Revolutions and Financial Capital, Carlota Perez

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1-12

Production capital follows financial capital

▶ **Installation Period** – New technology and financial capital combine to create a 'Cambrian explosion' of new market entrants, disrupting entire industries from the previous age

▶ **Turning Point** – Existing businesses either master the new technology or decline and become relics of the last age

▶ **Deployment Period** – Production capital of the new technological giants start to take over

	Installation Period ▼	Turning Point ▼	Deployment Period ▼
	1971	2000-?	
Age of Software & Digital	Dotcom and internet mania; Global finance and housing bubbles		?
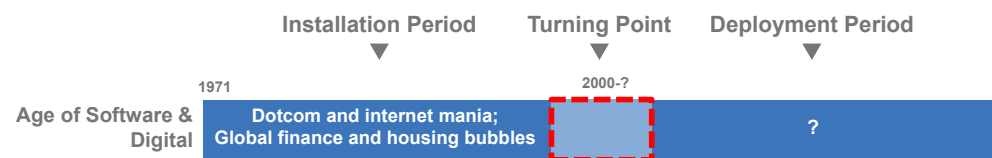
1-13

What stage are we in?

▶ "BMW Group's CEO expects that in their future more than half of its research and development staff will be software developers." (Mik Kersten, *Project to Product*)

▶ The market cap of Tesla ($464B market cap, $24B revenue) now exceeds the market cap of Ford ($33B market cap, $156B revenue) at a 14:1 value ratio (November 2020)

▶ Apple is now the biggest watchmaker in the world (Investopedia 2019)

Competing in the age of software

" The problem is not with our organizations realizing that they need to transform; the problem is that organizations are using managerial frameworks and infrastructure models from past revolutions to manage their businesses in this one.

—**Mik Kersten**

1-15

Rethinking the organization

" The world is now changing at a rate at which the basic systems, structures, and cultures built over the past century cannot keep up with the demands being placed on them.

—**John P. Kotter**
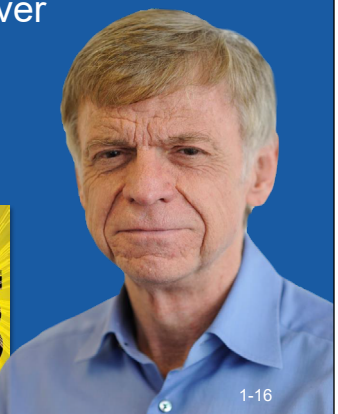
1-16

We started with a network

Customer Centricity

We added hierarchy for stability and execution

Customer Centricity
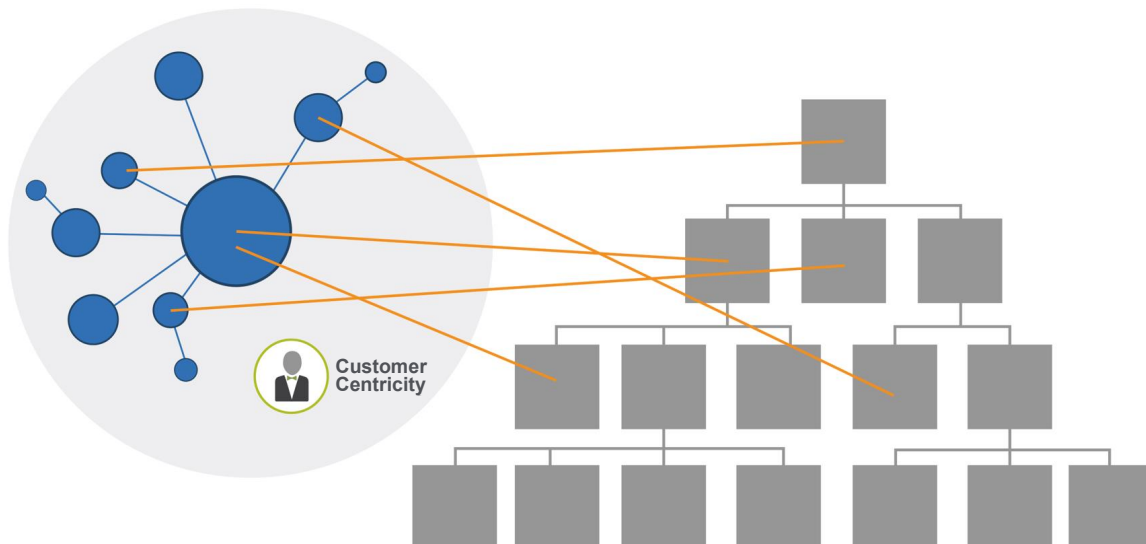
Guess what happens?
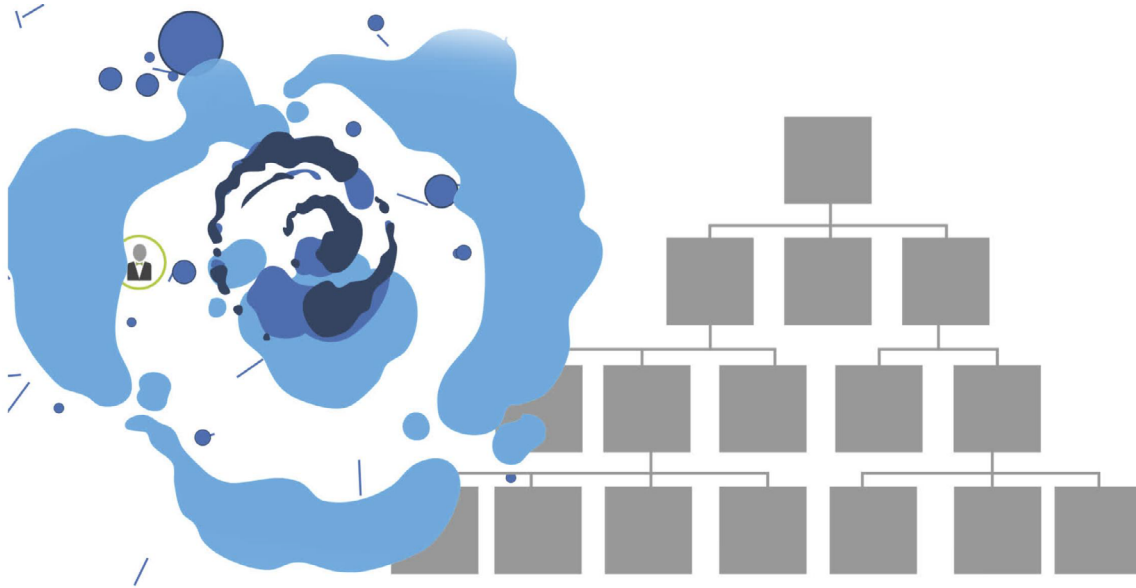
1-19

" The solution is not to trash what we know and start over but instead to reintroduce a second system—one which would be familiar to most successful entrepreneurs.

—**John P. Kotter**

1-20

We need a dual operating system for Business Agility

Efficiency and stability

Customer Centricity

Speed of innovation
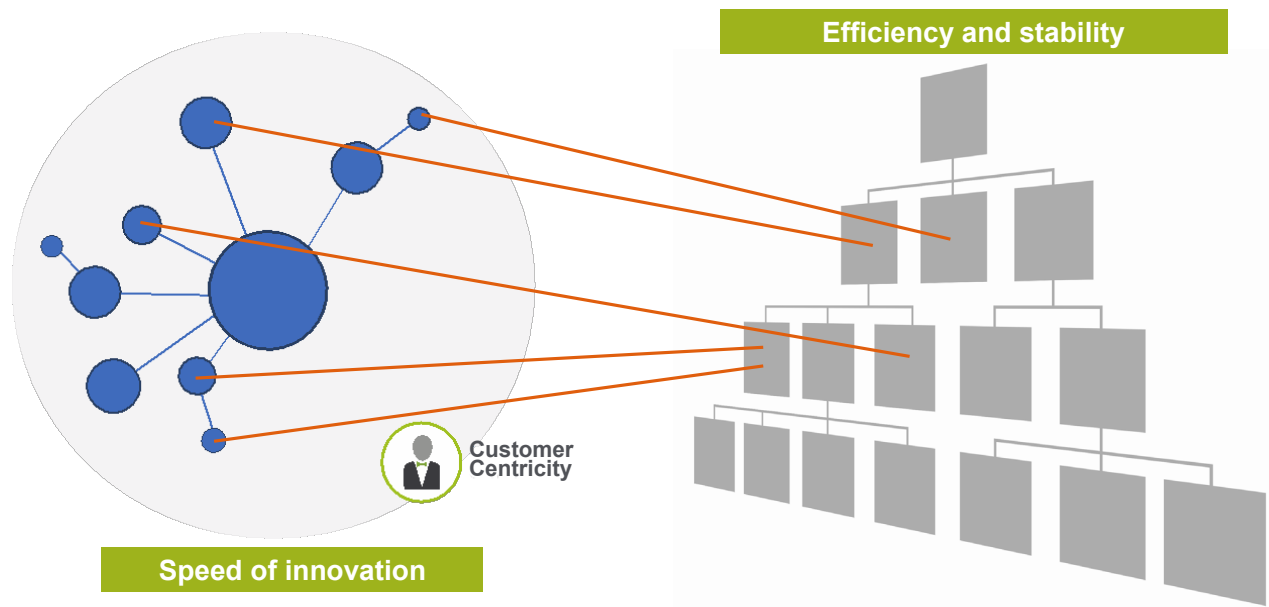
1-21

And we have just such an operating system at our fingertips

Value Stream network

Functional hierarchy
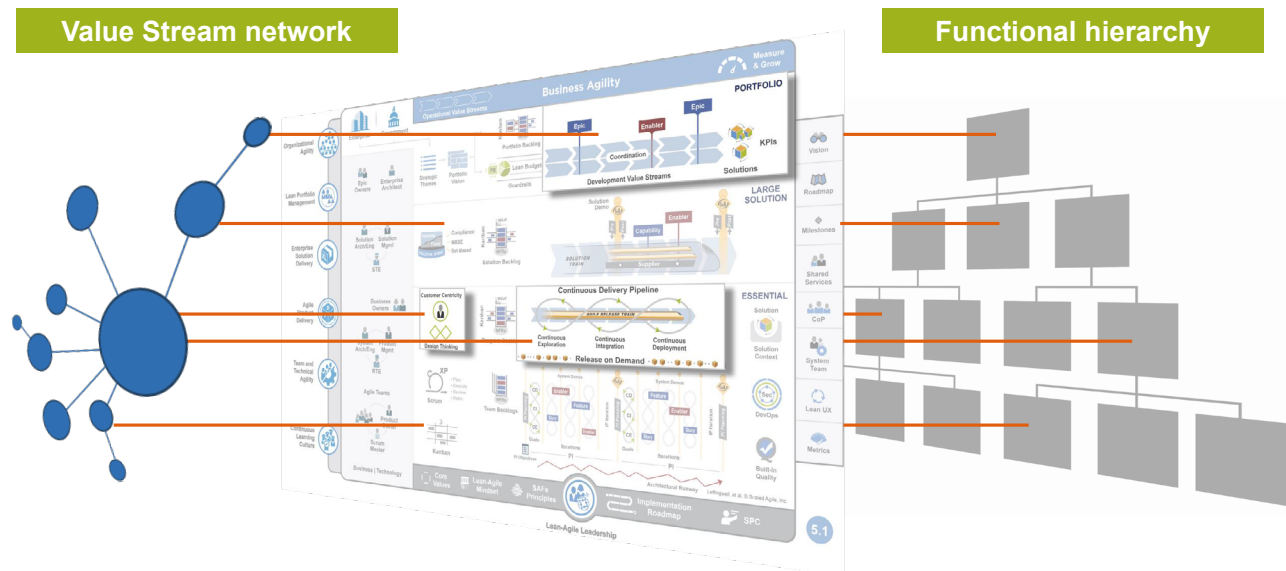
1-22

1.2 SAFe as an operating system for Business Agility

1-23

> *Every business is a software business now.* Achieving a state of **Business Agility** means that the entire organization—*not just development*—is engaged in continually and proactively delivering innovative business solutions faster than the competition.
>
> **—Dean Leffingwell, Creator of SAFe**

1-24
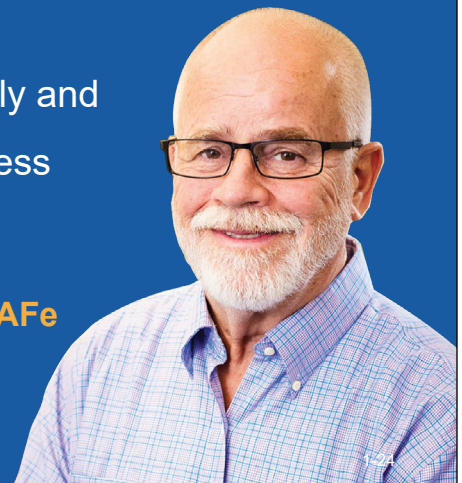
Business Agility requires technical agility **and** a business-level commitment to product and Value Stream thinking.

And it requires that **everyone involved in delivering business solutions** uses Lean and Agile practices.

1-25

SAFe® 5 for Lean Enterprises is a knowledge base of proven, integrated principles, practices, and competencies for achieving Business Agility by implementing Lean, Agile, and DevOps at scale.

https://v5.scaledagileframework.com/
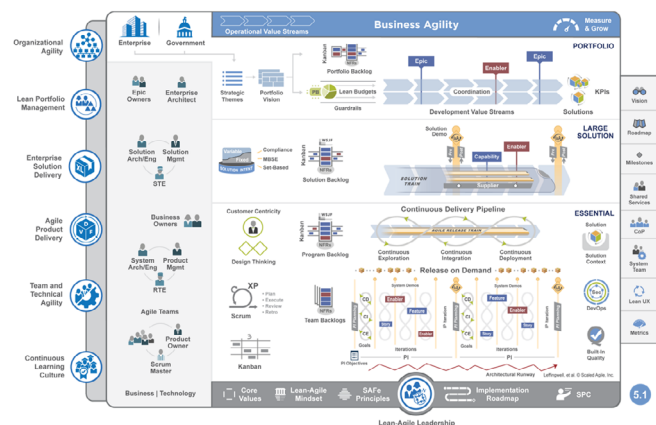
1-26

Why SAFe?

SAFe's business benefits are derived directly from case studies written by SAFe customers.

30%
Happier, more motivated employees

ENGAGEMENT

TIME-TO-MARKET

50%
Faster time-to-market

BUSINESS RESULTS

35%
Increase in productivity

PRODUCTIVITY

QUALITY

50%
Defect reduction

Typical results from https://scaledagile.com/insights-customer-stories/

1-27

SAFe configurations

Four configurations provide the right solution for each Enterprise.

Full Configuration

Large Solution Configuration

Portfolio Configuration

Essential Configuration

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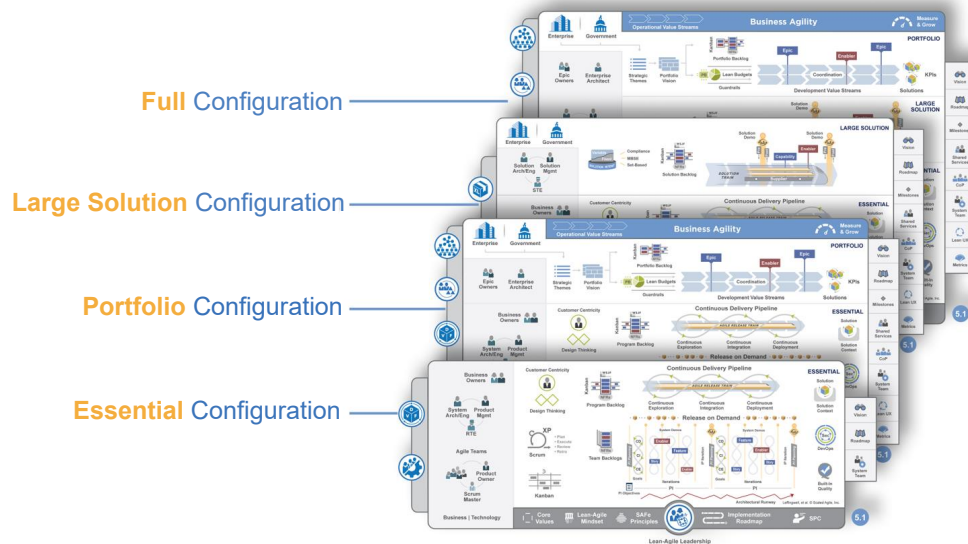
1-28

SAFe: Roots, past, present, and future

2011   **Field experience at Enterprise scale**   **Now…**

SAFe 1.0   SAFe 2.0   SAFe 3.0   LSE   SAFe 4.0   SAFe 4.5   SAFe 4.6   SAFe 5

Lean product development | Agile development | DevOps | Systems thinking

1-29

1.3 The Seven Core Competencies of Business Agility

1-30

The Seven Core Competencies of Business Agility

Enterprise Solution Delivery

Agile Product Delivery

Team And Technical Agility

Customer Centricity

Lean-Agile Leadership

Lean Portfolio Management

Organizational Agility

Continuous Learning culture
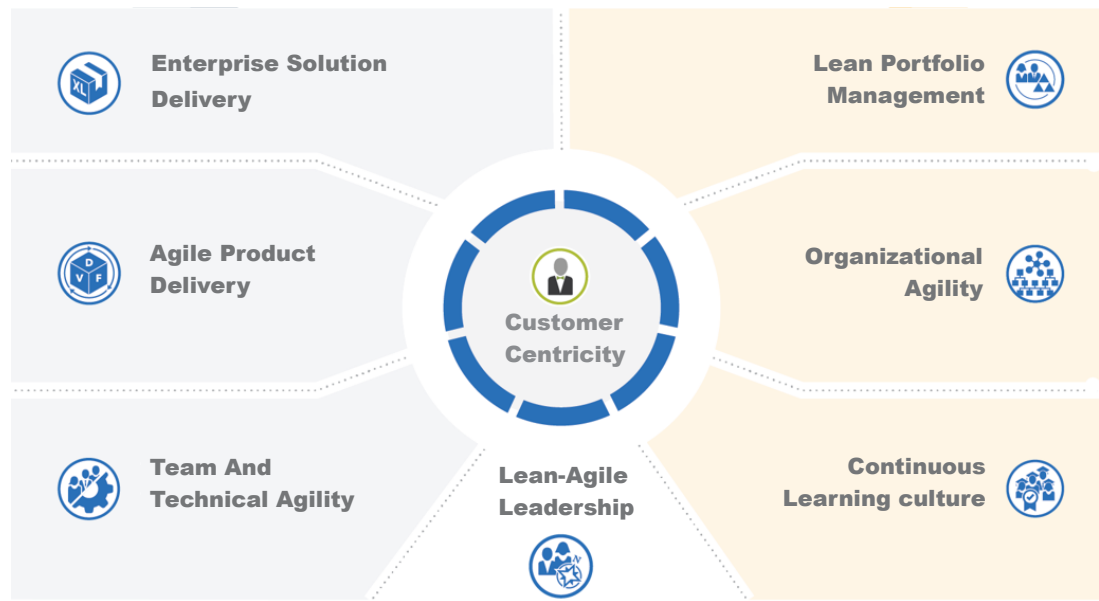
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1-31

Team and Technical Agility

► High-performing, cross-functional Agile Teams

► Teams of business and technical teams build Solutions

► Quality business Solutions delight Customers

Agile Teams

Teams of Agile Teams

AGILE RELEASE TRAIN
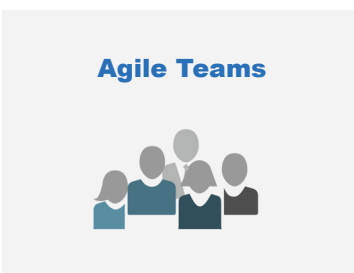
Built-In Quality

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1-32

Agile Product Delivery

▶ The Customer is the center of your product strategy

▶ Decouple the release of value from the development cadence

▶ Continuously explore, integrate, deploy, and release

Customer Centricity and Design Thinking
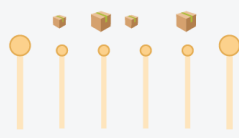
Develop on cadence and release on demand

DevOps and the Continuous Delivery Pipeline

AGILE RELEASE TRAIN

1-33

Enterprise Solution Delivery

▶ Apply Lean system engineering practices to build really big systems

▶ Coordinate and align the full supply chain

▶ Continue to enhance value after release

Lean System and Solution Engineering

SOLUTION INTENT

Coordinate Trains and Suppliers

Solution Train

Supplier

Continually Evolve Live Systems

1-34

Lean Portfolio Management

► Align strategy, funding, and execution

► Optimize operations across the portfolio

► Lightweight governance empowers decentralized decision-making

Strategy & Investment Funding

Lean Governance

Agile Portfolio Operations

Organizational Agility

► Create an enterprise-wide, Lean-Agile mindset

► Map and continuously improve business processes

► Respond quickly to opportunities and threats
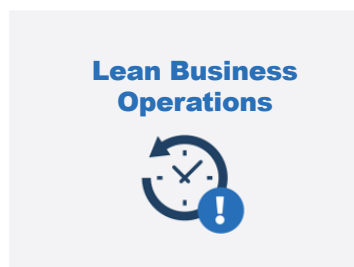
Lean-thinking People and Agile Teams

Lean Business Operations

Strategy Agility

Continuous Learning Culture

► Everyone in the organization learns and grows together

► Exploration and creativity are part of the organization's DNA

► Continuously improving Solutions, services, and processes is everyone's responsibility

Learning Organization	Innovation Culture	Relentless Improvement

Lean-Agile Leadership

► Inspire others by modeling desired behaviors

► Align mindset, words, and actions to Lean-Agile values and principles

► Actively lead the change and guide others to the new way of working

Leading by Example	Mindset & Principles	Leading Change

Growth Mindset

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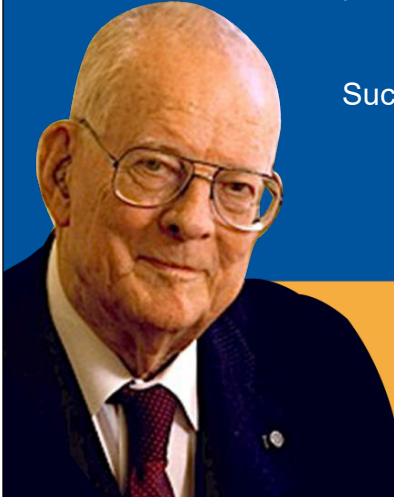
… and if you can't come, send no one"
—W. Edwards Deming, Vignette from *Out of the Crisis*

1-39

Measure and Grow toward Business Agility

Measure and Grow is the way each portfolio evaluates their progress toward Business Agility and determines their next improvement steps:

1. Create a high-level summary using the **Business Agility assessment**

2. Go deeper with the **Seven Core Competency assessments**

3. Analyze results and identify opportunities to improve

Business Agility Assessment

Team and Technical Agility (TTA)
Agile Product Delivery (APD)
Enterprise Solution Delivery (ESD)
Lean Portfolio Management (LPM)
Lean-Agile Leadership (LAL)
Organizational Agility (OA)
Continuous Learning Culture (CLC)
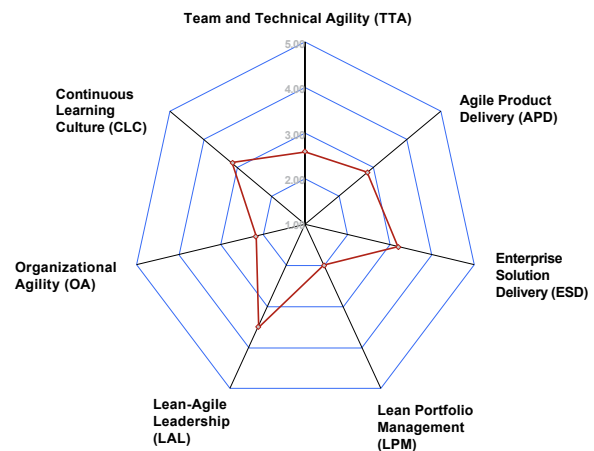
Access the Online Assessments: https://bit.ly/Community-MeasureAndGrow

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1-40

Lesson review

In this lesson you:

► Described what is necessary to thrive in the digital age

► Recognized SAFe as an operating system for Business Agility

► Explored the seven core competencies of Business Agility

Articles used in this lesson

Read these Framework articles to learn more about topics covered in this lesson

► "SAFe for Lean Enterprises"
https://v5.scaledagileframework.com/safe-for-lean-enterprises/

► "Business Agility"
https://v5.scaledagileframework.com/business-agility/

► "Measure and Grow"
https://v5.scaledagileframework.com/measure-and-grow/
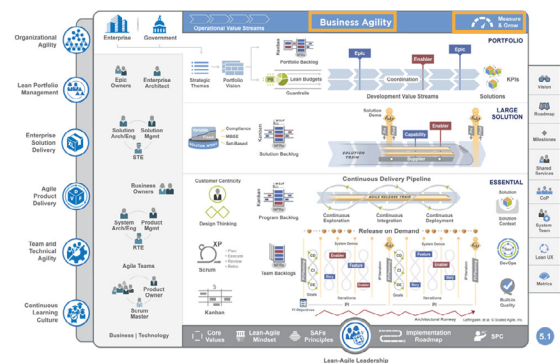
Continue your SAFe journey with the following resources

Watch this 18-minute video to hear *Why SAFe?* is the world's most widely used framework for Business Agility: https://bit.ly/Video-WhySAFe	Watch this three-minute video to learn how to *Navigate the Big Picture*, exploring the various elements of SAFe: https://bit.ly/Video-NavigatingTheBigPicture
Watch this five-minute video to review the Seven Core Competencies of the Lean Enterprise: https://bit.ly/Video-SAFeOverviewin5Minutes	Run the SAFe Business Agility Assessment to create the urgency for change: https://bit.ly/Community-MeasureAndGrow

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Lesson notes

Enter your notes below. If using a digital workbook, save your PDF often so you don't lose any of your notes.

Lesson 2

Becoming a Lean-Agile Leader

SAFe® Course - Attending this course gives students access to the SAFe® Agilist exam and related preparation materials.

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Why Lean-Agile Leadership?

An organization's managers, executives, and other leaders are responsible for the adoption, success, and ongoing improvement of Lean-Agile development and the competencies that lead to Business Agility. Only they have the authority to change and continuously improve the systems that govern how work is performed.

Lesson Topics

2.1 The Lean-Agile Mindset

2.2 Lean and Agile at scale with the SAFe Principles

Mindset & Principles

Fixed Mindset → Growth Mindset

| Core Values | Lean-Agile Mindset | SAFe Principles

Leading by Example

- Authenticity
- Decentralized Decision-Making
- Emotional Intelligence
- Lifelong Learning
- Growing Others

Leading Change

Change Vision
Change Leadership
Coalition for Change
Psychological Safety
Training
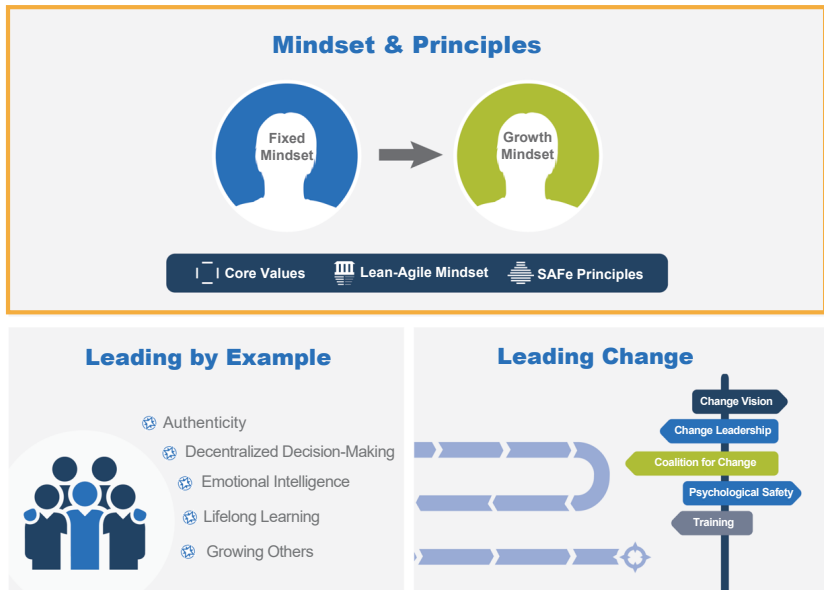
2-3

Learning objectives

At the end of this lesson you should be able to:

► Embrace the Lean-Agile Mindset

► Apply the SAFe Lean-Agile Principles

2-4

2.1 The Lean-Agile Mindset

2-5

Exemplifying SAFe core values

Alignment

- ► Communicate the mission, vision, and strategy
- ► Provide briefings and participate in PI Planning
- ► Participate in backlog review and preparation
- ► Organize around Value Streams
- ► Constantly check for understanding

Transparency

- ► Visualize all relevant work
- ► Take ownership and responsibility for errors
- ► Admit your own mistakes
- ► Support others who acknowledge and learn from their mistakes—never punish the messenger

Built-in Quality

- ► Refuse to accept low-quality work
- ► Support investments in technical debt reduction
- ► Ensure UX, architecture, operations, security, compliance, and others are part of the flow of work

Program Execution

- ► Participate as an active Business Owner
- ► Celebrate high quality and predictably delivered PIs
- ► Aggressively remove impediments and demotivators

2-6

Action Plan: Exemplifying SAFe's core values

► **Step 1:** Individually choose one of SAFe's four core values: Alignment, Transparency, Built-In Quality, or Program Execution

► **Step 2:** In your group, discuss how you can exemplify that core value in your organization

► **Step 3:** Write down one example in the Action Plan in your workbook

2-7

Lean thinking

✓ Precisely specify value by product

✓ Identify the Value Stream for each product

✓ Make value flow without interruptions

✓ Let the Customer pull value from the producer

✓ Pursue perfection

Lean Thinking: Banish Waste and Create Wealth in your Corporation, James Womack and Daniel Jones
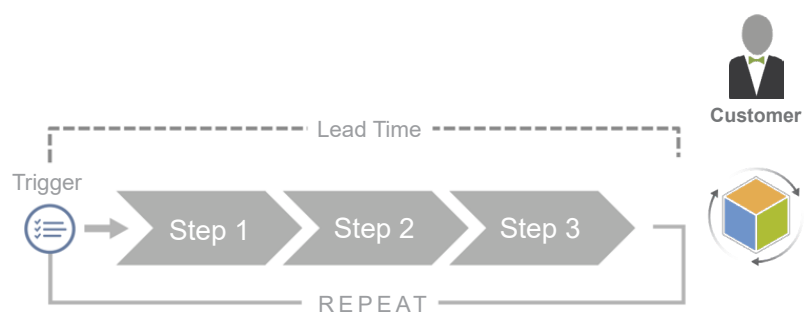
2-8

Exemplifying SAFe's
core values

SAFe House of Lean

The Lean thinking mindset is embodied in the SAFe House of Lean

---
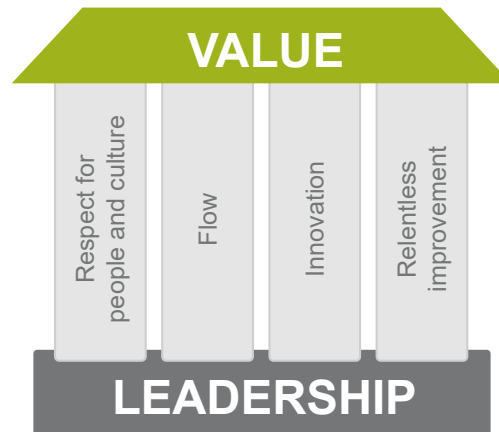
Value

Achieve the shortest sustainable lead time with:

► The best quality and value to people and society

► High morale, safety, and Customer delight
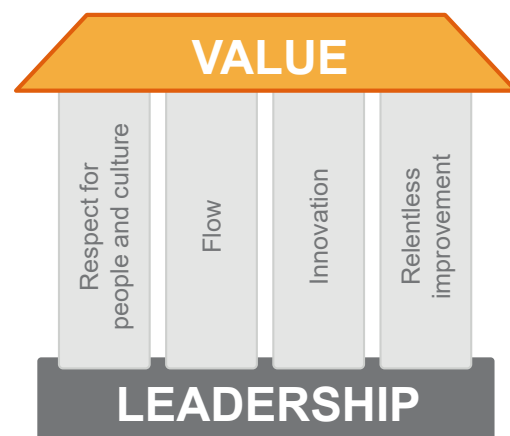
There is only one boss. The customer. And he can fire everybody in the company.

—Sam Walton

Respect for people and culture

► Generative culture

► People do all the work

► Your Customer is whoever consumes your work

► Build long-term partnerships based on trust

► To change the culture, you have to change the organization

VALUE

LEADERSHIP

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

Culture eats strategy for breakfast.
—Peter Drucker

2-11

Flow

► Optimize sustainable value delivery

► Build in quality

► Understand, exploit, and manage variability

► Move from projects to products

VALUE

LEADERSHIP

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

Operating a product development process near full utilization is an economic disaster.
—Don Reinertsen

2-12

Innovation

- ► Innovative people

- ► Provide time and space for innovation

- ► Go see

- ► Experimentation and feedback

- ► Innovation riptides

- ► Pivot without mercy or guilt

Innovation comes from the producer.
—W. Edwards Deming

2-13

Relentless improvement

- ► A constant sense of danger

- ► Optimize the whole

- ► Problem-solving culture

- ► Base improvements on facts

- ► Reflect at key Milestones

Those who adapt the fastest win.

2-14

Leadership

► Lead by example

► Adopt a growth mindset

► Exemplify the values and principles of Lean-Agile and SAFe

► Develop people

► Lead the change

► Foster psychological safety

VALUE

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

LEADERSHIP
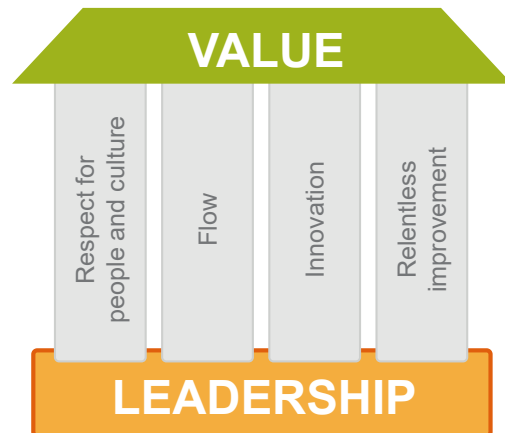
People are already doing their best; the problems are with the system. Only management can change the system.

—W. Edwards Deming

2-15

Activity: Assessing a Lean mindset

Duration
5 min

► **Step 1:** Assess where your organization stands in embracing a Lean mindset.

► **Step 2:** Discuss the results of the self-assessment. Do you have similar low or high scores?

	(low) 1	2	3	4	(high) 5
Value delivery	○	○	○	○	○
Respect for people and culture	○	○	○	○	○
Flow	○	○	○	○	○
Innovation	○	○	○	○	○
Relentless improvement	○	○	○	○	○
Leadership	○	○	○	○	○

2-16

	(low) 1	2	3	4	(high) 5
Value delivery					
Respect for people and culture					
Flow					
Innovation					
Relentless improvement					
Leadership					

Notes

Prepare 5 min   **Share** 3 min

► **Step 1:** Select one of the lowest scores in the assessment.

► **Step 2:** Brainstorm one to three actions you could take to improve this area.

► **Step 3:** Share your ideas with your group. Give and receive constructive suggestions on how the ideas offered can improve the mindset scores.

► **Step 4:** Write down one idea in your Action Plan and be prepared to share.

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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.

http://agilemanifesto.org/

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Improving the
Lean-Agile mindset

The Agile Manifesto 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 for the shorter timescale.

4. Business people and developers must work together daily throughout the project.

2-19

The Agile Manifesto principles

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 efficient and effective method of conveying information to and within a development team is face-to-face conversation.

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.

2-20

The Agile Manifesto principles

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 teams.

12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

2-21

Activity: Agile principles at scale

Prepare 5 min   **Share** 7 min

▶ **Step 1:** Review the principles behind the Agile Manifesto

▶ **Step 2:** Select one principle per group

▶ **Step 3:** Categorize as:

– Works as is

– Not applicable

– Requires rethinking for scale

▶ **Step 4:** Share your findings with the class

2-22

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 for the shorter timescale.

4. Business people and developers must work together daily throughout the project.

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 efficient and effective method of conveying information to and within a development team is face-to-face conversation.

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 teams.

12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

Source: Principles behind the Agile Manifesto: *https://agilemanifesto.org/principles.html*

Principles	Works as is	Not Applicable	Requires rethinking at scale
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 for the shorter timescale.	○	○	○
4. Business people and developers must work together daily throughout the project.	○	○	○
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 efficient and effective method of conveying information to and within a development team is face-to-face conversation.	○	○	○
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 teams.	○	○	○
12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.	○	○	○

Notes

2.2 Lean and Agile at scale with the SAFe Principles

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

#10 Organize around value

Why focus on the principles?

A common disease that afflicts management the world over is the impression that "Our problems are different." They are different to be sure, but the principles that will help to improve the quality of products and services are universal in nature.
—W. Edwards Deming

► A Lean-Agile transformation will deliver substantial benefits

► However, it is a significant change, and every implementation is different

► Leaders should understand why the practices work; it's part of 'knowing what it is they must do'

► If a practice needs to change, understanding the principles will assure the change moves the Enterprise in the right direction

2-25

#1 Take an economic view

2-26

Agile economics: Deliver early and often

Waterfall

Requirements → Design → Implementation → Verification

Documents | Documents | Unverified System | System
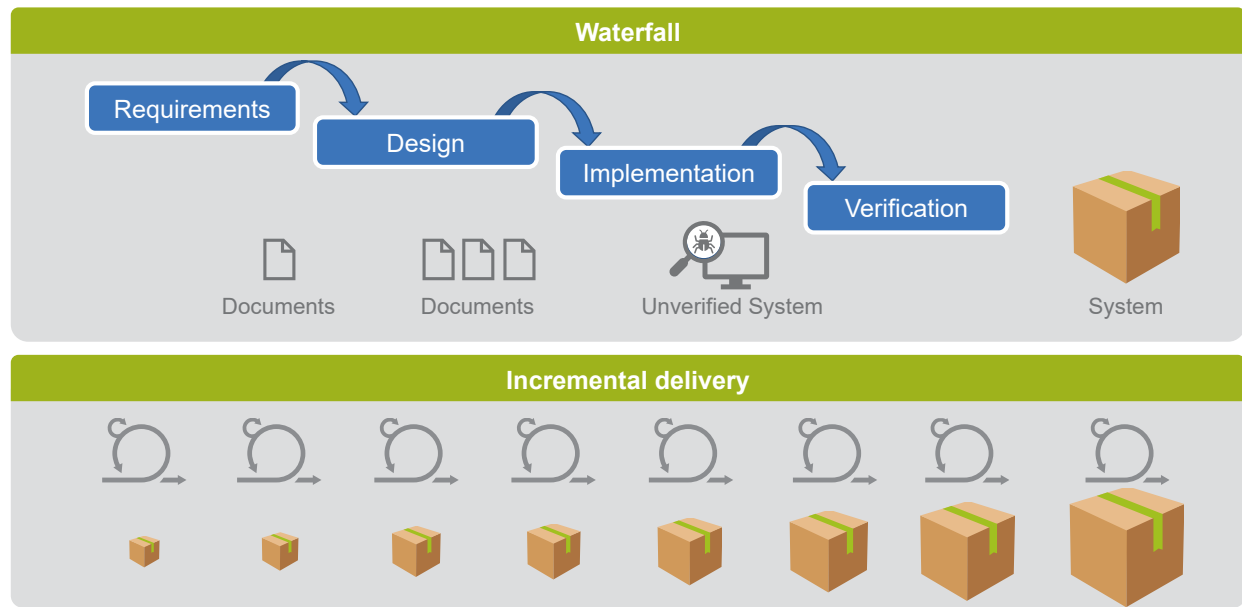
Incremental delivery

Deliver value incrementally

Fast feedback

incremental

Waterfall

Value delivery

Time
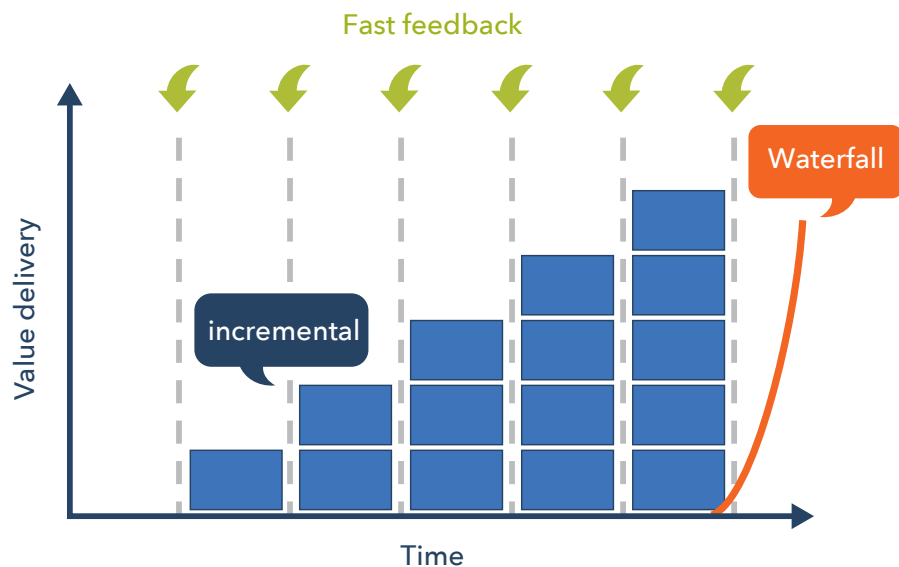
Early delivery has higher value
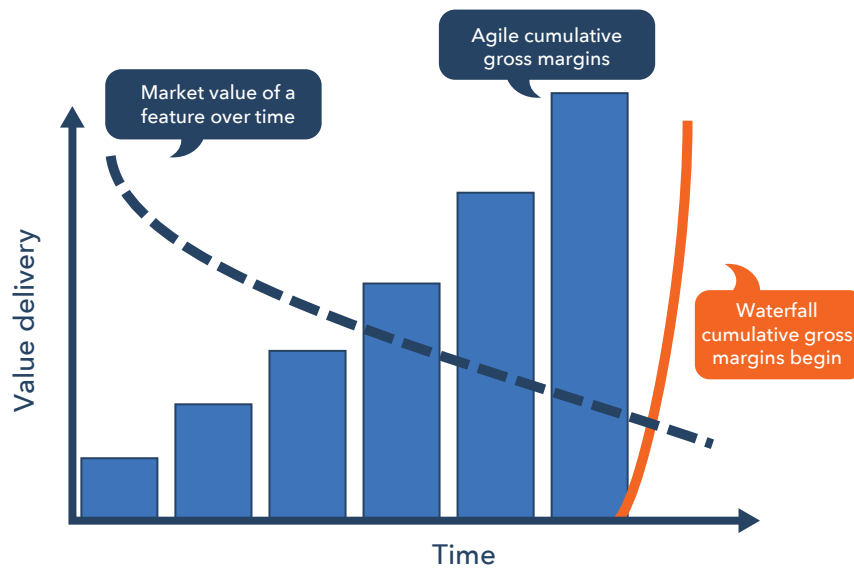
Activity: Accelerating value delivery

Prepare 5 min   **Share** 2 min

► **Step 1:** Consider that your backlog has three Features. Each will take the entire team one month to complete and delivers one unit of value.

► **Step 2:** Plot the value delivery of serial and simultaneous/parallel implementation scenarios for delivering the Features.

— **NOTE:** Assume 20% task switching overhead for each team member in Scenario 2: Parallel delivery

— **HINT:** Plot the serial case first

Scenario 1: Serial delivery
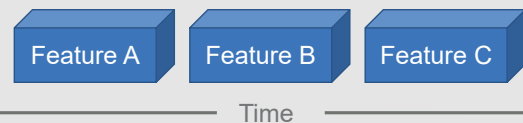
Feature A   Feature B   Feature C

Time

Scenario 2: Parallel delivery

Feature A

Feature B

Feature C

Time

Value
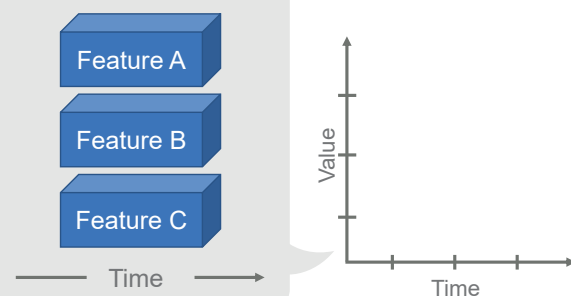
Time

Instructions: In your groups, discuss the graphs for the serial and parallel approaches. Be prepared to discuss with the class. Consider these questions:

For the serial approach, which graph is correct?

For the parallel approach, which graph is correct?

Which approach will deliver more value?

Feature 1

Feature 2

Feature 3

Serial Option A

Serial Option B

Serial Option C

Parallel Option A

Parallel Option B

Parallel Option C
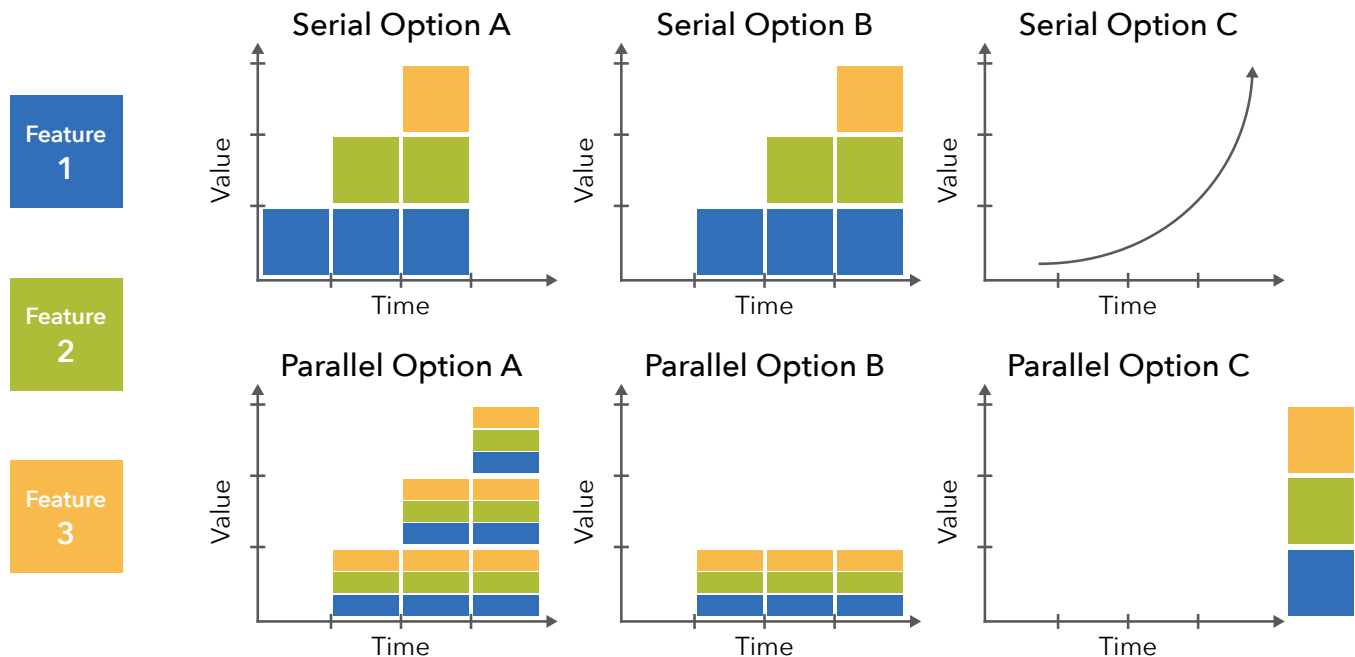
Notes

Solution economic trade-offs

Understanding trade-off parameters:

► Sequence jobs for maximum benefit

► Do not consider money already spent

► Make economic choices continuously

► Empower local decision making

► If you only quantify one thing, quantify the cost of delay

```
Lead Time  ←→  Product Cost

Value      ←→  Development
                Expense

Risk
```

2-31

#2 Apply systems thinking

2-32
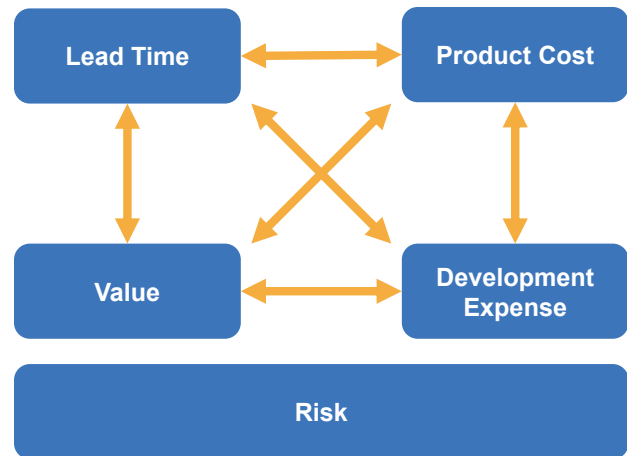
> ❝ **A system must be managed. It will not manage itself.**
>
> *Left to themselves, components become selfish, independent profit centers and thus destroy the system…*
>
> *The secret is cooperation between components toward the aim of the organization.*
>
> **—W. Edwards Deming**

2-33

Attributes of systems thinking

The Solution and the Enterprise are both affected by the following:

► Optimizing a component does not optimize the system

► For the system to behave well as a system, a higher-level understanding of behavior and architecture is required

► The value of a system passes through its interconnections

► A system can evolve no faster than its slowest integration point

The Solution is a system

The Enterprise building the system is a system too

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2-34
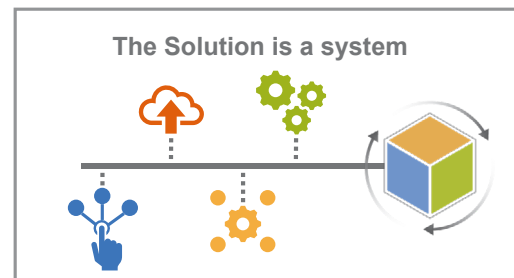
Optimize the full Value Stream

All we are doing is looking at the timeline from when the customer gives us an order to when we collect the cash. And we are reducing the timeline by reducing the non-value-added wastes.

—Taiichi Ohno
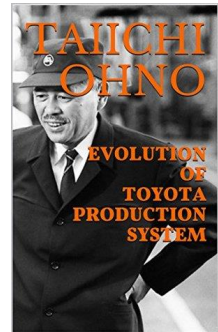
▸ Most problems with your process will surface as *delays*

▸ Most of the time spent getting to market is a result of these delays

▸ Reducing delays is the fastest way to reduce time to market

SCALED AGILE © Scaled Agile. Inc.

2-35

Focus on the delays!

Email supervisor	Email tech lead	Assign developer	Send to verification	Send to operations
1 week	**2 weeks**	**2 weeks**	**1 week**	**1 week**

Request	Approve	Technical Assessment	Code & Test	Verify	Deploy
1 hour	1 hour	1 hour	1 hour	1 hour	1 hour
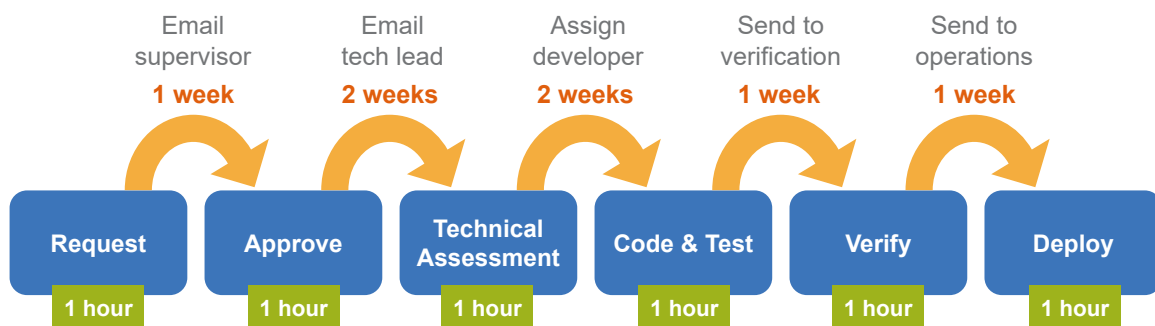
6 hours of value…   **…delivered in 7 weeks**

$$\frac{1 \text{ day}}{49 \text{ days}} = \textbf{2\% Flow Efficiency}$$

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2-36

Workbook | 58 | © Scaled Agile, Inc.

For personal use only - Magali PILET ROCHER - Mar 5, 2024 (ID:0056T000008VKWCQA4)

► **Step 1:** Identify three delays from your context and write them down.

► **Step 2:** Write down what you think might be some potential causes for the delays.

► **Step 3:** Consider how systems thinking relates to finding possible solutions for the delays. Who is ultimately responsible for the optimization of the full Value Stream?

► **Step 4:** Share your insights with the class.

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#3 Assume variability; preserve options

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Development occurs in an uncertain world

Aggressively evaluate alternatives. Converge specifications and solution set.
—Allen Ward

▶ You cannot possibly know everything at the start

▶ Requirements must be flexible to make economic design choices

▶ Designs must be flexible to support changing requirements

▶ Preservation of options improves economic results

Lean Product and Process Development
SECOND EDITION
by ALLEN C. WARD and DURWARD K. SOBEK II

| Flexible specifications |
| Economic Trade-offs |
| Design sets |

Cone of uncertainty
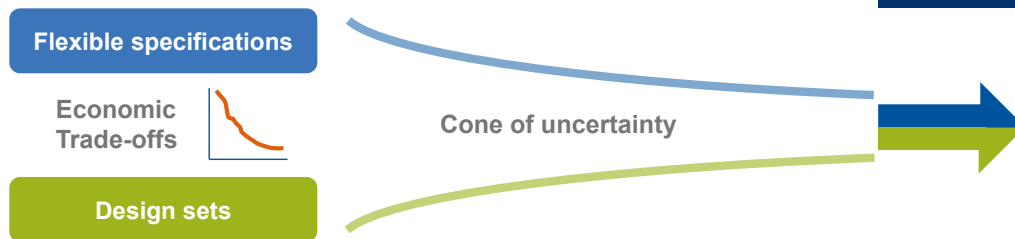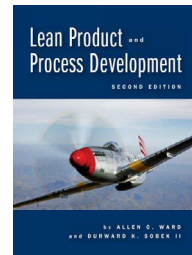
Apply a set-based approach
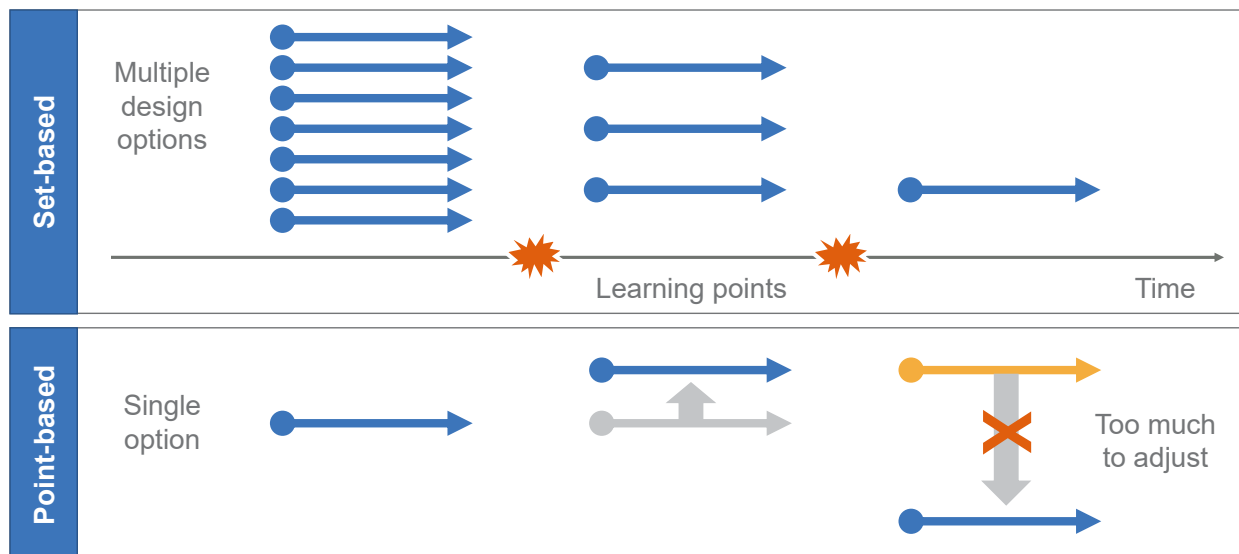
Set-based

Multiple design options

Learning points   Time

Point-based

Single option

Too much to adjust

#4 Build incrementally with fast, integrated learning cycles

Apply fast learning cycles

Fast feedback accelerates knowledge.

► Improves learning efficiency by decreasing the time between action and effect

► Reduces the cost of risk-taking by truncating unsuccessful paths quickly

► Is facilitated by small batch sizes

► Requires increased investment in development environment

The shorter the cycles, the faster the learning.

The iterative learning cycle

Plan → Do

PDCA

Adjust ← Check
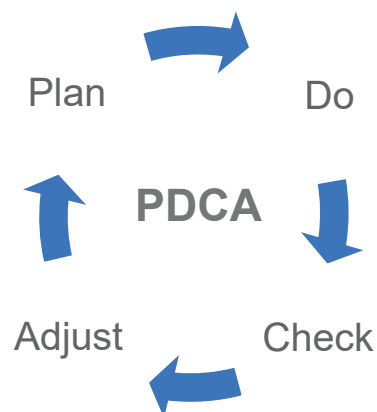
Integration points control product development

- ► Integration points accelerate learning

- ► Development can proceed no faster than the slowest learning loop

- ► Improvement comes through synchronization of design loops and faster learning cycles
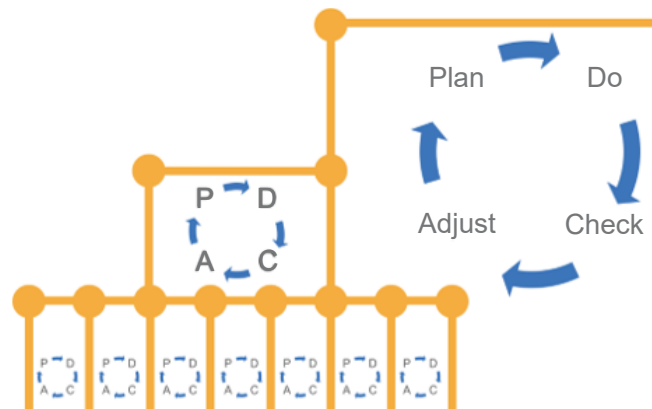
2-43

Integration points reduce risk
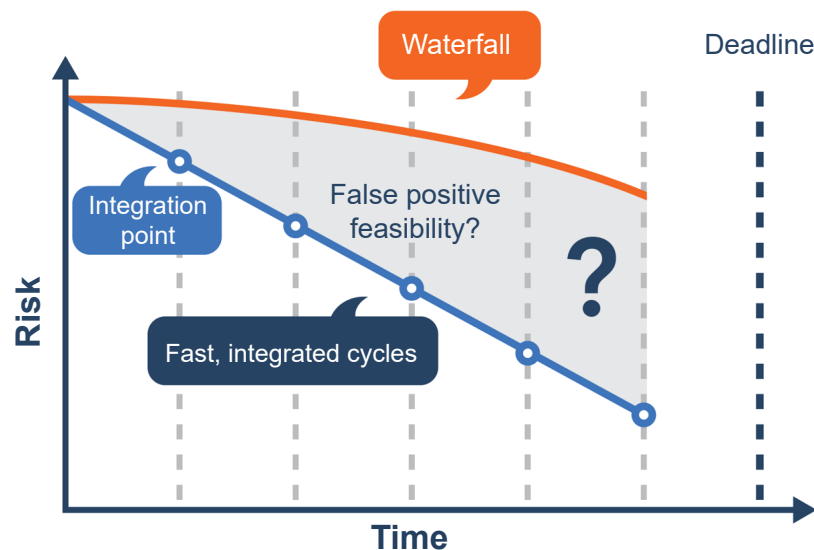
2-44

#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. —Dantar Oosterwal, Lean Machine

► They force design decisions too early; this encourages false-positive feasibility.

► They assume a 'point' Solution exists and can be built correctly the first time.

► They create huge batches and long queues, and they centralize requirements and design in program management.
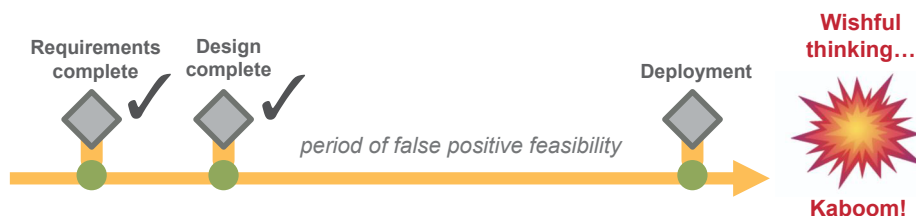
The problem of phase-gate milestones

Phase gates fix requirements and designs too early, making adjustments too late and costly as new facts emerge.

Tracking progress via traditional milestones delays critical learning points until it's too late.
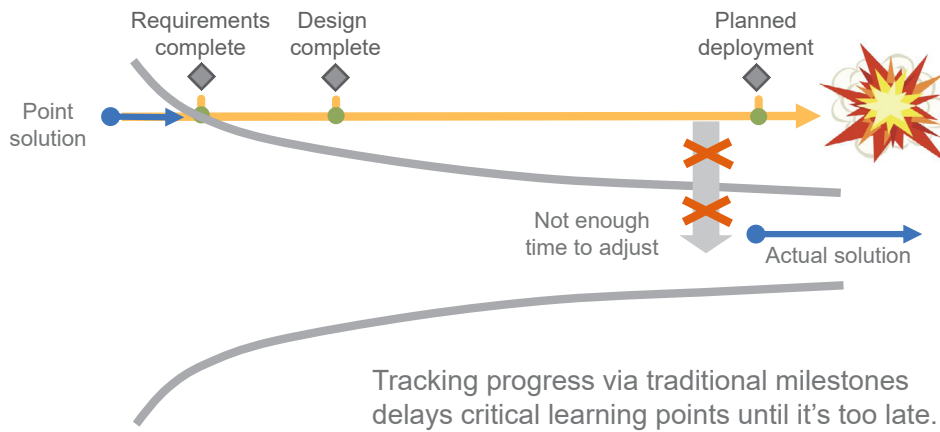
Apply objective Milestones

Program Increment (PI) System Demos are orchestrated to deliver objective progress, product, and process Metrics.
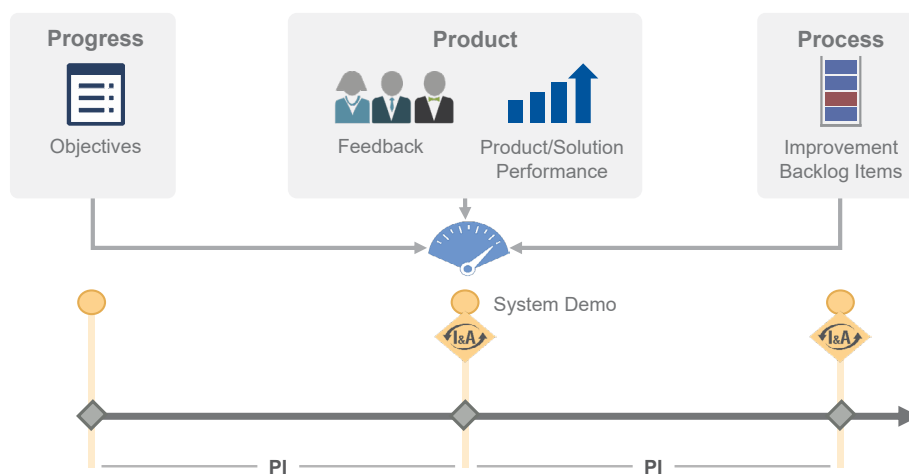
Iterate to the optimum Solution

Objective Milestones facilitate learning and allow for continuous, cost-effective adjustments towards an optimum Solution.

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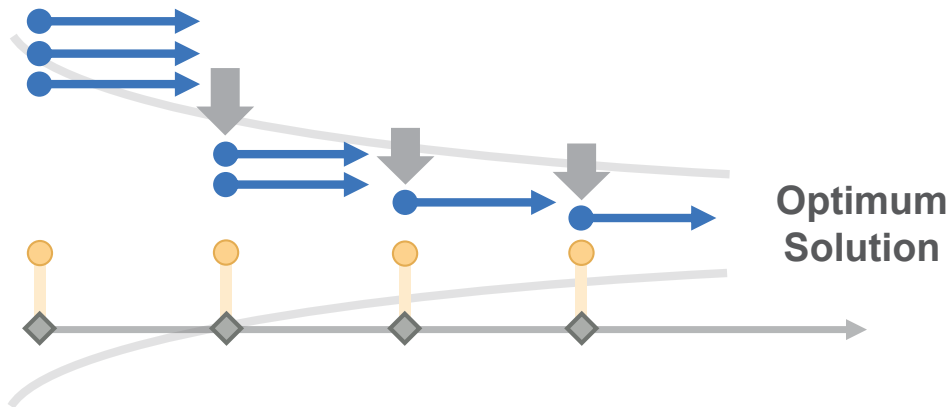
#6 Visualize and limit WIP, reduce batch sizes, and manage queue lengths

---

An example from the field

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

Not Started	Development	Test	Accepted
Story 10	Story 9	Story 3	Story 1
Story 11	Story 8	Story 2	
	Story 7	Story 4	
	Story 6		
	Story 5		
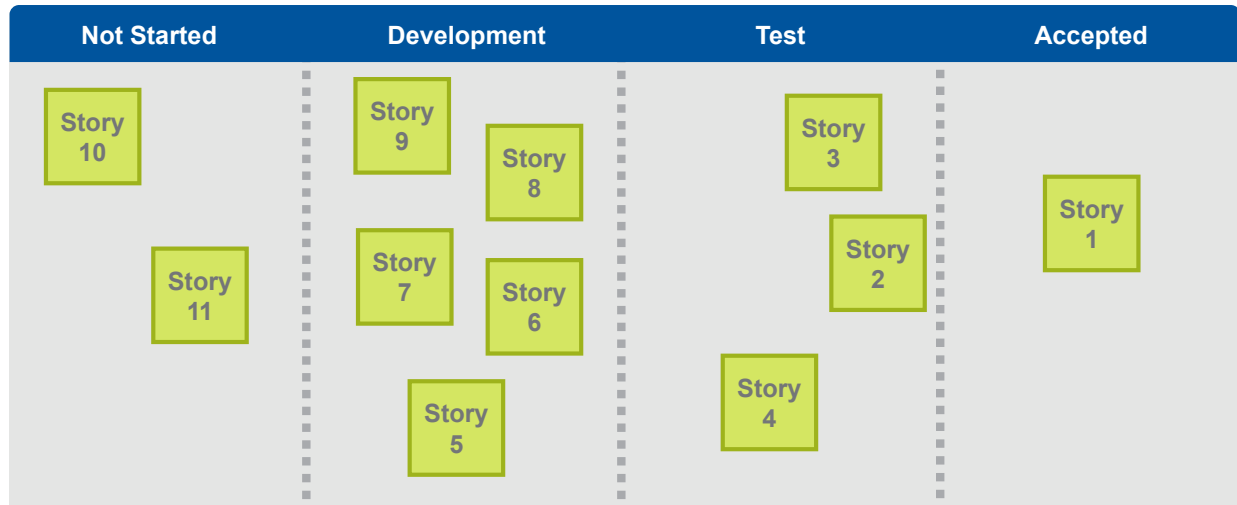
2-51

Visualize to increase understanding

Now how do you think they are doing?

Today

Wednesday	Thursday	Friday	Monday	Tuesday	Wednesday	Thursday	Friday	Monday	Tuesday

Not Started	Development	Test	Accepted
Story 10	Story 9	Story 3	Story 1
Story 11	Story 8	Story 2	
	Story 7	Story 4	
	Story 6		
	Story 5		
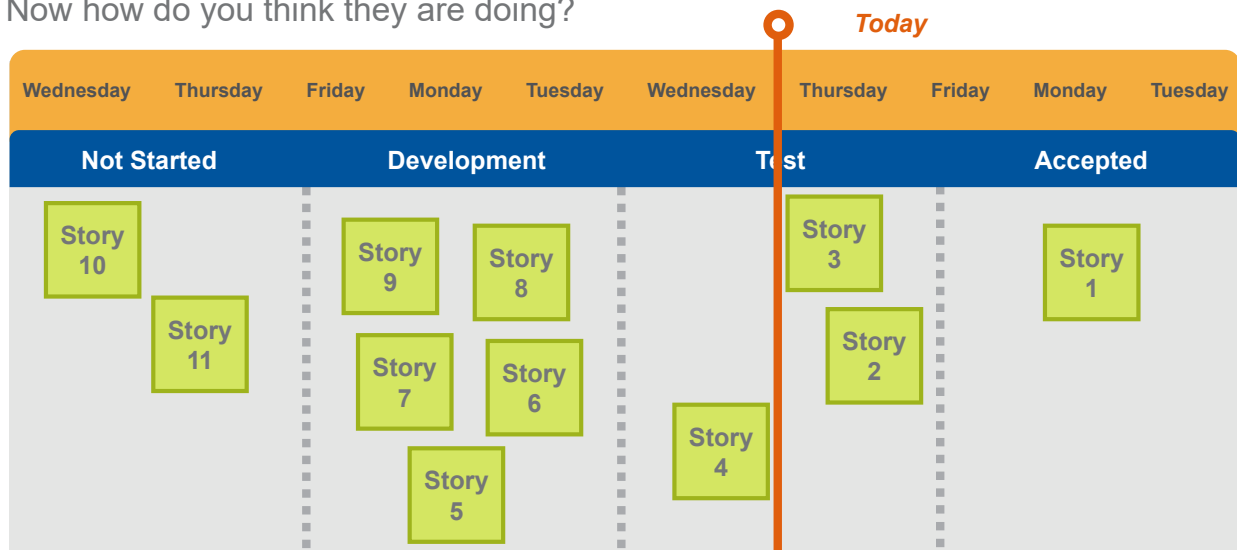
2-52

Activity: WIP improvement opportunities

► **Step 1:** Referring to the *Team Board* example, discuss the effect of a three-story WIP constraint on Development and Test.

► **Step 2:** Consider this scenario: You're a developer. You just finished Story 6. What would you do if:

   — There is no WIP constraint

   — The three-Story WIP constraint is in place

► **Step 3:** Which scenario has the highest throughput?
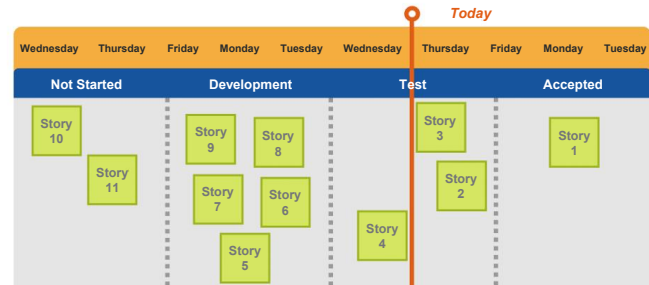
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2-53

Reduce batch size for higher predictability

High variation

Cycle time

Large batches

Medium batches

Small batches

Low variation

20%   40%   60%   80%   100%

Utilization
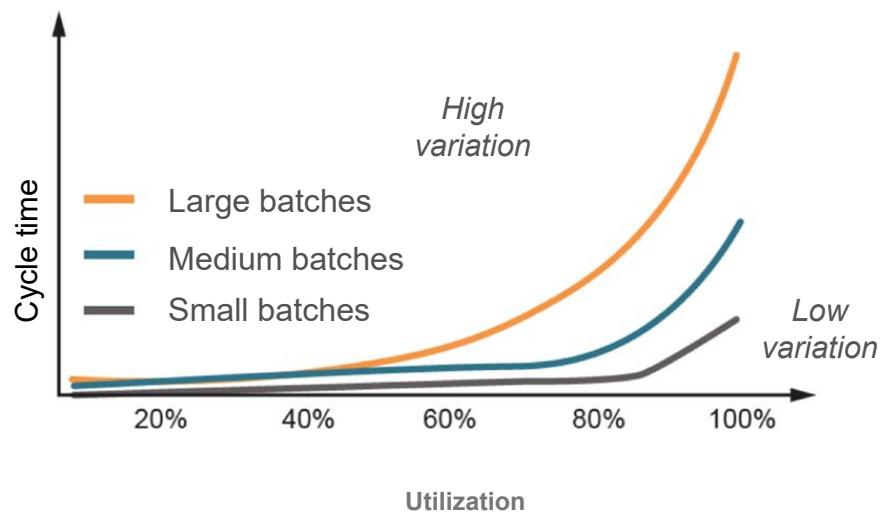
Source: Implementing Lean Software Development, Poppendieck, Mary

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2-54

Activity: Experience a large batch size

► **Step 1:** Create groups of five people with 10 coins per group. Designate one person as the timekeeper. The remaining four people will be processing the coins.

► **Step 2:** Person by person process each coin.

► **Step 3:** Pass all coins at the same time to the next person, who repeats step two until all four people are done

► **Step 4:** The timekeeper stops the timer and records the total time

https://bit.ly/Video-LargeBatchPart1
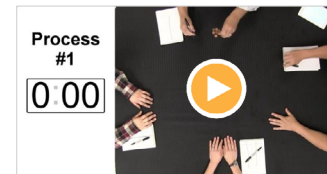
Optional 1:20 video demonstrating this exercise: part 1 of 3

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2-55

Activity: Experience a small batch size

► **Step 1:** Ensure that the timekeeper is ready to start the timer

► **Step 2:** This time, each person processes one coin at a time and immediately passes each coin to the next person

► **Step 3:** The timekeeper will stop the timer when the last person flips the last coin and records the result

Optional 18 sec video demonstrating this exercise: part 2 of 3

https://bit.ly/Video-SmallBatchPart2

Optional 19 sec video demonstrating this exercise: part 3 of 3

https://bit.ly/Video-BatchOverviewPart3

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2-56

The importance of small batches

► Large batch sizes increase variability

► High utilization increases variability

► Severe project slippage is the most likely result

► Small batches go through the system faster with lower variability

► The most important batch is the handoff batch

2-57

Finding optimal batch size

Optimal batch size is an example of a U-curve optimization.

► Total costs are the sum of holding costs and transaction costs

► Higher transaction costs make optimal batch size bigger

► Higher holding costs make optimal batch size smaller
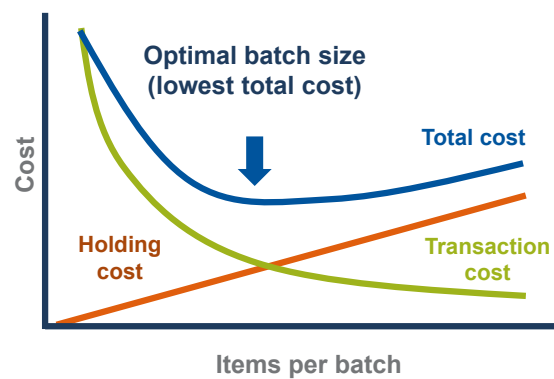
Principles of Product Development Flow, Don Reinertsen

2-58

Reducing optimal batch size

Reducing transaction costs reduces total costs and lowers optimal batch size.

► Reducing batch size:

  – Increases predictability

  – Accelerates feedback

  – Reduces rework

  – Lowers cost

► Batch size reduction probably saves **twice** what you would think

Principles of Product Development Flow, Don Reinertsen

2-59
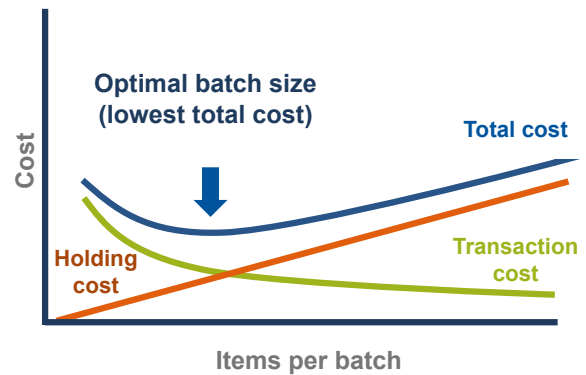
Video: Formula 1 Pit Stops: 1950 and Today

https://bit.ly/Video-Formula1PitStops

2-60

Manage queue lengths

Email from a client service organization:

Thank you for contacting us.

We are experiencing increased volumes and apologize in advance for the delay.

Our goal is to contact you within…

Long queues: All bad

Long queues create →
- Longer lead times
- Increased risk
- More variability
- Lower quality
- Less motivation

Principles of Product Development Flow, Don Reinertsen

2-61
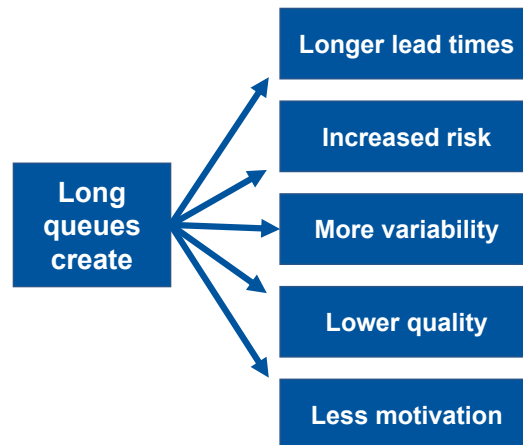
Reduce queue lengths

► Understand Little's Law

- Faster processing time decreases wait

- Shorter queue lengths decrease wait

► Control wait times by controlling queue lengths:

- WIP limits, small batches, defer commitments

$$W_q = \frac{L_q}{\lambda}$$

Average wait time = average queue length divided by average processing rate

Example – *Given an average processing speed of 10 Features per quarter and a committed set of 30 Features, a new Feature will experience an approximate wait time of:*

$$\frac{30 \text{ items}}{10 \text{ items/Quarter}} = 3 \text{ Quarters}$$

2-62

#7 Apply cadence, synchronize with cross-domain planning

2-63

Cadence and synchronization

Cadence	Synchronization
▶ Converts unpredictable events into predictable occurrences and lowers cost	▶ Causes multiple events to happen simultaneously
▶ Makes waiting times for new work predictable	▶ Facilitates cross-functional trade-offs
▶ Supports regular planning and cross-functional coordination	▶ Provides routine dependency management
▶ Limits batch sizes to a single interval	▶ Supports full system integration and assessment
▶ Controls injection of new work	▶ Provides multiple feedback perspectives
▶ Provides scheduled integration points	

Note: *Delivering on cadence requires scope or capacity margin*

Note: *To work effectively, design cycles must be synchronized*

2-64

Cadence without synchronization is not enough

These teams are iterating

Time spent thinking you are on track

When you discover you are not

System

Integrate and slip!

| Iterate | Iterate | Iterate | Iterate | Iterate | Iterate | Iterate | Iterate |

| Iterate | Iterate | Iterate | Iterate | Iterate | Iterate | Iterate |

| Iterate | Iterate | Iterate | Iterate | Iterate | Iterate |

The slowest component drags the train – still late discovery!
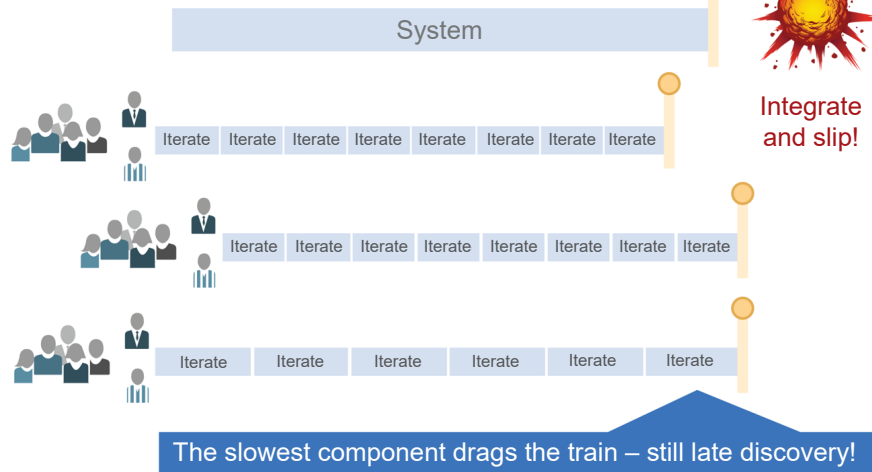
2-65

Synchronize to assure delivery

This system is iterating

Probably need help from a system team

System Demos   *System Demos*

| Sys 1 | Sys 2 | Sys 3 | Sys 4 | Sys 5 | Sys 6 | Sys 7 | Sys 8 |

| Iterate | Iterate | Iterate | Iterate | Iterate | Iterate | Iterate | Iterate |

Continuous Integration

| Iterate | Iterate | Iterate | Iterate | Iterate | Iterate | Iterate | Iterate |

Continuous Integration

| Iterate | Iterate | Iterate | Iterate | Iterate | Iterate | Iterate | Iterate |

PI   PI
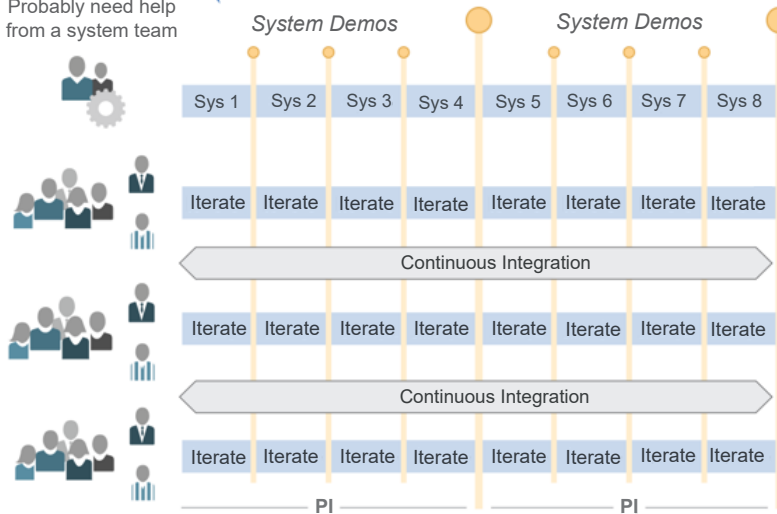
2-66

Control variability with planning cadence

Cadence-based planning limits variability to a single interval.

- Reality →
- Plan ⇢

Infrequent or one-time planning

Cadence-based planning

Accumulated deviation from plan

Maximum deviation from plan
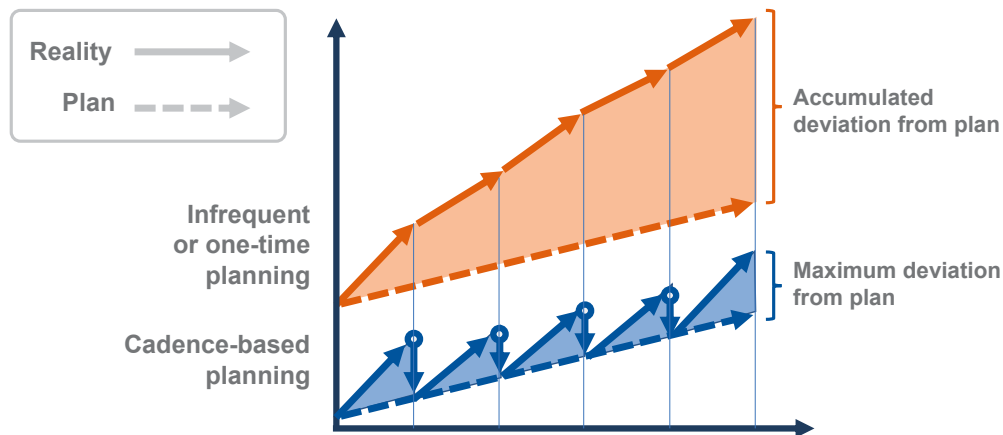
Synchronize with cross-domain planning

Future product development tasks can't be predetermined. Distribute planning and control to those who can understand and react to the end results.
              —Michael Kennedy, Product Development for the Lean Enterprise

- ► Everyone plans together at the same time
- ► Management sets the mission with minimum constraints

- ► Requirements and design emerge
- ► Important decisions are accelerated
- ► Teams take responsibility for their own plans

#8 Unlock the intrinsic motivation of knowledge workers

On managing knowledge workers

Workers are knowledge workers if they know more about the work they perform than their bosses. —Peter Drucker
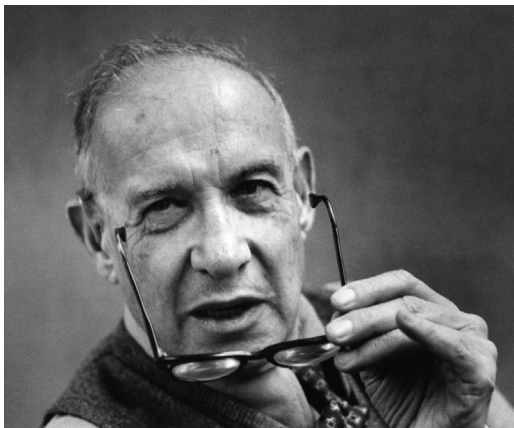
Used with permission from The Drucker Institute at Claremont Graduate University

▶ Workers themselves are most qualified to make decisions about how to perform their work.

▶ The workers must be heard and respected for management to lead effectively.

▶ Knowledge workers must manage themselves. They need autonomy.

▶ Continuing innovation must be part of the work, the tasks, and the responsibilities of knowledge workers.

Unlocking intrinsic motivation with autonomy, mastery, and purpose

▶ *Autonomy* is the desire to be self-directed and have control over what we work on, how we do our work, and who we work with

▶ *Mastery* is the urge to get better at what we do and improve our personal and team skills

▶ *Purpose* is the desire to do something that matters and has meaning

Daniel H. Pink
author of the New York Times bestseller
A Whole New Mind

DRiVE

The Surprising Truth
About What Motivates Us
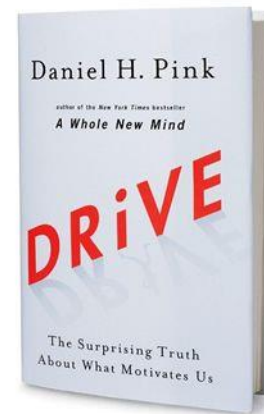
#9 Decentralize decision-making

Video: Greatness by David Marquet

https://bit.ly/Video-GreatnessMarquet

2-73

Decentralize decision-making

Define the economic logic behind a decision; empower others to make the changes.

Centralize	Decentralize everything else
▶ **Infrequent** – Not made very often and usually not urgent (Example: Internationalization strategy) ▶ **Long-lasting** – Once made, highly unlikely to change (Example: Common technology platform) ▶ **Significant economies of scale** – Provide large and broad economic benefit (Example: Compensation strategy)	▶ **Frequent** – Routine, everyday decisions (Example: Team and Program Backlog) ▶ **Time critical** – High cost of delay (Example: Point release to Customer) ▶ **Requires local information** – Specific and local technology or Customer context is required (Example: Feature criteria)

2-74

Activity: Decentralize decision-making

► **Step 1:** Consider three significant decisions you are currently facing. Write them in the table provided in your workbook.

► **Step 2:** Rate each decision based on the frequency, time criticality, and economies of scale, assigning a value of 0, 1, or 2.

► **Step 3:** Add the total values: 0 – 3 centralize and 4 – 6 decentralize.

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

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2-75

Keys to practicing decentralized decision-making

► Openly discuss how decisions are made and explore opportunities to move authority for those decisions closer to where the work is performed.

► Establish a decision-making framework that equips knowledge workers with the information to make good decisions.

► Provide clarity on organizational objectives, coach effective problem-solving, and provide opportunities to exercise and cultivate decision-making abilities.

► Take responsibility for making and communicating strategic decisions—those that are infrequent, long lasting, and have significant economies of scale. Decentralize all other decisions.

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2-76

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

Notes

#10 Organize around value

2-77

Value doesn't follow silos

Business | **System Engineering** | **Hardware** | **Software** | **Test and QA** | **Operations**

Management challenge: Connect the silos
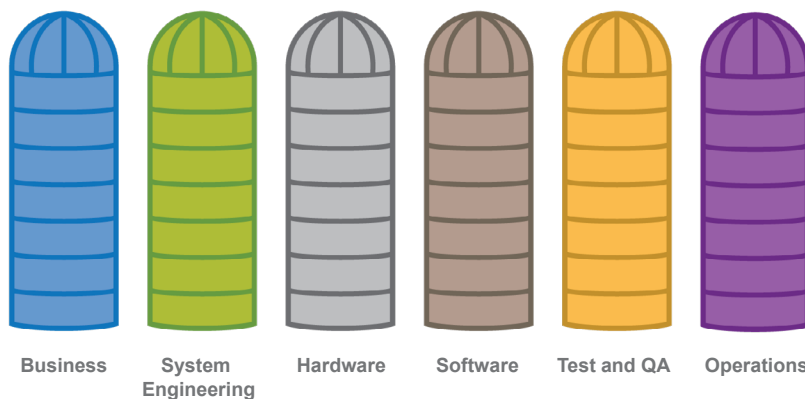
► Value delivery is inhibited by handoffs and delays

► Political boundaries can prevent cooperation

► Silos encourage geographic distribution of functions

► Communication across silos is difficult

2-78

Instead, organize around Development Value Streams

The aim of development is in fact the creation of profitable operational value streams.
—Allen C. Ward

► Includes activities from recognizing an opportunity through release and validation

► Contains the steps, the flow of information and material, and the people who develop the Solutions used by the Operational Value Streams

---
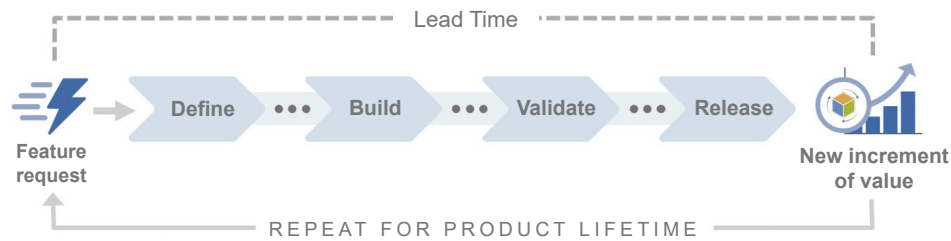
Value at scale is distributed
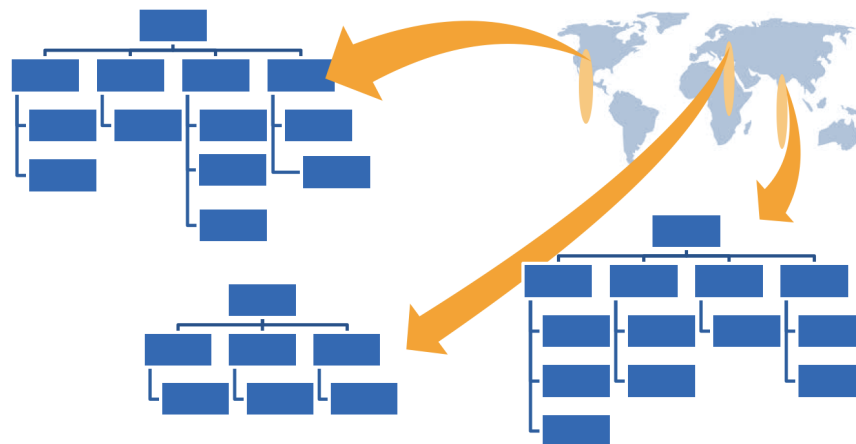
Value flows across organizational boundaries

Identify the Value Streams within which to build one or more Agile Release Trains.
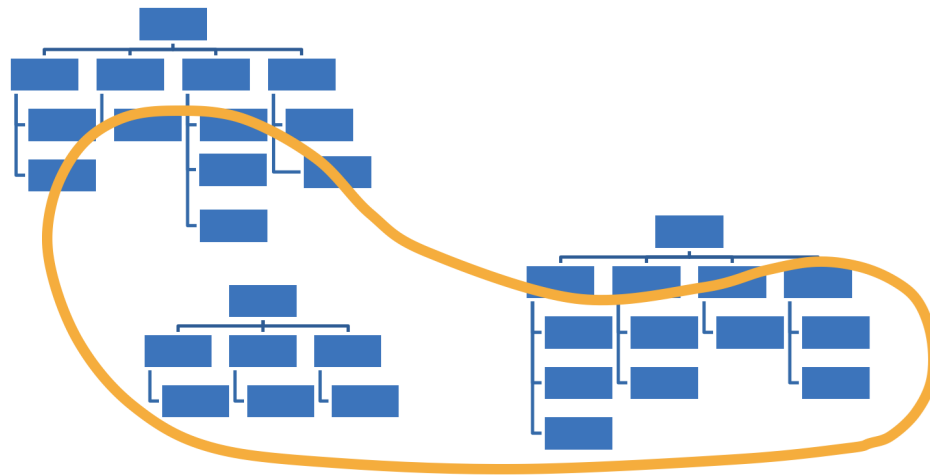
2-81

Principles are great, but …

> " *Clarity on how to **think**, without clarity on how to **act**, leaves people unmoved.*
>
> —Daniel Pink

… it's time to put this thinking to work.
Let's start doing.

2-82

Action Plan: Advocating for SAFe Principles

► **Step 1:** Individually identify three actions you can take to model and advocate SAFe Principles in your Enterprise.

► **Step 2:** Write them down in your Action Plan.

► **Step 3:** In your group, share some of the insights you gained from SAFe Principles.

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2-83

Lesson review

In this lesson you:

► Explored the Lean-Agile Mindset

► Applied Lean and Agile at scale with the SAFe Principles

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2-84

Advocating for
SAFe Principles

Articles used in this lesson

Read these Framework articles to learn more about topics covered in this lesson

► "Core Values"
https://v5.scaledagileframework.com/safe-core-values/
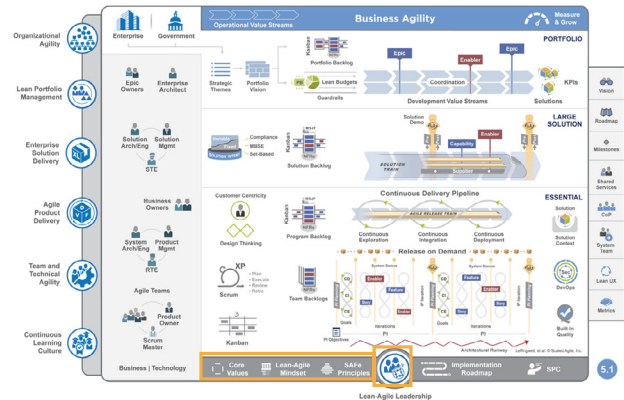
► "Lean-Agile Mindset"
https://v5.scaledagileframework.com/lean-agile-mindset/

► "SAFe Principles"
https://v5.scaledagileframework.com/safe-lean-agile-principles/

► "Lean-Agile Leadership"
https://v5.scaledagileframework.com/lean-agile-leadership/

Continue your SAFe journey with the following resources

Review the *SAFe Core Values* E-learning*:* https://bit.ly/Community-GettingStarted	Review the *SAFe Lean-Agile Principles* E-Learning: https://bit.ly/Community-GettingStarted
Review the *Lean-Agile Mindset* E-Learning: https://bit.ly/Community-GettingStarted	Watch this one-minute video, *How Batch Size Affects Delivery Speed,* which demonstrates how smaller batches enable faster delivery: https://bit.ly/Video-BatchandDeliverySpeed

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Lesson notes

Enter your notes below. If using a digital workbook, save your PDF often so you don't lose any of your notes.

Lesson 3

Establishing Team and Technical Agility

SAFe® Course - Attending this course gives students access to the SAFe® Agilist exam and related preparation materials.

Why Team and Technical Agility

Agile Teams and teams of Agile Teams create and support the business Solutions that deliver value to the Enterprise's Customers. Consequently, an organization's ability to thrive in the digital age is entirely dependent on the ability of its teams to deliver Solutions that reliably meet a Customer's needs.

3-2

Lesson Topics

3.1 Forming cross-functional Agile Teams

3.2 Built-In Quality

3.3 Organizing Agile Release Trains around the flow of value
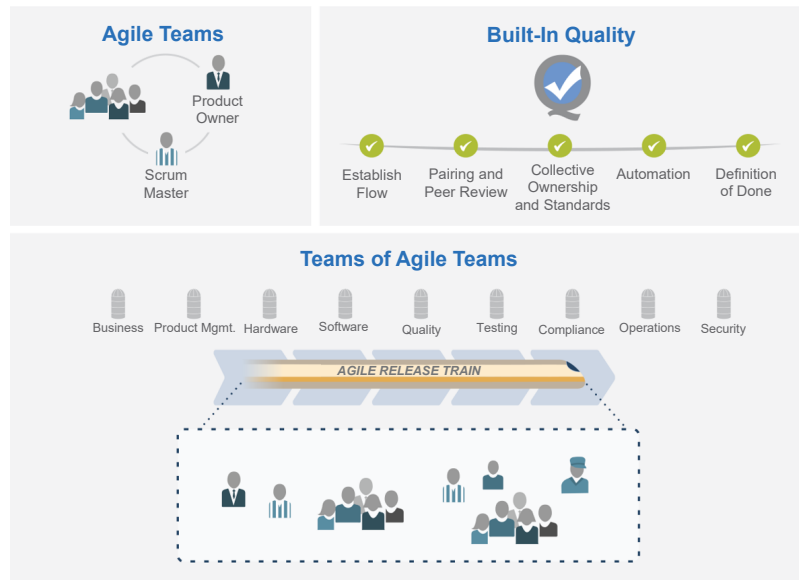
3-3

Learning objectives

At the end of this lesson, you should be able to:

► Prepare to form cross-functional Agile Teams

► Describe Built-in Quality practices

► Recommend organizing around value with Agile Release Trains (ARTs)

3-4

3.1 Forming cross-functional Agile Teams

Build cross-functional Agile Teams

Agile Teams are cross-functional, self-organizing entities that can define, build, test, and where applicable, deploy increments of value.

► Optimized for communication and delivery of value

► Deliver value every two weeks

► Contain two specialty roles:

— Scrum Master

— Product Owner

3-6
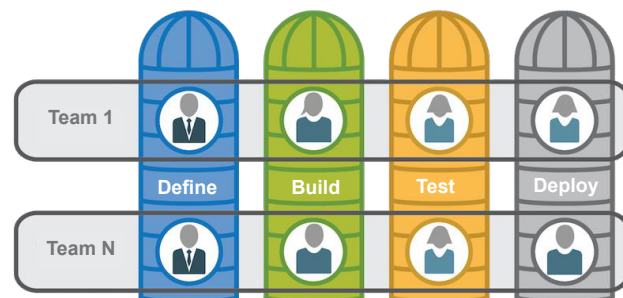
Responsibilities of the Agile Team

- ► Five to eleven team members

- ► Create and refine Stories and acceptance criteria

- ► Define, build, test and deploy Stories

- ► Build quality in to each increment of the solution.

- ► Develop and commit to team PI Objectives and Iteration Goals

Product Owner

Scrum Master

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3-7
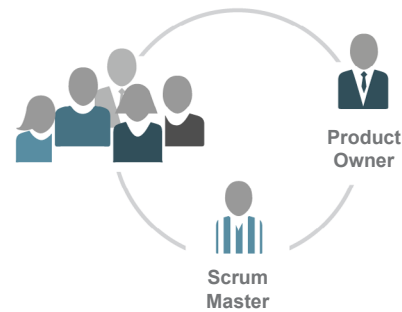
Agile Teams have two speciality roles

Scrum Master

- Coaches the Agile Team in self-management
- Helps the team focus on creating increments of value each Iteration
- Facilitates the removal of impediments to the team's progress
- Ensures that all team events take place, are productive and kept within the timebox

Product Owner

- Contributes to the Vision and Roadmap
- Acts as the Customer for team questions
- Creates, clearly communicates and accepts Stories
- Prioritizes the Team Backlog

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3-8

Teams execute Iterations with Scrum

Scrum is built on transparency, inspection, adaptation, and short learning cycles.
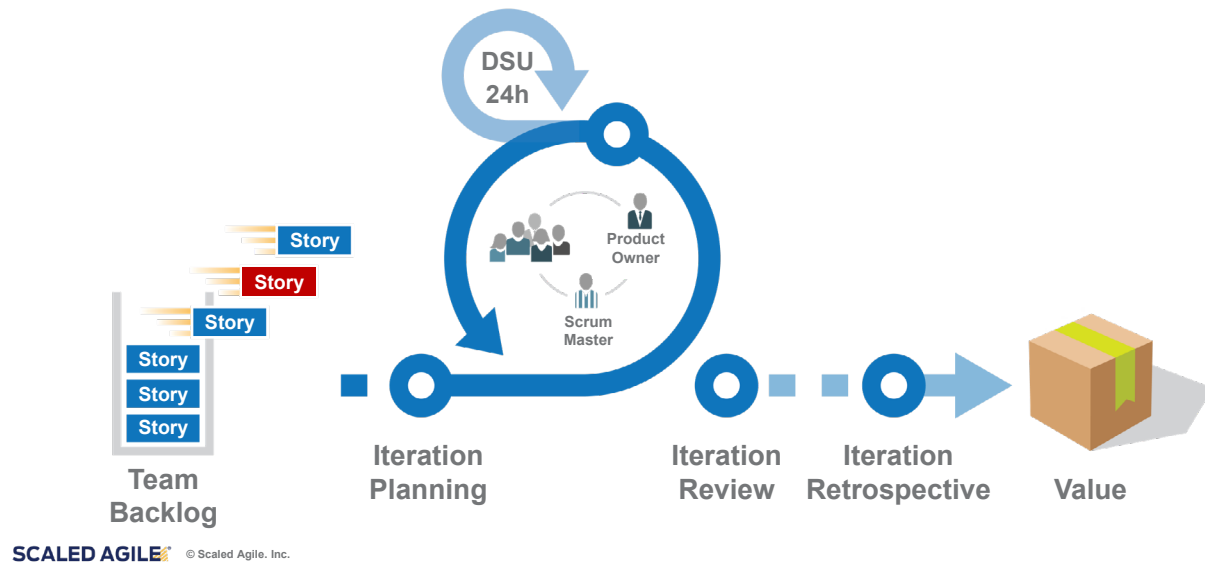
Teams visualize flow with Kanban
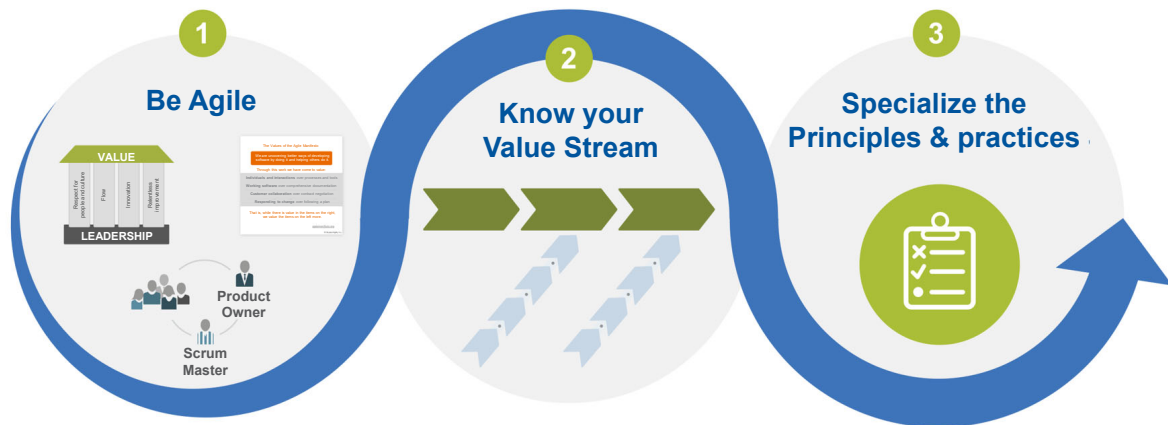
Kanban visualizes and optimizes the flow of work through the system.

Average WIP and duration are measured from the point work
is pulled from the backlog until it is accepted.
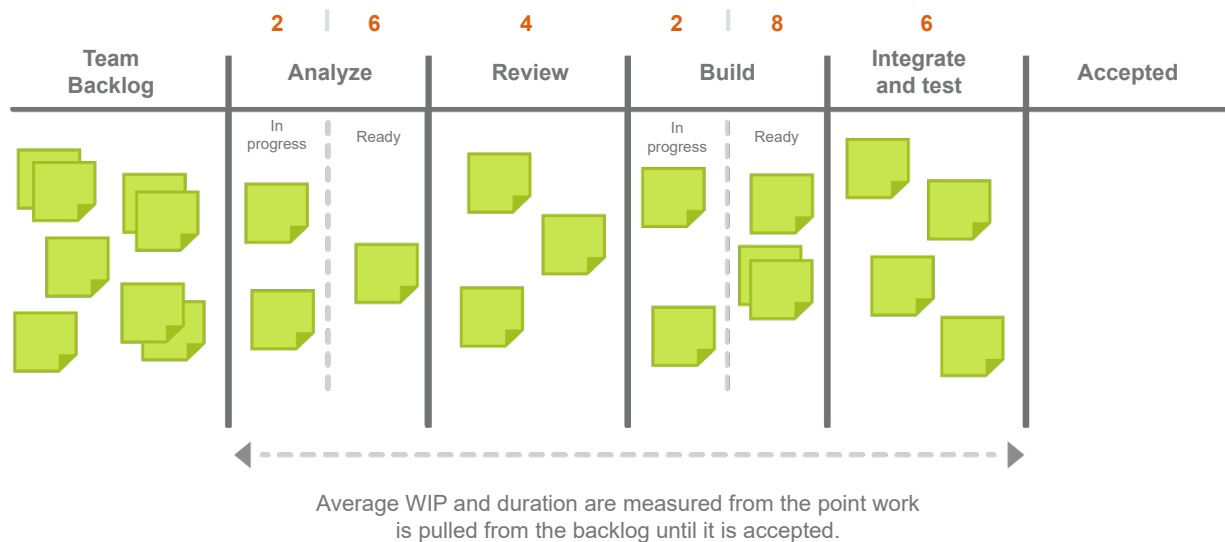
Extend into the business with Agile business teams

Agile Team maturity cycle

https://v5.scaledagileframework.com/business-and-technology/

Duration
3 min

Activity: Identify team names and roles

- ▶ **Step 1:** Your team is your group. Create a team name

- ▶ **Step 2:** Select a Scrum Master for your team

- ▶ **Step 3:** Select a Product Owner for your team

- ▶ **Step 4:** Make sure the team name and the names of the people selected are visible to all other teams

  - — **Note:** In the next lesson, your team will experience PI Planning
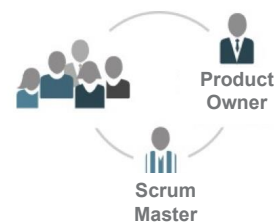
3.2 Built-in Quality

Build quality in

You can't scale crappy code (or hardware, or anything else).
— Dean Leffingwell

► Ensures that every increment of the Solution reflects quality standards

► Is required for high, sustainable development velocity

► Agile quality practices apply to every team, whether business or technology:

– Establish flow

– Peer review and pairing

– Collective ownership and standards

– Automation

– Definition of done

Built-in Quality practices for software teams

Include software quality practices (most inspired by XP) like, Agile testing, behavior-driven development, test-driven development, refactoring, code quality, and Agile architecture.
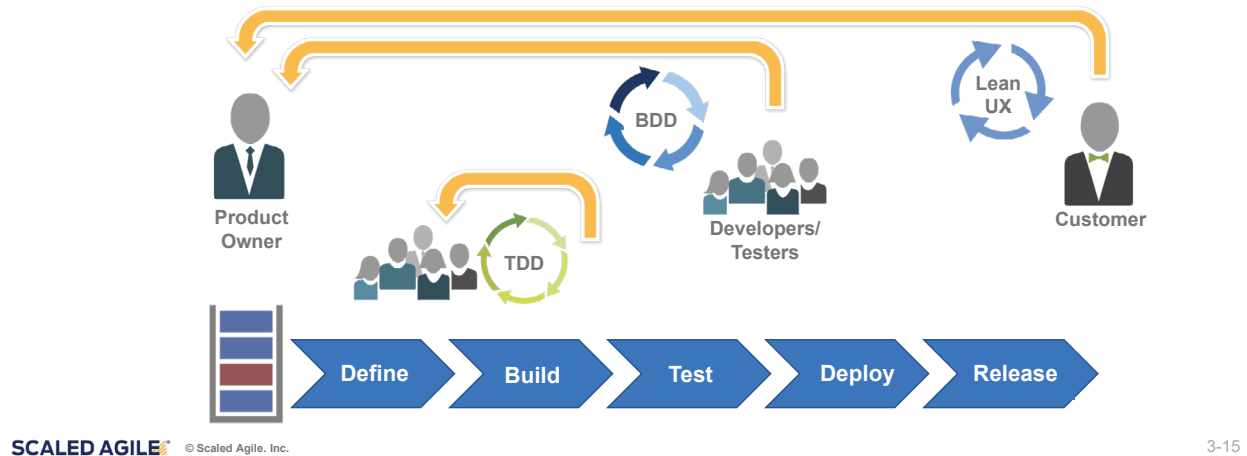
Built-in Quality practices for hardware teams

Support hardware quality with exploratory, early iterations, frequent system-level integration, design verification, Model-Based Systems Engineering (MBSE), and set-based design.
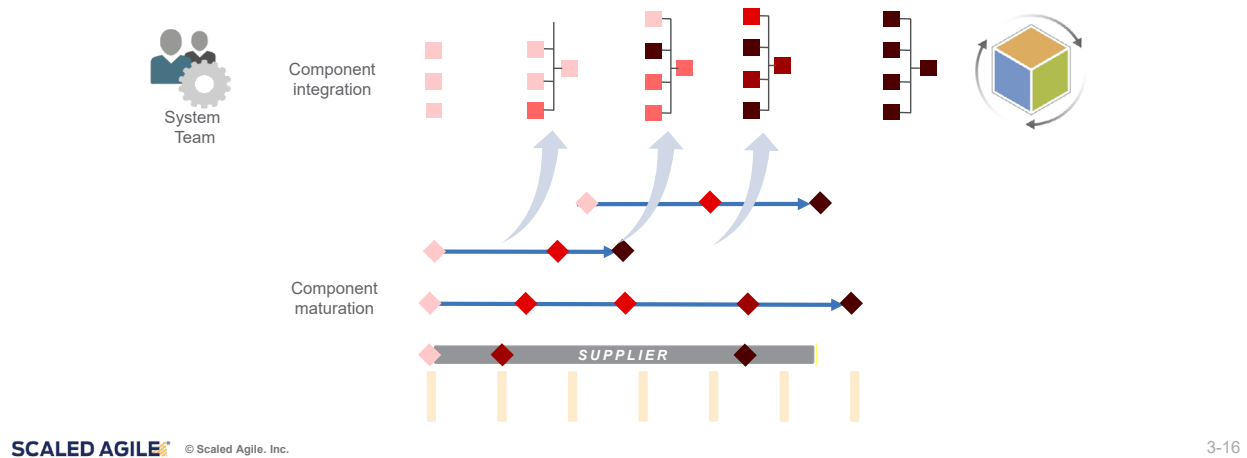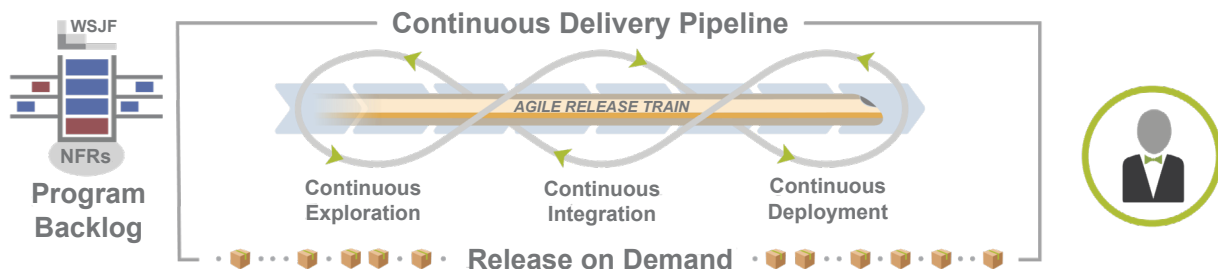
3.3 Organizing Agile Release Trains around the flow of value
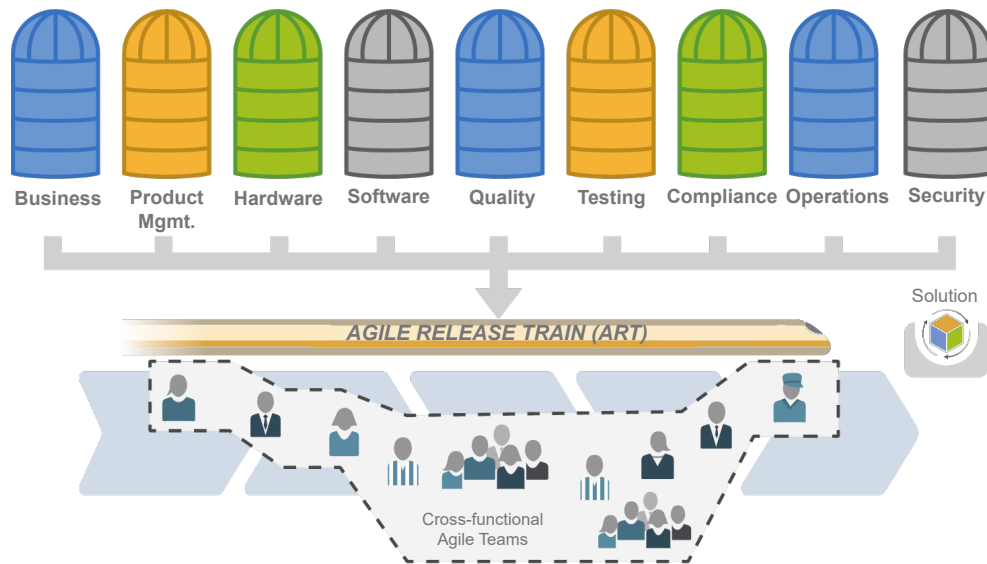
3-17

Agile Release Trains (ARTs)

► A virtual organization of 5 – 12 teams (50 – 125+ individuals)

► Synchronized on a common cadence, a Program Increment (PI)

► Aligned to a common mission via a single Program Backlog

WSJF

NFRs

Program Backlog

Continuous Delivery Pipeline

AGILE RELEASE TRAIN
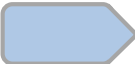
Continuous Exploration

Continuous Integration

Continuous Deployment

Release on Demand

3-18

ARTs are cross-functional

Business | Product Mgmt. | Hardware | Software | Quality | Testing | Compliance | Operations | Security

AGILE RELEASE TRAIN (ART)

Solution
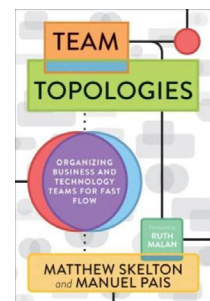
Cross-functional Agile Teams

3-19

Teams on the ART are organized for flow

Stream-aligned team – organized around the flow of work and has the ability to deliver value directly to the Customer or end user.

Complicated subsystem team – organized around specific subsystems that require deep specialty skills and expertise.

Platform team – organized around the development and support of platforms that provide services to other teams.

Enabling team – organized to assist other teams with specialized capabilities and help them become proficient in new technologies.
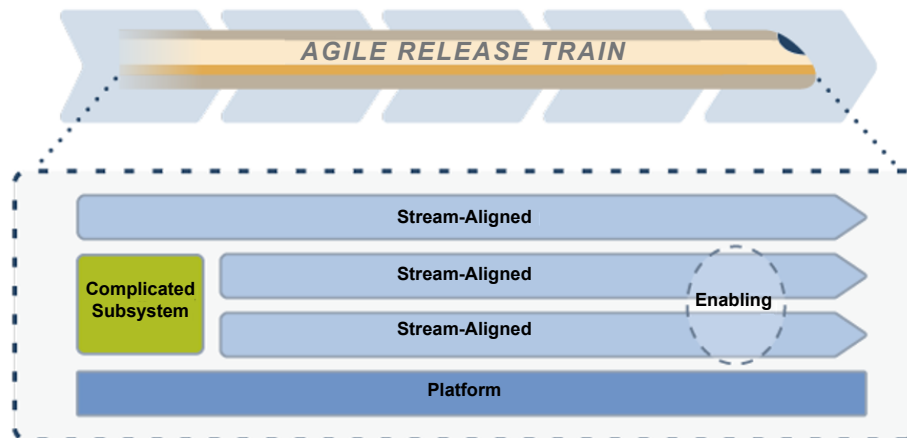
More information in the Advanced Topic Article:
https://v5.scaledagileframework.com/organizing-agile-teams-and-arts-team-topologies-at-scale/

3-20

ARTs are organized to deliver value continuously

Consider the necessary interactions between the teams and organize to maximize flow.

Roles on the Agile Release Train

Release Train Engineer acts as the Chief Scrum Master for the train.

Product Management owns, defines, and prioritizes the Program Backlog.

System Architect/Engineering provides architectural guidance and technical enablement to the teams on the train.

The **System Team** provides processes and tools to integrate and evaluate assets early and often.

Business Owners are key stakeholders on the Agile Release Train.

AGILE RELEASE TRAIN

Lesson review

In this lesson you:

► Discussed how to form cross-functional Agile Teams

► Reviewed built-in quality practices

► Explored how to organize Agile Release Trains (ARTs) around the flow of value

3-23

Articles used in this lesson

Read these Framework articles to learn more about topics covered in this lesson

► "Team and Technical Agility"
https://v5.scaledagileframework.com/team-and-technical-agility/

► "Built-In Quality"
https://v5.scaledagileframework.com/built-in-quality/

► "Agile Teams"
https://v5.scaledagileframework.com/agile-teams/

► "Agile Release Train"
https://v5.scaledagileframework.com/agile-release-train/

3-24

Continue your SAFe journey with the following resources

Review the *Agile Basics* E-Learning: https://bit.ly/Community-GettingStarted	Run an *Agile Team Charter Workshop* from the Team Formation Toolkit to create the foundation for successful teams in SAFe: https://bit.ly/Community-ToolkitsandTemplates
Apply the guidance from the advanced topic article, "Organizing Agile Teams and ARTs": https://v5.scaledagileframework.com/organizing-agile-teams-and-arts-team-topologies-at-scale/	Review the Built-in Quality technical practices in the *Agile Software Engineering Vlog* series: https://bit.ly/Playlist-SoftwareEngineering
Facilitate effective *Team Events* using the following tools and guidance: https://bit.ly/Community-SAFeARTandTeamEvents	Run a *Team and Technical Agility Assessment* to identify improvement opportunities: https://bit.ly/Community-MeasureAndGrow

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3-25

Lesson notes

Enter your notes below. If using a digital workbook, save your PDF often so you don't lose any of your notes.

Lesson 4
Building Solutions with Agile Product Delivery

SAFe® Course - Attending this course gives students access to the SAFe® Agilist exam and related preparation materials.

Why Agile Product Delivery?

In order to achieve Business Agility, Enterprises must rapidly increase their ability to deliver innovative products and services. To be sure that the Enterprise is creating the right Solutions for the right Customers at the right time, they must balance their execution focus with a Customer focus.

4-2

Lesson Topics

4.1 Customer Centricity and Design Thinking

4.2 Prioritizing the Program Backlog

4.3 PI Planning

4.4 Develop on Cadence; Release on Demand

4.5 Building a Continuous Delivery Pipeline with DevOps
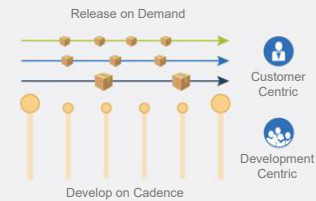
4-3

Learning objectives

At the end of this lesson, you should be able to:

► Express the benefits of a Customer-centric culture

► Practice applying Design Thinking

► Prioritize the Program Backlog with weighted shortest job first (WSJF)

► Participate in a PI Planning event

► Explain the need to Develop on Cadence; Release on Demand

► Justify the need to build and maintain a Continuous Delivery Pipeline with DevOps

4-4

4.1 Customer Centricity and Design Thinking

Discussion: Customer Centricity

Prepare
5 min

Share
2 min

► **Step 1:** Discuss as a group:

— Why is it important to maintain focus on the Customer?

— What are some of the characteristics of a Customer-centric Enterprise?

► **Step 2:** Be prepared to share with the class.

Why Customer Centricity?

Customer-centric Enterprises deliver whole-product Solutions that are designed with a deep understanding of Customer needs.

Enterprise   **Government**

Customer-centric businesses generate:
- ▶ Greater profits
- ▶ Increased employee engagement
- ▶ More satisfied customers

Customer Centricity

Customer-centric governments and nonprofits create:
- ▶ The resiliency, sustainability, and alignment needed to fulfill their mission

4-7

Customer Centricity is a mindset
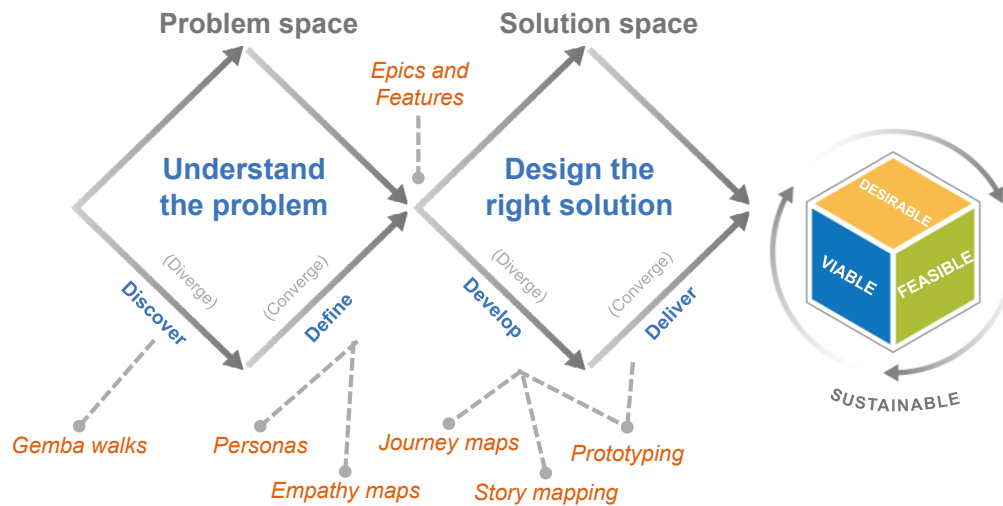
Whenever a customer-centric Enterprise makes a decision, it fully considers the effect it will have on its end users.

Understand the Customer's needs

Focus on the Customer

Think like the Customer

Everything is about the Customer!

Customer Centricity

Build whole-product Solutions

Know Customer lifetime value

4-8

What is Design Thinking?

Design Thinking is a clear and continuous understanding of the target market, Customers, the problems they are facing, and the jobs to be done.

4-9

Use personas to understand Customers

Personas are fictional characters that represent the different people who might use your product. Personas:

► Convey the problems they're facing in context and key triggers for using the product

► Capture rich, concise information that inspires great products without unnecessary details

Cary the Consumer

Age: 36
Location: Reno, Nevada, USA
Time in App: 10 minutes

"I'm a working dad with three children ages 3, 6, and 10. I'm also in a band, which means I want to spend as much time as possible with my kids and my band. I need my package delivered on time so that I can maximize time with my family."

I like technology! I have an iPhone, iPad, and nice home Wi-Fi setup	I am not home on some weekends	I'd rather order online than dial the phone and talk to somebody
My wife also works during the week, so she doesn't have much spare time to help	Text is my favorite form of communication with suppliers	I don't own a computer, only tablets and phones.

4-10

Use empathy maps to identify with Customers

► The empathy map is a tool that helps teams develop deep, shared understanding and empathy for the Customer

► Use it to design better user experiences and Value Streams

Who are we empathizing with?

What do they need to do?

What do they hear?

What do they see?

What do they do?

What do they think and feel?

What do they say?

Activity: Empathy mapping

Prepare
10 min

Share
5 min

► **Step 1:** In your group, create an empathy map using the example in your workbook or the template provided.

► **Step 2:** Select a user or Customer of a product or service from one of the companies at your table.

► **Step 3:** Following the sequence of numbers, fill in each section of the empathy map.

► **Step 4:** Discuss with your group how the empathy map can inform Solution development. Be prepared to share your insights with the class.

Empathy Map Canvas

Designed for:

Designed by:

Date:

Version:

GOAL

1 WHO are we empathizing with?
Who is the person we want to understand?
What is the situation they are in?
What is their role in the situation?

2 What do they need to DO?
What do they need to do differently?
What job(s) do they want or need to get done?
What decision(s) do they need to make?
How will we know they were successful?

3 What do they SEE?
What do they see in the marketplace?
What do they see in their immediate environment?
What do they see others saying and doing?
What are they watching and reading?

4 What do they SAY?
What have we heard them say?
What can we imagine them saying?

5 What do they DO?
What do they do today?
What behavior have we observed?
What can we imagine them doing?

6 What do they HEAR?
What are they hearing others say?
What are they hearing from friends?
What are they hearing from colleagues?
What are they hearing second-hand?

**7 What do they THINK and FEEL?**

PAINS
What are their fears,
frustrations, and anxieties?

GAINS
What are their wants,
needs, hopes and dreams?

What other thoughts and feelings might motivate their behavior?

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Last updated on 16 July 2017. Download a copy of this canvas at http://gamestorming.com/empathy-map/

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Instructions:

Step 1: Select a user customer of a product or service from one of your companies in your group.

Step 2: Following the sequence of numbers, fill in each section of the empathy map in the spaces below.

Step 3: Discuss with your group how the empathy map can inform Solution development. Be prepared to share with the class.

GOALS			PAINS/GAINS
#1 WHO? **#2** DO?	**#3** SEE?	**#6** HEAR?	**#7** THINK and FEEL?
	#4 SAY?	**#5** DO?	

#1

GOAL: *WHO* are we empathizing with?

Who is the person we want to understand?

What is the situation they are in?

What is their role in the situation?

#2

GOAL: What do they need to _DO_?

What do they need to do differently?

What job(s) do they want or need to get done?

What decision(s) do they need to make?

How will we know we were successful?

#3

What do they _SEE_?

What do they see in the marketplace?

What do they see in their immediate environment?

What do they see others saying and doing?

What are they watching and reading?

#4

What do they *SAY*?

What have we heard them say?

What can we imagine them saying?

#5

What do they *DO*?

What do they do today?

What behavior have we observed?

What can we imagine them doing?

#6

What do they *HEAR*?

What are they hearing others say?

What are they hearing from friends?

What are they hearing from colleagues?

What are they hearing second-hand?

#7

What do they *THINK* and *FEEL*?

PAINS	GAINS
What are their fears, frustrations and anxieties?	What are their wants, needs, hopes and dreams?

What other thoughts and feelings might motivate their behavior?

Use journey maps to design the end-to-end Customer experience
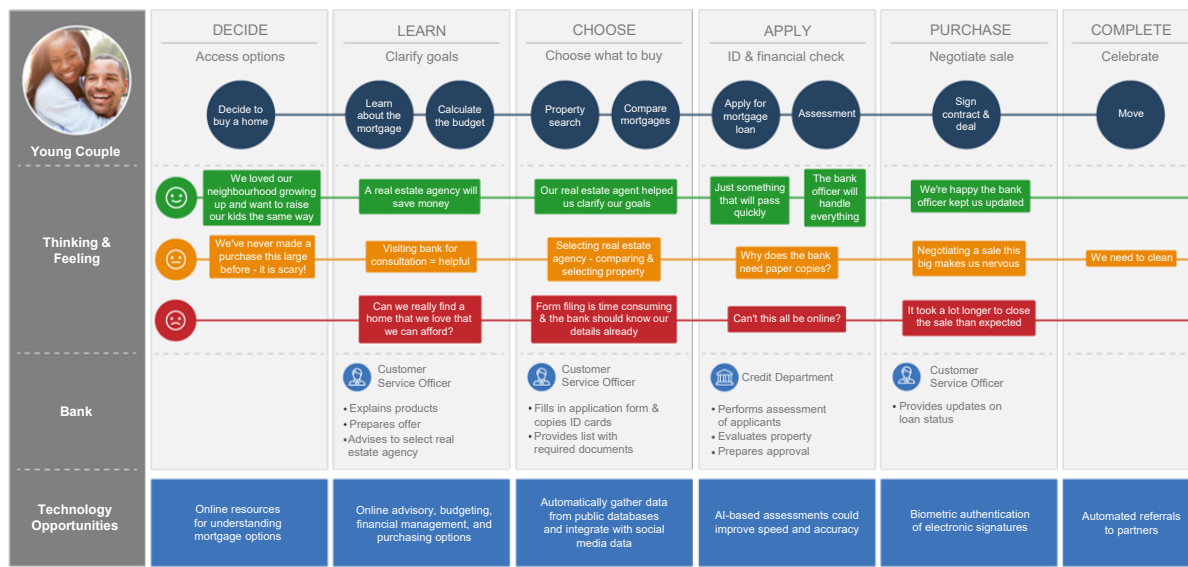
Customer journey map (mortgage loan)

4-13

Use Story maps to capture workflows

Stories within an activity are typically prioritized from "Stories essential to complete the activity" to "Stories that delight the user."

4-14

4.2 Prioritizing the Program Backlog

Features are managed through the Program Backlog

The Program Backlog is the holding area for upcoming Features that will address user needs and deliver business benefits for a single Agile Release Train (ART).

Program Backlog

Feature	40
Feature	40
Feature	40
Enabler	100
Feature	40
Feature	40
Feature	40

NFRs

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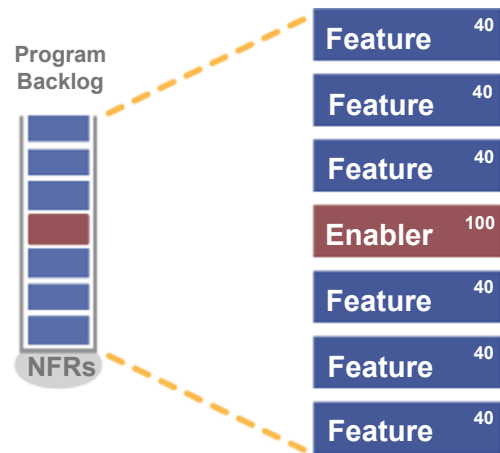
Vision aligns everyone on the product's direction

The Vision is a description of the future state of the product

- ► How will our product solve our Customer's problems?

- ► What Features does it have?

- ► How will it differentiate us?

- ► What nonfunctional requirements does it deliver?
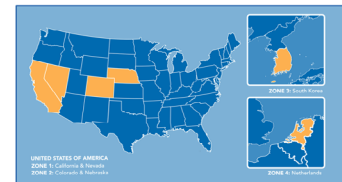
Features represent the work for the Agile Release Train

- ► The Feature benefit hypothesis justifies development cost and provides business perspective for decision-making

- ► Acceptance criteria are typically defined during Program Backlog refinement

- ► Reflect functional and nonfunctional requirements

- ► Fits in one PI

Multi-factor authentication

Benefit hypothesis
Enhance user security via both password and a device

Acceptance criteria
1. USB tokens as a first layer
2. Password authentication second layer
3. Multiple tokens on a single device
4. User activity log reflecting both authentication factors

Example Feature

Activity: Describe three Features

▶ **Step 1:** Individually identify three Features from your context

▶ **Step 2:** In your workbook, write down the Features and the benefit hypothesis for these Features

▶ **Step 3:** Choose one of the Features and write down some acceptance criteria for it

Feature:
Multi-factor authentication

Benefit Hypothesis:
Enhance user security via both password and a device

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4-19

Features are implemented by Stories

▶ Stories are small increments of value that can be developed in days and are relatively easy to estimate

▶ Story user-voice form captures role, activity, and goal

▶ Features fit in one PI for one ART; Stories fit in one Iteration for one team

Business Feature

Feature:
Shipping Method Selection
Benefit hypothesis:
Users can select a shipping method based on cost, delivery speed, and carrier

Enabler Story

Determine how to calculate the shipping costs

Enabler Stories represent different types of work, such as: *Exploration, Architecture, Infrastructure, Compliance.*

User Story

As a book purchaser **I can** see the price for each shipping method for my current order **so that** I can select a shipping method based on price.

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4-20

Describe Three Features

Feature: Multi-factor authentication

Benefit Hypothesis: Enhance user security via both password and a device.

Feature:

Benefit Hypothesis:

Feature:

Benefit Hypothesis:

Feature:

Benefit Hypothesis:

Estimate Stories with relative Story points

- ► A Story point is a singular number that represents:

  - – Volume: How much is there?

  - – Complexity: How hard is it?

  - – Knowledge: What do we know?

  - – Uncertainty: What's not known?

- ► Story points are relative. They are not connected to any specific unit of measure.

How *big* is it?

Guidance: Compared with other Stories, an 8-point Story should take relatively four times longer than a 2-point Story.

4-21

Apply estimating poker for fast, relative estimating

- ► Estimating poker combines expert opinion, analogy, and disaggregation for quick but reliable estimates

- ► All members participate

| ? | 1 | 2 | 3 | 5 | 8 | 13 | 20 | 40 | 100 | ∞ |

	Steps
1	Each estimator gets a deck of cards
2	Read a job
3	Estimators privately select cards
4	Cards are turned over
5	Discuss differences
6	Re-estimate

Source: Mike Cohn, Agile Estimating and Planning

4-22

Estimation is a whole-team exercise

► Increases accuracy by including *all* perspectives

► Builds understanding

► Creates shared commitment

The whole team estimates Stories

Warning: Estimation performed by a manager, architect, or select group negates these benefits
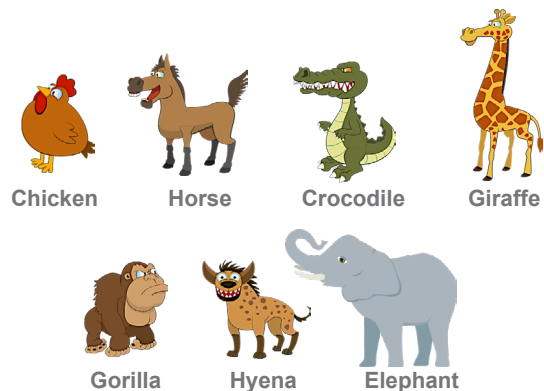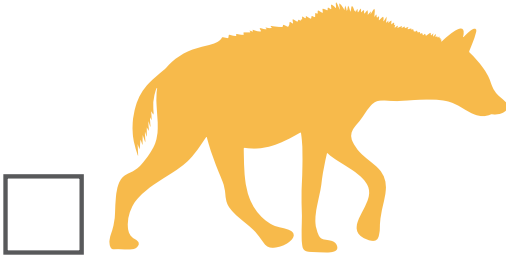
4-23

Activity: Relative size estimating

Prepare
7 min

Share
3 min

Use estimating poker to relatively estimate the mass of a set of animals.

► **Step 1:** In your groups, identify the smallest animal and mark it as *1*

► **Step 2:** Estimate the remaining animals using values *1, 2, 3, 5, 8, 13, 20, 40, 100*

Chicken   Horse   Crocodile   Giraffe
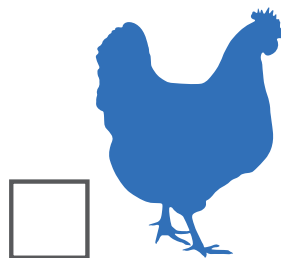
Gorilla   Hyena   Elephant

4-24

Hyea

☐

Horse

☐
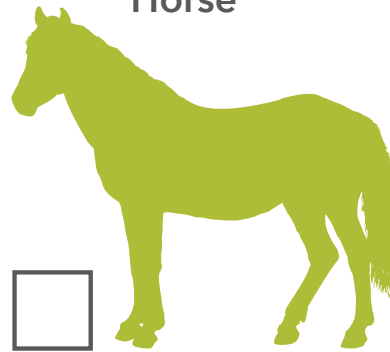
Gorilla
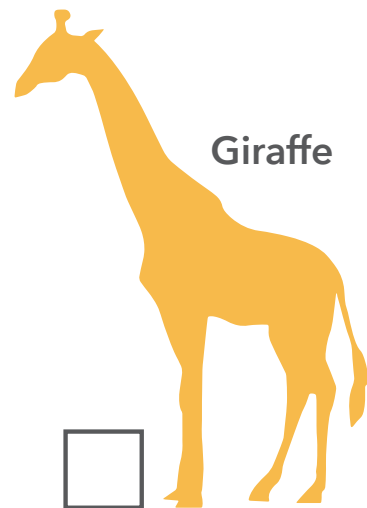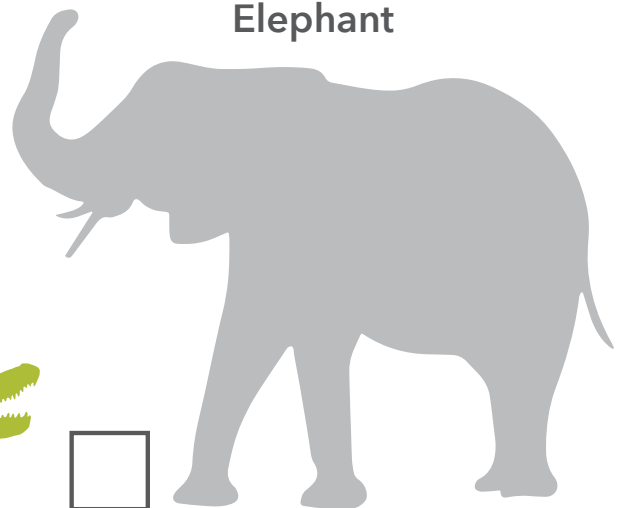
☐
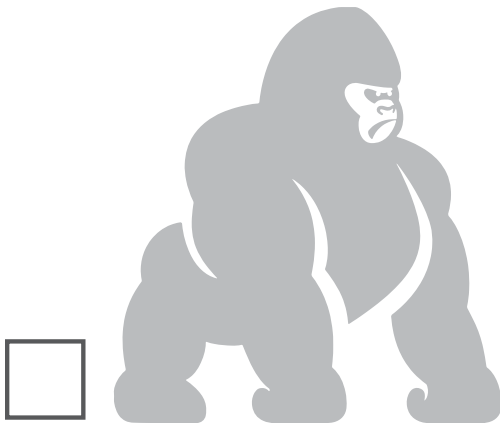
Chicken

☐

Giraffe

☐

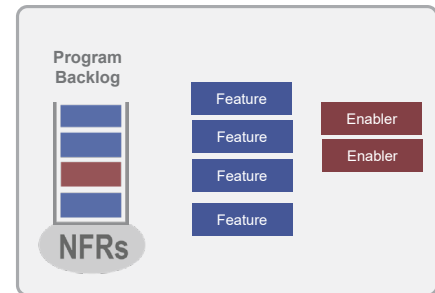**Elephant**

☐

Crocodile

☐

Prioritize Features for optimal ROI

In a flow system, *job sequencing* is the key to improving economic outcomes.

To prioritize based on Lean economics, we need to know two things:

► The cost of delay (CoD) in delivering value

► What is the cost to implement the valuable thing?

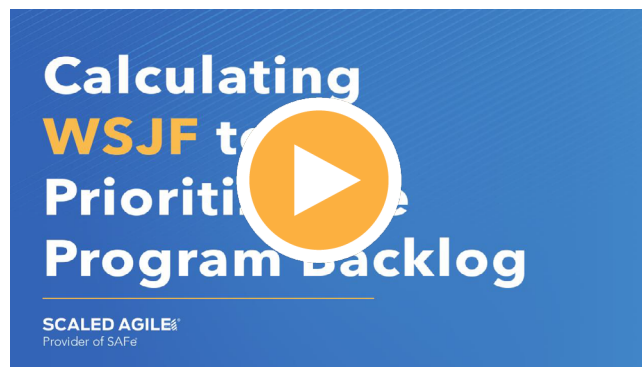*If you only quantify one thing, quantify the cost of delay. —Donald G. Reinertsen*

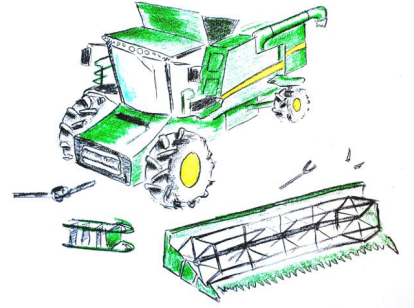**Video: Calculating WSJF to Prioritize the Program Backlog**

Duration
5 min

https://bit.ly/Video-CalculatingWSJF

Example with equal CoD: Which job first?

A $$, 1 day

B $$, 3 days
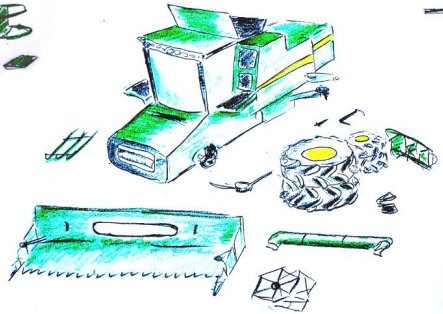
C $$, 10 days

4-27

Example with equal duration: Which job first?

A $$$, 3 days
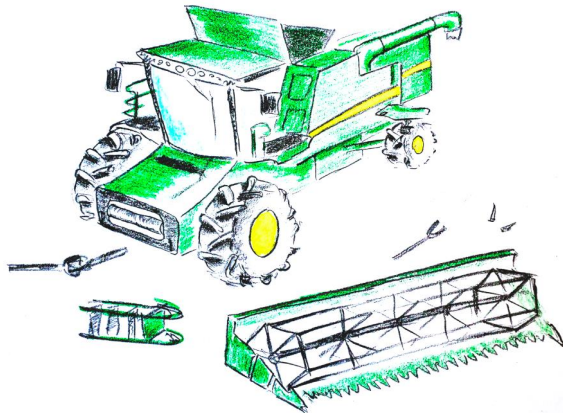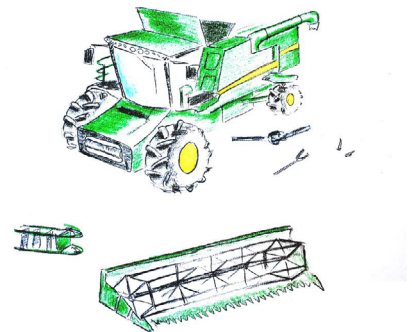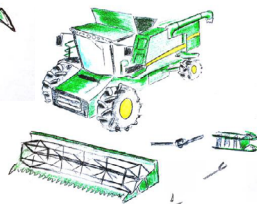
B $$, 3 days
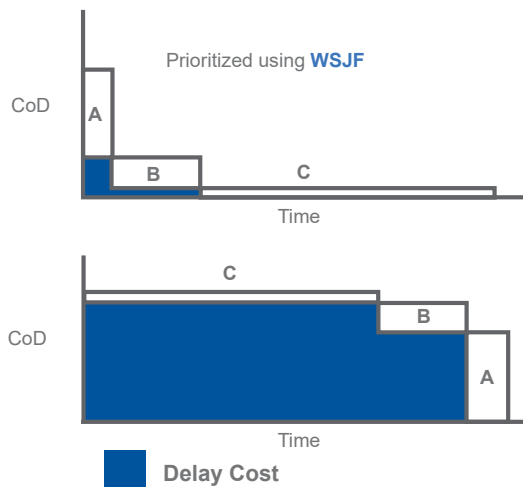
C $, 3 days

4-28

General case: Any cost of delay (CoD) and duration

In the general case, give preference to jobs with shorter duration and higher CoD, using weighted shortest job first (WSJF):

Prioritized using **WSJF**

CoD — A, B, C / Time

CoD — C, B, A / Time

■ **Delay Cost**

$$\text{WSJF} = \frac{\text{Cost of delay}}{\text{Job duration (Job size)}}$$

Feature	Duration	CoD	WSJF
A	1	10	10
B	3	3	1
C	10	1	0.1

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4-29

Components of cost of delay

User-Business Value

Relative value to the Customer or business

- They prefer this over that
- Revenue impact?
- Potential penalty or other negative impact?

Time Criticality

How user/business value decays over time

- Is there a fixed deadline?
- Will they wait for us or move to another Solution?
- What is the current effect on Customer satisfaction?

Risk Reduction & Opportunity Enablement (RR&OE)

What else does this do for our business

- Reduce the risk of this or future delivery?
- Is there value in the information we will receive?
- Enable new business opportunities?

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4-30

Calculate WSJF with relative estimating

In order to calculate WSJF, teams need to estimate cost of delay and duration

► For duration, use job size as a quick proxy

► Relative estimating is a quick technique to estimate job size and relative value

► WSJF stakeholders: Business Owners, Product Managers, Product Owners, and System Architects

$$WSJF = \frac{\text{User-business value} + \text{Time criticality} + \text{Risk reduction and/or opportunity enablement}}{\text{Job size}}$$

Activity: Weighted shortest job first (WSJF) prioritization

Prepare **10** min   Share **5** min

► **Step 1:** Prioritize three of the Features you identified earlier using WSJF

► **Step 2:** Share some insights from this activity with the class

Feature	User-business value	Time criticality	RR | OE Value	CoD	Job size	WSJF
	+	+	=	÷	=	
	+	+	=	÷	=	
	+	+	=	÷	=	

Scale for each parameter: 1, 2, 3, 5, 8, 13, 20
Note: Do one column at a time, start by picking the smallest item and giving it a "1."
There must be at least one "1" in each column.

$$WSJF = \frac{\text{User-business value} + \text{Time criticality} + \text{Risk reduction and/or opportunity enablement}}{\text{Job size}}$$

Feature	User-business value	Time criticality	RR | OE value	COD	Job size	WSJF
		+	+	=	÷	=
		+	+	=	÷	=
		+	+	=	÷	=

4.3 PI Planning

Duration

Video: The Power of PI Planning

2 min

https://bit.ly/Video-PowerofPIPlanning

---

What is PI Planning?

Program Increment (PI) Planning is a cadence-based event that serves as the heartbeat of the Agile Release Train (ART), aligning all teams on the ART to a shared mission and Vision.

► Two days every 8 – 12 weeks (10 weeks is typical)

► Everyone plans together

► Product Management owns Feature priorities

► Development teams own Story planning and high-level estimates

► Architect/Engineering and UX work as intermediaries for governance, interfaces, and dependencies

PI Planning

Agile Team

4-35
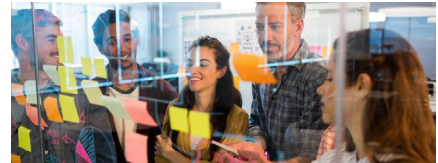
The benefits of PI Planning

► Establishing personal communication across all team members and stakeholders

► Aligning development to business goals with the business context, Vision, and Team/Program PI Objectives

► Identifying dependencies and fostering cross-team and cross-ART collaboration

► Providing the opportunity for just the right amount of architecture and Lean User Experience (UX) guidance

► Matching demand to capacity, eliminating excess work in process (WIP)

► Fast decision making

Cross-team collaboration

4-36

The PI Planning process
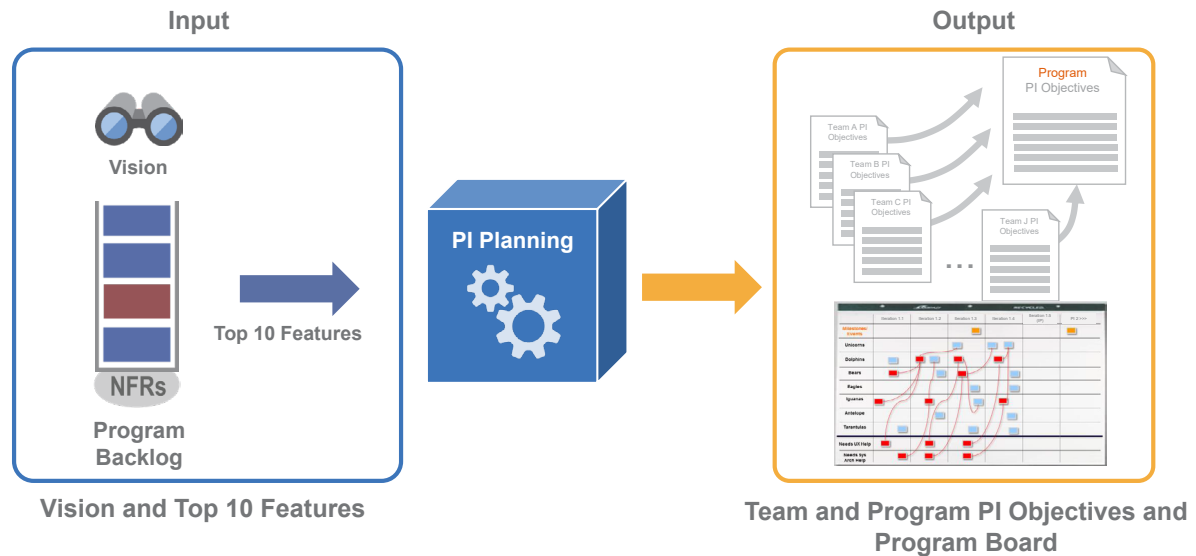
4-37

Create Alignment with PI Objectives

► Objectives are business summaries of what each team intends to deliver in the upcoming PI.

► They often directly relate to intended Features in the backlog.

► Other examples:

   — Aggregation of a set of Features

   — A Milestone like a trade show

   — An Enabler Feature supporting the implementation

   — A major refactoring

Objectives for PI 1	BV	AV
1. Show routing calculations between the 5 most frequent destinations		
2. Navigate autonomously from distribution center to the most frequent destination		
3. Parallel park for a delivery		
4. Return to the distribution center after delivery		
5. Include traffic data in route planning		
6. Recall a delivery that is already in progress		
Uncommitted Objectives		
7. Spike: Reduce GPS signal loss by 25%		
8. Demonstrate real-time rerouting to avoid delays (e.g., accident, construction)		

4-38

Maintain predictability with uncommitted objectives

Uncommitted objectives help improve the predictability of delivering business value.

▶ They are planned and aren't extra things teams do 'just in case you have time'

▶ They are not included in the commitment, thereby making the commitment more reliable

▶ If a team has low confidence in meeting a PI Objective, it should be moved to uncommitted

▶ If an objective has many unknowns, consider moving it to uncommitted and put in early spikes

▶ Uncommitted objectives count when calculating load

Objectives for PI 1

Uncommitted Objectives

7. Spike: Reduce GPS signal loss by 25%
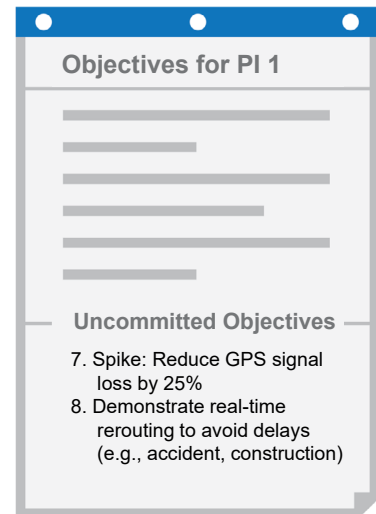8. Demonstrate real-time rerouting to avoid delays (e.g., accident, construction)

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Prepare to experience a simulated PI Planning event

The flow of the simulation

You will be presented with the program Vision

You will be involved in planning two Iterations considering Stories and Features

You will be drafting PI Objectives based on the program Vision and Features

You will be collaborating with the Business Owners to assign business value to the PI Objectives

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Outcomes of the PI Planning simulation

Actively participating in a simulated PI Planning event will enable you to:

| **Communication** | **Estimate Capacity** | **Objectives** | **Manage risks** |
| Experience the business benefits of establishing communication across all team members and stakeholders | Experience estimating capacity for the Iteration | Experience drafting PI Objectives for achieving the Program Increment and committing to the plan | Experience managing program risks |

Activity: Identify ART roles

Duration
3 min

► **Step 1:** Identify ART roles for the simulation

► **Step 2:** Ensure that you have all key roles required for the PI Planning simulation

Simulation role	Assigned to
Executive	Volunteer
Product Manager	Volunteer
System Architect, UX, Development Manager	Volunteer

Your Instructor will be the RTE.

Simulation: Why are we here?

Alignment to a common mission

We are here to gain alignment and commitment around a clear set of prioritized objectives. I will now review the agenda for the next two days of the PI Planning event.

RTE

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4-43

Simulation: Day 1 agenda

Business context	8:00 – 9:00	• State of the business
Product/Solution Vision	9:00 – 10:30	• Vision and prioritized Features
Architecture Vision and development practices	10:30 – 11:30	• Architecture, common frameworks, etc. • Agile tooling, engineering practices, etc.
Planning context and lunch	11:30 – 1:00	• Facilitator explains the planning process
Team breakouts	1:00 – 4:00	• Teams develop draft plans and identify risks and impediments • Architects and Product Managers circulate
Draft plan review	4:00 – 5:00	• Teams present draft plans, risks, and impediments
Management review and problem solving	5:00 – 6:00	• Adjustments made based on challenges, risks, and impediments

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4-44

Simulation: Day 2 agenda

Planning adjustments	8:00 – 9:00	• Planning adjustments made based on previous day's management meeting
Team breakouts	9:00 – 11:00	• Teams develop final plans and refine risks and impediments • Business Owners circulate and assign business value to team objectives
Final plan review and lunch	11:00 – 1:00	• Teams present final plans, risks, and impediments
Program risks	1:00 – 2:00	• Remaining program-level risks are discussed and ROAMed
PI confidence vote	2:00 – 2:15	• Team and program confidence vote
Plan rework if necessary	2:15 – ???	• If necessary, planning continues until commitment is achieved
Planning retrospective and moving forward	After commitment	• Retrospective • Moving forward • Final instructions

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4-45

Simulation: Briefings

Executive

Product Manager

System Architect

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4-46

Simulation: Planning guidance

Expect this first PI Planning to feel a bit chaotic. Future PI Planning meetings will become more routine.

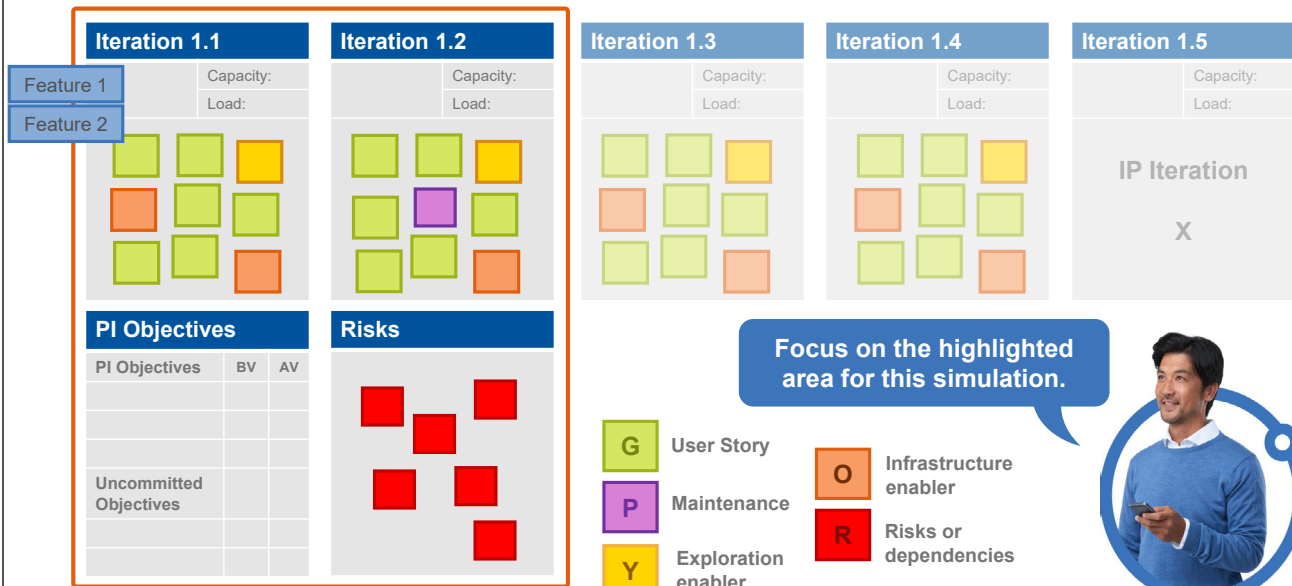**Product Owners:** You have the content authority to make decisions at the user Story level

Scrum Masters: Your responsibility is to manage the timebox, the dependencies, and the ambiguities

Agile Team: Your responsibility is to define user Stories, plan them into the Iteration, and work out interdependencies with other teams
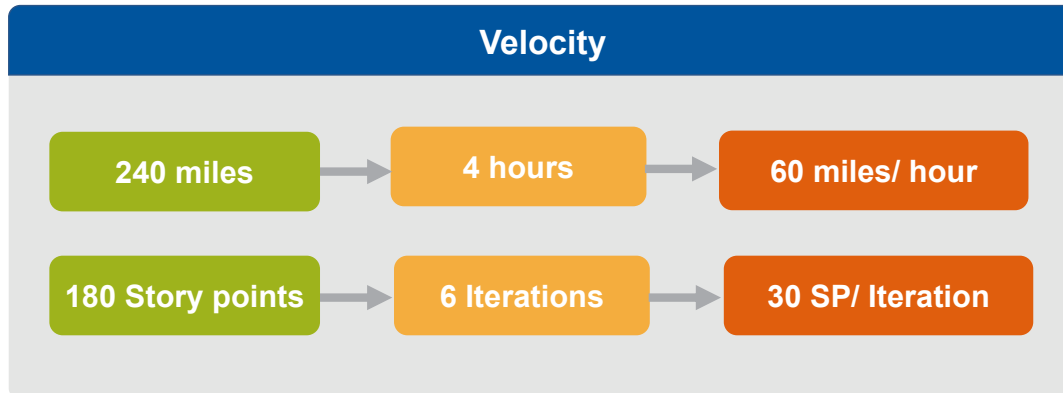
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4-47

Simulation: Planning requirements

Iteration 1.1	Iteration 1.2	Iteration 1.3	Iteration 1.4	Iteration 1.5
Capacity: Load:	Capacity: Load:	Capacity: Load:	Capacity: Load:	Capacity: Load:

Feature 1
Feature 2

IP Iteration

X

PI Objectives

PI Objectives	BV	AV
Uncommitted Objectives		

Risks

Focus on the highlighted area for this simulation.

G User Story

P Maintenance

Y Exploration enabler

O Infrastructure enabler

R Risks or dependencies

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4-48

Simulation: Using historical data to calculate velocity

Velocity

| 240 miles | → | 4 hours | → | 60 miles/ hour |

| 180 Story points | → | 6 Iterations | → | 30 SP/ Iteration |

Establish velocity by looking at the average output of the last Iterations.

4-49

Simulation: Calculate your capacity

Calculating Iteration capacity

► For every full-time Agile Team member contributing to Solution development, give the team 8 points (adjust for part-timers).

► Subtract 1 point for every team member vacation day and holiday.

► Find a small Story that would take about a half day to develop and a half day to test and validate. Call it a 1.

► Estimate every other Story relative to that one.

Example:

A 7-person team composed of 3 developers, 2 testers, 1 Product Owner, and 1 Scrum Master

Exclude the Scrum Master, Product Owner, and vacation time from the calculation

Calculated capacity: 5 x 8 points = 40 points per Iteration

4-50

Activity: Calculate your capacity

► **Step 1:** Review the example on the previous slide

► **Step 2:** Calculate your own capacity for the next two, 2-week Iterations

   — The first Iteration starts Monday

   — Use your real availability

► **Step 3:** Make sure you have your team's capacity calculated

4-51

Activity: Team breakout #1

You will be planning a short Program Increment with two Iterations.

► **Step 1:** Setup the team area. Enter the capacity for each Iteration.

► **Step 2:** Pick up a Feature from the Product Manager.

► **Step 3:** Estimate the Stories using Story points.

► **Step 4:** Load the Stories into the Iterations.

► **Step 5:** Write the PI Objectives using clear statements.

► **Step 6:** Identify the uncommitted objectives.

► **Step 7:** Identify any program risks and dependencies.

4-52

Activity: Scrum of Scrums (SoS)

Duration
5 min

► **Step 1:** Observe the SoS, conducted by the RTE

► **Step 2:** Each team's Scrum Master provides the team's current status and addresses the questions from the RTE

► **Step 3:** The RTE holds a meet-after after the sync (limited to 1 – 2 topics for the simulation)

Scrum of Scrums questions are on the following slide.

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4-53

Activity: Scrum of Scrums (SoS)

Duration
5 Min

SoS Sync Questions	Team 1	Team 2	Team 3	Team 4	Team 5
Have you identified the capacity for each Iteration of the PI?					
Have you identified most of the Stories for the first two Iterations and begun estimating?					
Have you begun resolving dependencies with other teams?					
Are you discussing tradeoffs and conflicting priorities with your Business Owners?					
Have you identified any program risks?					
Will you be ready to start writing PI Objectives in the next 15 minutes?					
Is there anything you need to discuss with other Scrum Masters? If so, stay for the meet-after.					

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4-54

Activity: Draft plan review

► **Step 1:** Present the summary of your team's first two Iterations and one or more draft PI Objectives

► **Step 2:** Make sure that you have included the following:

  — Capacity and load for each Iteration

  — Draft PI Objectives

  — Program risks and impediments

4-55

Management review and problem-solving

At the end of day 1, management meets to make adjustments to scope and objectives based on the day's planning.

Common questions during the managers' review:

- What did we just learn?
- Where do we need to adjust? Vision? Scope? Team assignments?
- Where are the bottlenecks?
- What Features must be de-scoped?
- What decisions must we make between now and tomorrow to address these issues?

4-56

Activities during day 2

Day 1				Day 2	
Business context	8:00–9:00			Planning adjustments	8:00–9:00
Product/Solution Vision	9:00–10:30			Team breakouts	9:00–11:00
Architecture Vision and development practices	10:30–11:30			Final plan review and lunch	11:00 –1:00
Planning context and lunch	11:30–1:00			Program risks	1:00–2:00
Team breakouts	1:00–4:00			PI confidence vote	2:00–2:15
Draft plan review	4:00–5:00			Plan rework if necessary	2:15–???
Management review and problem solving	5:00–6:00			Planning retrospective and moving forward	After commitment

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4-57

Make planning adjustments

► Based on the previous day's management review and problem-solving meeting, adjustments are discussed.

► Possible changes:

— Business priorities

— Adjustment to Vision

— Changes to scope

— Realignment of work and teams

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4-58

Team breakout #2

Based on new knowledge and a good night's sleep, teams work to create their final plans.

► In the second team breakout, Business Owners circulate and assign business value to PI Objectives from low (1) to high (10)

► Teams finalize the Program Increment plan

► Teams also consolidate program risks, impediments, and dependencies

► Uncommitted objectives provide the capacity and guard band needed to increase the reliability of cadence-based delivery

Objectives for PI 1	BV	AV
1. Show routing calculations between the 5 most frequent destinations	10	
2. Navigate autonomously from distribution center to the most frequent destination	8	
3. Parallel park for a delivery	7	
4. Return to the distribution center after delivery	10	
5. Include traffic data in route planning	7	
6. Recall a delivery that is already in progress	7	
Uncommitted Objectives		
7. Spike: Reduce GPS signal loss by 25%	2	
8. Demonstrate real-time rerouting to avoid delays (e.g., accident, construction)	5	

4-59

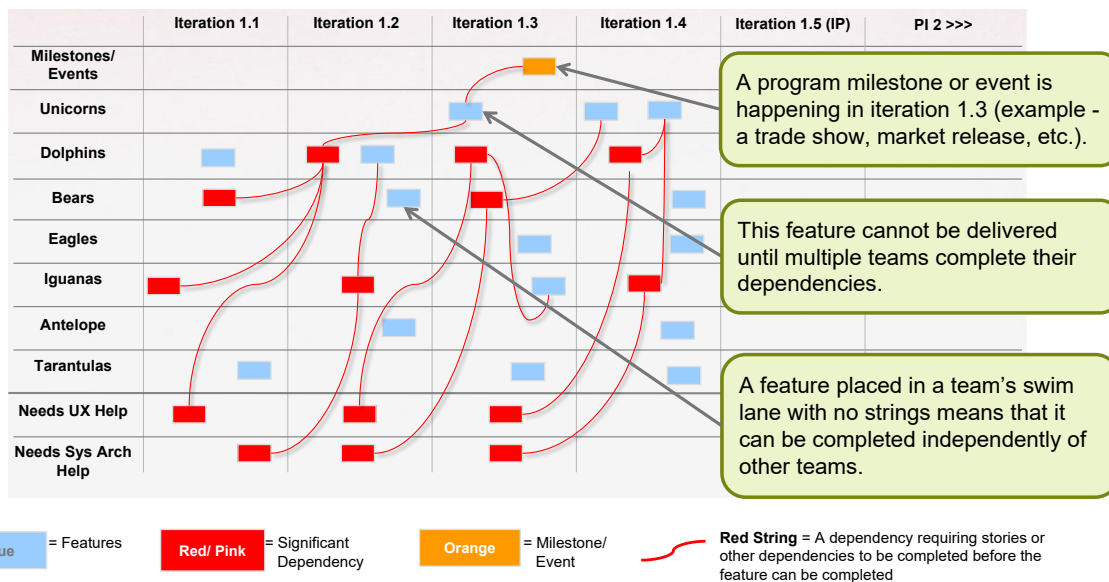
Activity: Setting business value

Duration 7 min

The instructor will demonstrate assigning business value for one team's objectives.

► **Step 1:** Bring the Business Owners to one team's draft plans

► **Step 2:** The Business Owners will set value on a scale of 1 – 10 for each identified objective

► **Step 3:** Observe the discussion that would take place, illustrating the larger purposes and thought processes around assigning business value

Objectives for PI 1	BV	AV
1. Show routing calculations between the 5 most frequent destinations	10	
2. Navigate autonomously from distribution center to the most frequent destination	8	
3. Parallel park for a delivery	7	
4. Return to the distribution center after delivery	10	
5. Include traffic data in route planning	7	
6. Recall a delivery that is already in progress	7	
Uncommitted Objectives		
7. Spike: Reduce GPS signal loss by 25%	2	
8. Demonstrate real-time rerouting to avoid delays (e.g., accident, construction)	5	

4-60

Program Board: Feature delivery, dependencies, and Milestones

A program milestone or event is happening in iteration 1.3 (example - a trade show, market release, etc.).

This feature cannot be delivered until multiple teams complete their dependencies.

A feature placed in a team's swim lane with no strings means that it can be completed independently of other teams.

Blue = Features	
Red/ Pink = Significant Dependency	
Orange = Milestone/ Event	
Red String = A dependency requiring stories or other dependencies to be completed before the feature can be completed	

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4-61

Final plan review

Teams and Business Owners peer-review all final plans.

Final plan review agenda

1. Changes to capacity and load

2. Final PI Objectives with business value

3. Program risks and impediments

4. Q&A session
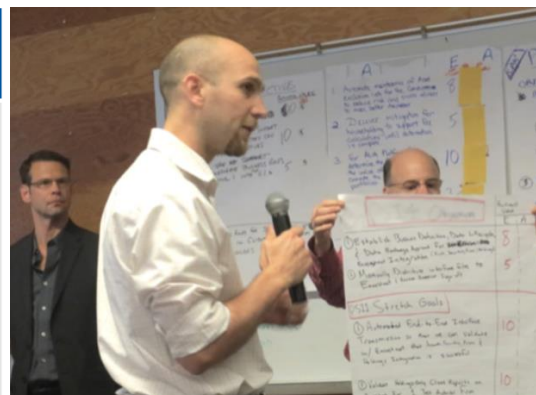
SCALED AGILE © Scaled Agile, Inc.

4-62

Building the final plan

▶ Final plans are reviewed by all teams

▶ Business Owners are asked whether they accept the plan

▶ If so, the plan is accepted

▶ If not, the plans stay in place, and the team continues planning after the review
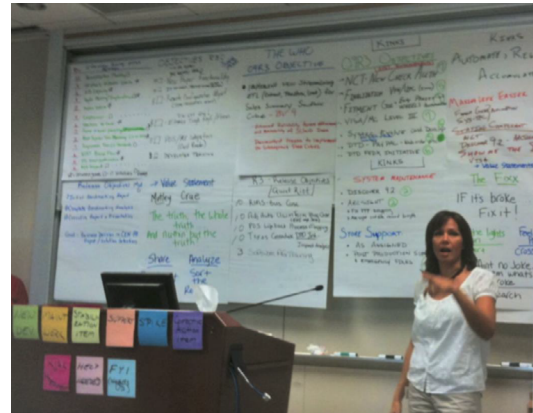
A team presenting their final plan

Used with permission of Discount Tire Corporation

4-63

Addressing program risks

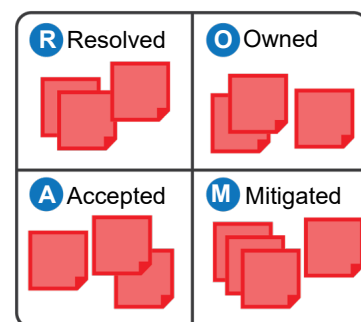After all plans have been presented, remaining program risks and impediments are discussed and categorized.

ROAMing risks:

Resolved - Has been addressed. No longer a concern.

Owned - Someone has taken responsibility.

Accepted - Nothing more can be done. If risk occurs, release may be compromised.

**Mitigated -** Team has plan to adjust as necessary.

4-64

Activity: Manage program risks

The instructor will demonstrate **ROAM**ing one to two risks for one team.

► **Step 1:** Pick one to two risk examples.

► **Step 2:** Read them in front of all teams and stakeholders.

► **Step 3:** Ask if anyone can own, help mitigate, or resolve the risks. Otherwise, accept as is.

► **Step 4:** Put each risk into a corresponding quadrant of the ROAM sheet for the program.

R Resolved   **O** Owned

A Accepted   **M** Mitigated
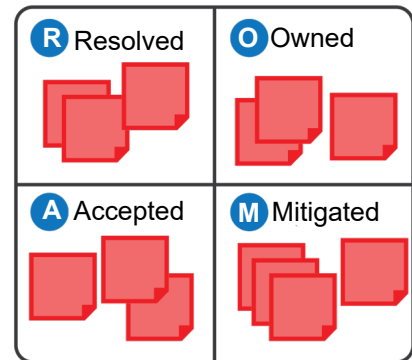
Confidence vote: Team and program

Once program risks have been addressed, a confidence vote is taken by the team and program.

A commitment with two parts:

1. Teams agree to do everything in their power to meet the agreed-to objectives

2. In the event that fact patterns dictate that it is simply not achievable, teams agree to escalate immediately so that corrective action can be taken

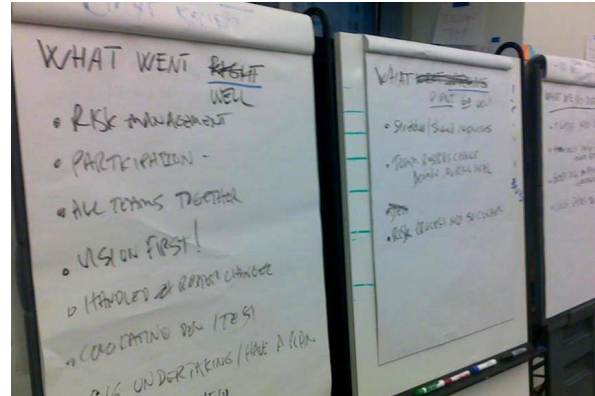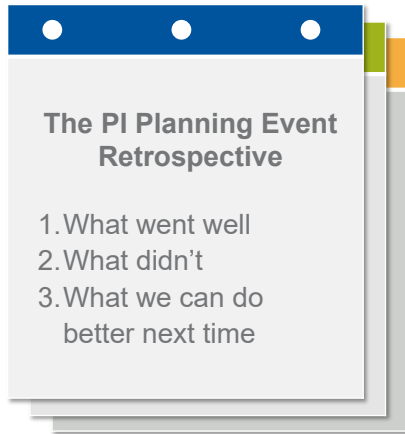**No confidence**   **Little confidence**   **Good confidence**   **High confidence**   **Very high confidence**
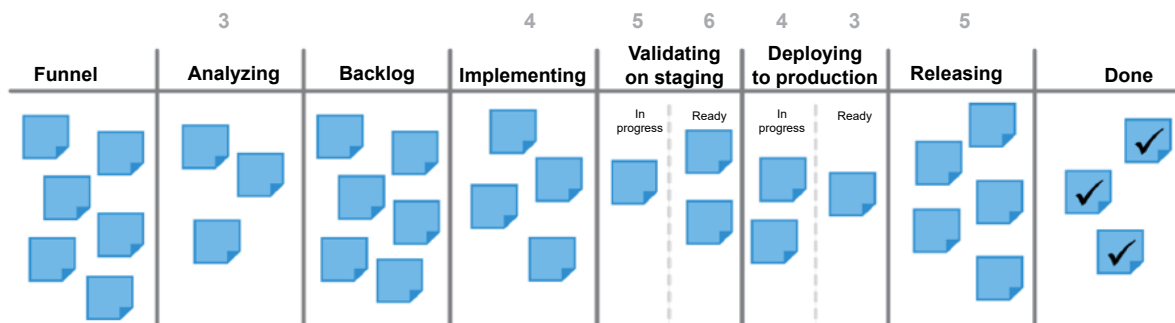
Run a planning meeting retrospective

The PI planning event will evolve over time. Ending with a retrospective will help continuously improve it.

The PI Planning Event Retrospective

1. What went well
2. What didn't
3. What we can do better next time

4-67

4.4 Develop on Cadence; Release on Demand

4-68

Manage the flow of work with the Program Kanban

	3		4	5	6	4	3	5	
Funnel	Analyzing	Backlog	Implementing	**Validating on staging**		**Deploying to production**		Releasing	Done
				In progress	Ready	In progress	Ready		

4-69

ART events drive the train

ART events create a closed-loop system to keep the train on the tracks.

ART Sync

ART events
Team events

Scrum of Scrums   PO Sync

PI Planning

Daily Stand-up

Iteration Planning

Iteration Review

System Demo

Iteration Retro

Backlog Refinement

Inspect & Adapt

Prepare for PI Planning
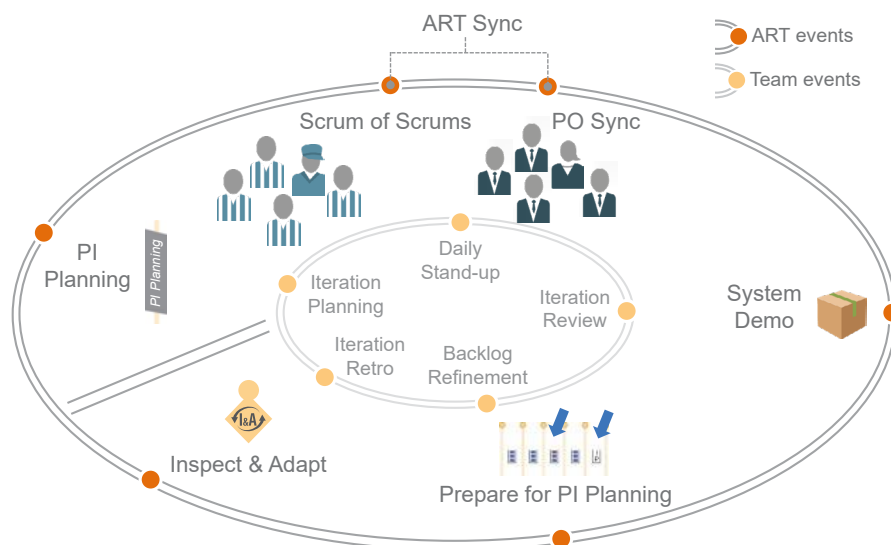
4-70

ART sync is used to coordinate progress

ART Sync

Scrum of scrums

▸ Visibility into progress and impediments

▸ Facilitated by RTE

▸ Participants: Scrum Masters, other select team members, SMEs if necessary

▸ Weekly or more frequently, 30–60 minutes

▸ Timeboxed and followed by a meet-after

PO Sync

▸ Visibility into progress, scope, and priority adjustments

▸ Facilitated by RTE or PM

▸ Participants: PM, POs, other stakeholders, and SMEs as necessary

▸ Weekly or more frequently, 30–60 minutes

▸ Timeboxed and followed by a meet-after

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Demo the full system increment every two weeks

▸ Features are functionally complete or toggled so as not to disrupt demonstrable functionality

▸ New Features work together and with existing functionality

▸ Happens after the Iteration review (may lag by as much as one Iteration maximum)

▸ Demo from a staging environment which resembles production as much as possible

INTEGRATE

Full system

SUPPORT

System team

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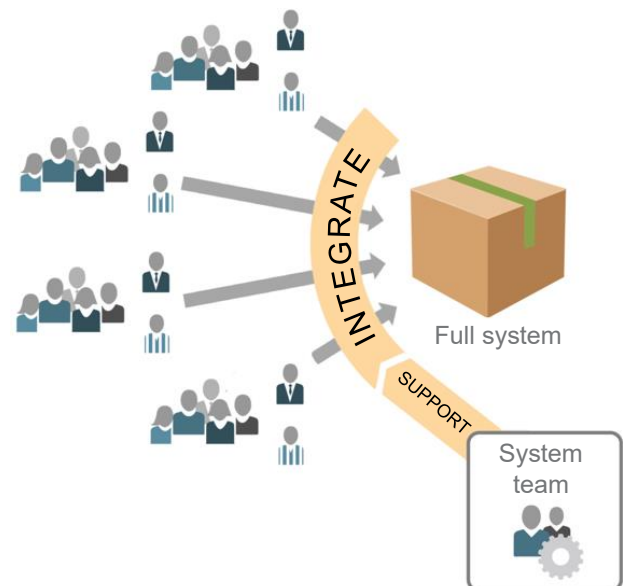
Innovation and Planning (IP) Iteration

Provide sufficient capacity margin to enable cadence. —Donald G. Reinertsen

Facilitate reliability, Program Increment readiness, planning, and innovation

► **Innovation:** Opportunity for innovation, hackathons, and infrastructure improvements

► **Planning:** Provides for cadence-based planning

► Estimating **guard band** for cadence-based delivery

4-73

Example IP Iteration calendar

Monday	Tuesday	Wednesday	Thursday	Friday
1	2	3	4	5
Buffer for leftover work				
Final verification and validation, and documentation (if releasing)				
Innovation				
PI planning readiness				
8	9	10	11	12
	Continuing education	PI planning		Optional time for distributed planning
		Business context	Planning adjustments	
		Product / solution vision	Team breakouts	
		Architecture vision and development practices	Final plan review and lunch	
Innovation continues	Inspect & Adapt Event	Planning requirements and lunch	Program risks	
		Team breakouts	PI confidence vote	
		Draft plan review	Plan rework if necessary	
PI planning readiness		Management review and problem-solving	Planning retrospective and moving forward	

4-74

Without the IP Iteration...

► Lack of delivery capacity buffer impacts predictability

► Little innovation; tyranny of the urgent

► Technical debt grows uncontrollably

► People burn out

► No time for teams to plan, demo, or improve together

**!
TROUBLE
AHEAD**

4-75

Improving results with the Inspect and Adapt event

Three parts of Inspect and Adapt:

1.   The PI System Demo

2.   Quantitative and Qualitative Measurement

3.   Problem-Solving Workshop

► **Timebox:** 3 – 4 hours per PI

► **Attendees:** Teams and stakeholders

4-76
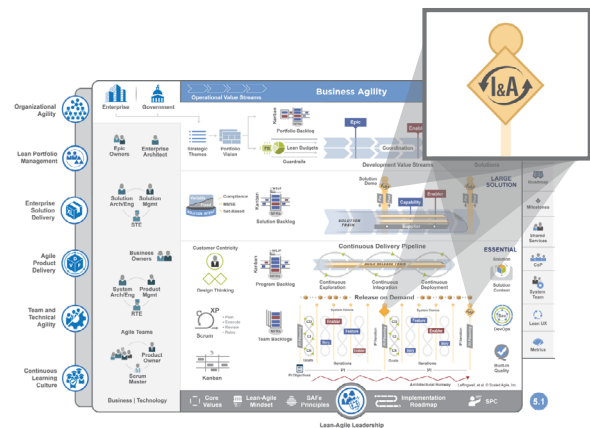
PI System Demo

At the end of the PI, teams demonstrate the current state of the Solution to the appropriate stakeholders.

► Often led by Product Management, POs, and the System Team

► Attended by Business Owners, ART stakeholders, Product Management, RTE, Scrum Masters, and teams

4-77

Program performance reporting

Prior to or as part of the PI System Demo, teams review the business value achieved for each of their PI Objectives.

► Teams meet with their Business Owners to self-assess the business value they achieved for each objective

► Each team's planned vs actual business value is then rolled up to the program predictability measure.

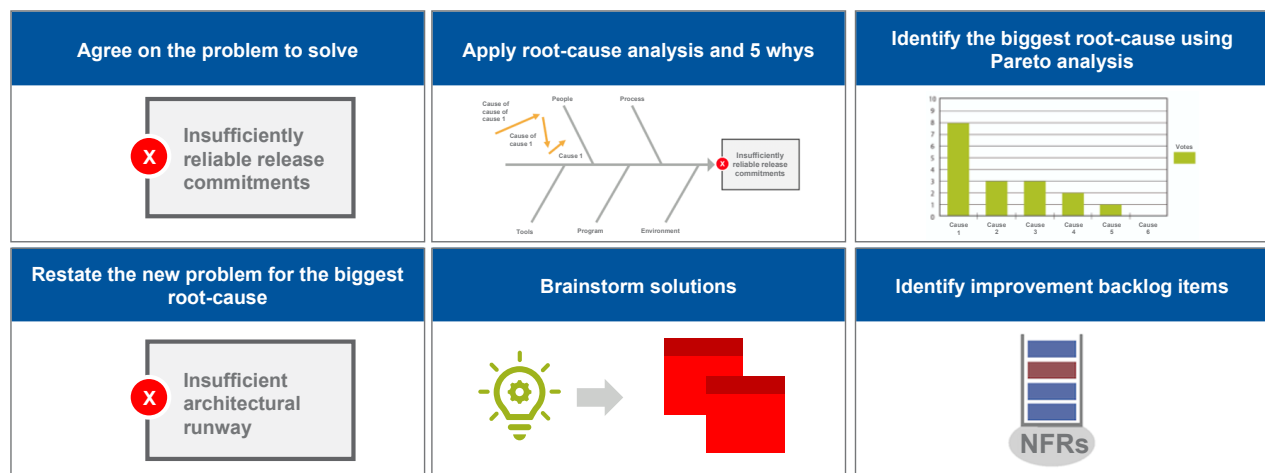| Objectives for PI 3	Business Value	
	Plan	Actual
Structured locations and validation of locations	7	7
Build and demonstrate a proof of concept for context images	8	8
Implement negative triangulation by: tags, companies and people	8	6
Speed up indexing by 50%	10	5
Index 1.2 billion more web pages	10	8
Extract and build URL abstracts	7	7
Uncommitted Objectives		
Fuzzy search by full name	7	0
Improve tag quality to 80% relevance	4	4
Totals	50	45
% Achievement: 90%		

4-78

Measure ART Predictability

The report compares actual business value achieved to planned business value.

Program Predictability Measure

- Target: Effective process control range
- Predictability sufficient to run the business
- Handles common variations
- Special causes may still cause excess variation

- - - - **Team A:** Out-of-control development
- - - - **Team B:** Controlled development
———— **Program (ART)**

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The Problem-Solving Workshop

Agree on the problem to solve	Apply root-cause analysis and 5 whys	Identify the biggest root-cause using Pareto analysis
Insufficiently reliable release commitments		

Restate the new problem for the biggest root-cause	Brainstorm solutions	Identify improvement backlog items
Insufficient architectural runway		NFRs

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4.5 Building a Continuous Delivery Pipeline with DevOps

Activity: DevOps myth or fact

▶ **Step 1:** Take the myth or fact quiz in your workbook

▶ **Step 2:** Check your results with the answer key at the bottom of the page that follows the quiz

Instructions: Take this myth or fact quiz individually. Check your results with the answer key at the bottom of the page that follows the quiz.

	Myth	Fact
1. DevOps is just about automation	○	○
2. DevOps is a cultural change	○	○
3. You don't need Lean-Agile to have a successful DevOps implementation	○	○
4. Agile is for development not operations	○	○
5. The deployment pipeline is used to deploy environments as well as solutions	○	○
6. DevOps tries to bridge the gap between new Features and stable solutions	○	○
7. Measurements are an important part of DevOps	○	○
8. Automation of testing reduces the holding cost	○	○
9. DevOps is only for small software companies	○	○
10. Chaos monkey was developed by Netflix	○	○

Notes

Video: What is DevOps?

Duration 2 min

https://bit.ly/Video-WhatisDevOps

4-83

Maximize speed *and* stability

Optimized for development speed

Optimized for stability

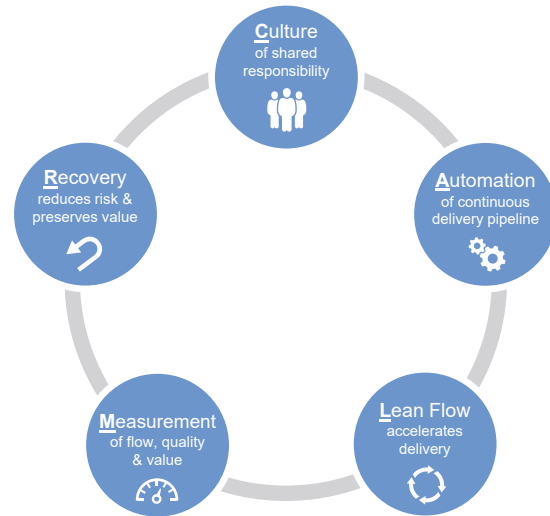**Working together for speed and stability**

Operations
Compliance
Development
Architecture
Security
Business
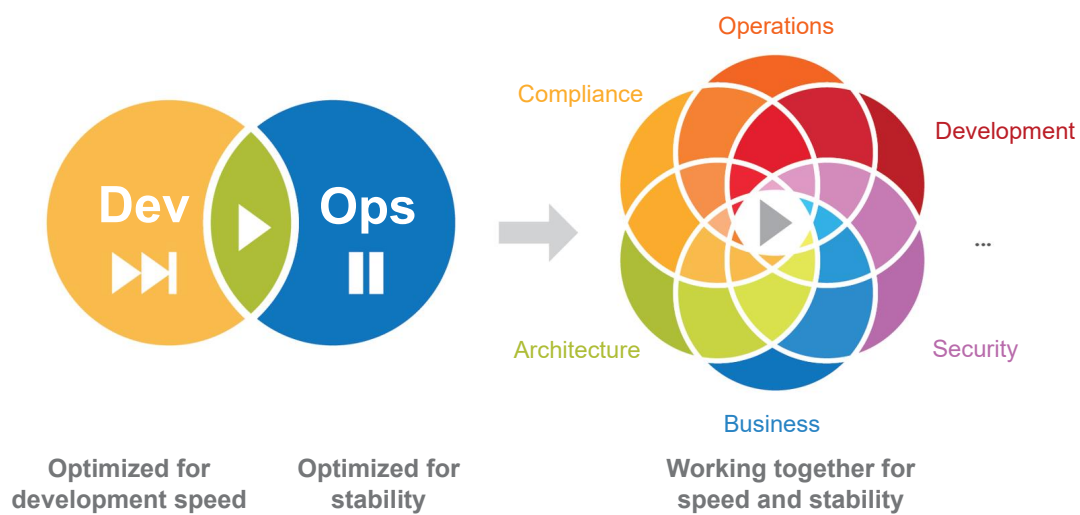
4-84

A CALMR approach to DevOps

► **C**ulture - Establish a culture of shared responsibility for development, deployment, and operations.

► **A**utomation - Automate the Continuous Delivery Pipeline.

► **L**ean flow - Keep batch sizes small, limit WIP, and provide extreme visibility.

► **M**easurement - Measure the flow through the pipeline. Implement full-stack telemetry.

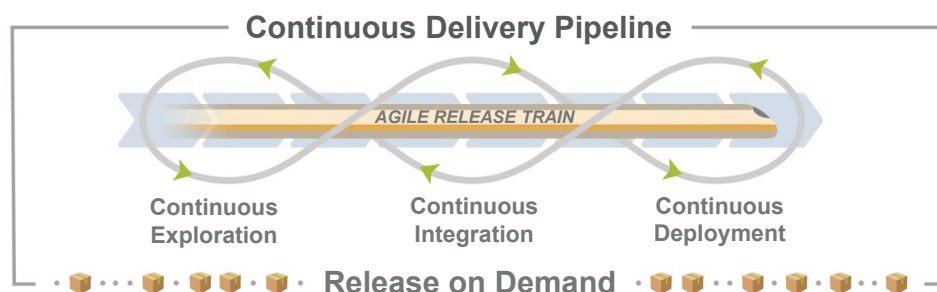► **R**ecovery - Architect and enable low-risk releases. Establish fast recovery, fast reversion, and fast fix-forward.

Culture of shared responsibility

Automation of continuous delivery pipeline

Lean Flow accelerates delivery

Measurement of flow, quality & value

Recovery reduces risk & preserves value

4-85

Building the Continuous Delivery Pipeline with DevOps

► The Continuous Delivery Pipeline (CDP) represents the workflows, activities, and automation needed to deliver new functionality more frequently.

► Each Agile Release Train builds and maintains, or shares, a pipeline.

► Organizations map their current pipeline into this new structure and remove delays and improve the efficiency of each step.
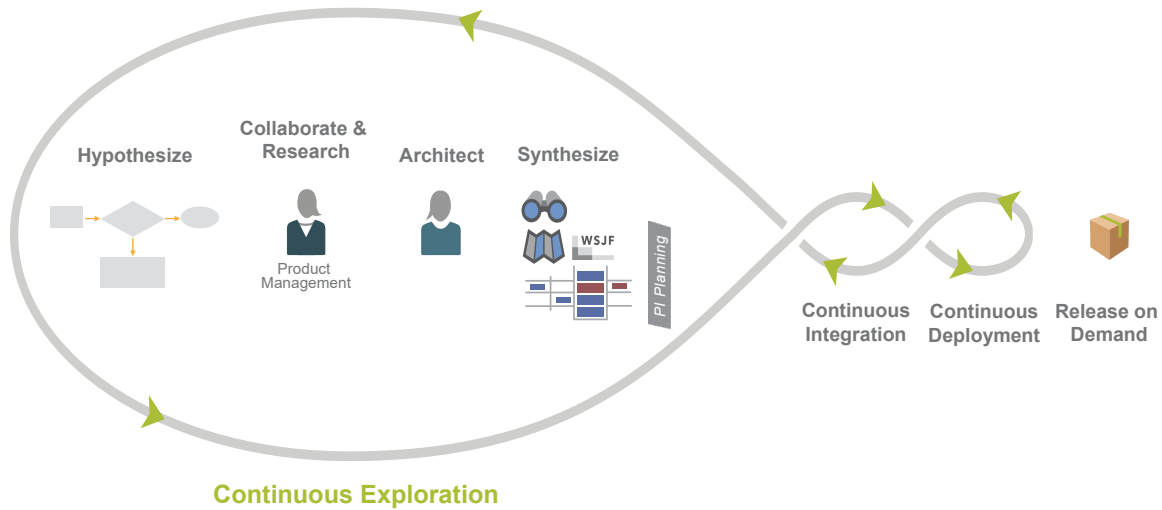
Continuous Delivery Pipeline

AGILE RELEASE TRAIN

Continuous Exploration   **Continuous Integration**   **Continuous Deployment**

Release on Demand

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4-86

Continuous Exploration – Understand Customer needs

Hypothesize   **Collaborate & Research**   **Architect**   **Synthesize**

Product Management

WSJF

PI Planning

Continuous Integration   **Continuous Deployment**   **Release on Demand**

Continuous Exploration

4-87

Continuous Integration – A critical technical practice of the ART

Develop   **Build**   **Test End-to-End**   **Stage**

Build

Test

Live   Idle

Deploy

Idle   Live

Continuous Exploration

Continuous Deployment   **Release on Demand**

Continuous Integration
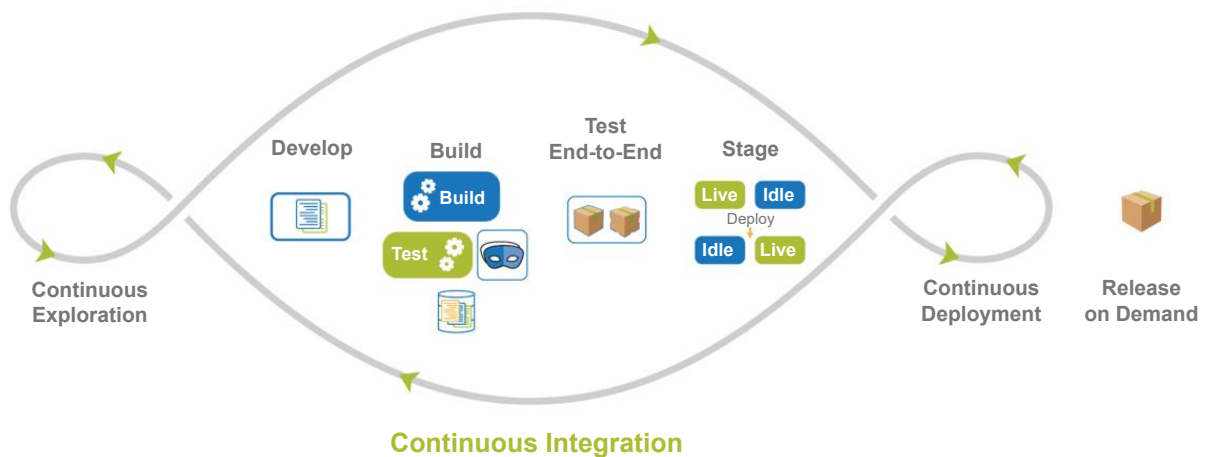
4-88

Continuous Deployment – Getting to production early

Continuous Exploration   Continuous Integration

Deploy   Verify   Monitor   Respond

Release on Demand

Continuous Deployment
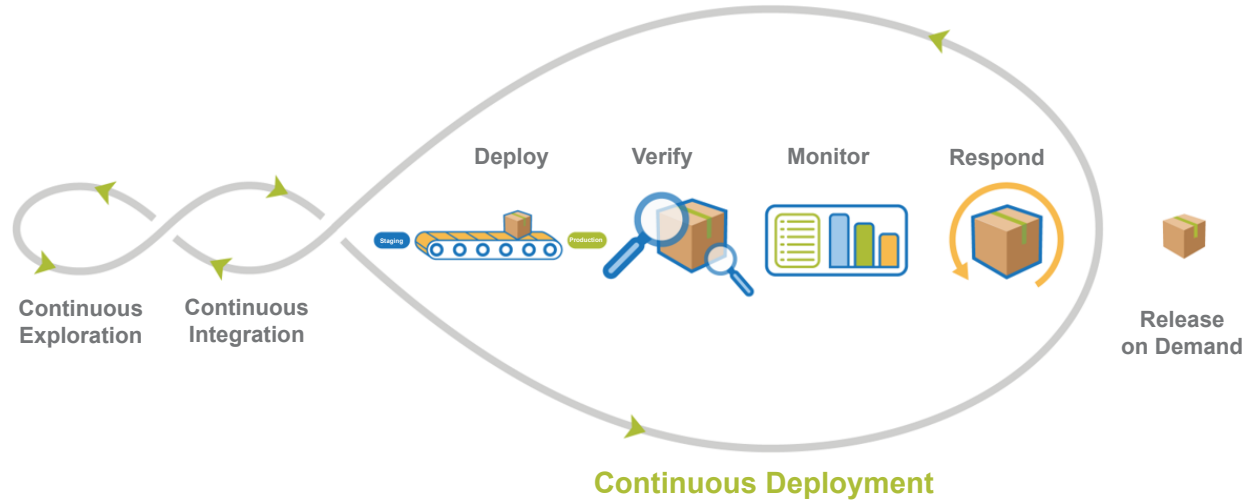
4-89

Decouple release elements from the total Solution

Solution   Value 'streamlets'

Streamlet 1
Streamlet 2
Streamlet 3
Streamlet 4

End-user functionality (released every 2 weeks)

Security updates (released on demand)

Back-office functionality (released every month)

Entire Solution (major release every quarter)
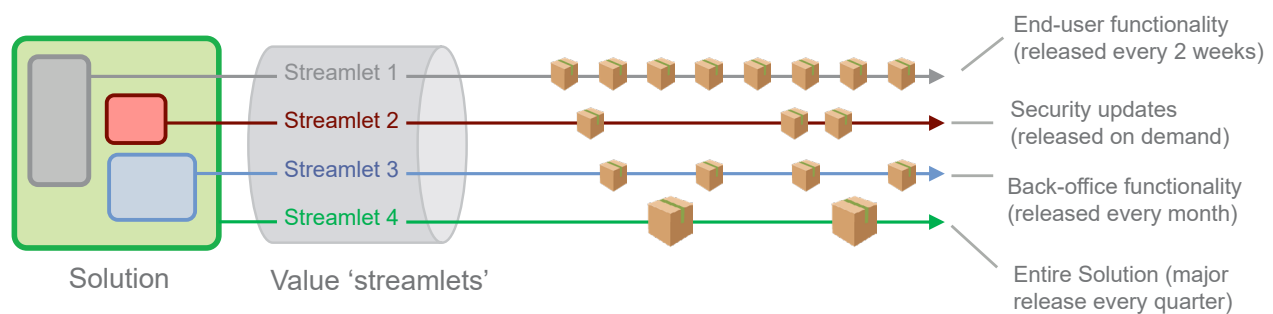
4-90

Separate deploy from release

- ▶ Separate deploy to production from release

- ▶ Hide all new functionality under feature toggles

- ▶ Enables testing background and foreground processes in the actual production environment before exposing new functionality to users

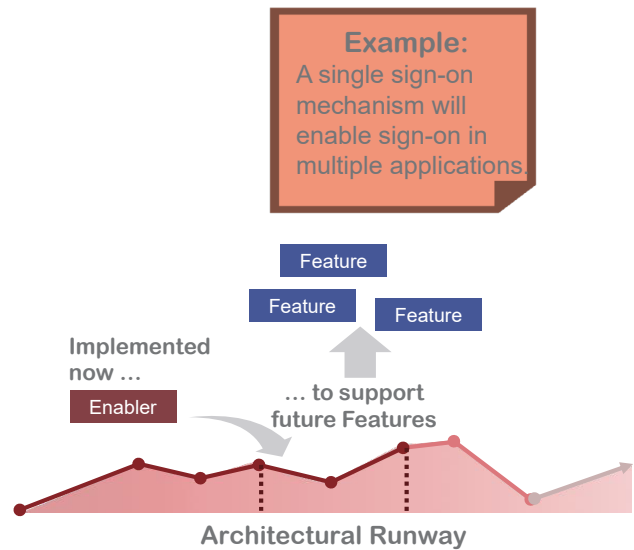- ▶ Timing of the release becomes a business decision

Deploy

Release

Feature / Feature / Feature / Feature

4-91
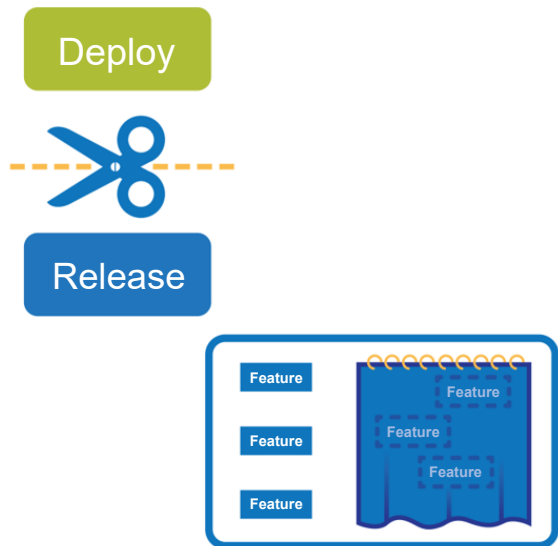
Release on Demand – Making value available when it's needed

Continuous Exploration Continuous Integration Continuous Deployment

Release Stabilize and Operate Measure Learn

Release on Demand

4-92
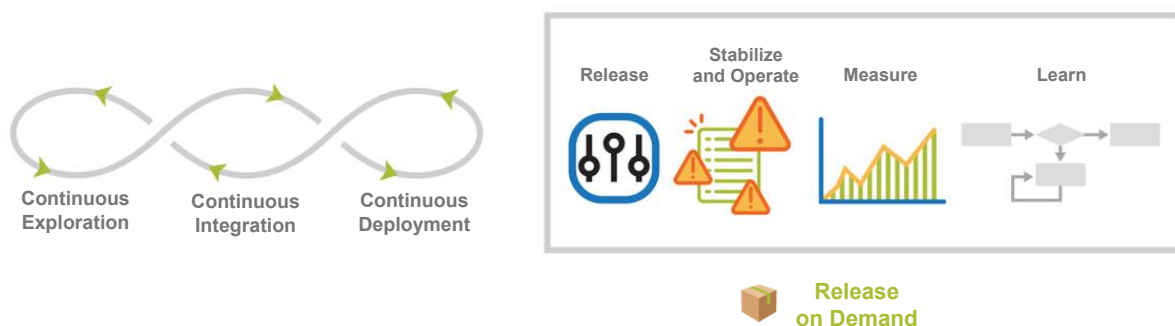
Architect for releasability

Architectural Runway is existing code, hardware components, marketing branding guidelines, etc., that enable near-term business Features.

▶ Enablers build up the runway

▶ Features consume it

▶ Architectural Runway must be continuously maintained

▶ Use capacity allocation (a percentage of train's overall capacity in a PI) for Enablers that extend the runway

Example:
A single sign-on mechanism will enable sign-on in multiple applications.

Feature

Feature   Feature

Implemented now …

Enabler   **… to support future Features**

Architectural Runway

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Action Plan: Improving Agile Product Delivery

Prepare Share
5 min   3 min

▶ **Step 1:** Consider the practices and the events that support Agile Product Delivery as discussed earlier

▶ **Step 2:** Identify three minimum viable improvements you could execute to improve Agile Product Delivery. Write them down in your Action Plan

▶ **Step 3:** Share your insights with the class

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Improving Agile
Product Delivery

Lesson review

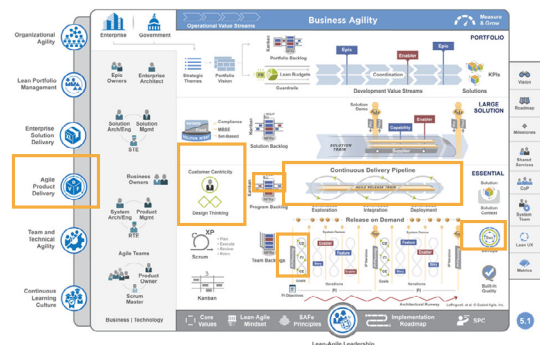In this lesson you:

► Identified the benefits of Customer Centricity

► Practiced Design Thinking

► Experienced Program Backlog prioritization with WSJF

► Participated in a PI Planning simulation

► Explored how to Develop on Cadence and Release on Demand

► Discussed how to build a Continuous Delivery Pipeline with DevOps

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Articles used in this lesson

Read these Framework articles to learn more about topics covered in this lesson

► Agile Product Delivery
  https://v5.scaledagileframework.com/agile-product-delivery/
► Customer Centricity
  https://v5.scaledagileframework.com/customer-centricity/
► Design Thinking
  https://v5.scaledagileframework.com/design-thinking/
► WSJF
  https://v5.scaledagileframework.com/wsjf/
► PI Planning
  https://v5.scaledagileframework.com/pi-planning/
► DevOps
  https://v5.scaledagileframework.com/devops/
► Continuous Delivery Pipeline
  https://v5.scaledagileframework.com/continuous-delivery-pipeline/

Continue your SAFe journey with the following resources

Apply the *Empathy Map* Collaborate template to inform Solution development: https://bit.ly/Template-EmpathyMap	Write *SMART PI Objectives* with the following guide: https://bit.ly/Community-SMARTObjectivesPDF
Review the five-minute *WSJF Overview* and the five-minute *Calculating WSJF* videos in preparation for a prioritization workshop: https://bit.ly/Video-WSJFOverview https://bit.ly/Video-CalculatingWSJF	Use the *PI Planning* Collaborate templates to run a successful remote PI Planning Event: https://bit.ly/Community-PIPlanning
Facilitate effective *ART Events* using the following tools and guidance: https://bit.ly/Community-SAFeARTandTeamEvents	Run an *Agile Product Delivery Assessment* to identify improvement opportunities: https://bit.ly/Community-MeasureAndGrow

4-97

Lesson notes

Enter your notes below. If using a digital workbook, save your PDF often so you don't lose any of your notes.

Lesson 5

Exploring Lean Portfolio Management

SAFe® Course - Attending this course gives students access to the SAFe® Agilist exam and related preparation materials.

SA
SAFe® 5

SCALED AGILE®

5-1

Why Lean Portfolio Management?

Traditional approaches to portfolio management were not designed for a global economy or the impact of digital disruption. These factors put pressure on enterprises to work under a higher degree of uncertainty and yet deliver innovative Solutions much faster.

STRATEGY
PLANNING
EXECUTION
PROFITS
GROWTH
SUCCESS

5-2

Lesson Topics

5.1 Defining a SAFe Portfolio

5.2 Connecting the portfolio to the Enterprise strategy

5.3 Maintaining the Portfolio Vision

5.4 Realizing the Portfolio Vision through Epics

5.5 Establishing Lean Budgets and Guardrails

5.6 Establishing portfolio flow
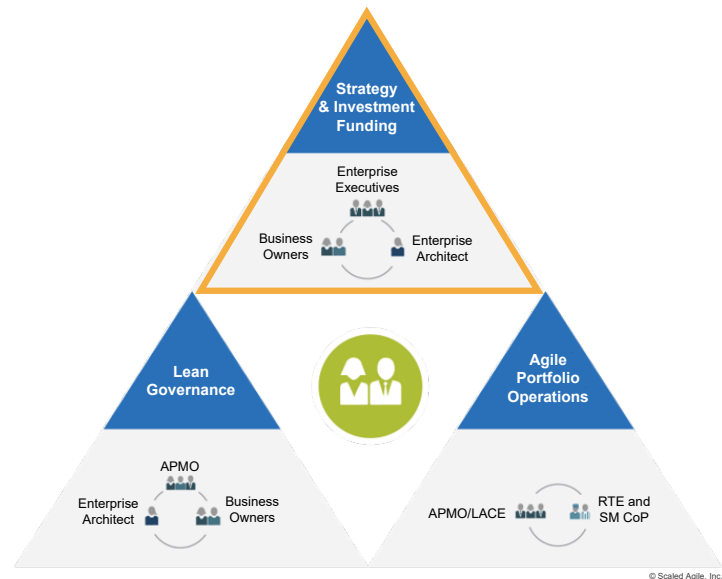
5-3

Learning objectives

At the end of this lesson, you should be able to:

► Describe the purpose and elements of a SAFe portfolio

► Construct well-written strategic themes

► Employ the portfolio canvas to describe the current and future state

► Create Epic hypothesis statements to inform the Vision

► Distinguish traditional and Lean budgeting approaches

► Construct a Portfolio Kanban

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5-4

The role of Lean Portfolio Management (LPM)

*"Most strategy dialogues end up with executives talking at cross-purposes because… nobody knows exactly what is meant by **vision** and **strategy**, and no two people ever quite agree on which topics belong where.*

That is why, when you ask members of an executive team to describe and explain the corporate strategy, you frequently get wildly different answers. We just don't have a good business discipline for converging on issues this abstract.

—Geoffrey Moore, Escape Velocity

5-5

5.1 Defining a SAFe portfolio

5-6

What is a SAFe portfolio?

A SAFe portfolio is a collection of *development* Value Streams.

► Each Value Stream builds, supports, and maintains Solutions

► Solutions are delivered to the Customer, whether internal or external to the Enterprise
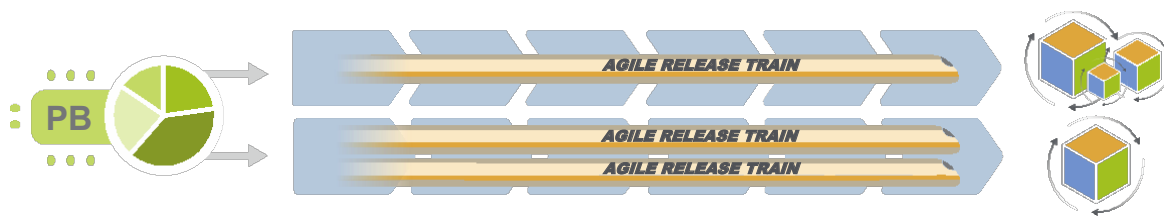
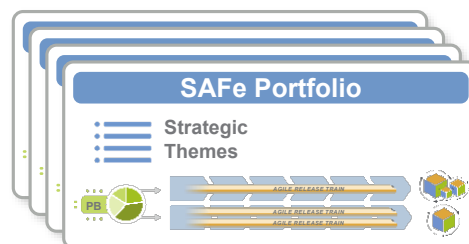## An Enterprise may have a single portfolio or multiple portfolios

Small Enterprise → **Single Portfolios**

Large Enterprise → **Multiple Portfolios**

Define the portfolio with the portfolio canvas

► The portfolio canvas is a template for identifying a specific SAFe portfolio

► It defines the domain of the portfolio and other key elements

Portfolio Canvas

Portfolio Name: Date: Version:

Value Propositions

Value Streams	Solutions	Customers	Channels	Customer Relationships	Budget	KPIs / Revenue

Key Partners   Key Activities   Key Resources

Cost Structure   Revenue Streams

The Portfolio Canvas is adapted from The Business Model Canvas (http://www.businessmodelgeneration.com).
This work is licensed under the Creative Commons Attribution-Share Alike 3.0 Unported License
To view a copy of this license visit: http://creativecommons.org/licensed/by-sa/3.0.

5-9

Map Solutions by horizon

Horizon 3 — Evaluating
Horizon 2 — Emerging
Horizon 1 — Investing / Extracting
Horizon 0 — Retiring
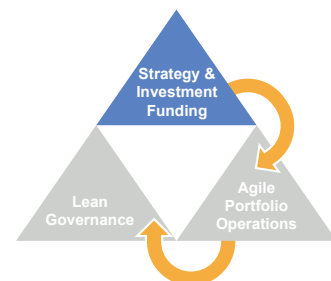
Decommission

Decommission

STOP

5-10
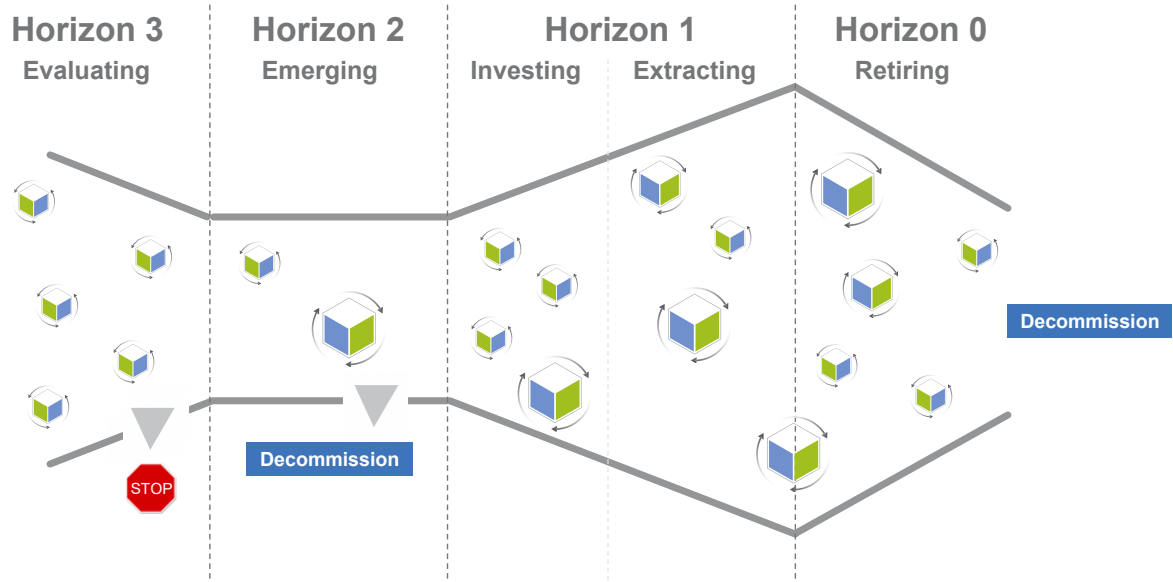
5.2 Connecting the portfolio to Enterprise strategy

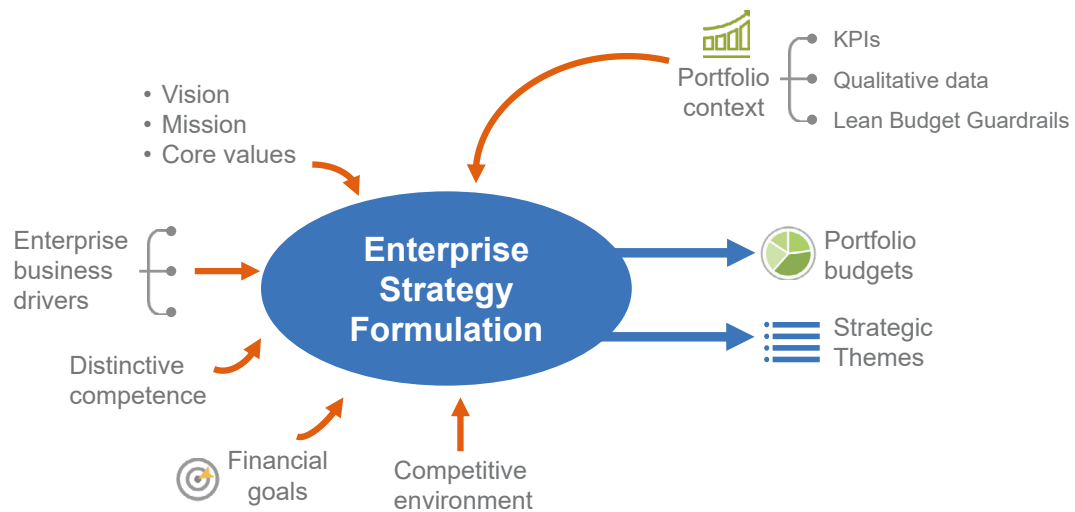## Strategy and investment funding: Collaboration and responsibilities

Strategy and investment funding ensures that the entire portfolio is aligned and funded to create and maintain the Solutions needed to meet business targets.

Enterprise Executives

Business Owners

Enterprise Architect
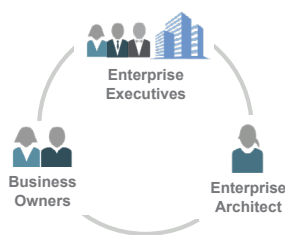
- Connect the portfolio to Enterprise strategy
- Maintain a Portfolio Vision
- Realize Portfolio Vision through Epics
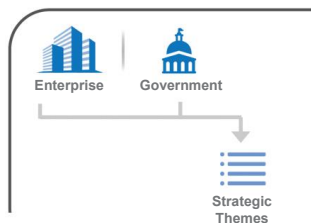- Establish Lean Budgets and Guardrails
- Establish portfolio flow

Strategy & Investment Funding

Lean Governance

Agile Portfolio Operations

Elements of Enterprise strategy formulation

- Vision
- Mission
- Core values

Enterprise business drivers

Distinctive competence

Financial goals

Competitive environment

Enterprise Strategy Formulation

Portfolio context
- KPIs
- Qualitative data
- Lean Budget Guardrails

Portfolio budgets

Strategic Themes

5-13

Connect the portfolio to the Enterprise with Strategic Themes

Enterprise   Government

Strategic Themes

Strategic Themes are differentiating business objectives that:

► Are a collaboration between LPM and the larger Enterprise

► Drive the future state of a portfolio

► Connect the Portfolio to the Enterprise strategy

► Provide context for the Portfolio Vision and Lean budgeting

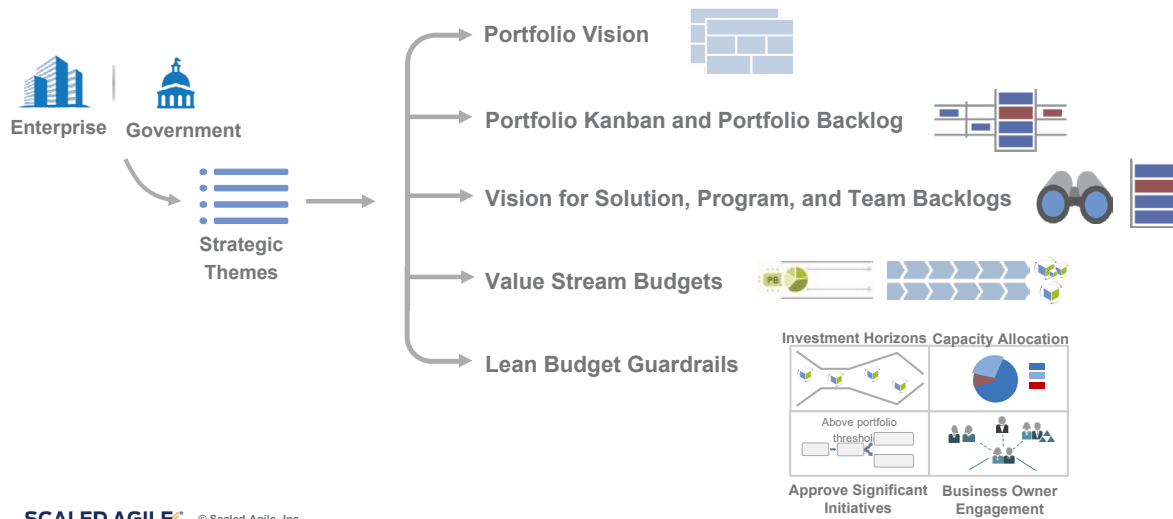| Good examples of Strategic Themes	Bad examples of Strategic Themes
Expand autonomous delivery into retail	Increase shareholder wealth
Expand autonomous delivery into healthcare	Maximize corporate wealth

5-14

Influence of Strategic Themes

Strategic Themes influence portfolio strategy and provide business context for portfolio decision-making.

Enterprise   **Government**

Strategic Themes

- **Portfolio Vision**
- **Portfolio Kanban and Portfolio Backlog**
- **Vision for Solution, Program, and Team Backlogs**
- **Value Stream Budgets**
- **Lean Budget Guardrails**

Investment Horizons   Capacity Allocation

Above portfolio threshol

Approve Significant Initiatives   Business Owner Engagement

5-15

Activity: Identify Strategic Themes

Prepare 5 min   **Share** 3 min

▶ **Step 1:** Identify three Strategic Themes that help define the strategy of your portfolio in the upcoming year

▶ **Step 2:** Discuss:

  — Are these *differentiators* for your business or business as usual?

▶ **Step 3:** Be prepared to share with the class

5-16

Strategic Theme #1

Strategic Theme #2

Strategic Theme #3

5.3 Maintaining the Portfolio Vision

5-17

Identify opportunities for the portfolio's future state with SWOT

► Establishes an understanding of the portfolio's strengths and weaknesses

► Helps identify the most significant opportunities and potential threats

Internal Origin

S Strengths

W Weaknesses

External Origin

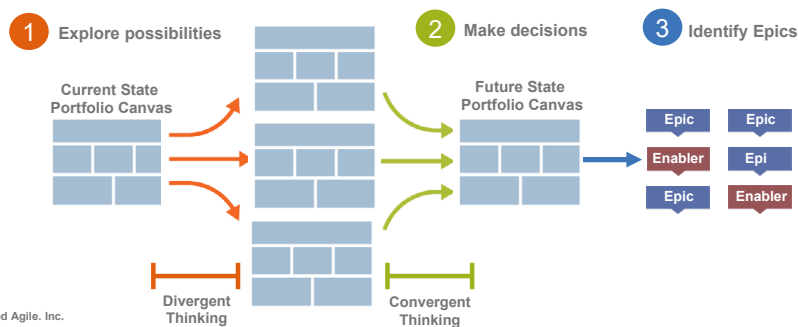**O** Opportunities

T Threats

5-18

TOWS strategic options matrix

- ► The key difference between the SWOT and TOWS analyses are the outcomes that they create

- ► TOWS analysis is used primarily for identifying strategic options to create a better future state

- ► SWOT analysis is a great way to uncover the current situation of your Value Stream, product, or portfolio

		External Opportunities (O)	External Threats (T)
		1.	1.
		2.	2.
		3.	3.
		4.	4.

Internal Strength (S)	SO	ST
1.	How can your strengths be used to exploit and maximize opportunities?	How can you apply your strengths to overcome present and potential threats?
2.		
3.		
4.		

Internal Weaknesses (W)	WO	WT
1.	How can your opportunities be leveraged to overcome weaknesses?	How can you minimize weaknesses and avoid threats?
2.		
3.		
4.		

5-19

Envision the future state

- ► The portfolio canvas captures the current state

- ► Use SWOT and TOWS to brainstorm potential future states

- ► Evaluate your options and select a future state

- ► Identify the Epics that will get you to this future state

1. Explore possibilities — Current State Portfolio Canvas — Divergent Thinking
2. Make decisions — Future State Portfolio Canvas — Convergent Thinking
3. Identify Epics — Epic, Epic, Enabler, Epi, Epic, Enabler

5-20

Express the future state as a Vision

A long view:

► How will our portfolio of future solutions solve the larger customer problems?

► How will these solutions differentiate us?

► What is the future context within which our solutions will operate?

► What is our current business context, and how must we evolve to meet this future state?

Vision: A postcard from the future

POSTCARD

Having a great time at a dream location...

Wish we were here!

► Aspirational, yet realistic and achievable

► Motivational enough to engage others on the journey

Result: Everyone starts thinking about how to apply their strengths in order to get there.

Switch: How to Change Things When Change is Hard, Heath and Heath, Broadway Books, 2010

5.4 Realizing Portfolio Vision through Epics

What is a portfolio Epic?

► An Epic is a significant Solution development initiative. There are two types:

  – *Business Epics* directly deliver business value

  – *Enabler Epics* support the Architectural Runway and future business functionality

► Portfolio Epics are typically cross-cutting, typically spanning multiple Value Streams and PIs.

► Epics need a Lean business case, the definition of a minimum viable product (MVP), an Epic Owner, and approval by LPM.

5-23
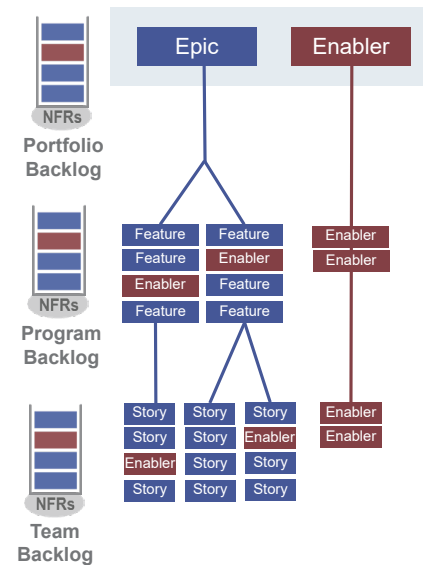
Epics are initially described with the Epic hypothesis statement

Epics are described with four major fields:

► **The value statement** – Describes the Epic in general terms: the "for-who-the …" portion

► **Business outcomes hypothesis** – States the quantitative or qualitative benefits that the business can anticipate if the hypothesis is proven to be correct

► **Leading indicators** – Describe the early measures that will help predict the business outcomes

► **Nonfunctional requirements (NFRs)** – Identify any NFRs associated with the Epic

Epic Hypothesis Statement	
Funnel Entry Date:	<The date that the epic entered the funnel.>
Epic Name:	<A short name for the epic.>
Epic Owner:	<The name of the epic owner.>
Epic Description:	<An elevator pitch (value statement) that describes the epic in a clear and concise way.> **For** <customers> **who** <do something> **the** <solution> **is a** <something – the 'how'> **that** <provides this value> **unlike** (competitor, current solution or non-existing solution> **our solution** <does something better – the 'why'>
Business Outcomes:	<The measurable benefits that the business can anticipate if the epic hypothesis is proven to be correct.>
Leading Indicators:	<The early measures that will help predict the business outcome hypothesis. For more on this topic, see the Innovation Accounting advanced topic article.>
Nonfunctional Requirements (NFRs):	<Nonfunctional requirements (NFRs) associated with the epic.>

5-24

Activity: Epic writing

► **Step 1:** In your group, identify an Epic from one of your contexts

► **Step 2:** Write the Epic hypothesis statement

► **Step 3:** Discuss:

    – What could be an MVP to validate this Epic?

Epic Hypothesis Statement	
Funnel Entry Date:	<The date that the epic entered the funnel.>
Epic Name:	<A short name for the epic.>
Epic Owner:	<The name of the epic owner.>
Epic Description:	<An elevator pitch (value statement) that describes the epic in a clear and concise way.> **For** <customers> **who** <do something> **the** <solution> **is a** <something – the 'how'> **that** <provides this value> **unlike** (competitor, current solution or non-existing solution) **our solution** <does something better – the 'why'>
Business Outcomes:	<The measurable benefits that the business can anticipate if the epic hypothesis is proven to be correct.>
Leading Indicators:	<The early measures that will help predict the business outcome hypothesis. For more on this topic, see the Innovation Accounting advanced topic article.>
Nonfunctional Requirements (NFRs):	<Nonfunctional requirements (NFRs) associated with the epic.>

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5-25

5.5 Establishing Lean Budgets and Guardrails

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5-26

Epic: Develop next-generation van hardware to capture additional data on van performance	Epic: Maintenance programs tailored for each van based on sensor data	Epic: Automated electronic inspections and tracking

Epic Hypothesis Statement	
Funnel Entry Date:	<The date that the epic entered the funnel.>
Epic Name:	<A short name for the epic.>
Epic Owner:	<The name of the epic owner.>
Epic Description:	<An elevator pitch (value statement) that describes the epic in a clear and concise way.> For <customers> who <do something> the <solution> is a <something – the 'how'> that <provides this value> unlike <competitor, current solution or non-existing solution> our solution <does something better – the 'why'>
Business Outcomes:	<The measurable benefits that the business can anticipate if the epic hypothesis is proven to be correct.>
Leading Indicators:	<The early measures that will help predict the business outcome hypothesis. For more on this topic, see the Innovation Accounting advanced topic article.>
Nonfunctional Requirements (NFRs):	<Nonfunctional requirements (NFRs) associated with the epic.>

Epic Hypothesis Statement

Funnel Entry Date:

Epic Name:

Epic Owner:
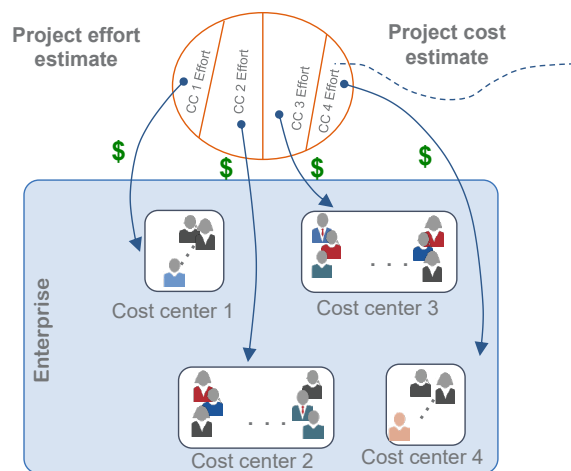
Epic Description:

Business Outcomes:

Leading Indicators:

Nonfunctional Requirements (NFRs):

Problem: Cost-center budgeting

Traditional project-based, cost-center budgeting creates overhead and friction, lowers velocity.

Project effort estimate

CC 1 Effort | CC 2 Effort | CC 3 Effort | CC 4 Effort

Project cost estimate

Project

A project requires collaboration of cost centers and assignment of people, budget, and schedule. It takes multiple budgets to build a single project budget.

Enterprise

Cost center 1 . . . . Cost center 3

Cost center 2 . . . Cost center 4

Result:
- Slow, complex budgeting process
- Leads to utilization-based planning and execution
- Low program throughput
- Moves people to the work

5-27

Project overruns cause re-budgeting and increases cost of delay

Project estimate

Planned: Project

Actual: Project

What/who do we blame?
- Technology challenge?
- Change in scope?
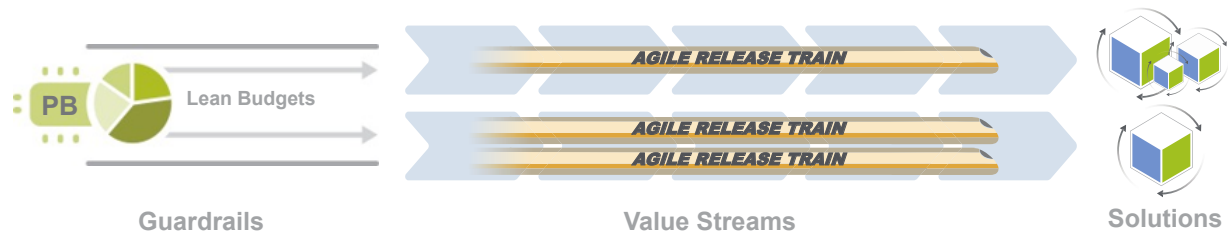- The team?
- **Does it matter?**

Result:
- Wait for new budget approval; increase cost of delay (CoD)
- Costly variance analysis; blame game; threatens transparency
- Resource scramble reassignments

5-28

Solution: Fund Value Streams, not projects

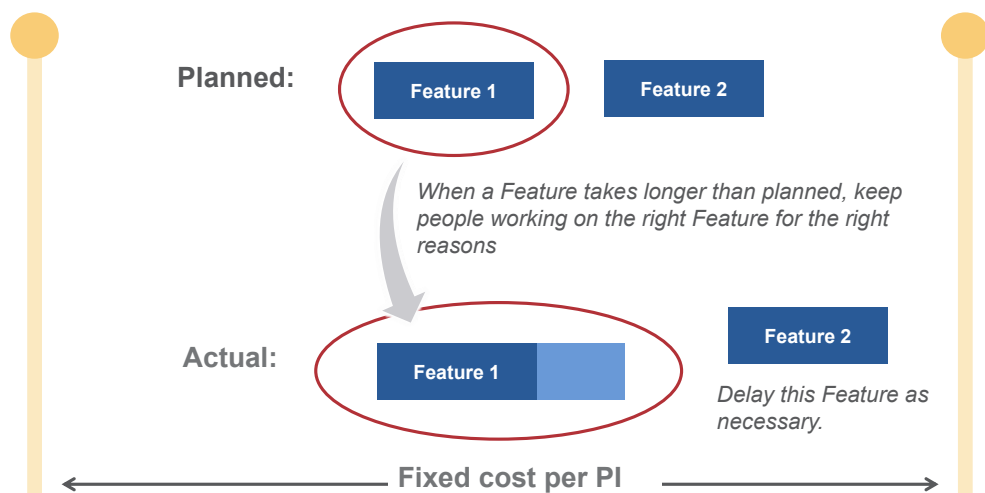Funding Value Streams provides for full control of spend, with:

► No costly and delay-inducing project cost variance analyses

► No resource reassignments

► No blame game for project overruns

PB — Lean Budgets

Guardrails   **Value Streams**   **Solutions**

AGILE RELEASE TRAIN

AGILE RELEASE TRAIN
AGILE RELEASE TRAIN

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5-29

Budgets are not affected by Feature overruns or changing priorities

Planned: Feature 1   Feature 2

When a Feature takes longer than planned, keep people working on the right Feature for the right reasons

Actual: Feature 1   Feature 2

Delay this Feature as necessary.

Fixed cost per PI

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5-30

## Maintain the Guardrails

► Apply investment horizons

► Utilize capacity allocation

► Approve Epic initiatives

► Continuous Business Owner engagement
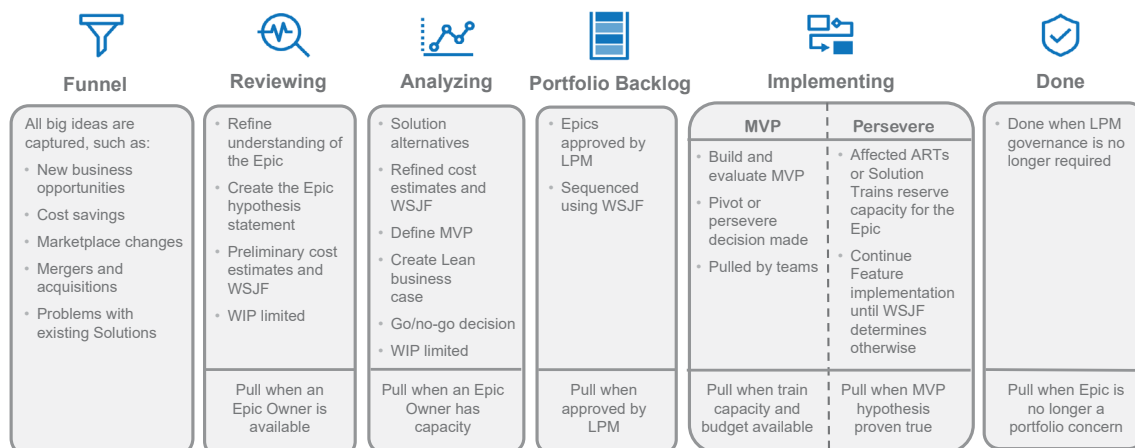
5-31

5.6 Establishing portfolio flow

5-32
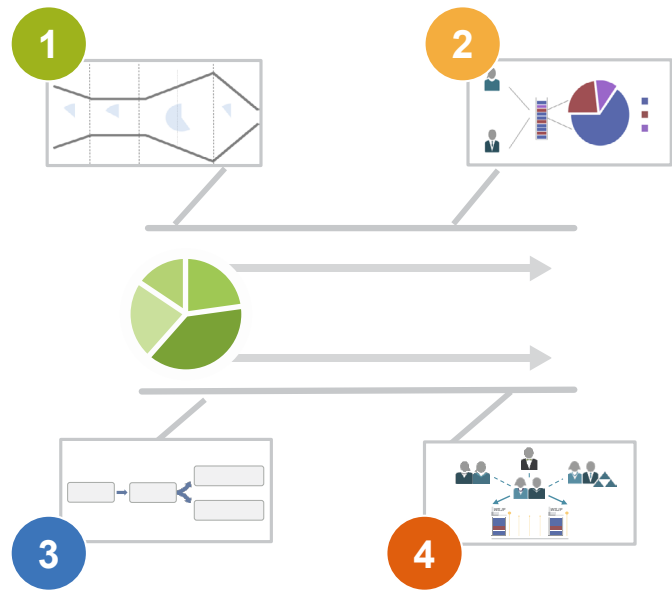
Govern Epic flow with the Portfolio Kanban

► Makes largest business initiatives visible

► Brings structure to analysis and decision-making

► Provides WIP limits to ensure the teams analyze responsibly

► Helps prevent unrealistic expectations

► Helps drive collaboration among the key stakeholders

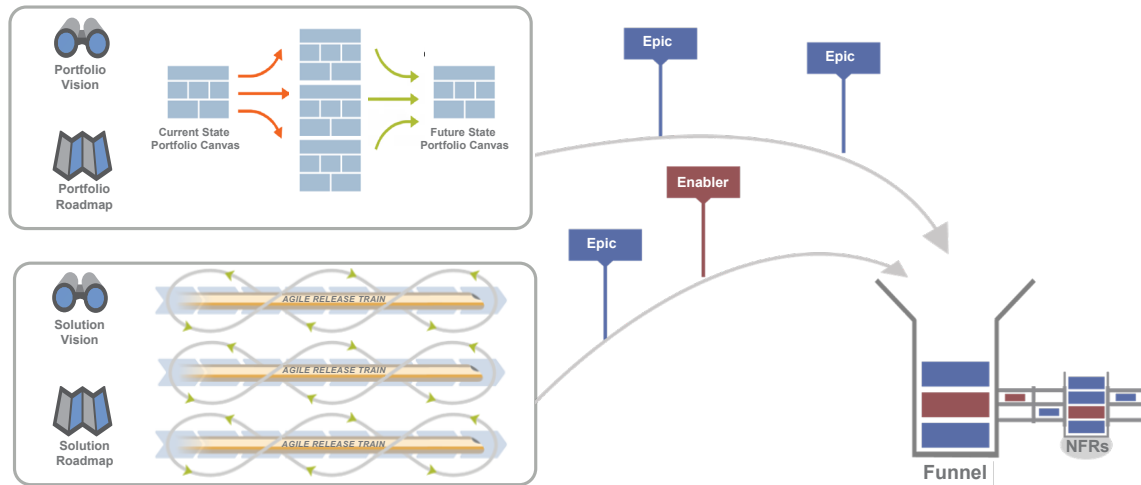► Provides a transparent and quantitative basis for economic decision-making

5-33
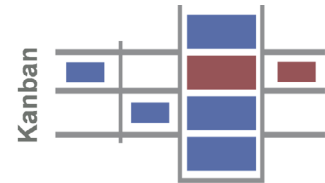
Epics flow through the Portfolio Kanban

The Portfolio Kanban system describes the process states that an Epic goes through from the funnel to done.

| Funnel	Reviewing	Analyzing	Portfolio Backlog	Implementing		Done
All big ideas are captured, such as: • New business opportunities • Cost savings • Marketplace changes • Mergers and acquisitions • Problems with existing Solutions	• Refine understanding of the Epic • Create the Epic hypothesis statement • Preliminary cost estimates and WSJF • WIP limited	• Solution alternatives • Refined cost estimates and WSJF • Define MVP • Create Lean business case • Go/no-go decision • WIP limited	• Epics approved by LPM • Sequenced using WSJF	**MVP** • Build and evaluate MVP • Pivot or persevere decision made • Pulled by teams	**Persevere** • Affected ARTs or Solution Trains reserve capacity for the Epic • Continue Feature implementation until WSJF determines otherwise	• Done when LPM governance is no longer required
	Pull when an Epic Owner is available	Pull when an Epic Owner has capacity	Pull when approved by LPM	Pull when train capacity and budget available	Pull when MVP hypothesis proven true	Pull when Epic is no longer a portfolio concern

5-34

Feed the portfolio funnel

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MVPs foster innovation and control scope

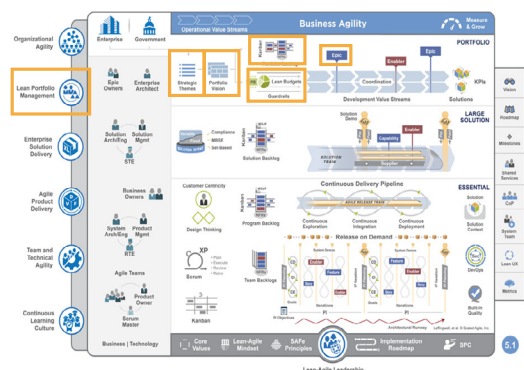### SAFe Lean Startup Cycle
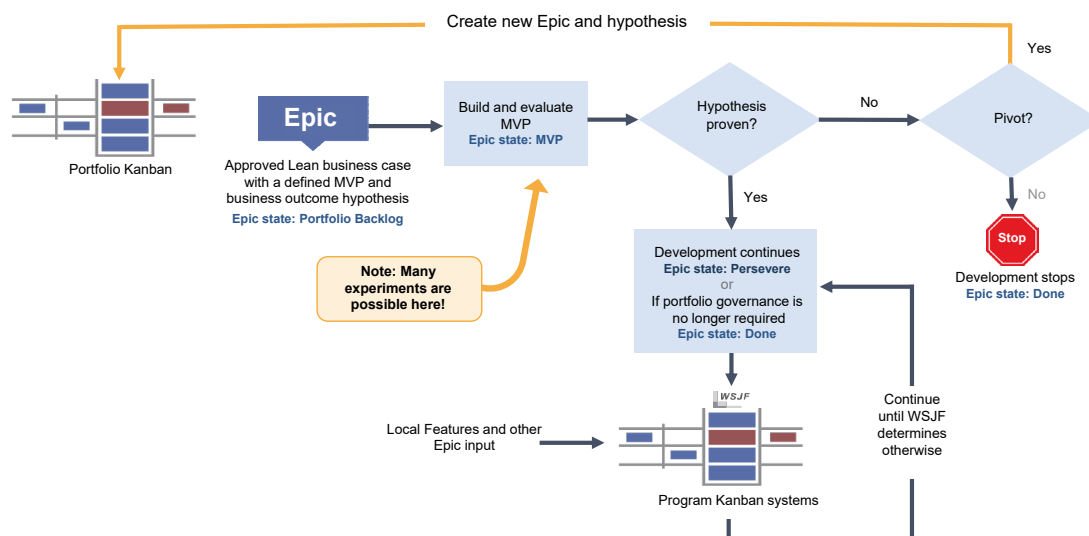
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Lesson review

In this lesson you:

► Described the purpose and elements of a SAFe portfolio

► Constructed well-written strategic themes

► Reviewed the Portfolio Canvas to describe the current and future state

► Created Epic hypothesis statements to inform the Vision

► Distinguished traditional and Lean budgeting approaches

► Discussed the Portfolio Kanban

5-37

Articles used in this lesson

Read these Framework articles to learn more about topics covered in this lesson

► "Lean Portfolio Management"
https://v5.scaledagileframework.com/lean-portfolio-management/
► "Strategic Themes
https://v5.scaledagileframework.com/strategic-themes/
► "Portfolio Vision"
https://v5.scaledagileframework.com/portfolio-vision/
► "Lean Budgets"
https://v5.scaledagileframework.com/lean-budgets/
► "Lean Budget Guardrails"
https://v5.scaledagileframework.com/guardrails/
► "Portfolio Kanban"
https://v5.scaledagileframework.com/portfolio-kanban/
► "Epics"
https://v5.scaledagileframework.com/epic/

5-38

Continue your SAFe journey with the following resources

Watch this six-minute video, *Introduction to LPM,* to revisit the key themes: https://bit.ly/Video-IntroductionLPM	Use the *SWOT/TOWS Analysis* Collaborate template to identify strategic options to create a better future state: https://bit.ly/Template-SWOTandTOWSAnalysis
Complete the *Portfolio Canvas Collaborate* template to define the key elements of the portfolio: https://bit.ly/Template-PortfolioCanvas	Use the *Epic Hypothesis Statement* Collaborate template to define a statement for each of your significant solution initiatives: https://bit.ly/Template-EpicHypothesisStatement
Analyze the Portfolio's strengths and weaknesses with the *SWOT Analysis* Collaborate template: https://bit.ly/Template-SWOT-Analysis	Run a *Lean Portfolio Management Assessment* to identify improvement opportunities: https://bit.ly/Community-MeasureAndGrow

5-39

Lesson notes

Enter your notes below. If using a digital workbook, save your PDF often so you don't lose any of your notes.

Lesson 6

Leading the Change

SAFe® Course - Attending this course gives students access to the SAFe® Agilist exam and related preparation materials.
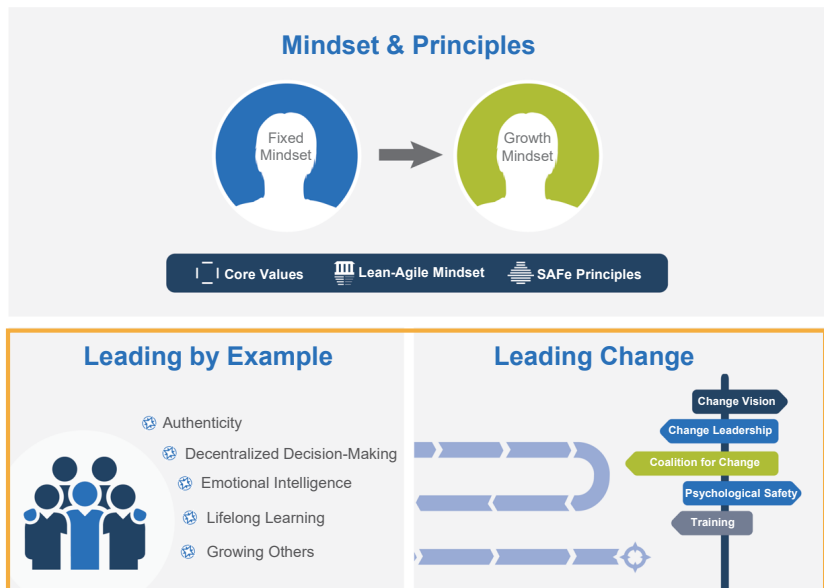
SCALED AGILE®

Why Lean-Agile Leadership?

An organization's managers, executives, and other leaders are responsible for the adoption, success, and ongoing improvement of Lean-Agile development and the competencies that lead to Business Agility. Only they have the authority to change and continuously improve the systems that govern how work is performed.

Lesson Topics

6.1 Leading by example

6.2 Leading the change

Mindset & Principles

Fixed Mindset → Growth Mindset

Core Values | Lean-Agile Mindset | SAFe Principles

Leading by Example
- Authenticity
- Decentralized Decision-Making
- Emotional Intelligence
- Lifelong Learning
- Growing Others

Leading Change
- Change Vision
- Change Leadership
- Coalition for Change
- Psychological Safety
- Training

6-3

Learning objectives

At the end of this lesson you should be able to:

► Explain the behaviors necessary to lead by example

► Discuss techniques for leading successful change

► Recognize the steps in the SAFe Implementation Roadmap

6-4

6.1 Leading by example

6-5

Leading by example

Setting an example is not the main means of influencing others, it is the only means. —Albert Einstein

► **Authenticity** requires leaders to model desired professional and ethical behaviors

► **Emotional intelligence** describes how leaders identify and manage their emotions and those of others through self-awareness, self-regulation, motivation, empathy, and social skills

► **Lifelong learning** depicts how leaders engage in an ongoing, voluntary, and self-motivated pursuit of knowledge and growth, and they encourage and support the same in others

► **Growing others** encourages leaders to provide the personal, professional, and technical guidance and resources each employee needs to assume increasing levels of responsibility

► **Decentralized decision-making** moves the authority for decisions to where the information is

Leading by Example

- Authenticity
- Emotional Intelligence
- Lifelong Learning
- Growing Others
- Decentralized Decision-Making

6-6

Leaders provide the organization with patterns of expected behaviors

Pathological Culture *Power-oriented*	Bureaucratic Culture *Rule-oriented*	Generative Culture *Performance-oriented*
Low cooperation	Modest cooperation	High cooperation
Messengers blamed	Messengers neglected	Messengers trained
Responsibilities shirked	Narrow responsibilities	Responsibilities shared
Collaboration discouraged	Collaboration tolerated	Collaboration encouraged
Failure leads to scapegoating	Failure leads to justice	Failure leads to improvement
Innovation crushed	Innovation leads to problems	Innovation implemented

6-7

6.2 Leading the change

6-8

Keys to leading successful change

- ► Establish a sense of urgency

- ► Create a powerful guiding coalition

- ► Develop the vision and strategy

- ► Communicate the vision

- ► Empower employees for broad-based action

- ► Generate short-term wins

- ► Consolidate gains and produce more wins

- ► Anchor new approaches in the culture
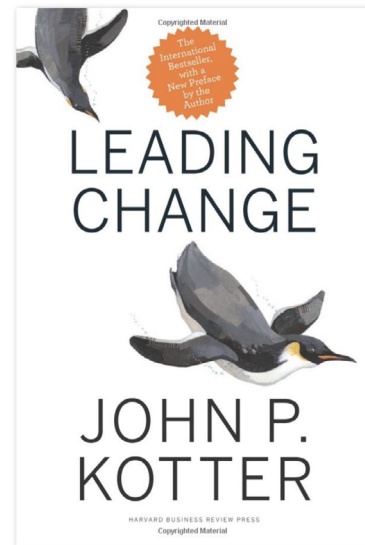
SCALED AGILE © Scaled Agile. Inc.

6-9

SAFe® Implementation Roadmap
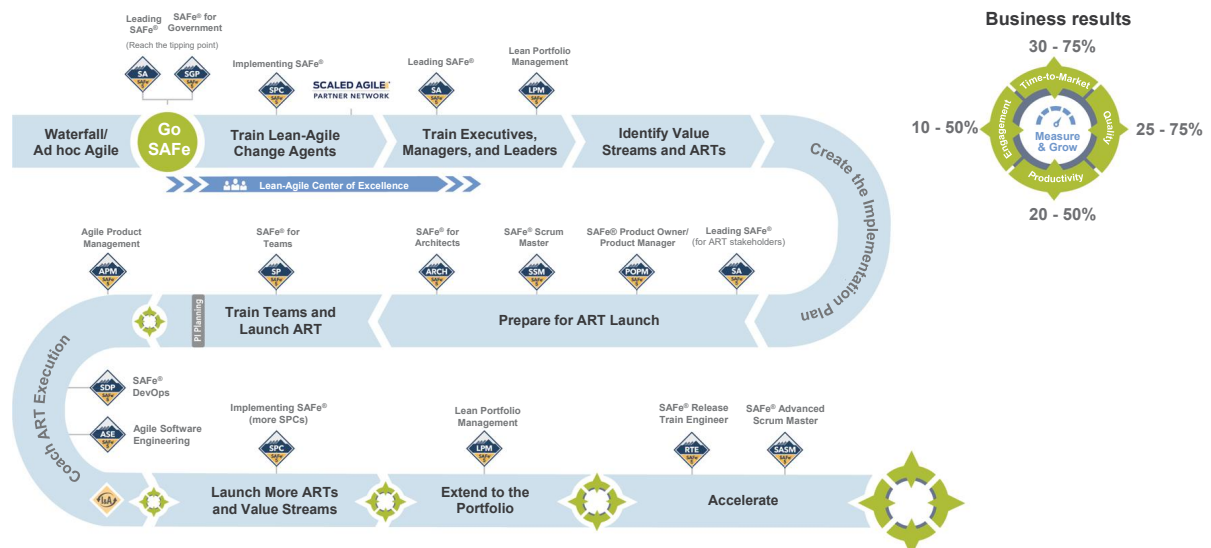
SCALED AGILE © Scaled Agile. Inc.

6-10

Train everyone.

Launch trains.

Action Plan: Leading the change

Prepare
5 min

Share
3 min

► **Step 1:** Identify three action items you can do in the next month to start leading the SAFe transformation.

► **Step 2:** Share your ideas with your group.

► **Step 3:** Discuss outcomes you hope to achieve with your Action Plan

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Leading the change

Lesson review

In this lesson you:

► Explored the behaviors necessary to lead by example

► Discussed techniques for leading successful change

► Reviewed the steps in the SAFe Implementation Roadmap

Lesson review

Read these Framework articles to learn more about topics covered in this lesson.

► Lean-Agile Leadership
https://v5.scaledagileframework.com/lean-agile-leadership/

► Implementation Roadmap
https://v5.scaledagileframework.com/implementation-roadmap/
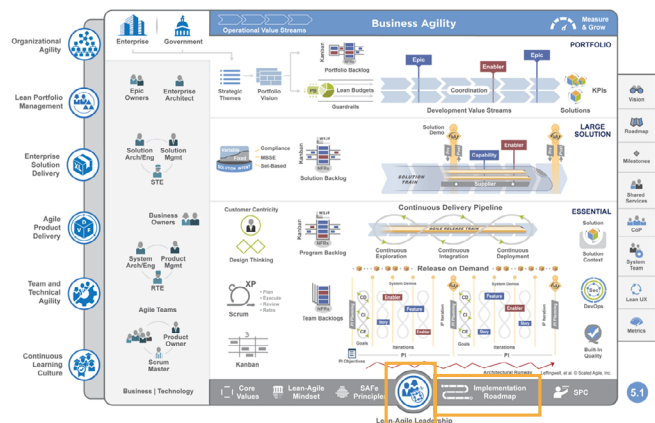
Continue your SAFe journey with the following resources

Use the *Introducing SAFe Toolkit 5.1* to establish a sense of urgency in your organization: https://bit.ly/Community-ToolkitsandTemplates	Run a *Lean Agile Leadership Assessment* to identify improvement opportunities: https://bit.ly/Community-MeasureAndGrow

6-15

Lesson notes

Enter your notes below. If using a digital workbook, save your PDF often so you don't lose any of your notes.

Lesson 7

Practicing SAFe

SAFe® Course - Attending this course gives students access to the SAFe® Agilist exam and related preparation materials.

Duration
3 min

Video: SAFe Certification Benefits

https://bit.ly/Video-SAFeCertificationBenefits

7-2

A Path Towards Certification

Access exam study guides and practice tests

Download your certificate of course completion

Take the **Certification Exam**

Showcase your **Digital Badge** and get recognized as Certified SAFe Professional

Becoming a Certified SAFe Professional

7-3

Duration 3 min

Video: Welcome to the SAFe Community Platform

Welcome to the SAFe® Community Platform

SCALED AGILE®
Provider of SAFe

https://bit.ly/Video-WelcomeSAFeCommunityPlatform

7-4

Leading SAFe Class Page

Access all the practice assets you need to get started on your SAFe journey.
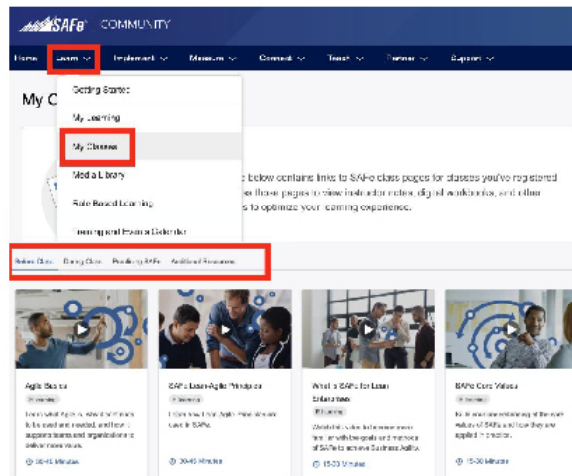
7-5

SAFe ART and Team Events

SAFe Art and Team Events: Use checklists, templates, videos, agendas, toolkits, and more to support your ART and team events
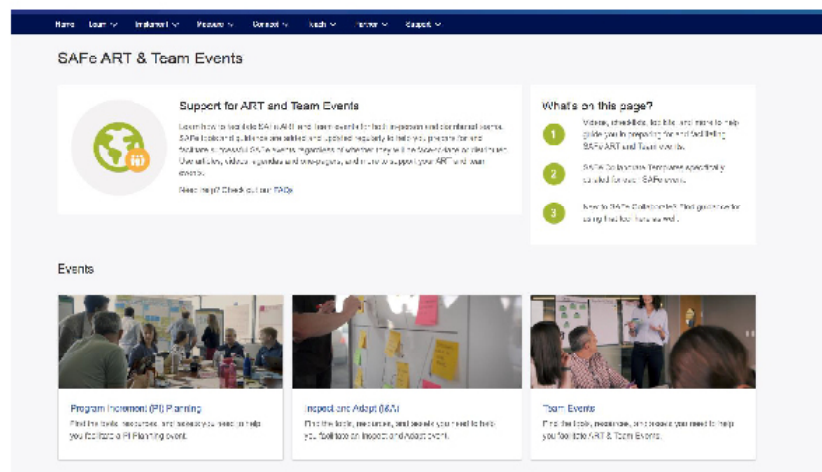
7-6
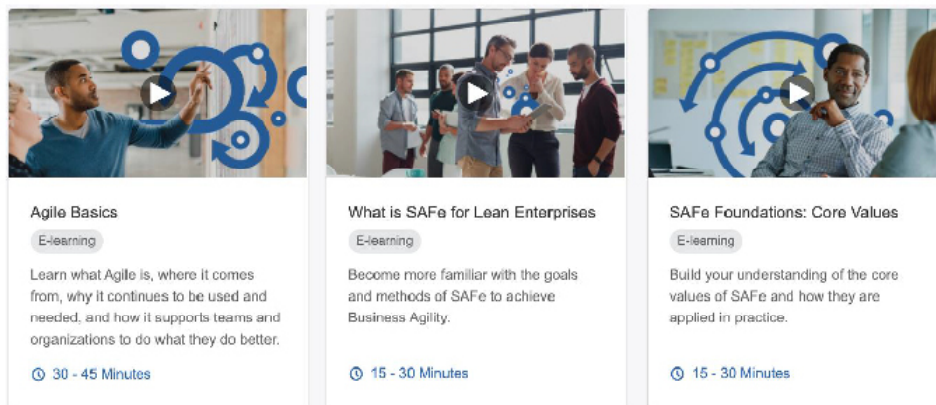
SAFe Collaborate

Organize and run virtual SAFe events in real time

SAFe Collaborate is a visual, cloud-based workspace where organizations can orchestrate virtual SAFe events activities easily and effectively with predesigned and customizable templates.
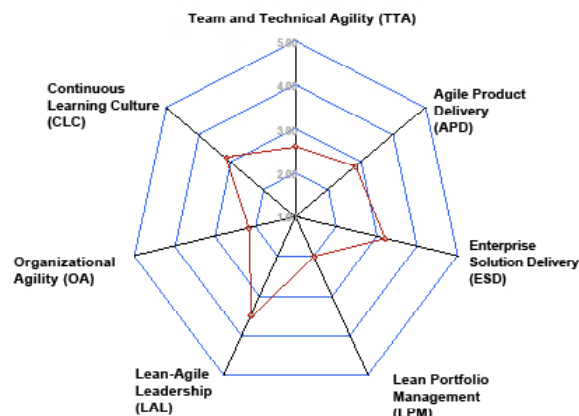
SCALED AGILE   © Scaled Agile. Inc.   7-9
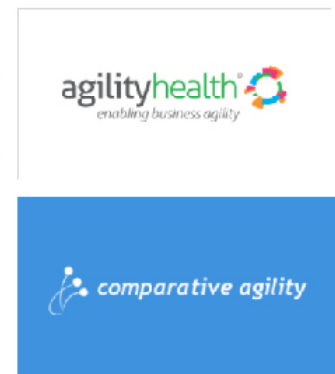

Measure and Grow

Evaluate progress towards business agility with the SAFe assessments, Measure and Grow workshop and our assessment partners

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Good luck on your SAFe Practice with the

SAFe Community Platform!

https://community.scaledagile.com

7-11

Lesson notes

Enter your notes below. If using a digital workbook, save your PDF often so you don't lose any of your notes.

SAFe Glossary

> 📖 **SAFe Glossary:** Visit the Scaled Agile Framework site (*v5.scaledagileframework.com/glossary/*) to download glossaries translated into other languages.