

Leading SAFe®

Thriving in the Digital Age
with Business Agility

6.0

Workbook



Welcome to the course!

Make the Most of

Your Learning



Access the SAFe Community Platform

Manage your member profile, access videos and training resources, join Communities of Practice, and more.



Prepare Yourself

Access your learning plan featuring your digital workbook, study materials, and certification practice test



Become a Certified SAFe Professional

Get certified to validate your knowledge, expand your professional capabilities, and open the door to new career opportunities.



Access SAFe Content and Tools

Access professional development resources and toolkits.



Collaborate with Your Team

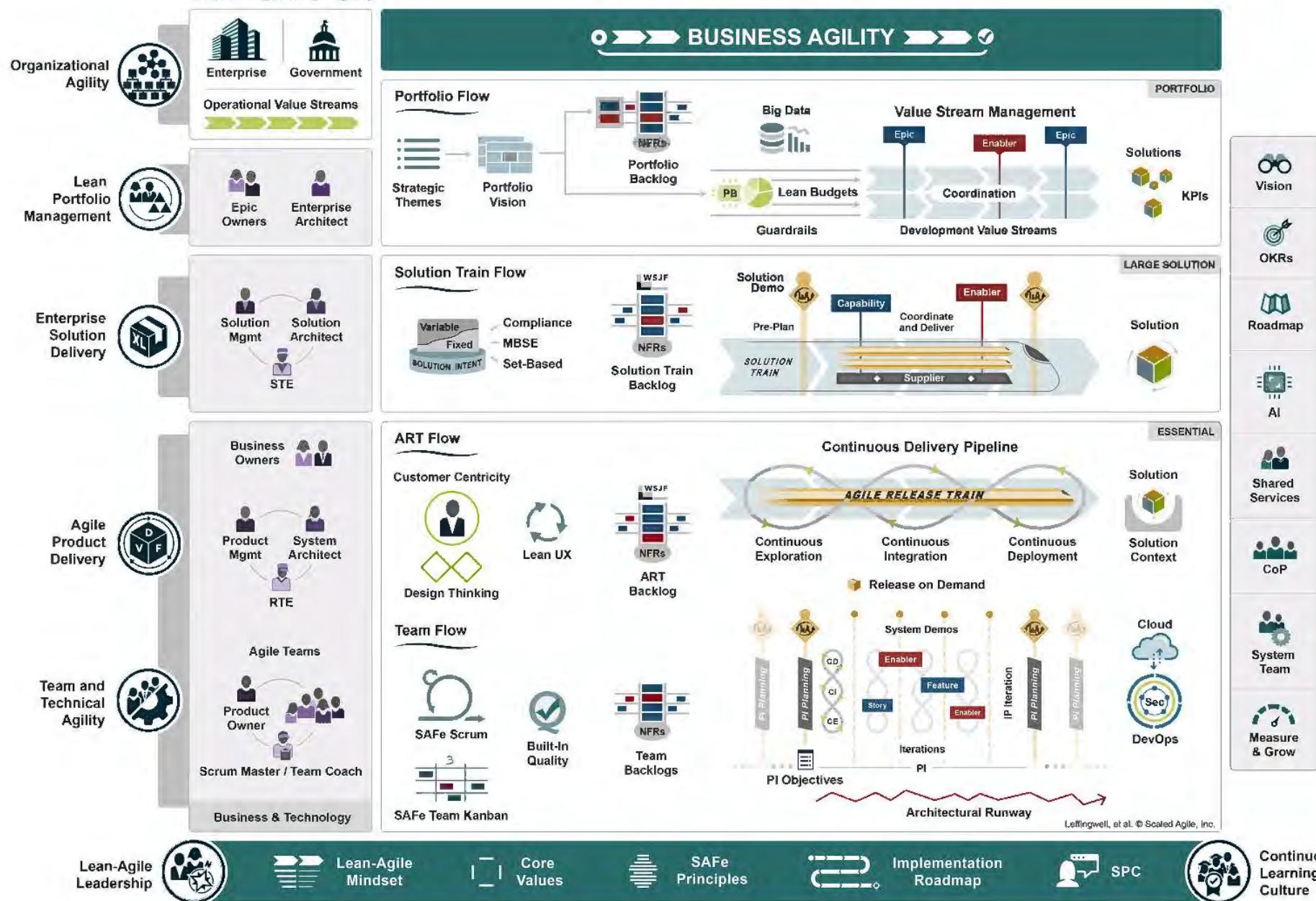
Choose from hundreds of collaboration templates to easily set up events like PI Planning and work in real time with your team and others—all with SAFe Collaborate.



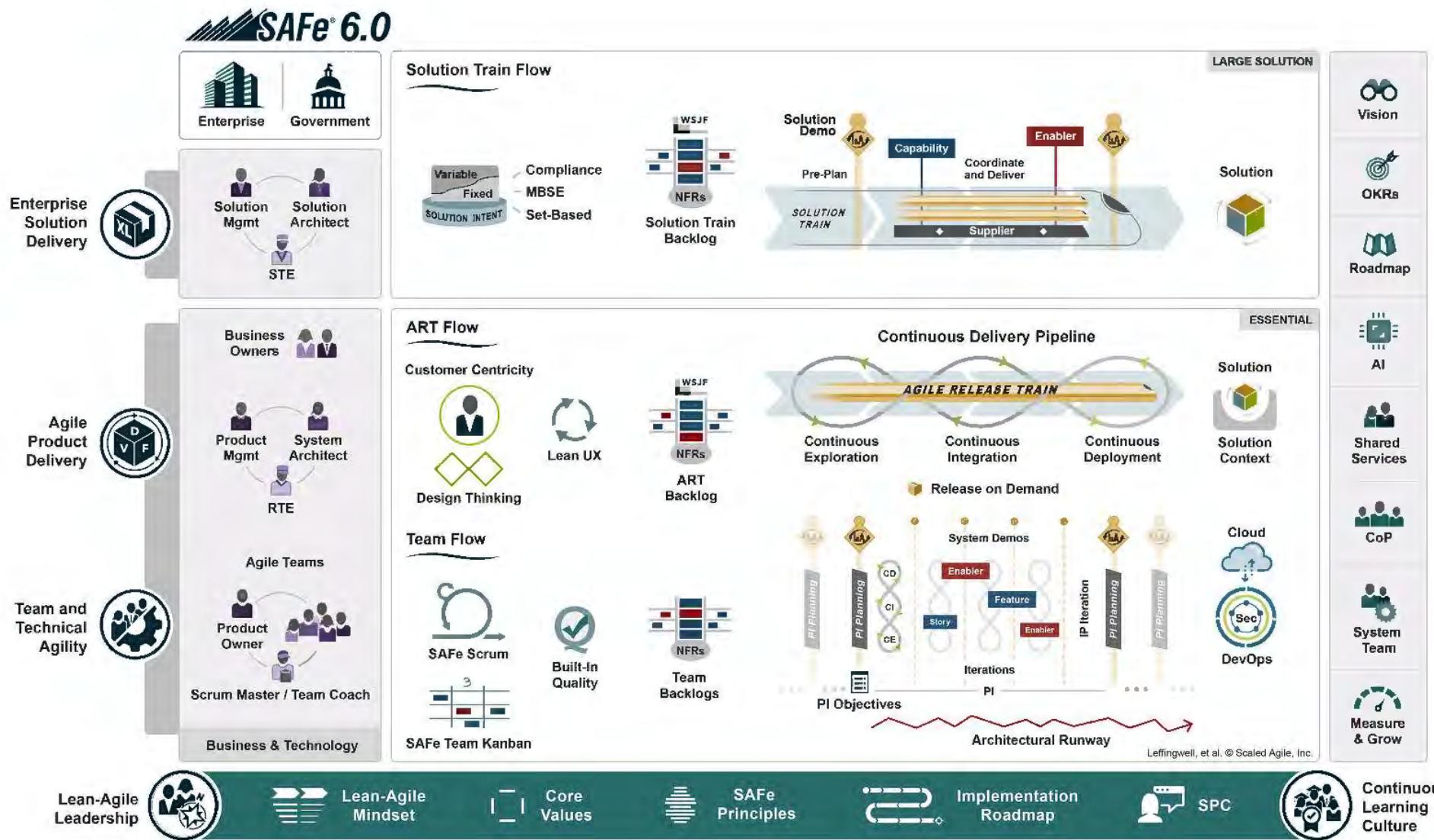
Showcase SAFe Credentials

Display your digital badge to promote your SAFe capabilities and proficiencies throughout your career.

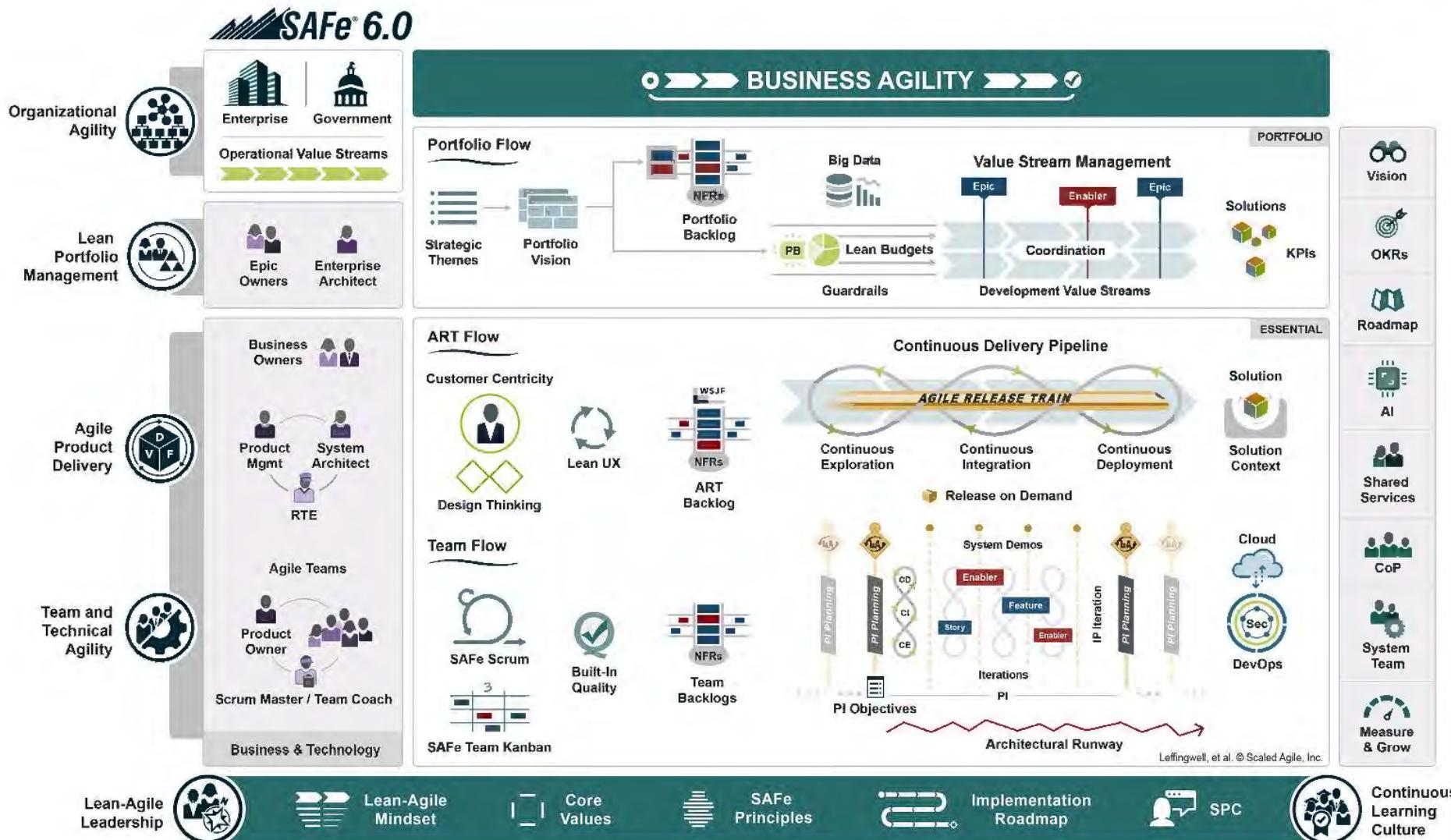
SAFe® 6.0



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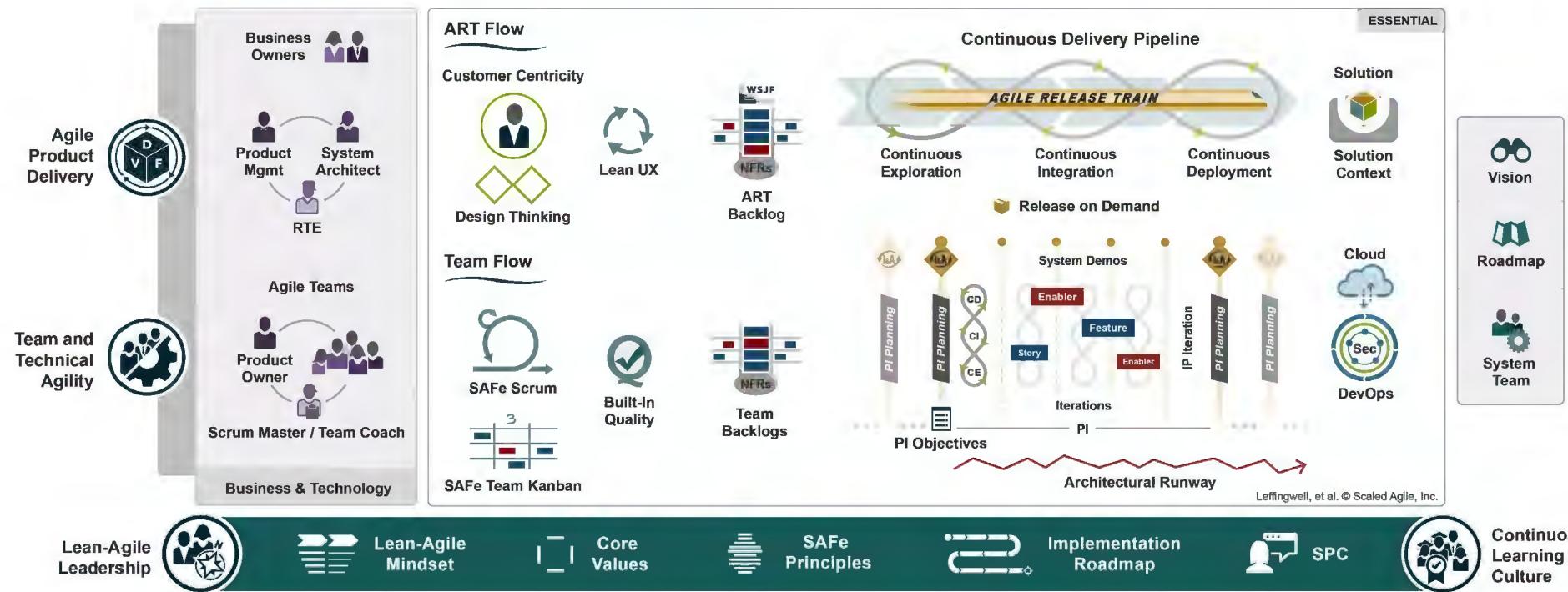


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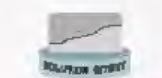
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BUSINESS AGILITY

Enterprise Solution Delivery



Lean Systems
Engineering



Coordinating Trains
and Suppliers



Continually Evolve
Live Systems

Lean Portfolio Management

Strategy & Investment Funding



Lean Governance

Agile Portfolio Operations

Agile Product Delivery



Customer Centricity
& Design Thinking



Develop on Cadence
Release on Demand



Team and Technical Agility



Agile Teams



Built-in Quality



Teams of Agile Teams

Lean-Agile Leadership



Mindset & Principles



Leading by Example



Leading Change

Continuous Learning Culture



Learning Organization

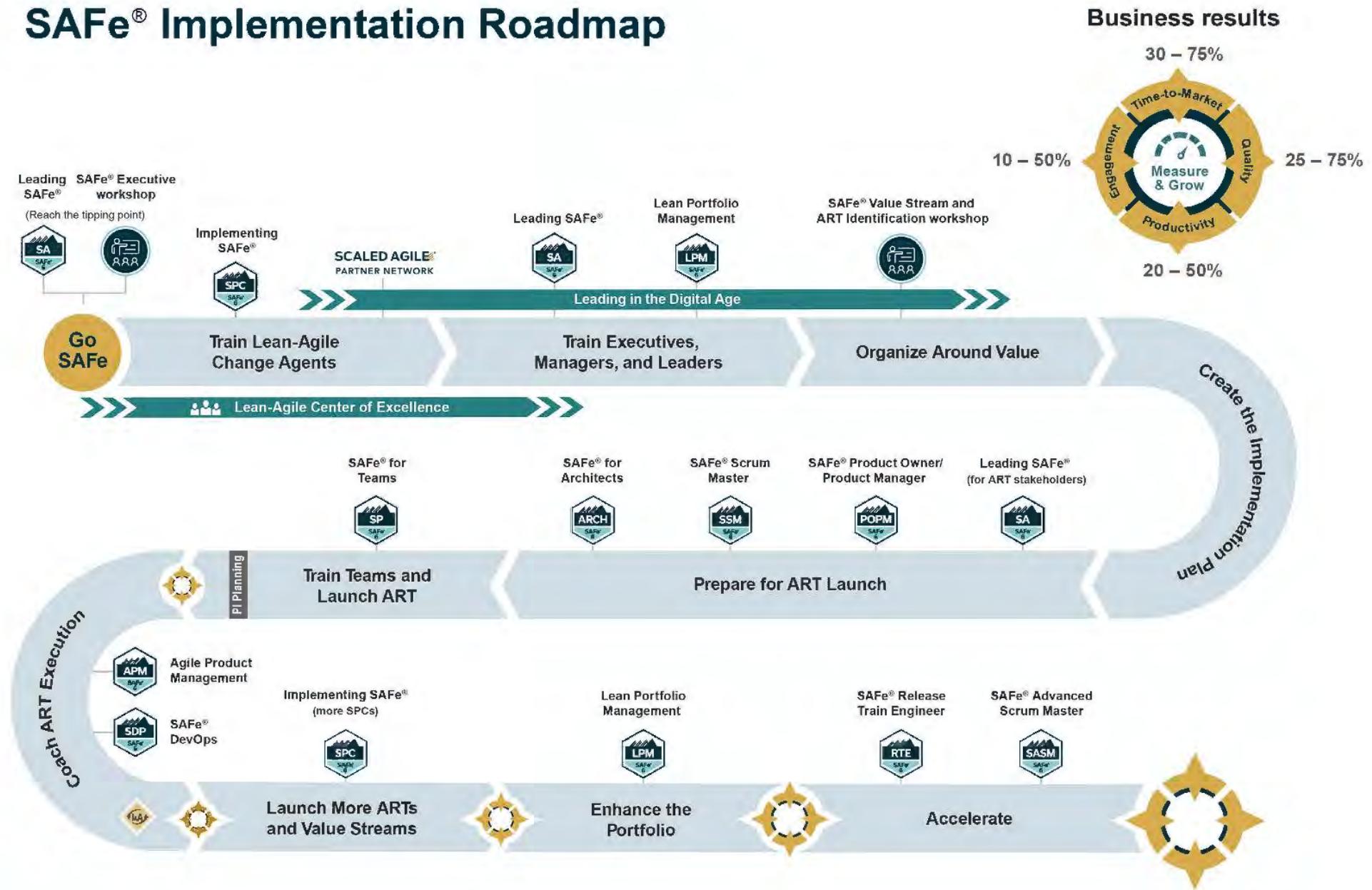


Innovation Culture



Relentless Improvement

SAFe® Implementation Roadmap



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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.

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Logistics

- ▶ Course meeting times
- ▶ Breaks
- ▶ Facilities
- ▶ Technology requirements
- ▶ Working agreements

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1-2



Discussion: Introductions

Duration
 5 min

- ▶ **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: Building a Foundation with Mindset, Values, and Principles
- ▶ 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: Access the class page

Duration
5 min

- ▶ **Step 1:** Individually 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 workbook.



SAFe® | COMMUNITY

Visit the Leading SAFe class page
to download the workbook.
<https://bit.ly/Community-MyClasses>

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1-5

Lesson 1

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.



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Lesson Topics

- 1.1** Thriving in the digital age
- 1.2** SAFe as an operating system for 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
- ▶ Explore the seven core competencies of Business Agility

1.1 Thriving in the digital age

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1-9

“Those who master large-scale software delivery will define the economic landscape of the 21st century...”

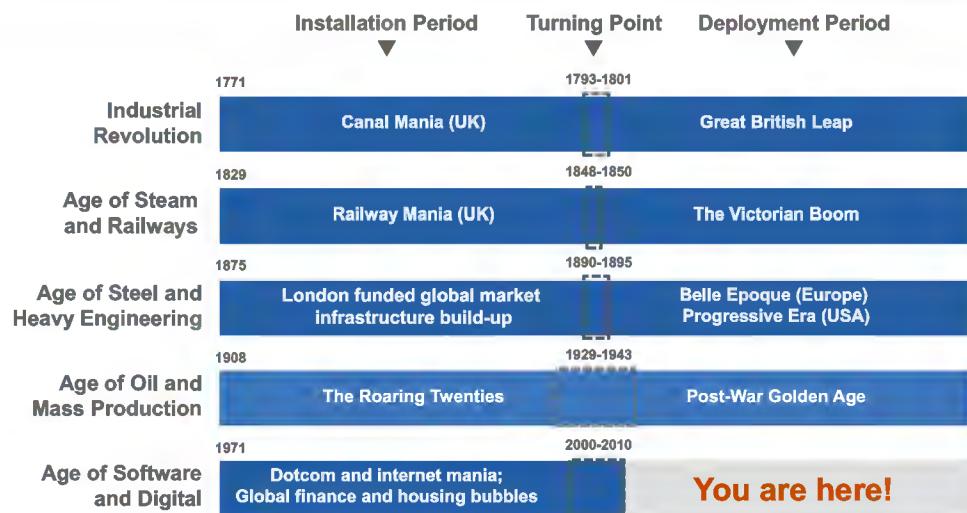
—Mik Kersten, *Project to Product*

Project to Product by Mik Kersten.
Portrait of Mik Kersten. Photo used with permission from Mik Kersten.



1-10

Technological revolutions change society



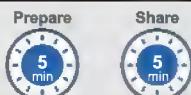
The five technological revolutions, adapted from *Technological Revolutions and Financial Capital* by Carlota Perez.

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1-11



Discussion: The impact of the Digital Age



- ▶ **Step 1:** In your groups, discuss the impact of the Digital Age on your industry.
- ▶ **Step 2:** Talk about the challenges or opportunities you foresee.
- ▶ **Step 3:** Be prepared to share with the class.



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1-12

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.”

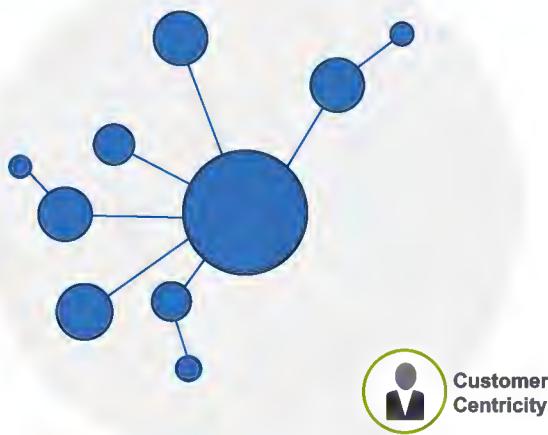
—John P. Kotter, *Accelerate*

Accelerate by John P. Kotter.
Portrait of John Kotter. Photo courtesy of Kotter Inc.

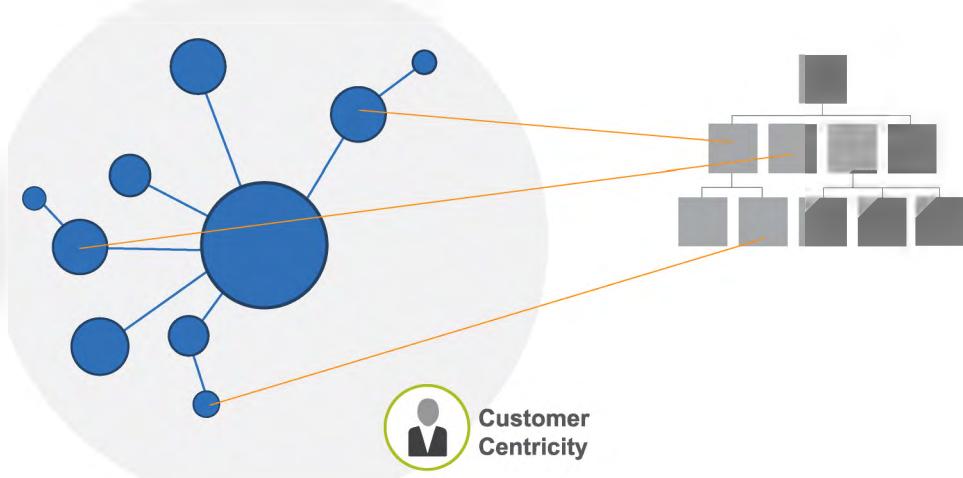


1-13

We started with a network



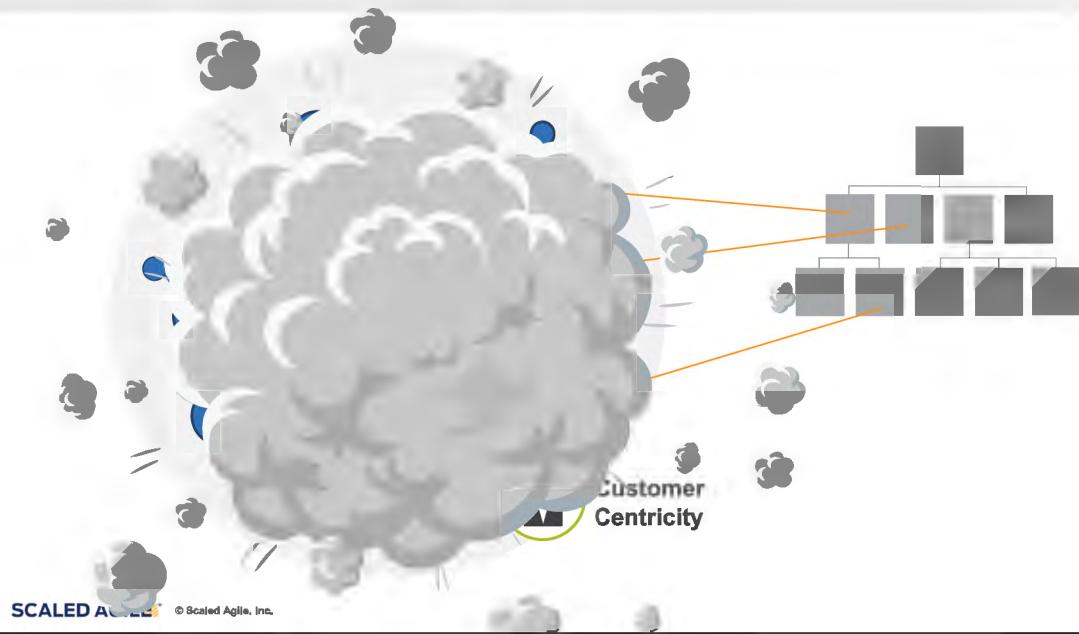
We added hierarchy for stability and execution



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1-15

Guess what happens



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1-16

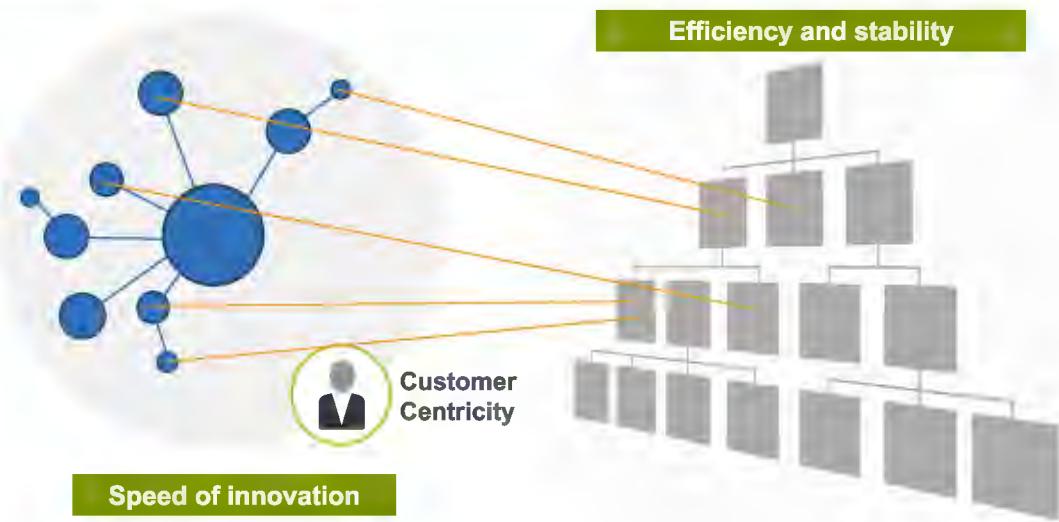


The solution is not to trash what we know and start over but instead to reintroduce, in an organic way, a second system—one which would be familiar to most successful entrepreneurs."

—John P. Kotter, *Accelerate*

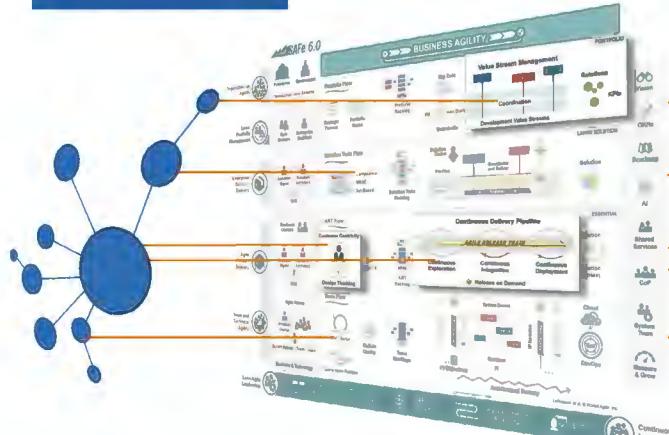
1-17

We need a dual operating system for Business Agility



And we have just such an operating system at our fingertips

Value Stream Network



Traditional Hierarchy



Operates at the speed of innovation

Offers efficiency and stability

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1-19

1.2 SAFe as an operating system for Business Agility

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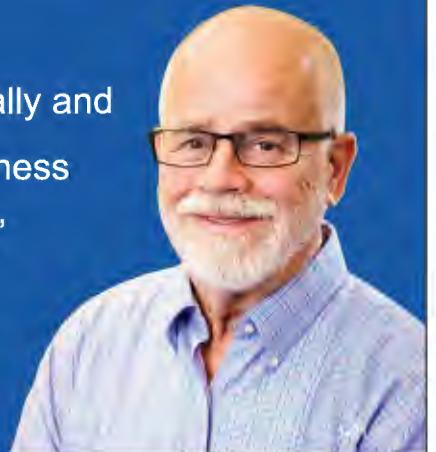
1-20



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



Dean Leffingwell, Creator of SAFe.

Business Agility Value Stream

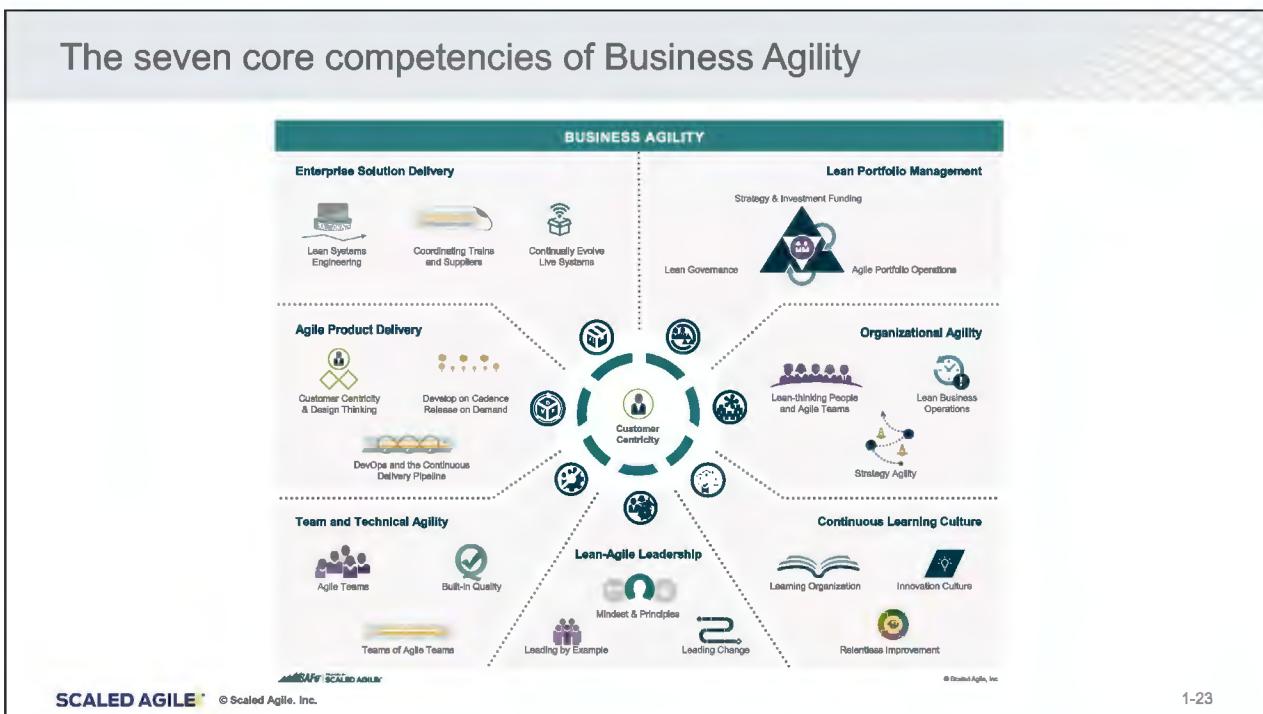
Business Agility is the ability to compete and thrive in the digital age by quickly responding to market changes and emerging opportunities with innovative, digitally-enabled business solutions.



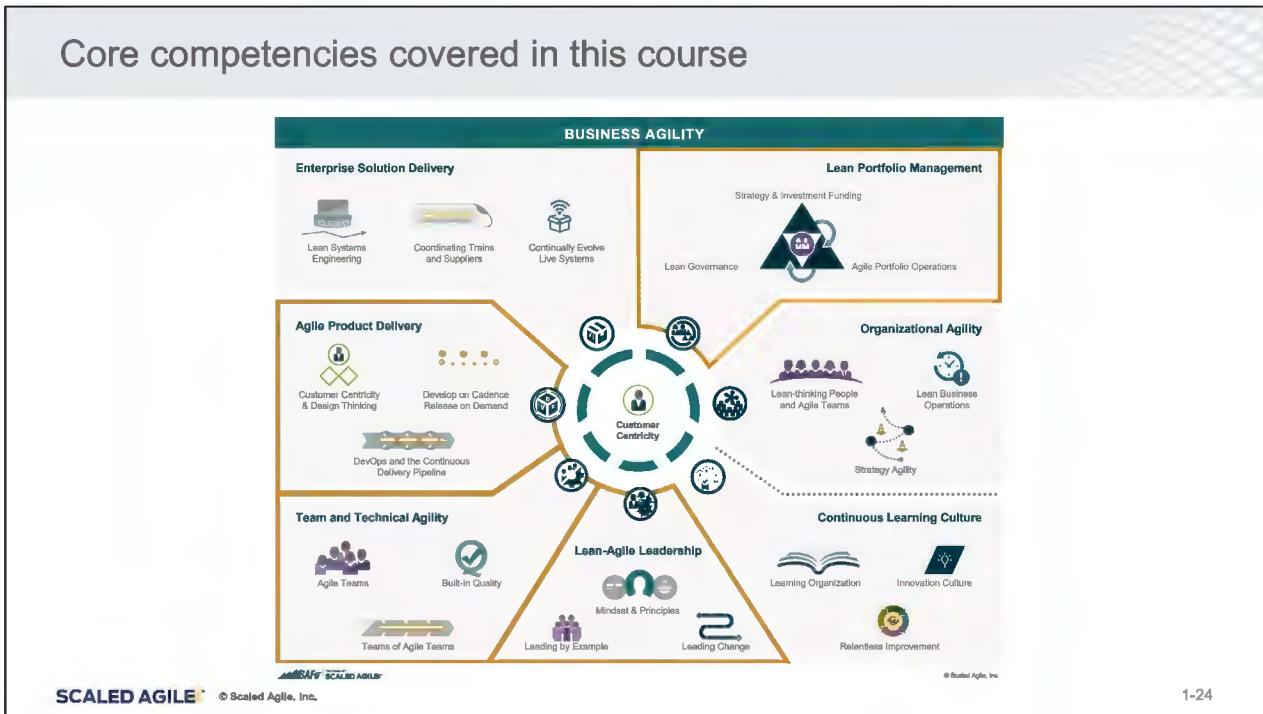
Achieving Business Agility requires the seven core competencies.

<https://www.scaledagileframework.com/business-agility-value-stream/>

The seven core competencies of Business Agility



Core competencies covered in this course



Why SAFe?

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

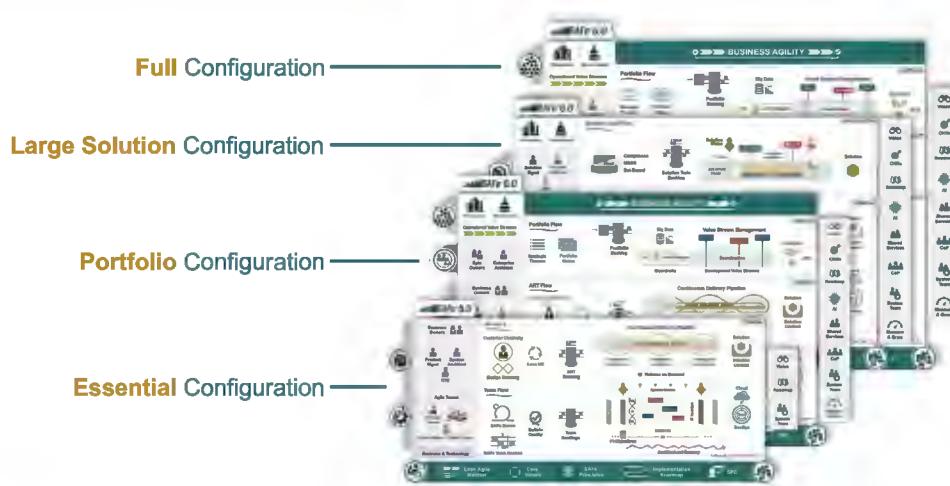


Typical results from <https://scaledagile.com/insights-customer-stories/>

1-25

SAFe configurations

Four configurations provide the right solution for each Enterprise.



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1-26

The management challenge



It is not enough that top management commit themselves for life to quality and productivity. They must know what it is that they are committed to—that is, what they must do. These obligations can not be delegated.”

—W. Edwards Deming, *Out of the Crisis*



Portrait of W. Edwards Deming. Photo courtesy of The W. Edwards Deming Institute®.

Lesson review

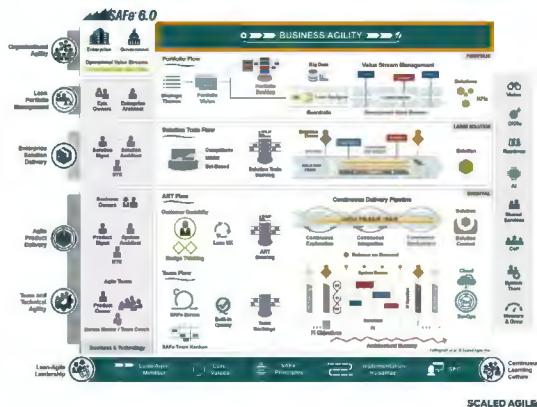
In this lesson you:

- ▶ 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 6.0”
<https://scaledagileframework.com/safe/>
- ▶ “Business Agility”
<https://www.scaledagileframework.com/business-agility/>



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1-29

Continue your SAFe journey with the following resources:

Expand your application of key concepts in
What is SAFe:
<https://bit.ly/Community-GettingStarted>

1-30

References

- Deming, W. Edwards. *Out of the Crisis*. Cambridge: The MIT Press, 2000. 23.
- Kersten, Mik. *Project to Product: How to Survive and Thrive in the Age of Digital Disruption with the Flow Framework*. IT Revolution: Portland, 2018. Cover.
- Kotter, John P. *Accelerate: Building Strategic Agility for a Faster-Moving World*. Boston: Harvard Business Review Press, 2014. vii, viii.
- Perez, Carlota. *Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages*. Cheltenham: Edward Elgar Publishing Limited, 2002. 107.

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

Building a Foundation with Mindset, Values, and Principles

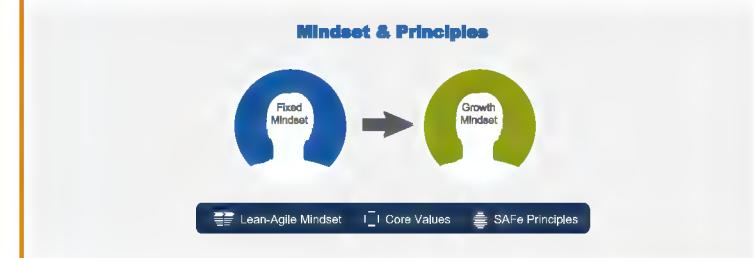
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Lesson Topics

- 2.1 The Lean-Agile Mindset
 - 2.1.1 Lean thinking
 - 2.1.2 Agile development
- 2.2 SAFe Core Values
- 2.3 Apply SAFe Principles



2-2

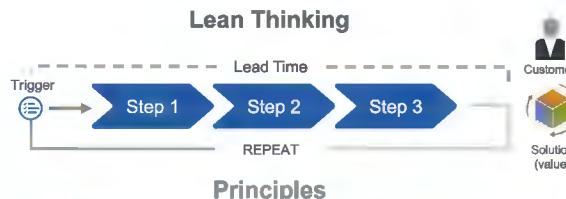
Learning objectives

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

- ▶ Describe the value of a Lean-Agile Mindset
- ▶ Recognize the SAFe Core Values
- ▶ Apply the SAFe Lean-Agile principles

2.1 The Lean-Agile Mindset

SAFe Lean-Agile Mindset



Principles

- 1 Precisely specify value by product
- 2 Identify the Value Stream for each product
- 3 Make value flow without interruptions
- 4 Let the Customer pull value from the producer
- 5 Pursue perfection

Agile Values

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.

<https://agilemanifesto.org/>

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2-5

2.1.1 Lean thinking

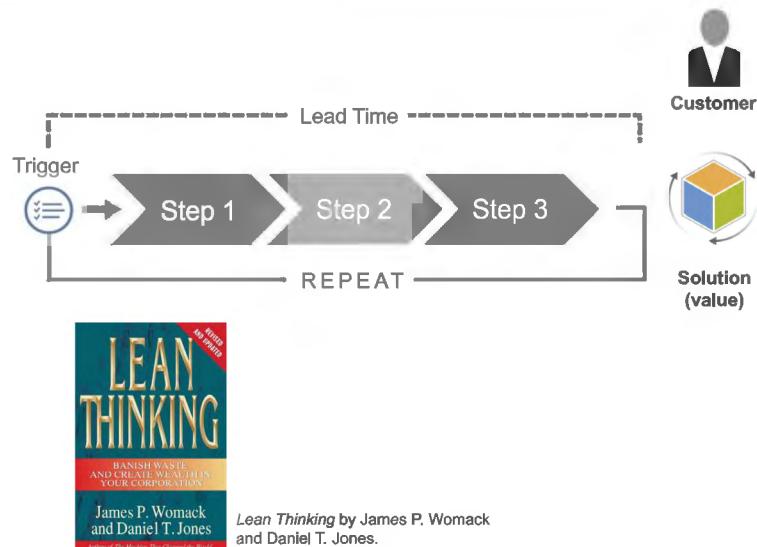
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2-6

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



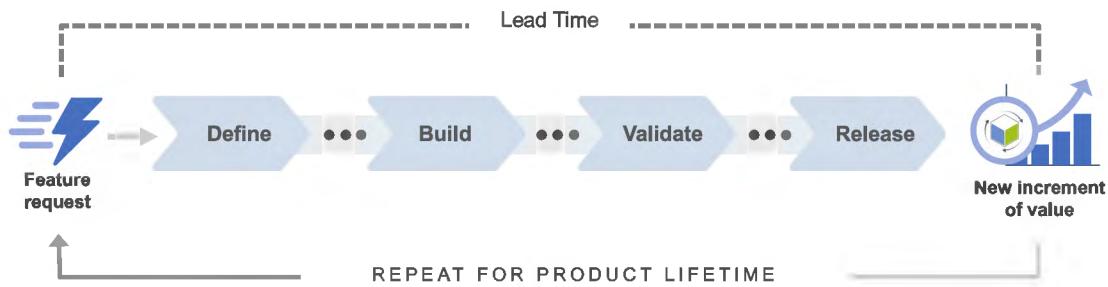
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2-7

Identify the Value Stream for each product

Each Value Stream:

- ▶ 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 Solution



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2-8



Activity: Identify your Value Stream

Prepare



Share



- ▶ **Step 1:** Individually, select a Solution your Enterprise is currently developing.
- ▶ **Step 2:** Identify the Customer you are building it for.
- ▶ **Step 3:** In your workbook, sketch out the steps in the Value Stream.
- ▶ **Step 4:** Be prepared to share with the class.

NOTE! You will build on your example Value Stream through the subsequent activities in this lesson.

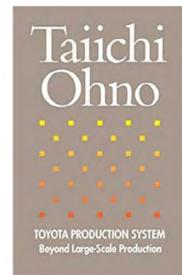
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2-9

Optimize the full Value Stream

“All we are doing is looking at the time line... from the moment the customer gives us an order to the point when we collect the cash. And we are reducing that time line by removing the non-value-added wastes.”

—Taiichi Ohno, as quoted by Norman Bodek, from the foreword of *Toyota Production System*



Toyota Production System
by 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

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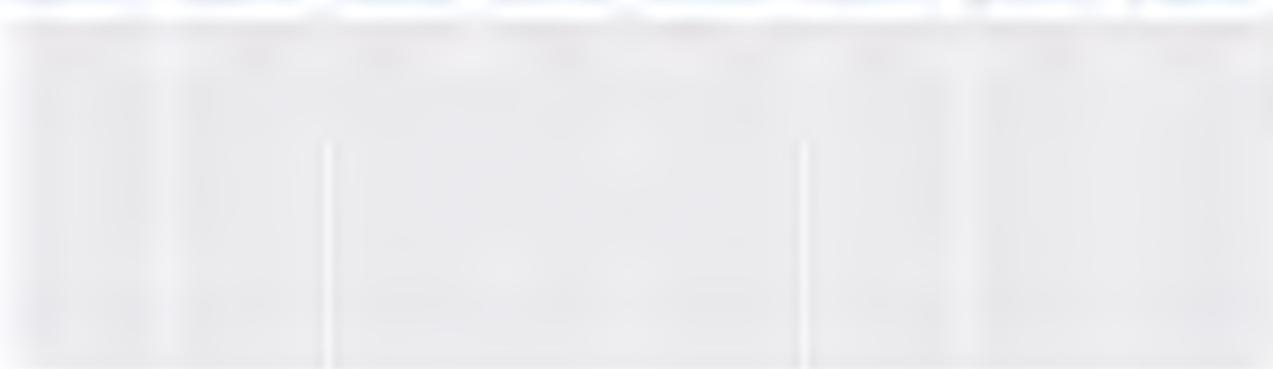
2-10

Identify your Value Stream

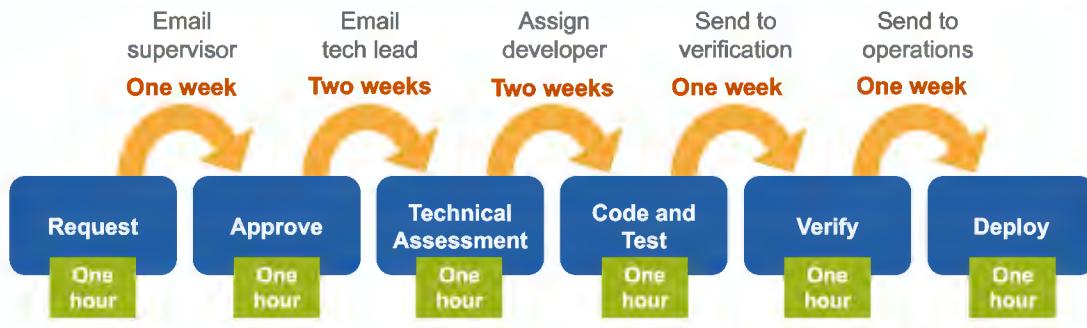
Instructions: Select a Solution your Enterprise is currently developing and identify the Customer you are building it for. In the text boxes below, sketch out the steps in the Value Stream and be prepared to share with the class.

Solution:

Customer:



Focus on the delays



Six hours of value... ...delivered in seven weeks

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

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2-11



Activity: Identifying delays



- ▶ **Step 1:** Individually, identify three delays from the Value Stream identified in the previous activity and write them down.
- ▶ **Step 2:** Write down what you think might be some potential causes for the delays.
- ▶ **Step 3:** Be prepared to share with the class.

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2-12

Identifying delays

Instructions: Identify three delays from the Value Stream identified in the previous activity and write them down. Write down what you think might be some potential causes for the delays. Be prepared to share with the class.

Delay #1:

Delay #1 cause:

Delay #2:

Delay #2 cause:

Delay #3:

Delay #3 cause:

2.1.2 Agile development

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2-13

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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2-14



Activity: Agile principles at scale

Prepare

5
min

Share

7
min

- ▶ **Step 1:** As a group, select one of the principles behind the Agile Manifesto from the following slides listed in your workbook.
- ▶ **Step 2:** Categorize the principle as:
 - Not applicable at scale
 - Works as-is at scale
 - Requires rethinking for scale
- ▶ **Step 3:** Be prepared to share with the class.

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2-15

The Agile Manifesto principles

FOR REFERENCE ONLY

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.

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2-16

Agile principles at scale

Instructions: Select one of the principles behind the Agile Manifesto from the list below. Categorize the principle as ‘Not Applicable,’ ‘Works as-is’ and ‘Requires rethinking at scale.’

Principles	Works as-is	Requires rethinking at scale	Not Applicable
1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference for the shorter timescale.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Business people and developers must work together daily throughout the project.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Working software is the primary measure of progress.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Continuous attention to technical excellence and good design enhances agility.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Simplicity—the art of maximizing the amount of work not done—is essential.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. The best architectures, requirements, and designs emerge from self-organizing teams.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Notes

The Agile Manifesto principles

FOR REFERENCE ONLY

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.

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The Agile Manifesto principles

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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.

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2.2 SAFe Core Values

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2-19

Exemplifying SAFe Core Values

Alignment

- ▶ Communicate the vision, mission, and strategy
- ▶ Connect strategy to execution
- ▶ Speak with a common language
- ▶ Constantly check for understanding
- ▶ Understand your customer

Transparency

- ▶ Create a trust-based environment
- ▶ Communicate directly, openly, and honestly
- ▶ Turn mistakes into learning moments
- ▶ Visualize work
- ▶ Provide ready access to needed information

Respect for People

- ▶ Hold precious what it is to be human
- ▶ Value diversity of people and opinions
- ▶ Grow people through coaching and mentoring
- ▶ Embrace ‘your customer is whoever consumes your work’
- ▶ Build long-term partnerships based on mutual benefit

Relentless Improvement

- ▶ Create a constant sense of urgency
- ▶ Build a problem-solving culture
- ▶ Reflect and adapt frequently
- ▶ Let facts guide improvements
- ▶ Provide time and space for innovation

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2-20



Action Plan: Exemplifying SAFe's Core Values

Duration
5 min

- ▶ **Step 1:** Individually in your workbook, assess where your organization stands in exemplifying the SAFe Core Values.
- ▶ **Step 2:** Choose one of SAFe's four Core Values that scored low for your organization.
- ▶ **Step 3:** Identify one to two actions you can take to improve those scores within the next two weeks.
- ▶ **Step 4:** Write these actions down in the Action Plan of your workbook.



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2-21

2.3 Apply SAFe Principles

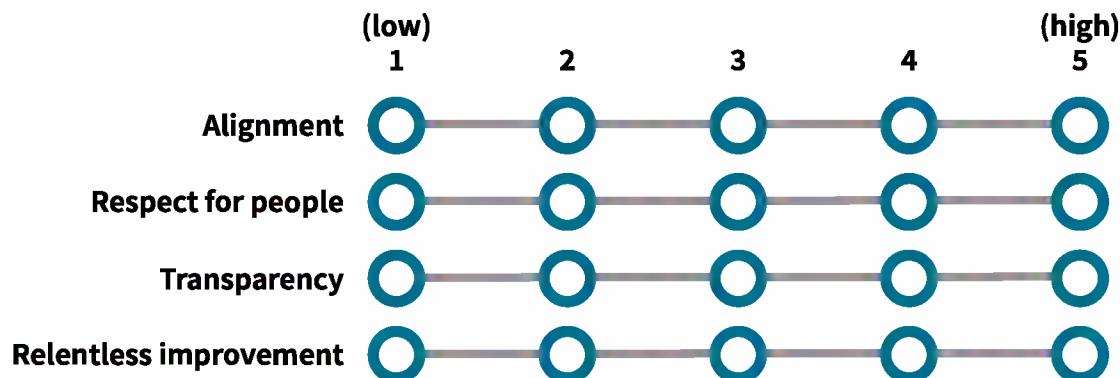
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2-22

Exemplifying SAFe's Core Values

Instructions: Assess where your organization stands in exemplifying the SAFe Core Values. Choose one of SAFe's four Core Values that scored low for your organization. Identify one to two actions you can take to improve those scores within the next two weeks. Write these actions down in the Action Plan of your workbook on page 43.



Notes



Action Plan

**Exemplifying SAFe's
Core Values**

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 Make value flow without interruptions
- #7 Apply cadence, synchronize with cross-domain planning
- #8 Unlock the intrinsic motivation of knowledge workers
- #9 Decentralize decision-making
- #10 Organize around value

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2-23

Why focus on the principles?

“A common disease that afflicts management and government administration 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 quality of product and of service are universal in nature.”

—W. Edwards Deming, *Out of the Crisis*

Portrait of W. Edwards Deming. Photo courtesy of The W. Edwards Deming Institute®.

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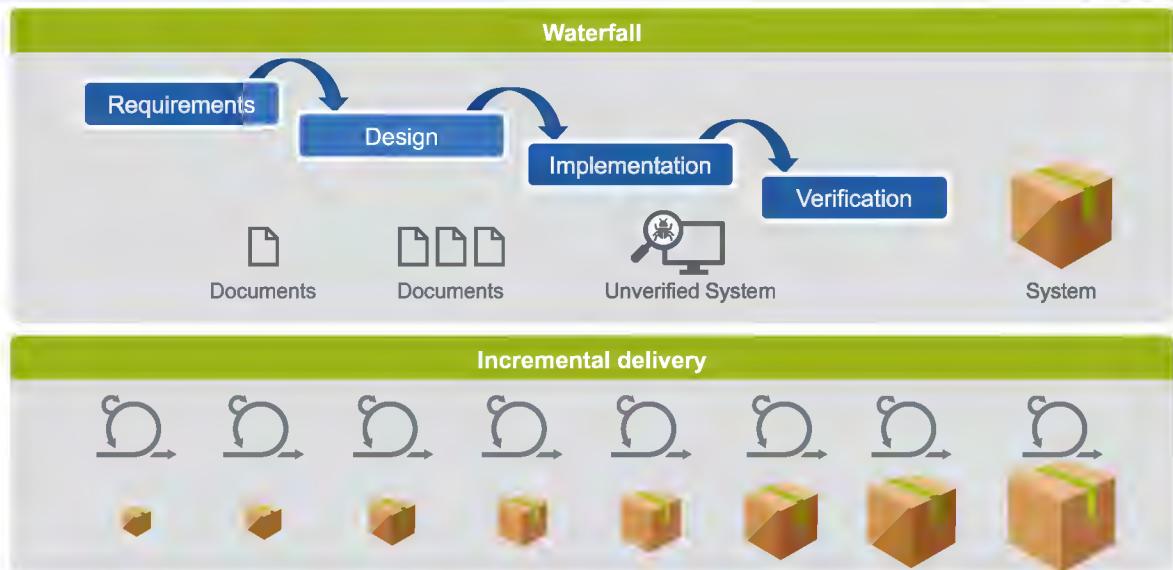
2-24

#1 Take an economic view

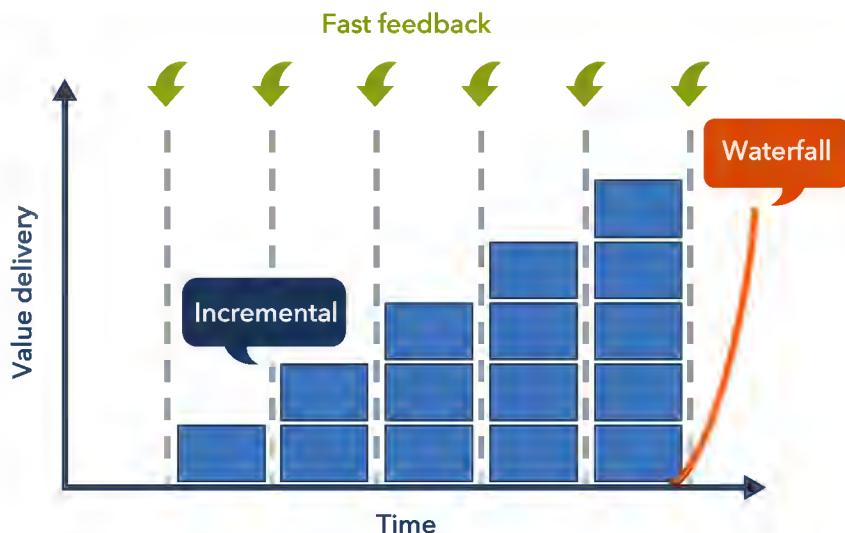
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2-25

Agile economics: Deliver early and often



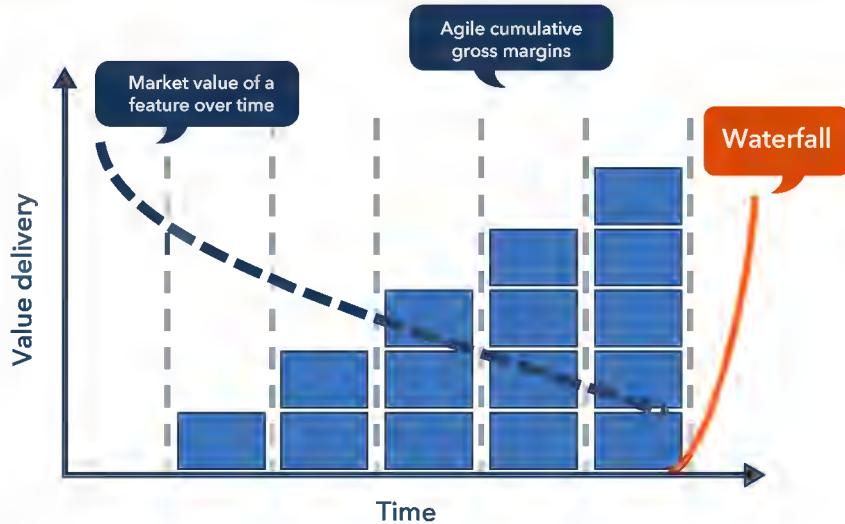
Deliver value incrementally



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2-27

Deliver value incrementally



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2-28

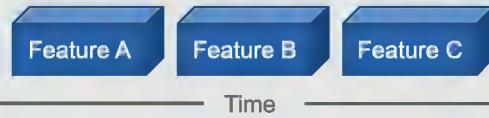


Activity: Accelerating value delivery

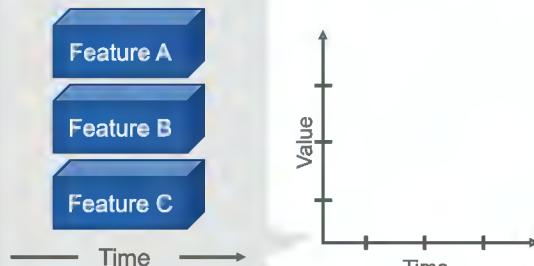


- ▶ **Step 1:** In your groups, consider that your backlog has three Features. Each will take the entire team one month to complete and delivers one unit of value.
- ▶ **Step 2:** In your group template, plot the value delivery of serial and simultaneous or parallel implementation scenarios for delivering the Features.
- ▶ **Step 3:** Be prepared to share with the class
 - **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



Scenario 2:
Parallel delivery



2-29

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#2 Apply systems thinking

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2-30

“A system must be managed. It will not manage itself. Left to themselves... components become selfish, competitive, independent profit centers, and thus destroy the system. The secret is cooperation between components toward the aim of the organization.”

—W. Edwards Deming,
The New Economics for Industry, Government, Education

Portrait of W. Edwards Deming. Photo courtesy of The W. Edwards Deming Institute®

2-31

Systems thinking



Attributes of systems thinking

- ▶ 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



Discussion: Apply systems thinking attributes



- ▶ **Step 1:** In your groups, discuss how the attributes of systems thinking apply to both types of systems.
- ▶ **Step 2:** Be prepared to share with the class.

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2-33

#3 Assume variability; preserve options

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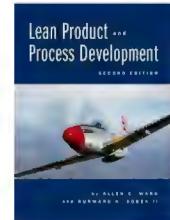
2-34

Development occurs in an uncertain world

“Rather than try to pick an early winner, aggressively eliminate alternatives through analysis, simulation, and testing.”

—Allen C. Ward, *Lean Product and Process Development*

- ▶ 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



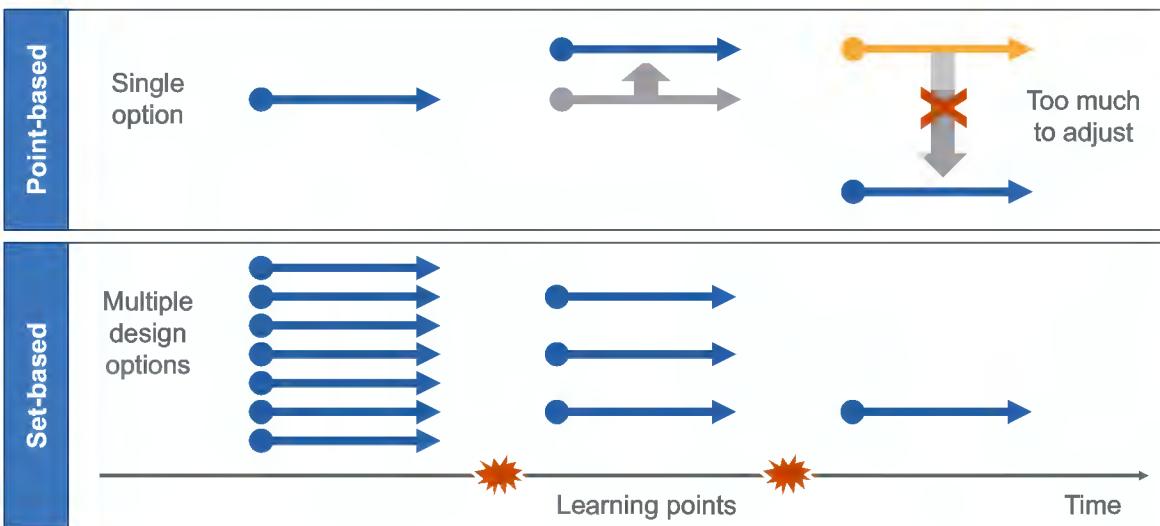
*Lean Product ...
Process Development*
by Allen C. Ward
and Durward K. Sobek II

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2-35

Cone of uncertainty

Apply a set-based approach

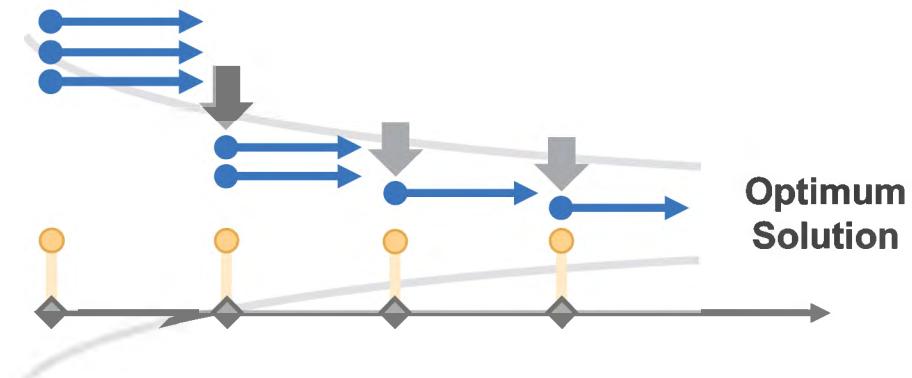


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2-36

Iterate to the optimum Solution

Set-Based Design facilitates learning and allows for continuous, cost-effective adjustments towards an optimum Solution.



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2-37



Activity: Set-Based Design in context



- ▶ **Step 1:** Individually, identify an upcoming technical or business Milestone in the Value Stream you previously identified.
- ▶ **Step 2:** In your workbook, identify some design options that might help to better assure you can meet that Milestone.
- ▶ **Step 3:** Be prepared to share with the class.

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2-38

Set-Based Design in context

Instructions: Identify an upcoming technical or business Milestone in the Value Stream you previously identified. In the notes section below, identify some design options that might help to better assure you can meet that Milestone.

Notes

#4 Build incrementally with fast, integrated learning cycles

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2-39

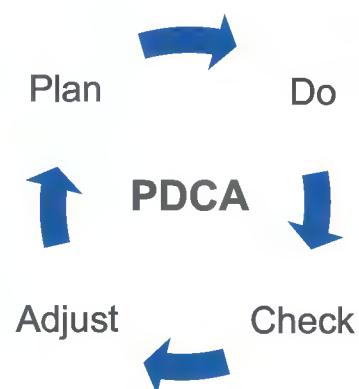
Apply fast learning cycles

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



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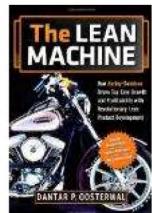
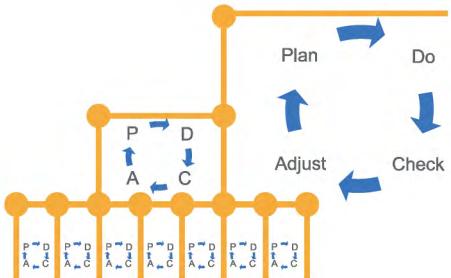
2-40

Integration points control product development

"Product development is the creation of reusable knowledge through set-based design and the establishment of development cadence and flow."

—Dantar P. Oosterwal, *The Lean Machine*

- ▶ 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

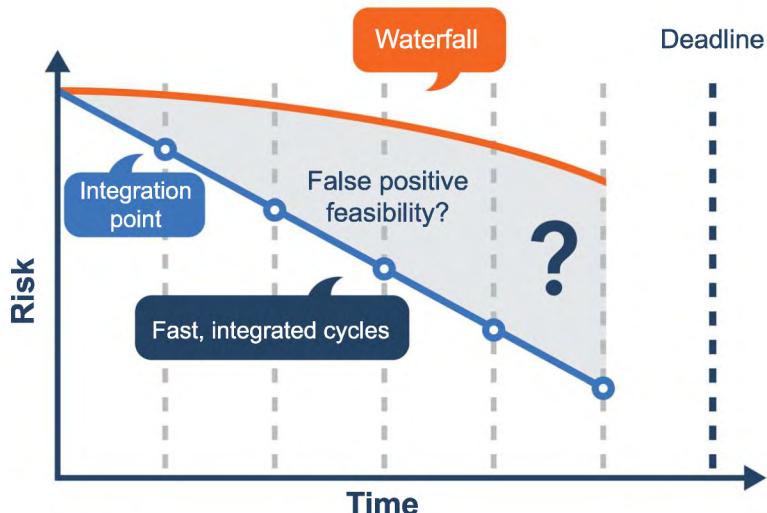


The LEAN MACHINE
by Dantar P. Oosterwal.

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2-41

Integration points reduce risk



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2-42



Activity: Accelerating learning cycles in context

Prepare
5 min

Share
3 min

- ▶ **Step 1:** Individually, consider the Value Stream and Solution that you previously identified.
- ▶ **Step 2:** In your workbook, identify which integration points might apply to reduce the risk of being in the zone of ‘false positive feasibility.’
- ▶ **Step 3:** Be prepared to share with the class.

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2-43

#5 Base milestones on objective evaluation of working systems

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2-44

Accelerating learning cycles in context

Instructions: Consider the Value Stream and Solution that you previously identified. In the notes section below, identify which integration points might apply to reduce the risk of being in the zone of ‘false positive feasibility.’

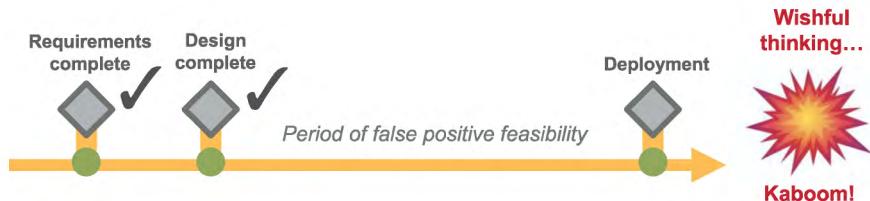
Notes

The problem of phase-gate Milestones

"There was in fact no correlation between exiting phase gates on time and the success of a project.... The data even suggested that the inverse may be true."

—Dantar P. Oosterwal, *The 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

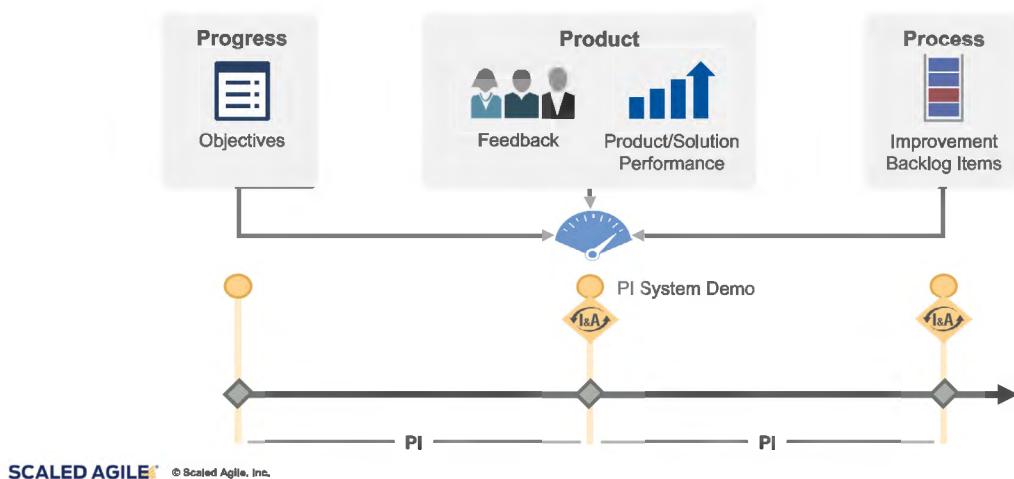


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2-45

Apply objective Milestones

PI System Demos are orchestrated to deliver objective progress, product, and process Metrics.



#6 Make value flow without interruptions

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2-47

The eight flow accelerators

1. **Visualize and limit WIP**
2. Address bottlenecks
3. Minimize handoffs and dependencies
4. Get faster feedback
5. **Work in smaller batches**
6. **Reduce queue length**
7. Optimize time ‘in the zone’
8. Remediate legacy practices and policies

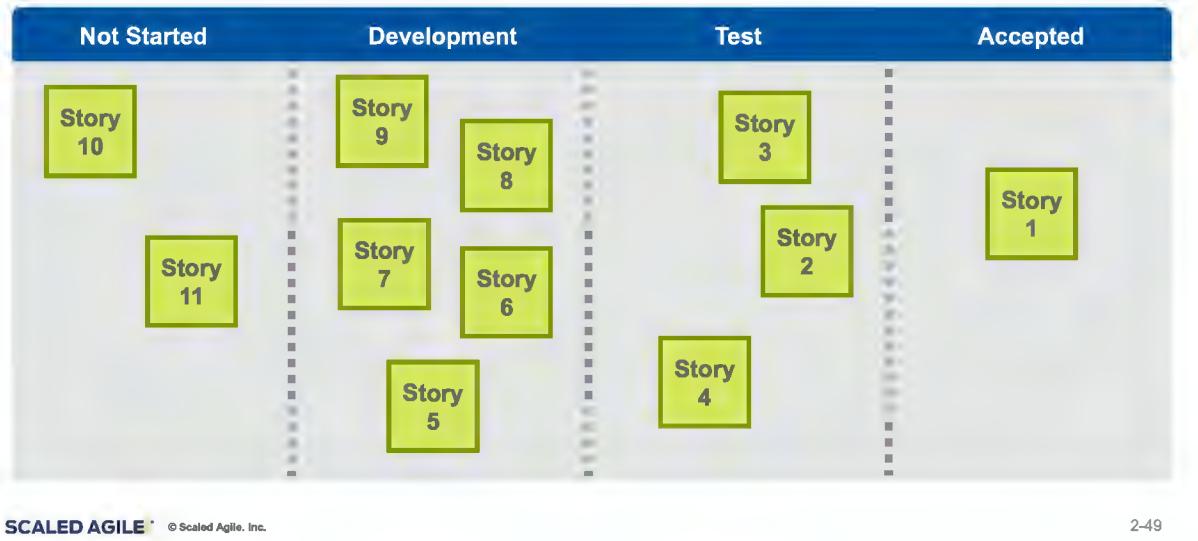


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An example from the field

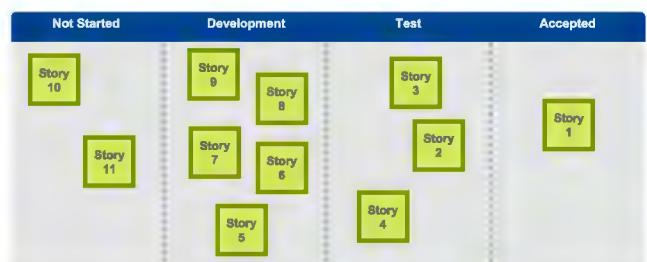
There are three days left in the iteration. How is this team doing?



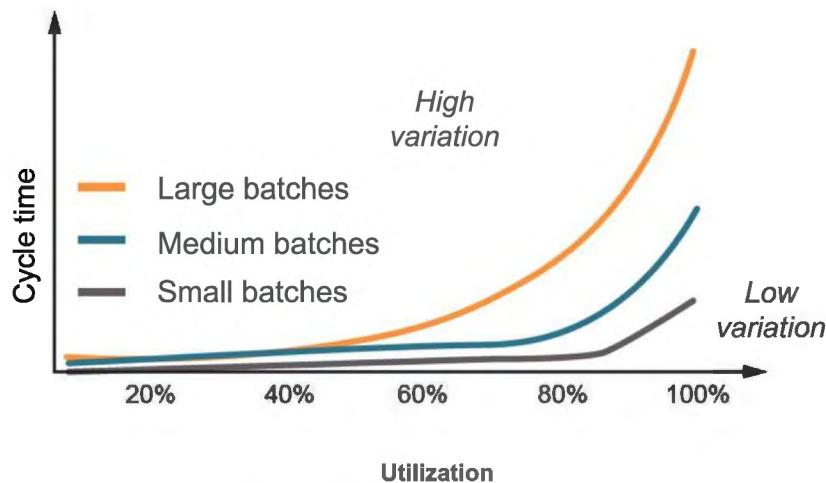
Discussion: WIP improvement opportunities



- ▶ **Step 1:** Referring to the *Team Kanban Board* example, discuss the effect of a three-Story WIP constraint on Development and test with the class.
- ▶ **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?



Reduce batch size for higher predictability



Adapted from *Implementing Lean Software Development* by Mary Poppendieck and Tom Poppendieck.

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2-51



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:** Process each coin person by person.
- ▶ **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 video demonstrating this exercise: part one of three

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2-52



Activity: Experience a small batch size

Duration
5 min

- ▶ **Step 1:** Ensure that the timekeeper is ready to start the timer.
- ▶ **Step 2:** This time, each person in their group 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 video demonstrating this exercise: part two of three

<https://bit.ly/Video-SmallBatchPart2>



Optional video demonstrating this exercise: part three of three

<https://bit.ly/Video-BatchOverviewPart3>

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2-53

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



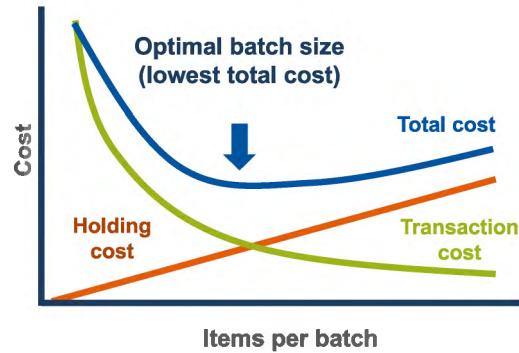
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2-54

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



Adapted from *The Principles of Product Development Flow*
by Donald G. Reinertsen.

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2-55

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



Adapted from *The Principles of Product Development Flow*
by Donald G. Reinertsen.

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2-56



Discussion: Reducing batch sizes in context

Duration
8 min

- ▶ **Step 1:** As a group, share an example of a ‘batch’ in your context.
- ▶ **Step 2:** What steps could you take to reduce the size of the batch?

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2-57

Long queues are bad queues

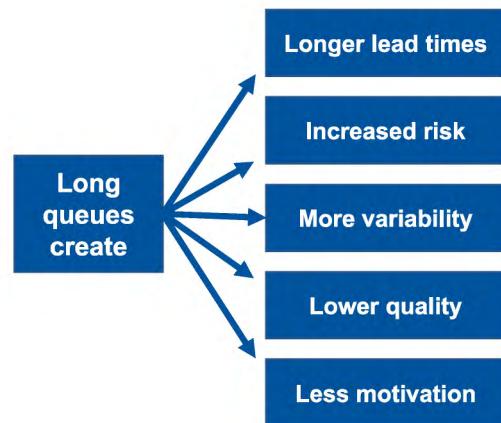
Email from a client service organization:

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



Adapted from *The Principles of Product Development Flow*
by Donald G. Reinertsen.

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2-58

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:

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

#7 Apply cadence, synchronize with cross-domain planning

Cadence and synchronization

Cadence

- ▶ Converts unpredictable events into predictable occurrences and lowers cost
- ▶ Makes waiting times for new work predictable
- ▶ Supports regular planning and cross-functional coordination
- ▶ Limits batch sizes to a single interval
- ▶ Controls injection of new work
- ▶ Provides scheduled integration points

Synchronization

- ▶ Causes multiple events to happen simultaneously
- ▶ Facilitates cross-functional trade-offs
- ▶ Provides routine dependency management
- ▶ Supports full-system integration and assessment
- ▶ Provides multiple feedback perspectives

Note: Delivering on cadence requires scope or capacity margin

Note: To work effectively, design cycles must be synchronized

Cadence without synchronization is not enough

These teams are iterating

Time spent thinking you are on track

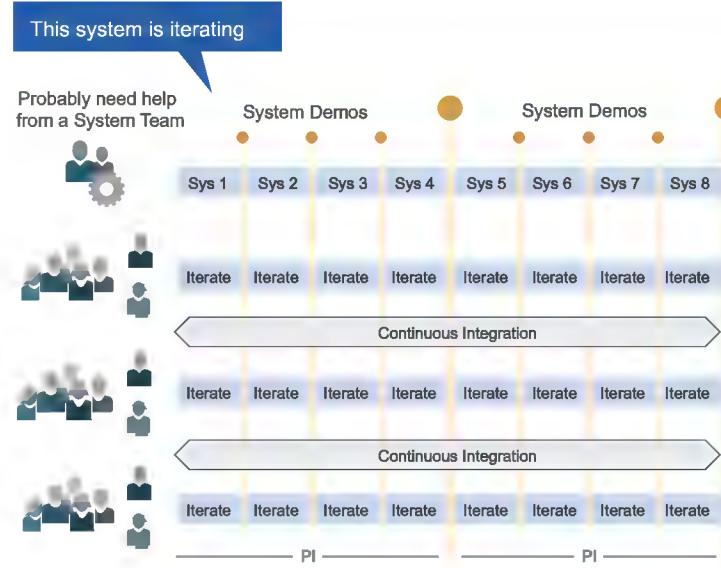
When you discover you are not

System



Integrate
and slip!

Synchronize to assure delivery

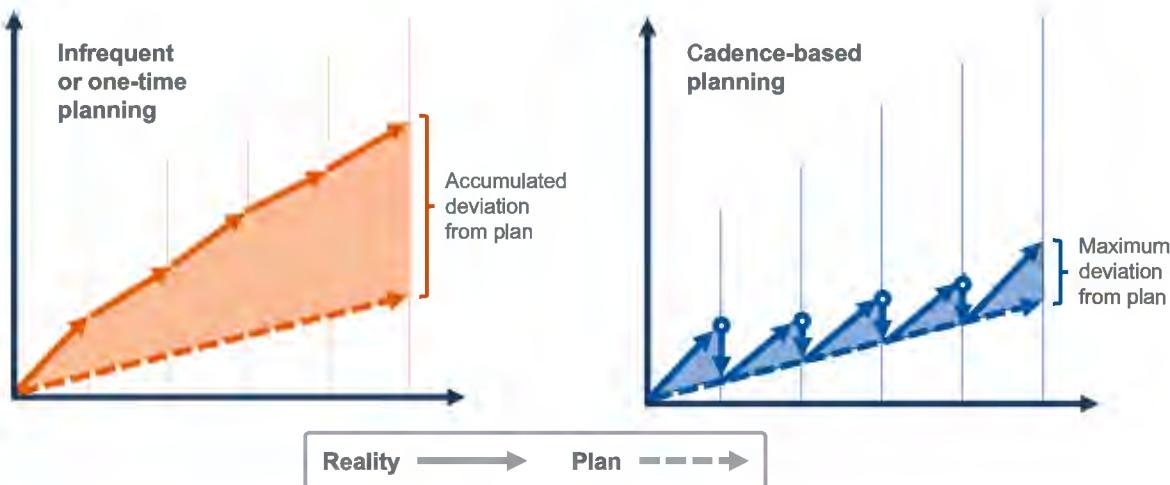


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2-63

Control variability with planning cadence

Cadence-based planning limits variability to a single interval.



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2-64

Synchronize with cross-domain planning

"The truth is, future product development tasks...can't be predetermined. ...distribute the planning and control to those who understand and can react to the interim results."

—Michael N. 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
- ▶ Identify dependencies and risks
- ▶ Important decisions are accelerated
- ▶ Teams take responsibility for their own plans

#8 Unlock the intrinsic motivation of knowledge workers

On managing knowledge workers

"That [knowledge workers] know more about their job than anybody else in the organization is part of the definition of knowledge workers."

—Peter Drucker, *The Essential Drucker*

- ▶ 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 and require autonomy
- ▶ Continuing innovation must be part of the work, the tasks, and the responsibilities of knowledge workers



Portrait of Peter Drucker.
Creative Commons image.

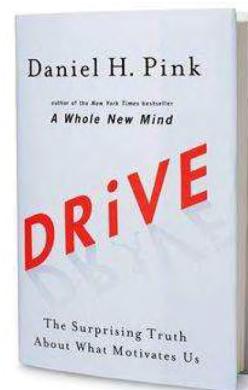
2-67

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2-67

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



Drive by Daniel H. Pink.

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2-68

#9 Decentralize decision-making

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2-69

Video: MindSpring Presents: "Greatness" by David Marquet

Duration
10 min



https://www.youtube.com/watch?v=OqmdLcyES_Q

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2-70

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 ART 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)



Activity: Decentralize decision-making



- ▶ **Step 1:** Individually, 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 zero, one, or two.
- ▶ **Step 3:** Add the total values: zero to three = centralize; four to six = decentralize.

Decision	Frequent? Y=2 N=0	Time-critical? Y=2 N=0	Economies of scale? Y=0 N=2	Total
Defining Strategic themes	0	1	0	1 (centralize)
Team Backlog refinement	2	2	2	6 (decentralize)
Define PI Dates	0	1	0	1 (centralize)

Decentralize decision-making

Instructions: Consider three significant decisions you are currently facing. Write them in the table below. Rate each decision based on the frequency, time criticality, and economies of scale, assigning a value of zero, one, or two. Add the total values: zero to three = centralize; four to six = decentralize.

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

Notes

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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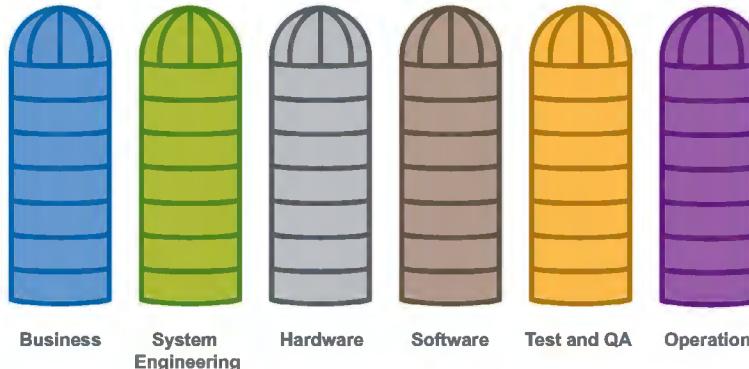
2-73

#10 Organize around value

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2-74

Value doesn't follow 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

Management challenge: Connect the silos

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2-75

Instead, organize around development Value Streams

"Al Ward tells us that the aim of development is in fact the creation of profitable operational value streams."

—John Shook, from the foreword of *Lean Product and Process Development*

Each development Value Stream:

- ▶ 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 Solution used by the Operational Value Streams

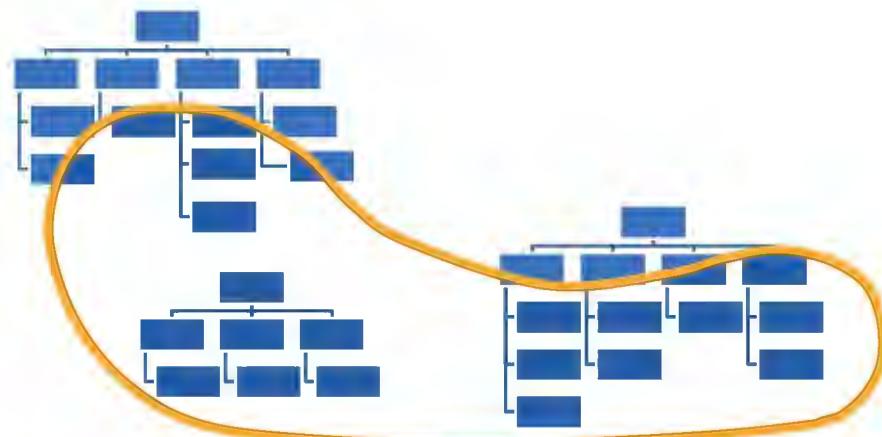


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2-76

Value flows across organizational boundaries

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



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2-77

Principles are great, but ...

“ Clarity on how to think without clarity on how to act can leave people unmoved.”

—Daniel Pink, *To Sell Is Human*

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

2-78

Lesson review

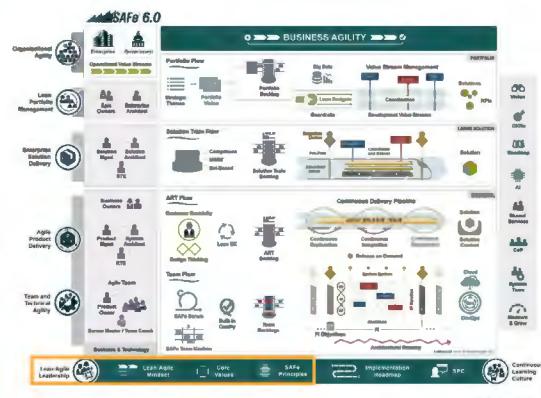
In this lesson you:

- ▶ Described the value of a Lean-Agile Mindset
- ▶ Recognized the SAFe Core Values
- ▶ Applied the SAFe Lean-Agile principles

Articles used in this lesson

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

- ▶ “Core Values”
<https://www.scaledagileframework.com/safe-core-values/>
- ▶ “Lean-Agile Mindset”
<https://www.scaledagileframework.com/lean-agile-mindset/>
- ▶ “SAFe Lean-Agile Principles”
<https://www.scaledagileframework.com/safe-lean-agile-principles/>
- ▶ “Lean-Agile Leadership”
<https://www.scaledagileframework.com/lean-agile-leadership/>



Continue your SAFe journey with the following resources:

Review the SAFe Core Values E-learning to learn more about the values that drive SAFe: https://bit.ly/Community-GettingStarted	Review the SAFe Lean-Agile Principles E-Learning to build your understanding: https://bit.ly/Community-GettingStarted
Review the Lean-Agile Mindset E-Learning to gain understanding about mindset changes: https://bit.ly/Community-GettingStarted	Watch this one-minute video to understand How Batch Size Affects Delivery Speed : https://bit.ly/Video-BatchandDeliverySpeed
Watch the fifteen-minute Playlist: SAFe Lean-Agile Principles (6.0) to reinforce your understanding of the SAFe principles: https://bit.ly/Playlist-Principles6	

References

- Bodek, Norman. Foreword to *Toyota Production System: Beyond Large-Scale Production* by Taiichi Ohno. Boca Raton: CRC Press, 1988. Kindle Edition.
- Deming, W. Edwards. *The New Economics for Industry, Government, Education*. Cambridge: The MIT Press, 2018. 36.
- Deming, W. Edwards. *Out of the Crisis*. Cambridge: The MIT Press, 2000. 110.
- Drucker, Peter F. *The Essential Drucker: The Best of Sixty Years of Peter Drucker's Essential Writings on Management*. New York: HarperCollins, 2001. 78.
- Kennedy, Michael N. *Product Development for the Lean Enterprise: Why Toyota's System Is Four Times More Productive and How you can Implement It*. Richmond: The Oaklea Press, 2003. 150.
- Ohno, Taiichi. *Toyota Production System: Beyond Large-Scale Production*. Boca Raton: CRC Press, 1988. Kindle Edition.
- Oosterwal, Dantai P. *The Lean Machine: How Harley-Davidson Drove Top-Line Growth and Profitability with Revolutionary Lean Product Development*. New York: AMACOM, 2010. 143, 148-149.

References

- Pink, Daniel H. *Drive: The Surprising Truth About What Motivates Us*. New York: Riverhead Books, 2011.
- Pink, Daniel H. *To Sell Is Human: The Surprising Truth About Moving Others*. New York: Riverhead Books, 2012. 140.
- Poppoendieck, Mary and Tom Poppoendieck. *Implementing Lean Software Development: From Concept to Cash*. Upper Saddle River, NJ: Addison-Wesley, 2007.
- Reinersten, Donald G. *The Principles of Product Development Flow: Second Generation Lean Product Development*. Redondo Beach: Celeritas Publishing, 2009.
- Shook, John. Foreword to *Lean Product and Process Development*, 2nd Edition by Allen C. Ward and Durward Sobek. Cambridge: Lean Enterprise Institute, 2014.
- Ward, Allen C. and Durward K. Sobek II. *Lean Product and Process Development*, 2nd ed. Cambridge: Lean Enterprise Institute, 2014. Kindle Edition.
- Womack, James P. and Daniel T. Jones. *Lean Thinking: Banish Waste and Create Wealth in Your Corporation*, 2nd ed. New York: Free Press, 2003.

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 learners access to the SAFe Agilist exam and related preparation materials.



SCALED AGILE®

Why Team and Technical Agility

Agile Teams and teams of Agile Teams create and support the business Solutions that deliver consistent 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.



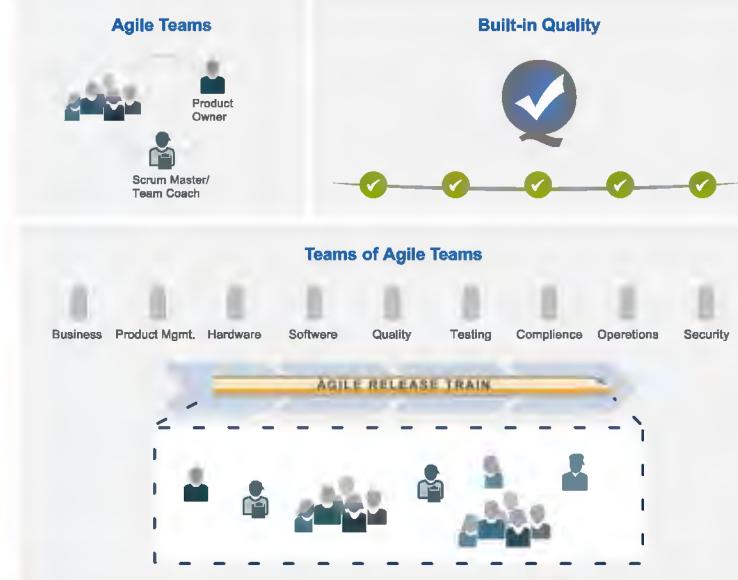
3-2

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:

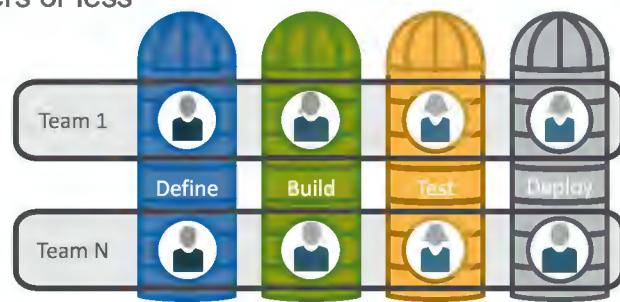
- ▶ Prepare to form cross-functional Agile Teams
- ▶ Describe Built-in Quality practices
- ▶ Recommend organizing around value with Agile Release Trains (ARTs)

3.1 Forming cross-functional Agile Teams

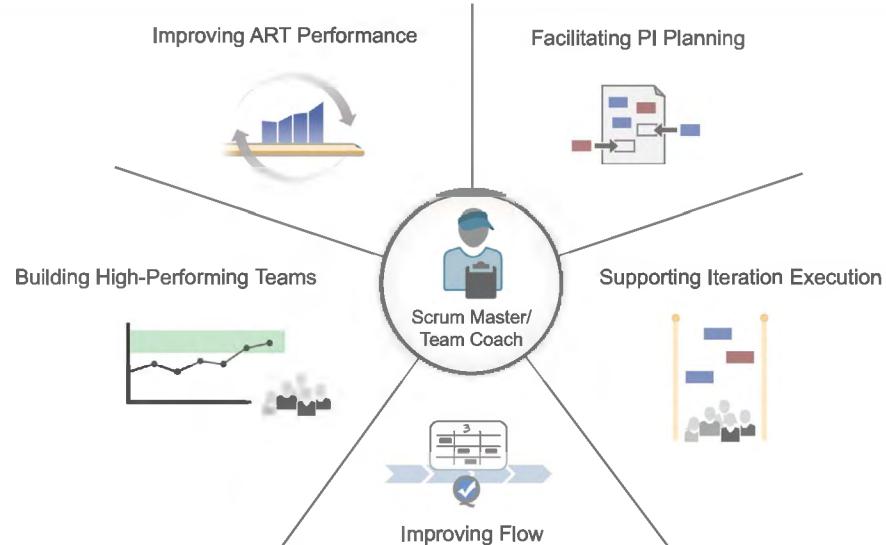
Build cross-functional Agile Teams

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
- ▶ Typically include 10 team members or less
- ▶ Contain two specialty roles:
 - Scrum Master/Team Coach
 - Product Owner



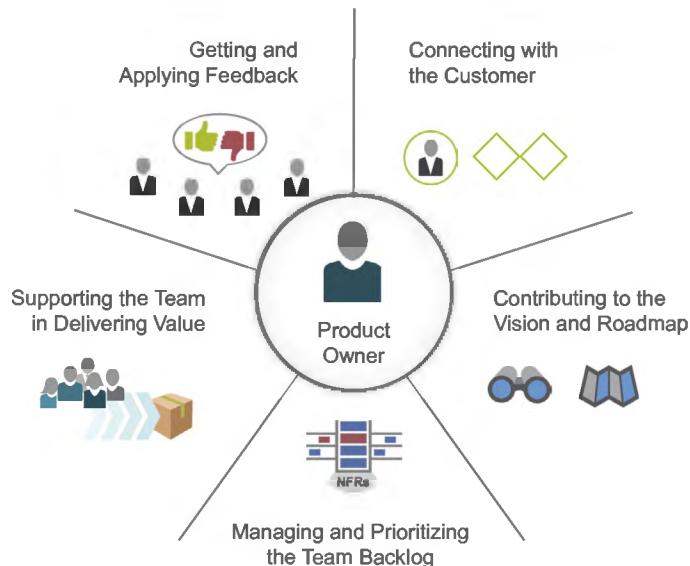
Scrum Master/Team Coach responsibilities



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3-7

Product Owner responsibilities



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3-8



Activity: Form teams for the PI Planning simulation

Duration
5 min

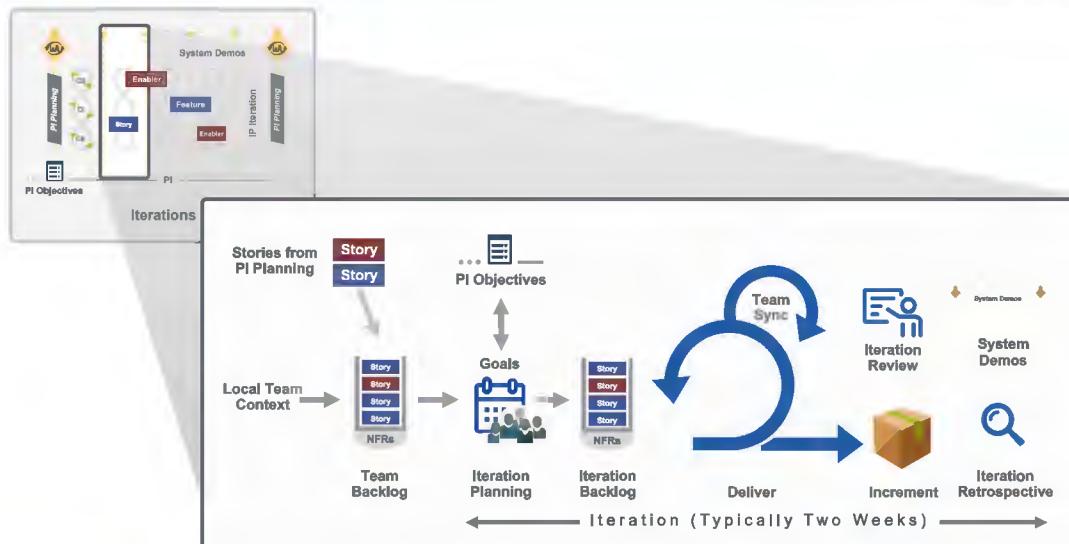
- ▶ **Step 1:** Break into teams. Create a team name in your Team Template.
- ▶ **Step 2:** Discuss the Scrum Master/Team Coach responsibilities. Who on your team is best suited to fulfill this role?
- ▶ **Step 3:** Discuss the Product Owner responsibilities. Who on your team is best suited to fulfill this role?
- ▶ **Step 4:** Make sure the team name and the roles are visible to all other teams in your template.
 - **Note:** In the next lesson, your team will experience Planning Interval (PI) Planning.



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3-9

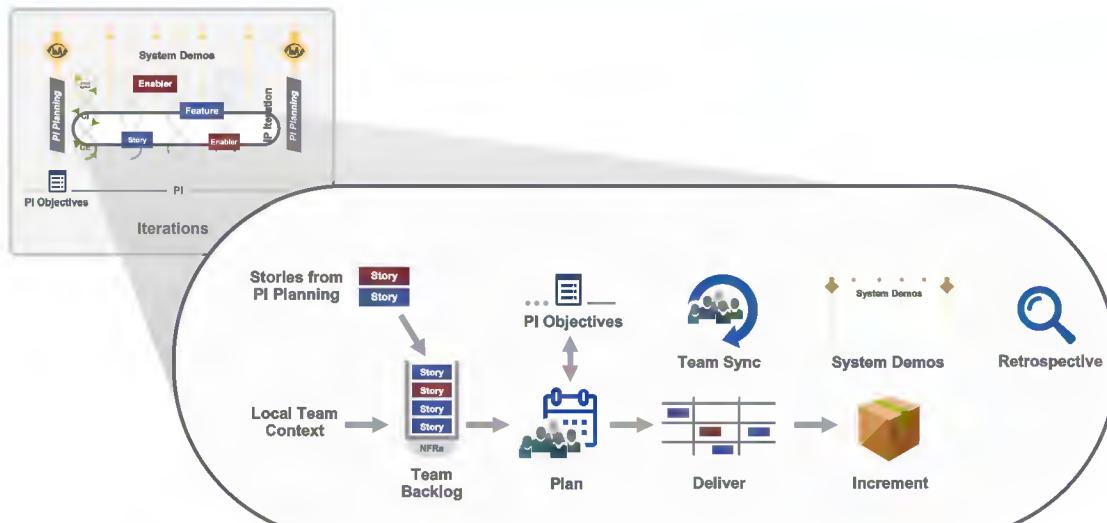
SAFe Scrum overview



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3-10

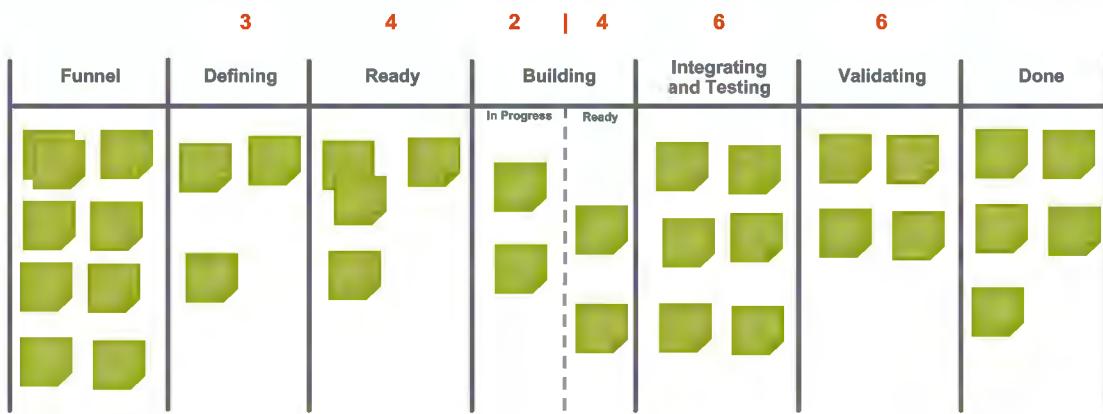
SAFe Team Kanban overview



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3-11

All Agile Teams visualize flow



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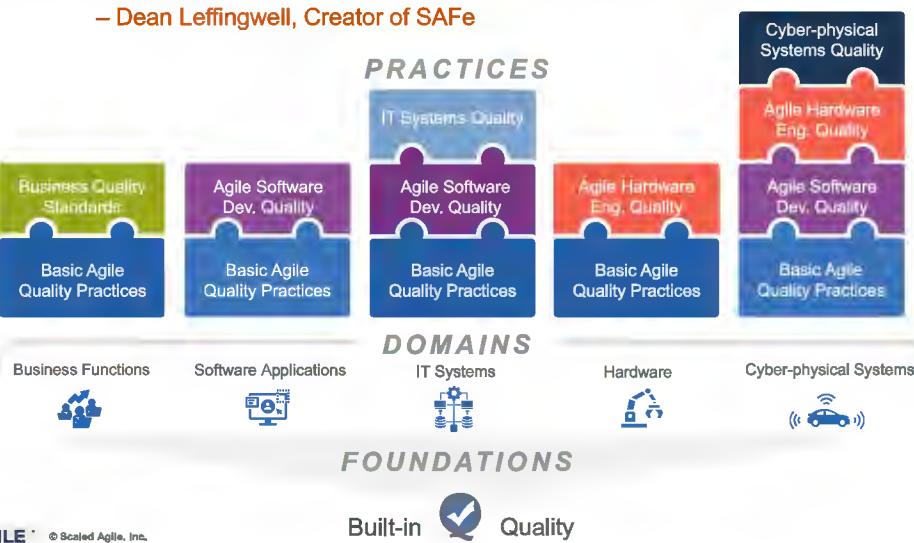
3-12

3.2 Built-in Quality

Built-in Quality

"You can't scale crappy code (or hardware, or anything else)."

– Dean Leffingwell, Creator of SAFe



Basic Agile quality practices

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

- ▶ **Shift learning left** – Reveal problems sooner, take corrective action with minimum impact
- ▶ **Pairing and peer review** – Multiple viewpoints enhance work quality and grow knowledge
- ▶ **Collective ownership and T-shaped skills** – Reduce bottlenecks and increase flow
- ▶ **Artifact standards and definition of done** – Ensure consistent quality for each work product
- ▶ **Workflow automation** – Enable small batches and reduce errors



Activity: Reflect on basic Agile quality practices in your context



- ▶ **Step 1:** Individually, reflect on the basic Agile quality practices and consider how they might apply in your context and capture this in your workbook.
- ▶ **Step 2:** Be prepared to share with the class.



Shift learning left

Pairing and peer review

Collective ownership and T-shaped skills

Artifact standards and definition of done

Workflow automation

Reflect on basic Agile quality practices in your context

Instructions: Reflect on the basic Agile quality practices and consider how they might apply in your context and capture this in the notes section below.

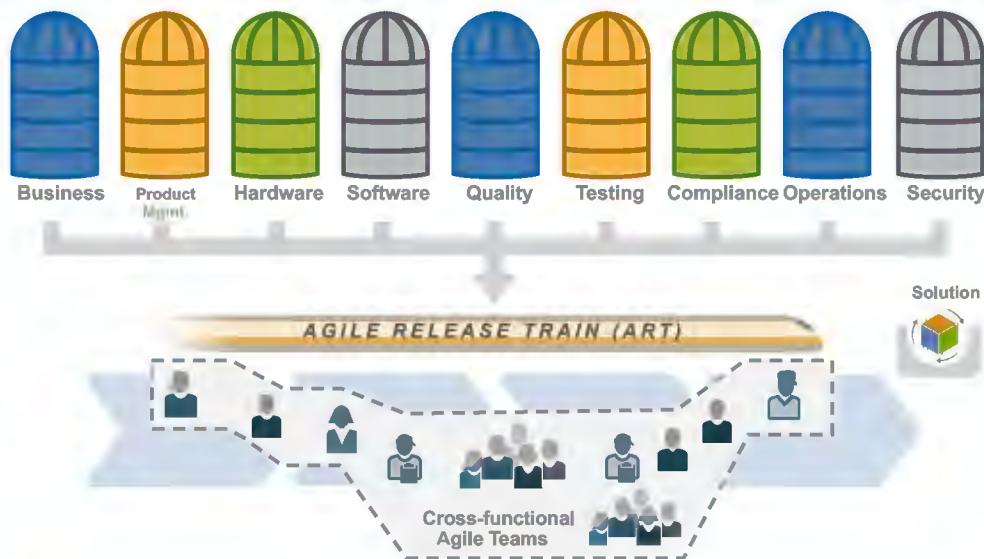
Notes

3.3 Organizing Agile Release Trains around the flow of value

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3-17

ARTs are cross-functional



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3-18

Agile Release Trains

- ▶ A virtual organization of 5–12 teams (50–125+ individuals)
- ▶ Synchronized on a common cadence—a PI
- ▶ Aligned to a common mission via a single ART Backlog



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3-19

Roles on the Agile Release Train



Release Train Engineer is a coach for the Agile Release Train.



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



System Architect 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.

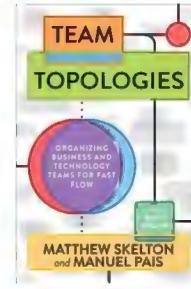


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3-20

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



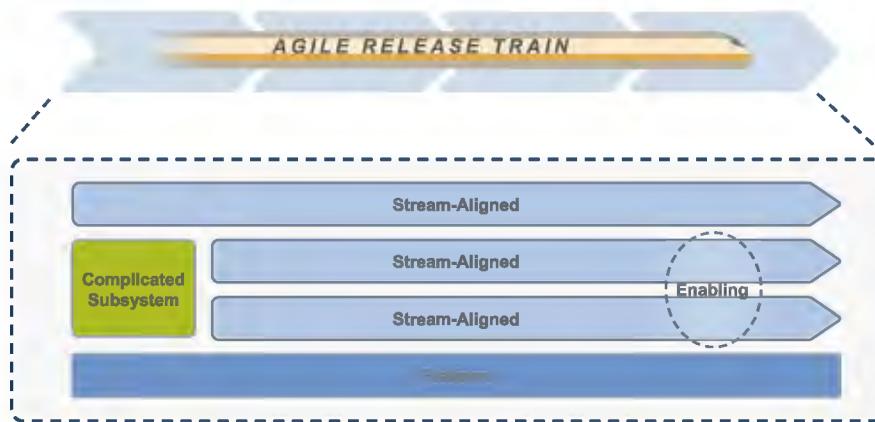
Team Topologies by Matthew Skelton and Manuel Pais

More information in the advanced topic article:

<https://www.scaledagileframework.com/organizing-agile-teams-and-arts-team-topologies-at-scale/>

ARTs are organized to deliver value continuously

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



Lesson review

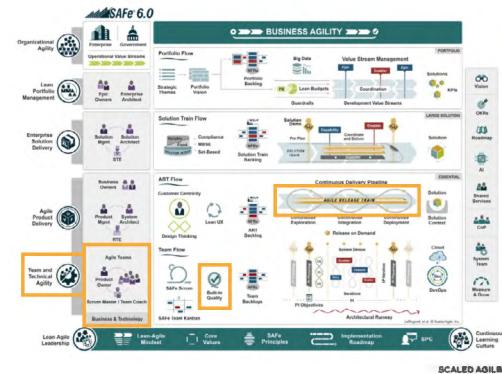
In this lesson you:

- ▶ Prepared to form cross-functional Agile Teams
- ▶ Described Built-in Quality practices
- ▶ Recommended organizing around value with Agile Release Trains (ARTs)

Articles used in this lesson

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

- ▶ “Team and Technical Agility”
<https://www.scaledagileframework.com/team-and-technical-agility/>
- ▶ “Built-In Quality”
<https://www.scaledagileframework.com/built-in-quality/>
- ▶ “Agile Teams”
<https://www.scaledagileframework.com/agile-teams/>
- ▶ “Agile Release Train”
<https://www.scaledagileframework.com/agile-release-train/>



Continue your SAFe journey with the following resources:

<p>Review the <i>Agile Basics</i> E-Learning to refresh Agile basics understanding: https://bit.ly/Community-GettingStarted</p>	<p>Download the “Team Formation Toolkit” to create successful teams: https://bit.ly/Community-ToolkitsandTemplates</p>
<p>Watch the <i>Playlist: Agile Software Engineering Vlog</i> to review the Built-in Quality technical practices: https://bit.ly/Playlist-SoftwareEngineering</p>	<p>Facilitate effective team events using the SAFe ART and Team Events tools: https://bit.ly/Community-SAFeARTandTeamEvents</p>
<p>Run a “Team and Technical Agility Assessment” to identify opportunities: https://bit.ly/Community-MeasureAndGrow</p>	

SAFEGUIDE.COM | © Scaled Agile, Inc.

3-25

References

Skelton, Matthew and Manuel Pais. *Team Topologies: Organizing Business and Technology Teams for Fast Flow*. Portland: IT Revolution, 2019.

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3-26

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 learners access to the SAFe Agilist exam and related preparation materials.



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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 ART Backlog

4.3 PI Planning

4.4 Develop on cadence; release on demand

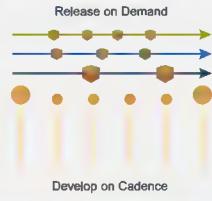
4.5 Building a Continuous Delivery Pipeline with DevOps

Customer Centricity



Design Thinking

Develop on Cadence; Release on Demand



DevOps and the Continuous Delivery Pipeline



DevOps



4-3

Learning objectives

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

- ▶ Describe the benefits of a Customer-centric culture
- ▶ Practice applying Design Thinking
- ▶ Prioritize the ART Backlog with weighted shortest job first (WSJF)
- ▶ Participate in a PI Planning simulation
- ▶ Explain the need to develop on cadence and release on demand
- ▶ Justify the need to build and maintain a Continuous Delivery Pipeline with DevOps

4.1 Customer Centricity and Design Thinking

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4-5

Why Customer Centricity?

Design whole-product Solutions with a deep understanding of Customer needs.

Benefits include:

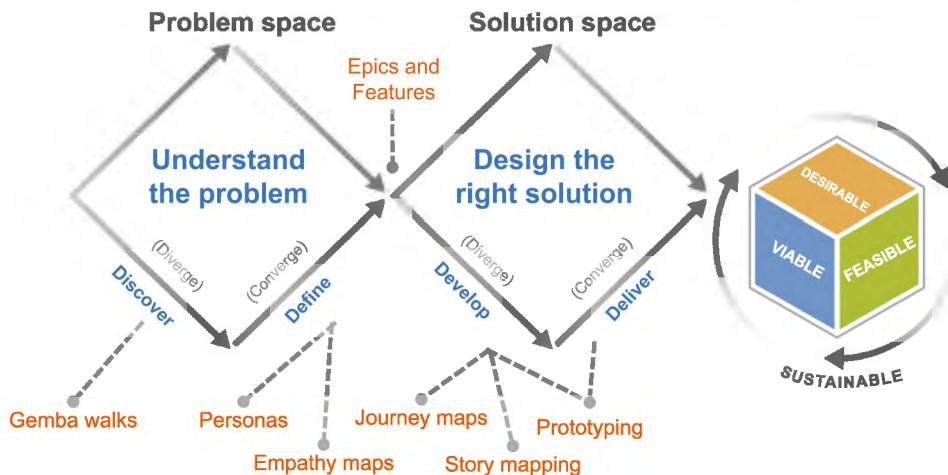
- ▶ Greater revenue
- ▶ Increased employee engagement
- ▶ More satisfied Customers
- ▶ Alignment to mission
- ▶ Better product resiliency and sustainability



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4-6

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.

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4-7

Use personas to understand Customers

Personas are characterizations of the people who might use your product. Personas will:

- ▶ Convey the problems end users are 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 high-speed Wi-Fi
- My wife works so she doesn't have much spare time to help
- I am not home on some weekends
- I'd rather text instead of calling or emailing suppliers

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4-8

Use empathy maps to identify with Customers

- ▶ The empathy map is a tool that helps teams develop deep, shared understanding of and empathy for the Customer
- ▶ Use the empathy map to design better user experiences and Value Streams



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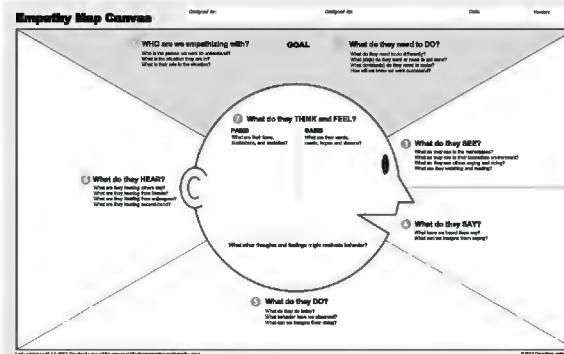
4-9



Activity: Empathy mapping



- ▶ **Step 1:** In your group, create an empathy map using 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:** Be prepared to share with the class.



"Empathy Map" by Dave Gray

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4-10

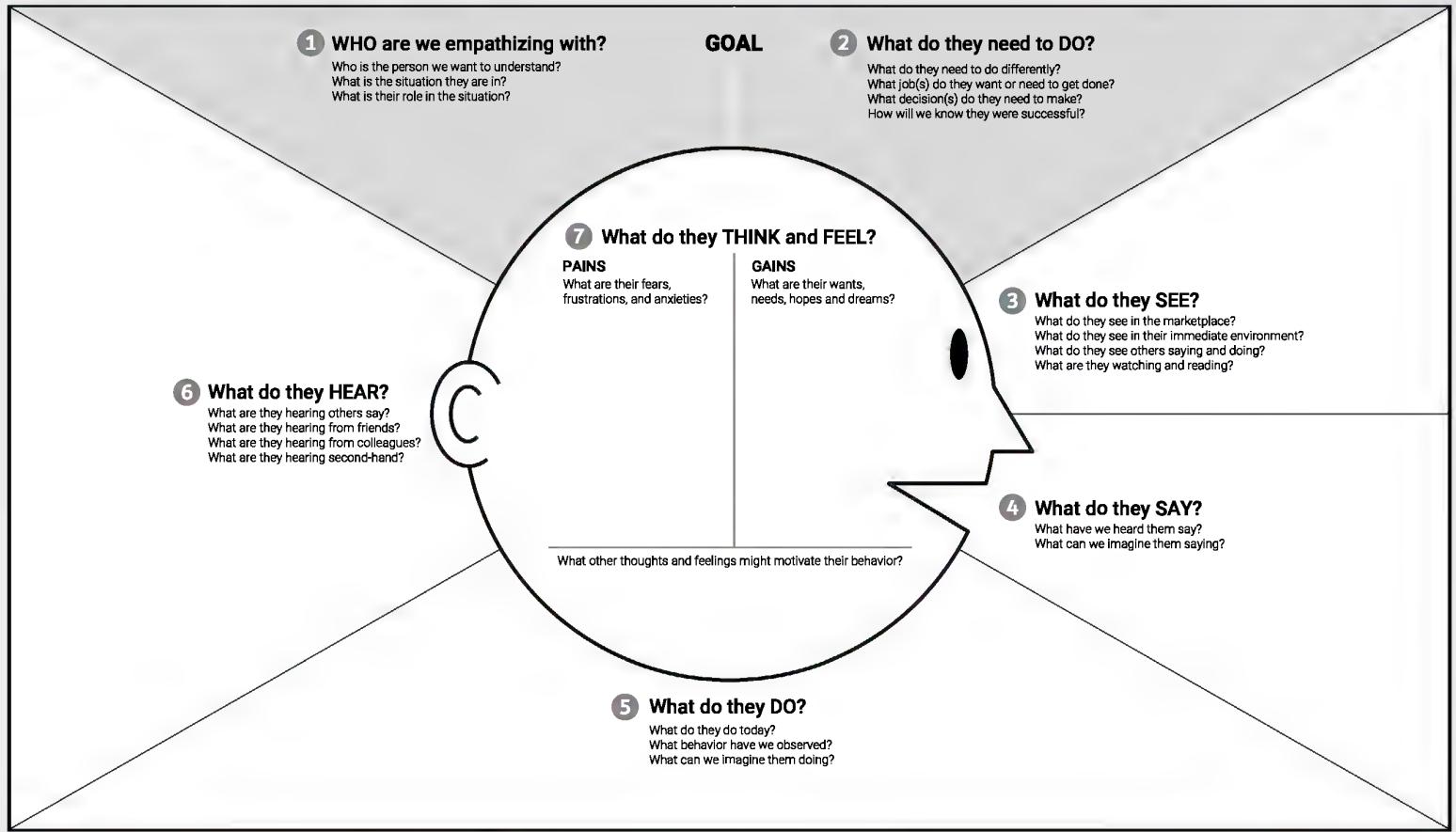
Empathy Map Canvas

Designed for:

Designed by:

Date:

Version:

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

© 2017 Dave Gray, xplane.com

Empathy mapping

Instructions: Select a user customer of a product or service from one of your companies in your group. Following the sequence of numbers, fill in each section of the empathy map in the spaces below. Discuss with your group how the empathy map can inform Solution development. Be prepared to share with the class.



#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?

Empathy mapping

#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?

Empathy mapping

#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?

Empathy mapping

#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

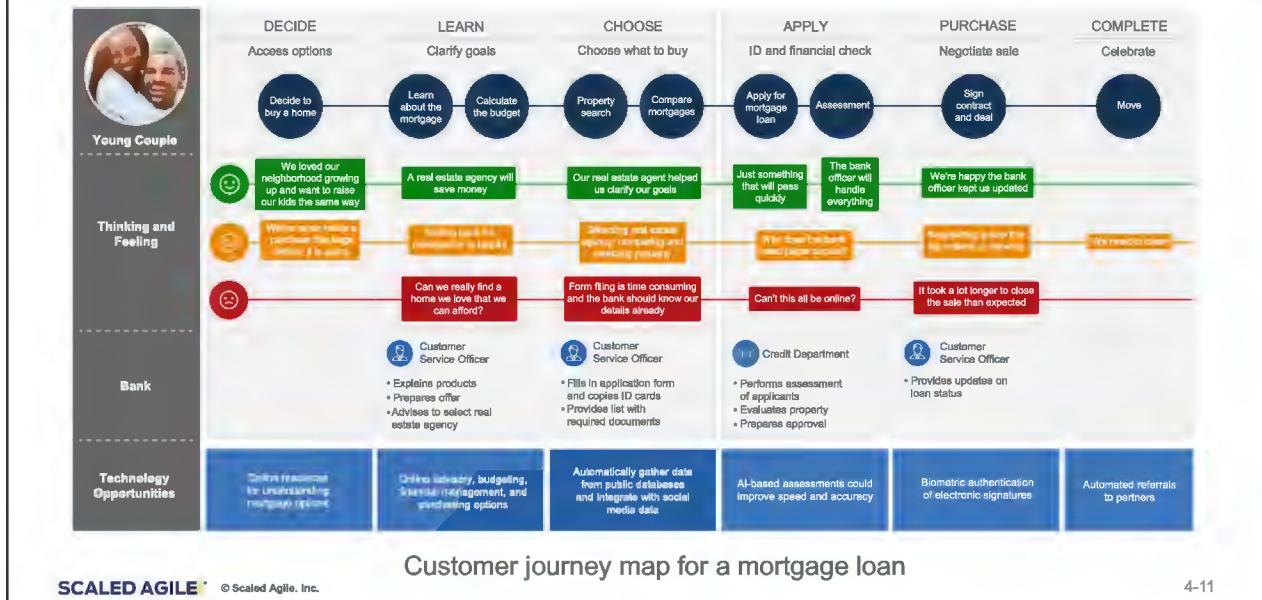
What are their fears, frustrations and anxieties?

GAINS

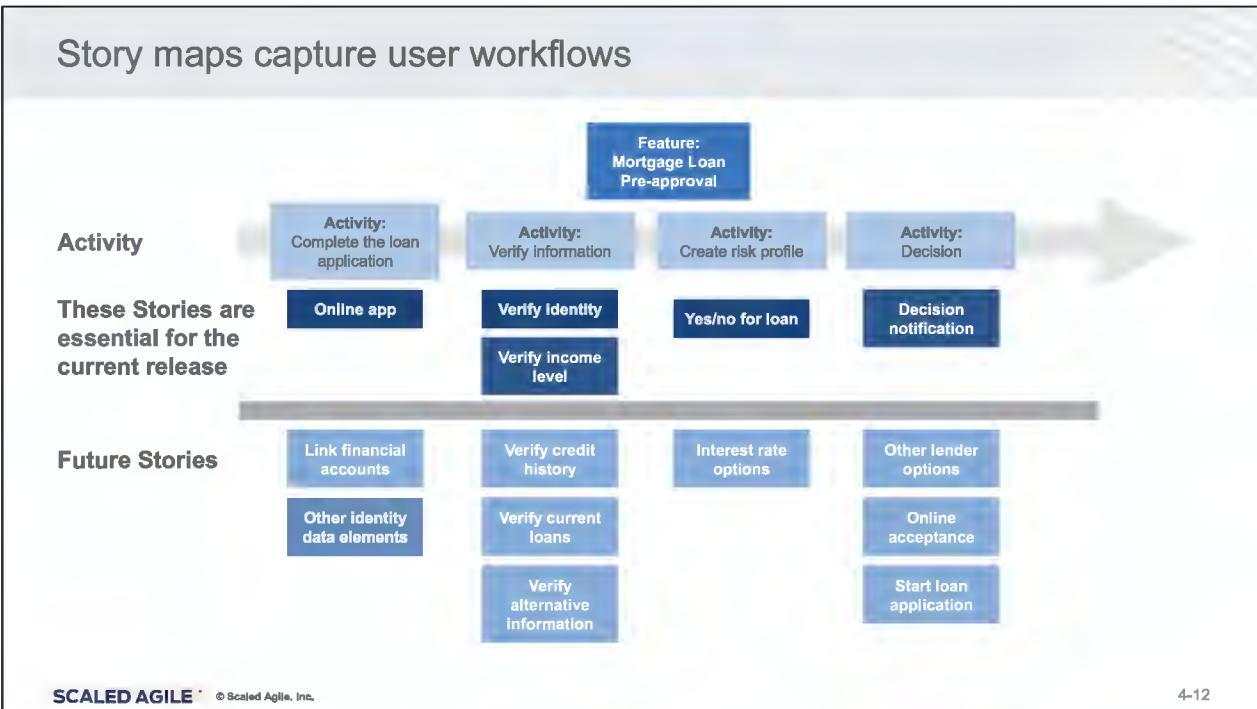
What are their wants, needs, hopes and dreams?

What other thoughts and feelings might motivate their behavior?

Use journey maps to design the end-to-end Customer experience



Story maps capture user workflows



4.2 Prioritizing the ART Backlog

Vision aligns everyone on the product's direction

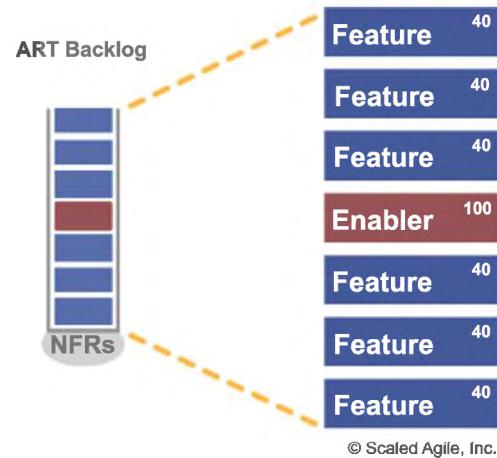
The product Vision is a description of the future state of the product

- ▶ 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 fulfill the product Vision

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



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4-15

Features represent the work for the Agile Release Train

- ▶ The Feature benefit hypothesis justifies development costs and provides business perspective for decision-making
- ▶ Acceptance criteria are typically defined during ART 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

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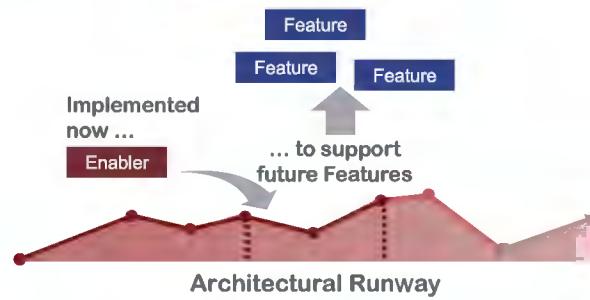
4-16

Enablers build the Architectural Runway

The Architectural Runway is the existing code, hardware components, marketing branding guidelines, and other variables that enable near-term business Features.

- ▶ Enablers build up the runway, including exploration, architecture, infrastructure, and compliance
- ▶ Features consume the runway
- ▶ The Architectural Runway must be continuously maintained
- ▶ Use capacity allocation (a percentage of the 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.



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4-17



Activity: Describe three Features

Duration

- ▶ **Step 1:** Individually, identify three Features from your context and write them in your workbook.
- ▶ **Step 2:** If you have time, choose one of the Features and add the benefit hypothesis and acceptance criteria.

Feature:
Multi-factor authentication

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

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4-18

Describe three Features

Instructions: Identify three Features from your context and write them below. If you have time, choose one of the Features and add the benefit hypothesis and acceptance criteria.

Feature: Multi-factor authentication

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

Feature:

Benefit Hypothesis:

Feature:

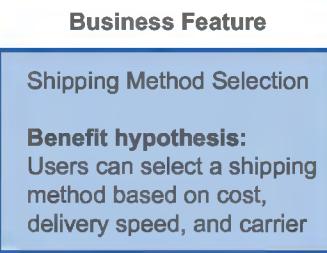
Benefit Hypothesis:

Feature:

Benefit Hypothesis:

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 the end user's roles, activities, and goals
- ▶ Features fit in one PI for one ART; Stories fit in one Iteration for one team



Enabler Story

Research how to calculate the shipping costs.

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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4-19

Estimate Stories with relative Story points

- ▶ A Story point is a number that represents:
 - **Volume** - How much there is
 - **Complexity** - How difficult it is
 - **Knowledge** - What we know
 - **Uncertainty** - What's not known
- ▶ Story points are relative, and are not connected to any specific unit of measure



What size is it?



Guidance: Compared to other Stories, an eight-point Story should take relatively four times longer than a two-point Story.

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4-20

Apply estimating poker for fast, relative estimating

- ▶ Estimating poker combines expert opinion, analogy, and disaggregation for quick but reliable estimates
- ▶ All members participate
- ▶ Increases accuracy by including all perspectives
- ▶ Builds understanding and creates shared understanding

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

Agile Estimating and Planning by Mike Cohn

Warning: Estimation performed by a manager, architect, or select group negates these benefits.

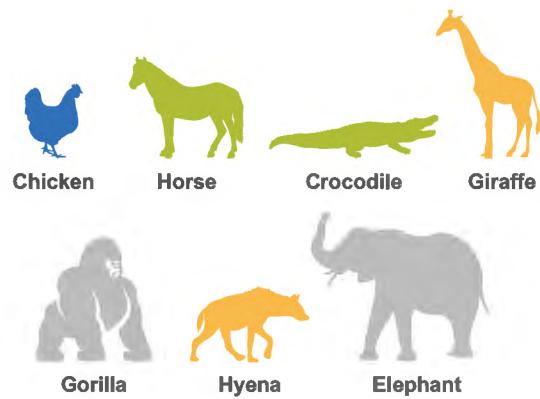


Activity: Relative size estimating



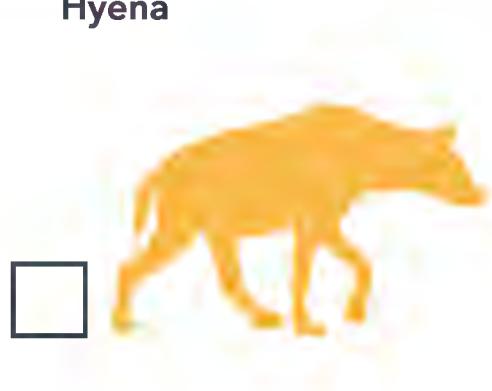
Use estimating poker to relatively estimate the mass of a set of animals.

- ▶ **Step 1:** In your groups, identify the smallest animal and mark it as **1**.
- ▶ **Step 2:** Estimate the remaining animals using values **2, 3, 5, 8, 13, 20, 40, and 100**.



Relative size estimating

Hyena



Horse



Gorilla



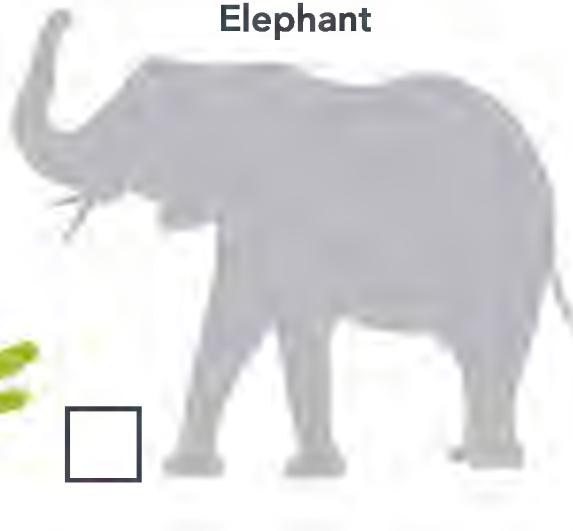
Chicken



Giraffe



Elephant



Crocodile



Prioritize Features for optimal ROI

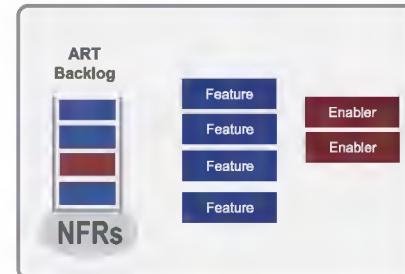
In a flow system, job sequencing is the key to improving economic outcomes.

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

- ▶ The cost of delay (CoD) in delivering value
- ▶ How long it takes to implement value

"If you only quantify one thing, quantify the cost of delay."

—Donald G. Reinertsen, *The Principles of Product Development Flow*



Video: Calculating WSJF to Prioritize the Program Backlog



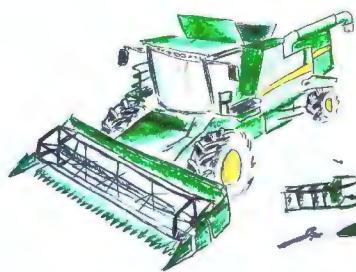
Calculating WSJF to Prioritize Program Backlog

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Provider of SAFe®

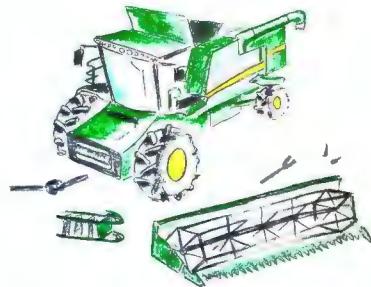
<https://bit.ly/Video-CalculatingWSJF>

Example with equal CoD: Which job first?

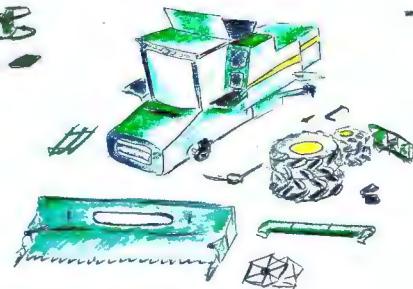
A \$\$, one day



B \$\$, three days



C \$\$, 10 days



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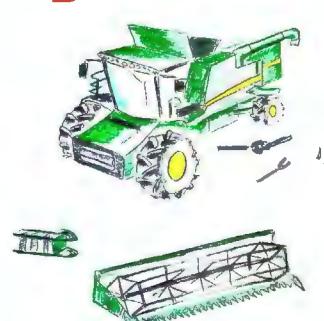
4-25

Example with equal duration: Which job first?

A \$\$\$, three days



B \$\$, three days



C \$, three days

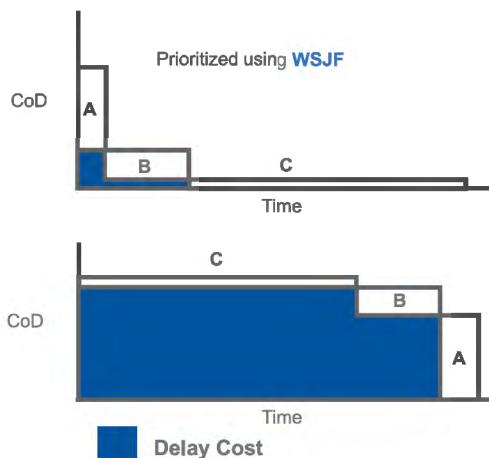


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4-26

General case: Any CoD and duration

Give preference to jobs with a shorter duration and higher CoD, using WSJF:



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

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

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4-27

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 and Opportunity Enablement (RR&OE)



What else this does 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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4-28

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

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



Activity: WSJF prioritization



- ▶ **Step 1:** Individually, in your workbook, prioritize three of the Features you identified earlier using WSJF.
- ▶ **Step 2:** Be prepared to share with the class.

Feature	User-business value	Time criticality	RR/OE Value	CoD	Job size	WSJF
Book reviewing	1	+	1	+	1	= 3 ÷ 3 = 1
Profile management	5	+	5	+	5	= 15 ÷ 5 = 3
Book rating	3	+	1	+	5	= 9 ÷ 1 = 9

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.

Weighted shortest job first (WSJF) prioritization

Instructions: Prioritize three of the Features you identified earlier using WSJF. Be prepared to share with the class.

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

Feature	User-business value	Time criticality	RR OE value	COD	Job size	WSJF
	+	+	= 0.00	÷	=	
	+	+	= 0.00	÷	=	
	+	+	= 0.00	÷	=	

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.

4.3 PI Planning

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Video: SAFe at Travelport: The Power of PI Planning

Duration
2 min

SAFe®
at Travelport
The Power of PI Planning



SCALED AGILE®
Provider of SAFe

<https://bit.ly/Video-PowerofPIPlanning>

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What is PI Planning?

Planning Interval (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
- ▶ System Architect and User Experience (UX) work as intermediaries for governance, interfaces, and dependencies

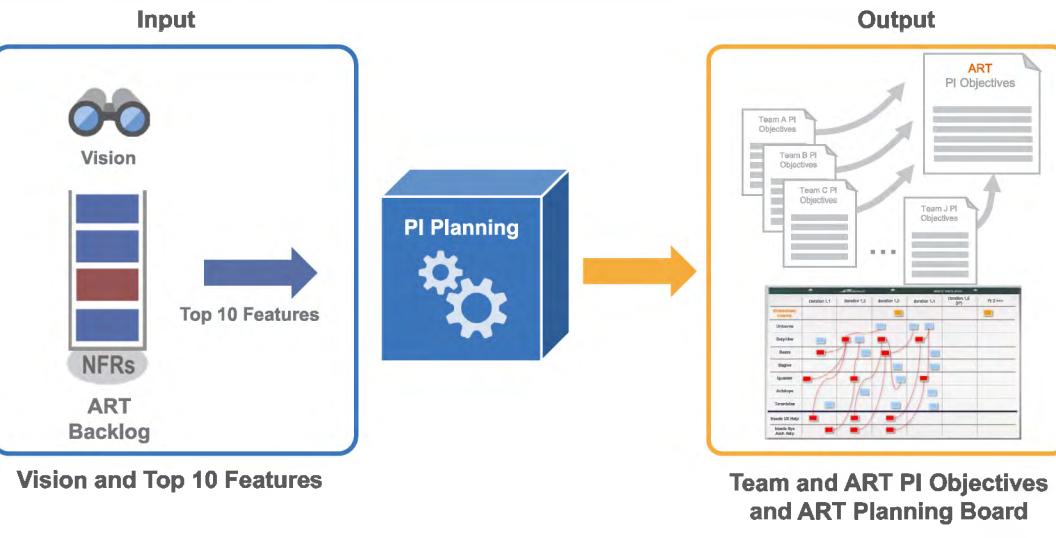
The benefits of PI Planning

- ▶ Establishing personal communication across all team members and stakeholders
- ▶ Aligning development to business goals with the business context, Vision, and Team/ART PI Objectives
- ▶ Identifying dependencies and fostering cross-team and cross-ART collaboration
- ▶ Providing the opportunity for just the right amount of architecture and Lean UX guidance
- ▶ Matching demand to capacity; eliminating excess work in process (WIP)
- ▶ Fast decision-making



Cross-team collaboration

The PI Planning process



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4-35

Create alignment with PI Objectives

- ▶ Objectives are business summaries of what each team intends to deliver in the upcoming PI
- ▶ Objectives 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 five 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)			

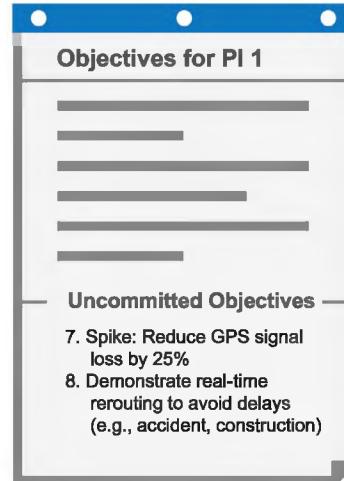
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4-36

Maintain predictability with uncommitted objectives

Uncommitted objectives help improve the predictability of delivering business value.

- ▶ Uncommitted objectives are planned and aren't extra things teams do 'just in case they 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



Outcomes of the PI Planning simulation

Actively participating in a simulated PI Planning event will reinforce:



Communication
Experience the business benefits of establishing communication across all team members and stakeholders



Estimating Capacity
Experience estimating capacity for the Iteration



Drafting Objectives
Experience drafting PI Objectives for achieving the Planning Interval and committing to the plan



Managing Risks
Experience managing ART PI Risks



Activity: Identify ART roles

Duration
3 min

- ▶ **Step 1:** Identify ART roles for the simulation in your class.
- ▶ **Step 2:** Ensure that you have all key roles required for the PI Planning simulation.

Note: Your instructor will be the RTE.

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

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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. Your RTE will now review the agenda for the next two days of PI Planning.

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Simulation: Day one agenda

Business context	8:00 – 9:00	<ul style="list-style-type: none">• State of the business
Product/Solution Vision	9:00 – 10:30	<ul style="list-style-type: none">• Vision and prioritized Features
Architecture Vision and development practices	10:30 – 11:30	<ul style="list-style-type: none">• Architecture, common frameworks, etc.• Agile tooling, engineering practices, etc.
Planning context and lunch	11:30 – 1:00	<ul style="list-style-type: none">• Facilitator explains the planning process
Team breakouts	1:00 – 4:00	<ul style="list-style-type: none">• Teams develop draft plans and identify risks and impediments• Architects and Product Managers circulate
Draft plan review	4:00 – 5:00	<ul style="list-style-type: none">• Teams present draft plans, risks, and impediments
Management review and problem solving	5:00 – 6:00	<ul style="list-style-type: none">• Adjustments made based on challenges, risks, and impediments



Simulation: Day two agenda

Planning adjustments	8:00 – 9:00	<ul style="list-style-type: none">• Planning adjustments made based on previous day's management meeting
Team breakouts	9:00 – 11:00	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• Teams present final plans, risks, and impediments
ART PI Risks	1:00 – 2:00	<ul style="list-style-type: none">• Remaining PI-level risks are discussed and ROAMED
PI confidence vote	2:00 – 2:15	<ul style="list-style-type: none">• Team and ART confidence vote
Plan rework if necessary	2:15 – ???	<ul style="list-style-type: none">• If necessary, planning continues until commitment is achieved
Planning retrospective and moving forward	After commitment	<ul style="list-style-type: none">• Retrospective• Moving forward• Final instructions



Simulation: Briefings



Executive



Product
Manager



System
Architect



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/Team Coaches - 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

Simulation: Planning requirements

Iteration 1.1

Capacity: Load:

Feature 1
Feature 2

PI Objectives

PI Objectives BV AV

Uncommitted Objectives

Risks

Capacity: Load:

Capacity: Load:

Capacity: Load:

IP Iteration X

Focus on the highlighted area for this simulation.

Legend:

- G User Story
- P Maintenance
- Y Exploration Enabler
- O Infrastructure Enabler
- R Risks or dependencies

4-45

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Activity: Select the Feature from Product Management

Duration 5 min

- Step 1:** Each team selects a Feature from Product Management.
- Step 2:** Ensure this information is visible so it can be referred to during the PI Planning simulation.

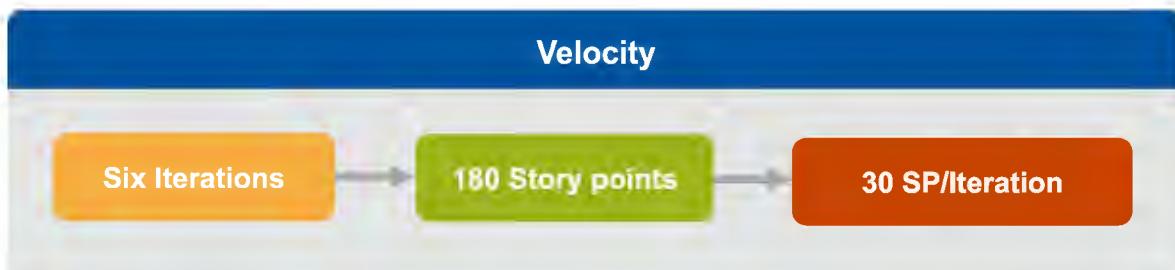
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4-46



Simulation: Using historical data to calculate velocity

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



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Simulation: Calculate your capacity

Calculating Iteration capacity:

- ▶ For every full-time Agile Team member contributing to Solution development, give the team eight points; adjust this number for part-time team members
- ▶ Subtract one point for every team member vacation day and holiday
- ▶ Assign one point to a Story that would take about a half day to develop and a half day to test and validate
- ▶ Estimate every other Story relative to that one

Example:

A seven-person team composed of three developers, two testers, one Product Owner, and one Scrum Master/Team Coach

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

Calculated capacity: $5 \times 8 \text{ points} = 40 \text{ points per Iteration}$

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Activity: Team breakout #1

Duration
 50 min

You will be planning a short PI with two Iterations with your teams.

- ▶ **Step 1:** Calculate and enter the capacity for each Iteration (two weeks per iteration).
 - The first Iteration starts Monday
 - Use your real availability
- ▶ **Step 2:** Estimate the Stories using Story points.
- ▶ **Step 3:** Load the Stories into the Iterations.
- ▶ **Step 4:** Write the PI Objectives using clear statements.
- ▶ **Step 5:** Identify the uncommitted objectives.
- ▶ **Step 6:** Identify any ART PI Risks and dependencies.



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Activity: Coach Sync

Duration
 5 min

- ▶ **Step 1:** The teams observe the Coach Sync, conducted by the RTE.
- ▶ **Step 2:** Choose a Scrum Master/Team Coach to provide the team's current status and address the questions from the RTE.
- ▶ **Step 3:** The RTE holds a meet-after following the sync (limited to one or two topics for the simulation).

Note: Coach Sync questions are on the following slide.

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4-50



Activity: Coach Sync

Duration


Coach Sync Questions	Team 1
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 ART PI 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/Team Coaches? If so, stay for the meet-after.	

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4-51



Activity: Draft plan review

Duration


- ▶ **Step 1:** The teams will present summaries of their first two Iterations and one or more draft PI Objectives.
- ▶ **Step 2:** Make sure to include the following:
 - Capacity and load for each Iteration
 - Draft PI Objectives
 - ART PI Risks and impediments

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4-52

Management review and problem-solving

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

Common questions:

- What did we just learn?
- Where do we need to adjust Vision, scope, team assignments, or anything else?
- Where are the bottlenecks?
- What Features must be de-scoped?
- What decisions must we make between now and tomorrow to address these issues?



Photo used with permission from Hybris Software.

Activities during day two

Day One		Day Two	
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	ART PI 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

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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4-55

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 PI plan
- ▶ Teams also consolidate ART PI 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 five 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	
<hr/>		
Uncommitted Objectives		
7. Spike: Reduce GPS signal loss by 25%	2	
8. Demonstrate real-time rerouting to avoid delays (e.g., accident, construction)	5	

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4-56



Activity: Setting business value

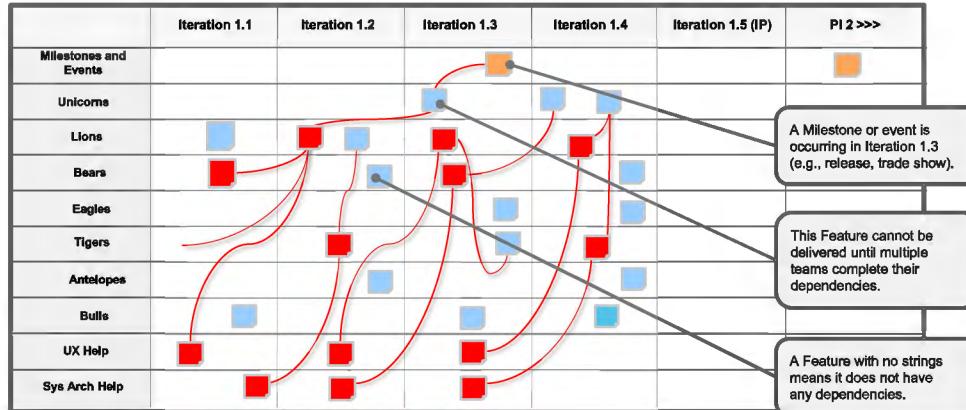


The instructor will demonstrate assigning business value for one team's objectives.

- ▶ **Step 1:** Bring one team's draft plans to the Business Owners.
- ▶ **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 five 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	

ART planning board: Feature delivery, dependencies, and Milestones



ART Planning Board Legend:



Red strings (or lines for digital boards) are used to connect a Feature or Milestone to one or more dependencies. Sometimes a dependency has its own dependency (see Lions in Iteration 1.2).

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. ART PI Risks and impediments
4. Q&A session



4-59

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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 plan stays in place, and the team continues planning after the review



A team presenting their final plan.
Photo used with permission from Discount Tire Corporation.

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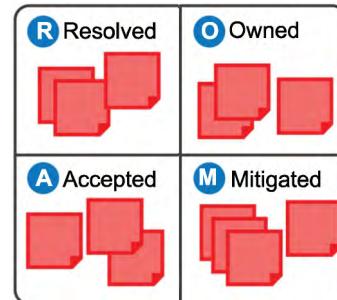
4-60

Addressing ART PI Risks

After all plans have been presented, remaining ART PI Risks and impediments are discussed and categorized.

ROAMing risks:

- ▶ **Resolved** - Addressed; no longer a concern
- ▶ **Owned** - Someone has taken responsibility
- ▶ **Accepted** - Nothing more can be done, and if risk occurs, release may be compromised
- ▶ **Mitigated** - Team has plan to adjust as necessary

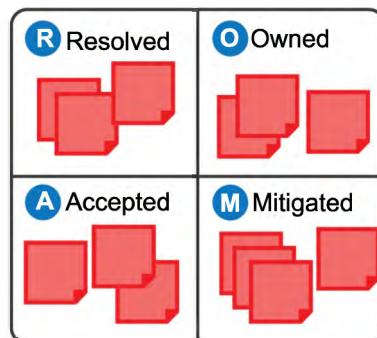


Activity: Manage ART PI Risks



The instructor will demonstrate ROAMing 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 the risk as-is.
- ▶ **Step 4:** Put each risk into a corresponding quadrant of the ROAM sheet for the ART.



Confidence vote: Teams and ART

Once ART PI Risks have been addressed, a confidence vote is taken by each team and the ART.

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 objectives are not achievable, teams agree to escalate immediately so that corrective action can be taken



No confidence



Little confidence



Good confidence



High confidence



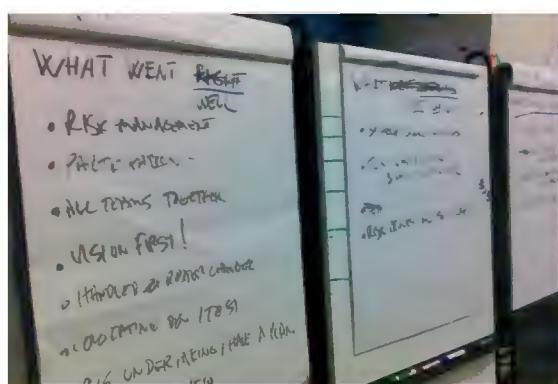
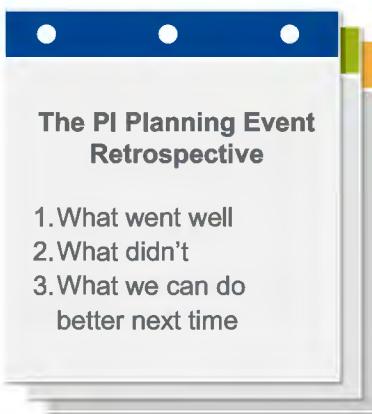
Very high confidence

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4-63

Run a planning meeting retrospective

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



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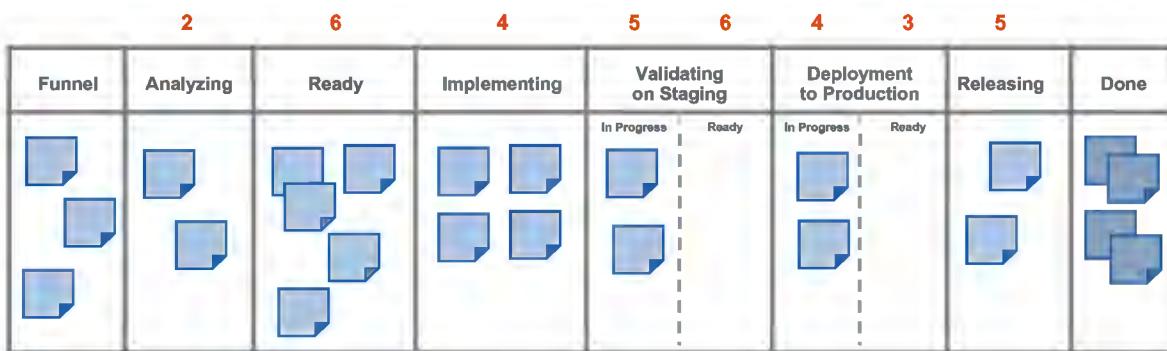
4-64

4.4 Develop on cadence; release on demand

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4-65

Manage the flow of work with the ART Kanban

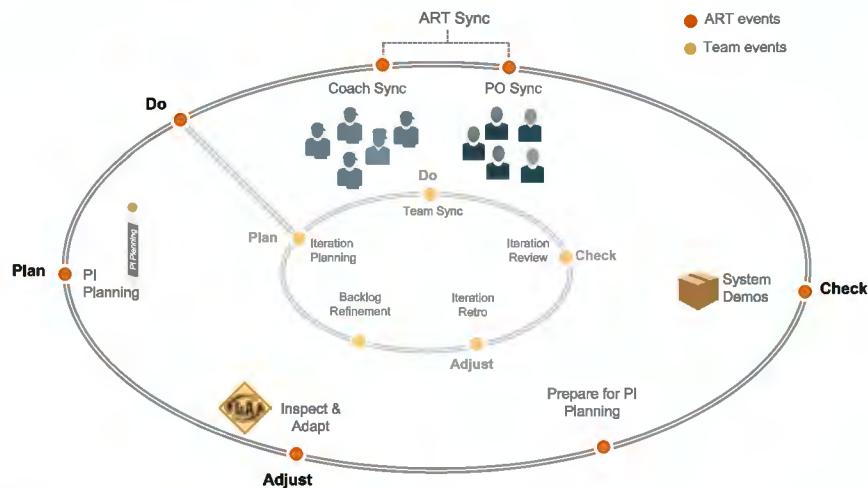
Funnel	Analyzing	Ready	Implementing	Validating on Staging	Deployment to Production	Releasing	Done
	 2	 6	 4	 5	 6	 4	 3
<ul style="list-style-type: none">• All new ideas welcome	<ul style="list-style-type: none">• Benefit hypothesis• Calculate WSJF• WIP limited	<ul style="list-style-type: none">• Features approved by Product Management• Continuous WSJF prioritization• WIP limited	<ul style="list-style-type: none">• Features decomposed into Stories• Teams define, build and validate the Solution• WIP limited	<ul style="list-style-type: none">• Features integrated and deployed to staging• Features demonstrated and approved by Product Management• WIP limited	<ul style="list-style-type: none">• Finish deployment testing of Features• Features deployed to production, and sometimes toggled off• WIP limited	<ul style="list-style-type: none">• Features released to Customers incrementally or all at once• Benefit hypothesis evaluated• WIP limited	

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4-66

ART events drive the train

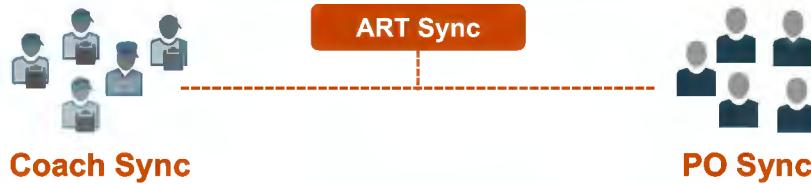
ART events create a closed-loop system to keep the train on the tracks.



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4-67

ART Sync is used to coordinate progress



Coach Sync

- Visibility into progress and impediments
- Facilitated by RTE
- Participants include Scrum Masters/Team Coaches, other select team members, SMEs if necessary
- Weekly or more frequently, 30–60 minutes
- Timeboxed and followed by a meet-after

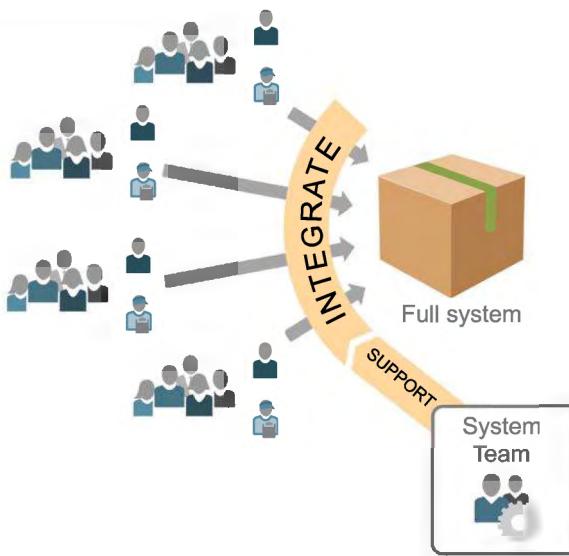
- Visibility into progress, scope, and priority adjustments
- Facilitated by RTE or PM
- Participants include PM, POs, other stakeholders, and SMEs as necessary
- Weekly or more frequently, 30–60 minutes
- Timeboxed and followed by a meet-after

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4-68

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



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4-69

Innovation and Planning (IP) Iteration

“Provide sufficient capacity margin to enable cadence.”

—Donald G. Reinertsen, *The Principles of Product Development Flow*

Facilitate reliability, PI readiness, planning, and innovation

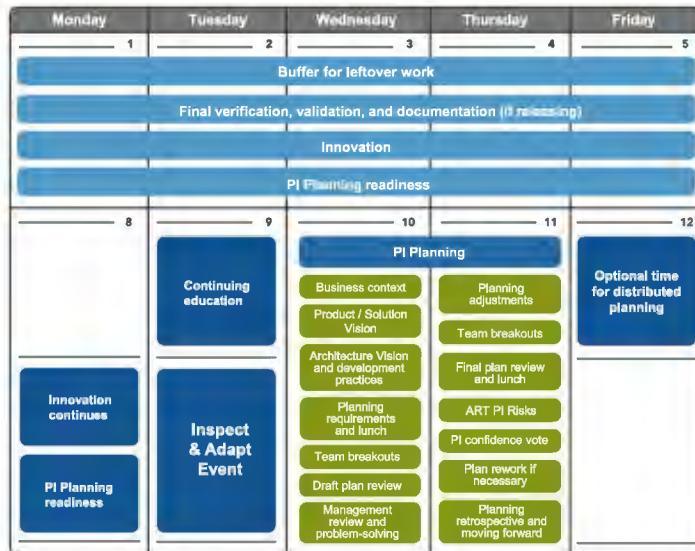
- ▶ **Innovation** - Opportunity for innovation, hackathons, and infrastructure improvements
- ▶ **Planning** - Provides for cadence-based planning
- ▶ Estimating guard band for cadence-based delivery



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4-70

Example IP Iteration calendar



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Without the IP Iteration...

- ▶ Lack of delivery capacity buffer impacts predictability
- ▶ Little innovation and 'tyranny of the urgent'
- ▶ Technical debt grows uncontrollably
- ▶ People burn out
- ▶ No time for teams to plan, demo, or improve together



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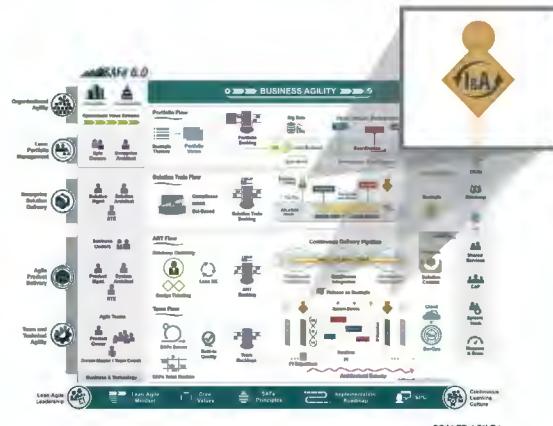
4-72

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:** Three to four hours per PI
- **Attendees:** Teams and stakeholders



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4-73

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/Team Coaches, and teams



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4-74

ART 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 ART Predictability Measure

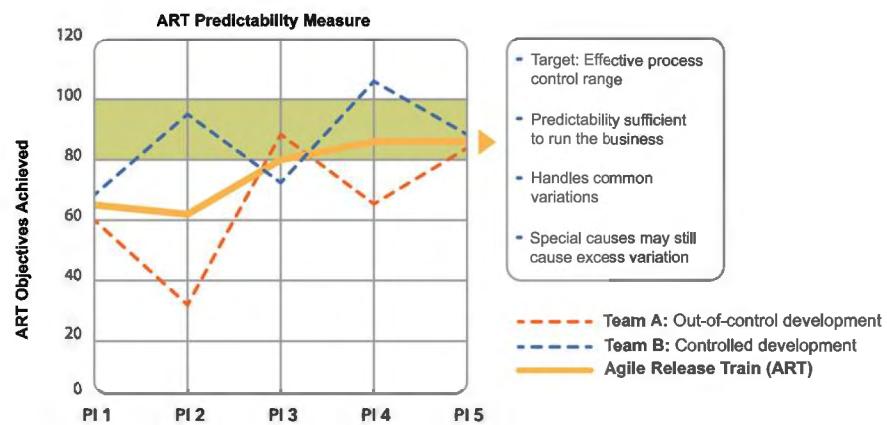
Objectives for PI 3	
Business Value	
Plan	Actual
7	7
8	8
8	6
10	5
10	8
7	7
Uncommitted Objectives	
7	0
4	4
Totals	
50	45
% Achievement: 90%	

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4-75

Measure ART predictability

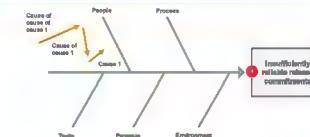
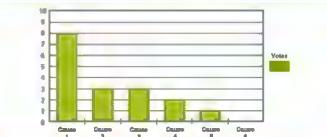
The report compares actual business value achieved against planned business value.



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4-76

The problem-solving workshop

Agree on the problem to solve	Apply root cause analysis and five whys	Identify the biggest root cause using Pareto analysis														
<p>X Insufficiently reliable release commitments</p>		 <table border="1"><thead><tr><th>Cause</th><th>Frequency</th></tr></thead><tbody><tr><td>Cause 1</td><td>8</td></tr><tr><td>Cause 2</td><td>3</td></tr><tr><td>Cause 3</td><td>2</td></tr><tr><td>Cause 4</td><td>1</td></tr><tr><td>Cause 5</td><td>1</td></tr><tr><td>Cause 6</td><td>1</td></tr></tbody></table>	Cause	Frequency	Cause 1	8	Cause 2	3	Cause 3	2	Cause 4	1	Cause 5	1	Cause 6	1
Cause	Frequency															
Cause 1	8															
Cause 2	3															
Cause 3	2															
Cause 4	1															
Cause 5	1															
Cause 6	1															
<p>X Insufficient Architectural Runway</p>																

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4-77

4.5 Building a Continuous Delivery Pipeline with DevOps

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4-78



Activity: DevOps myth or fact

Prepare
5 min

Share
2 min

- ▶ **Step 1:** Individually, 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.

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4-79



Video: What is DevOps

Duration
2 min



<https://bit.ly/Video-WhatisDevOps>

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4-80

DevOps myth or fact

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

Notes

Click to reveal quiz answers

1. MYTH 2. FACT 3. MYTH 4. MYTH 5. FACT 6. FACT 7. FACT 8. MYTH 9. MYTH 10. FACT

Maximize speed and stability



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4-81

Building the Continuous Delivery Pipeline with DevOps

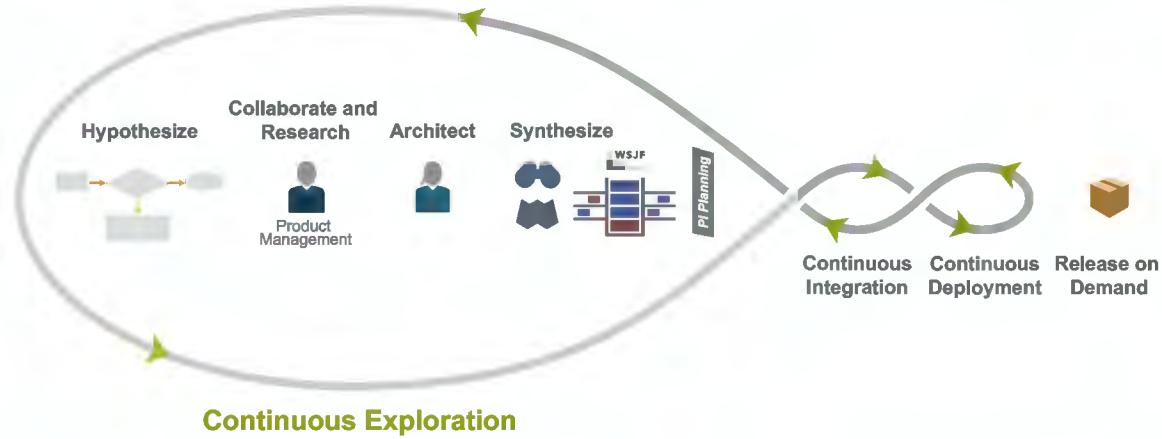
- ▶ The Continuous Delivery Pipeline (CDP) represents the workflows, activities, and automation needed to deliver new functionality more frequently.
- ▶ Each ART builds and maintains, or shares, a pipeline.
- ▶ Organizations map their current pipeline into this new structure and remove delays and improve the efficiency of each step.



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4-82

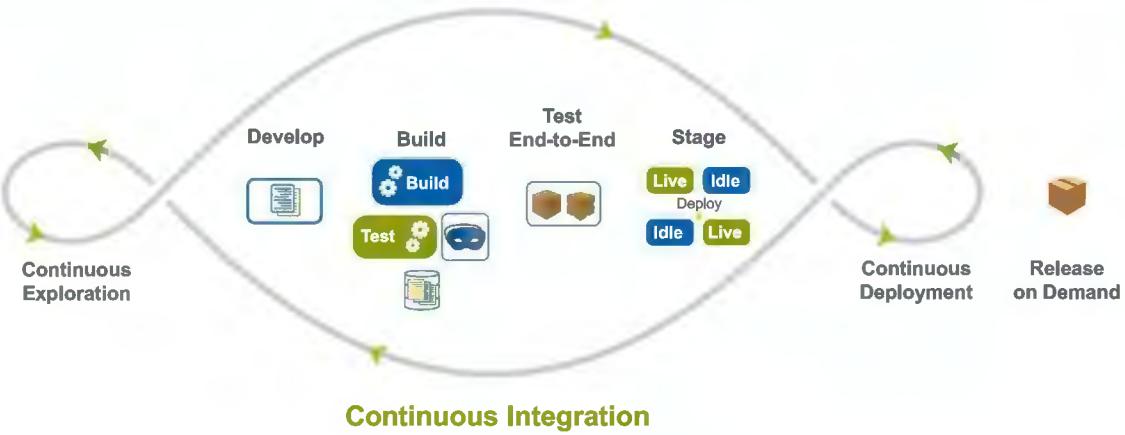
Continuous Exploration: Understand Customer needs



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4-83

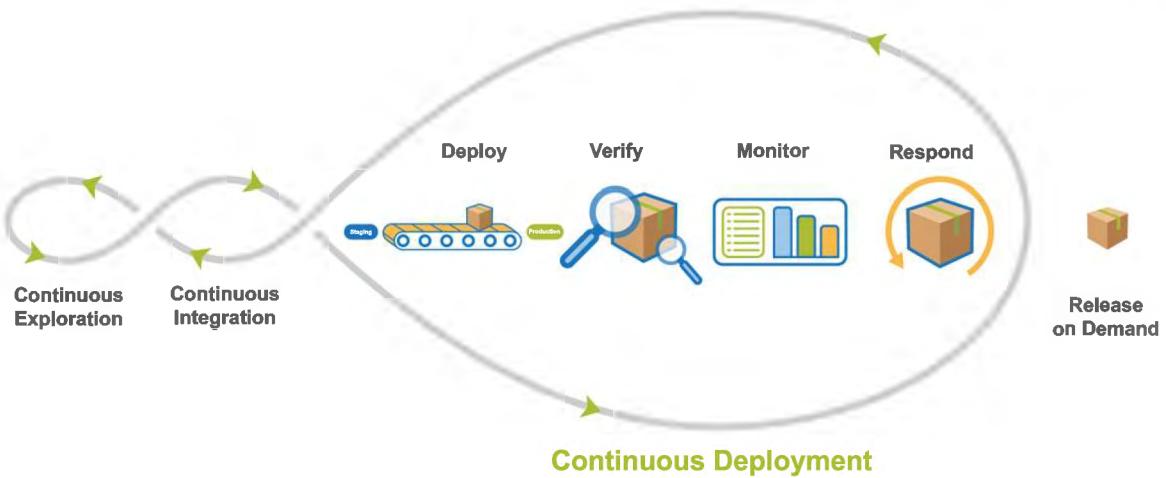
Continuous Integration: A critical technical practice of the ART



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4-84

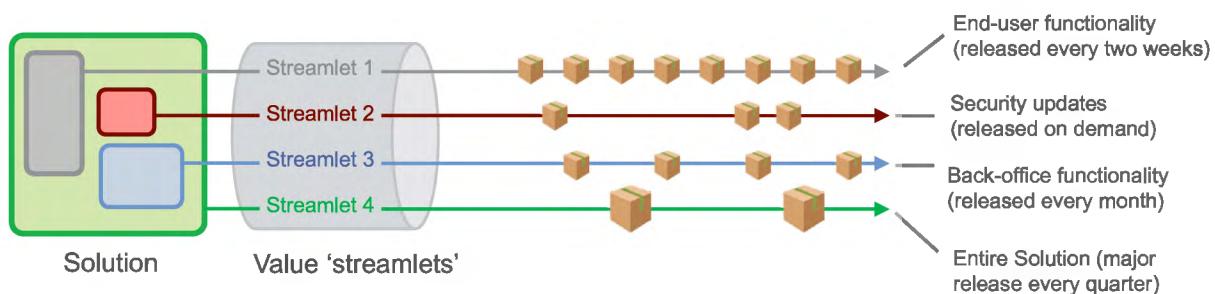
Continuous Deployment: Getting to production early



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4-85

Decouple release elements from the total Solution

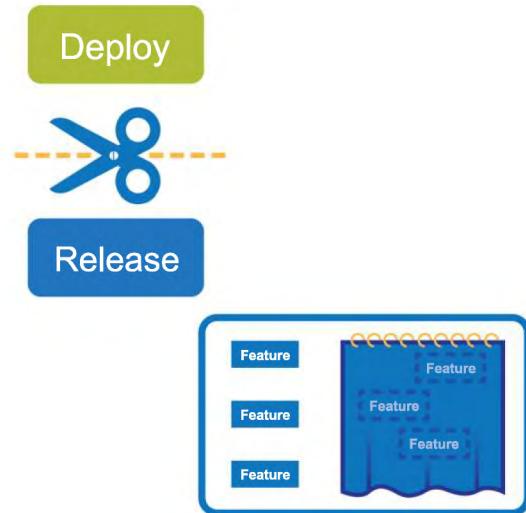


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4-86

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



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4-87

Release on Demand: Making value available when it's needed



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Action Plan: Improving Agile Product Delivery

Prepare



Share



- ▶ **Step 1:** Consider the practices and the events that support Agile Product Delivery as discussed earlier.
- ▶ **Step 2:** Identify one viable improvement you could execute to improve Customer Centricity and Design Thinking. Write it down in your Action Plan.
- ▶ **Step 3:** Identify one viable improvement you could execute to improve the Continuous Delivery Pipeline. Write it down in your Action Plan.
- ▶ **Step 4:** Share your insights with the class.



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4-89

Lesson review

In this lesson you:

- ▶ Described the benefits of Customer Centricity
- ▶ Practiced Design Thinking
- ▶ Prioritized the ART Backlog with weighted shortest job first (WSJF)
- ▶ Participated in a PI Planning simulation
- ▶ Explained the need to develop on cadence and release on demand
- ▶ Justified the need to build and maintain a Continuous Delivery Pipeline with DevOps

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4-90



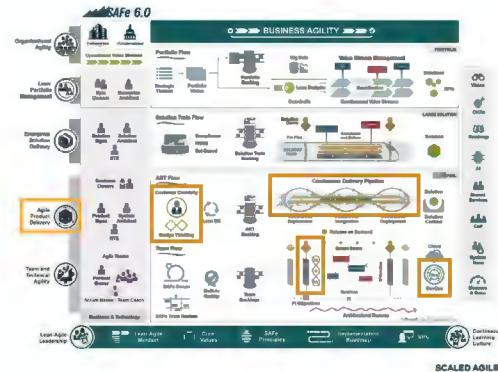
Action Plan

Improving Agile
Product Delivery

Articles used in this lesson

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

- ▶ “Agile Product Delivery”
<https://www.scaledagileframework.com/agile-product-delivery/>
- ▶ “Customer Centricity”
<https://www.scaledagileframework.com/customer-centricity/>
- ▶ “Design Thinking”
<https://www.scaledagileframework.com/design-thinking/>
- ▶ “Weighted Shortest Job First”
<https://www.scaledagileframework.com/wsjf/>
- ▶ “PI Planning”
<https://www.scaledagileframework.com/pi-planning/>
- ▶ “DevOps”
<https://www.scaledagileframework.com/devops/>
- ▶ “Continuous Delivery Pipeline”
<https://www.scaledagileframework.com/continuous-delivery-pipeline/>



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Continue your SAFe journey with the following resources:

Use the “Empathy Map” Collaborate template to inform Solution development:
<https://bit.ly/Template-EmpathyMap>

Write “SMART Objectives” with the following guide:
<https://bit.ly/Community-SMARTObjectivesPDF>

Use the “SAFe Virtual PI Planning” template to run a successful remote PI Planning event:
<https://bit.ly/Community-PIPlanning>

Facilitate effective SAFe ART and Team Events using the following tools and guidance:
<https://bit.ly/Community-SAFeARTandTeamEvents>

Run an “Agile Product Delivery Assessment” to identify various opportunities for improvement:
<https://bit.ly/Community-MeasureAndGrow>

Watch the five-minute video, *An Overview of WSJF*, for an overview of WSJF and how it applies to prioritizing Features:
<https://bit.ly/Video-WSJFOverview>

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4-92

References

- Cohn, Mike. *Agile Estimating and Planning*. Boston: Addison-Wesley 2006.
- Gray, Dave. "Empathy Map." Game Storming. Updated November 12, 2009. <https://gamestorming.com/empathy-Dmap>.
- Lawrence, Richard and David Green. "The Humanizing Work Guide to Splitting User Stories." Humanizing Work. Updated August 15, 2022. <https://www.humanizingwork.com/the-humanizing-work-guide-to-splitting-user-stories/>.
- Leffingwell, Dean. *Agile Software Requirements: Lean Requirements Practices for Teams, Programs, and the Enterprise*. Upper Saddle River, NJ: Addison-Wesley 2011. Kindle Edition.
- Reinersten, Donald G. *The Principles of Product Development Flow: Second Generation of Lean Product Development*. Redondo Beach: Celeritas 2009. 31, 178.

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 learners access to the SAFe Agilist exam and related preparation materials.



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Why Lean Portfolio Management?

Traditional approaches to portfolio management were not designed for a global economy or the impact of digital disruption.

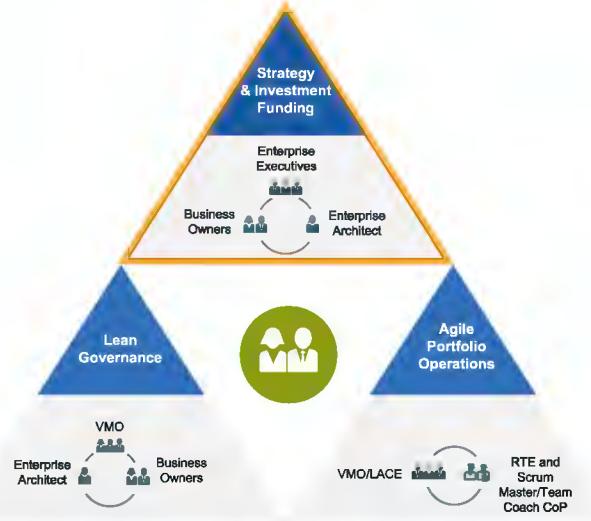
These factors put pressure on Enterprises to work under a higher degree of uncertainty while delivering innovative Solutions at a faster pace.



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



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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

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* or *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 so frequently get wildly different answers. We just don't have good business discipline for converging on issues this abstract."

—Geoffrey A. Moore, *Escape Velocity*



Portrait of Geoffrey A. Moore. Reproduced with permission of Nancy Warmer.

5-5

5.1 Defining a SAFe portfolio

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



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5-7

An Enterprise may have a single portfolio or multiple portfolios



Small Enterprise



Single Portfolios



Large Enterprise



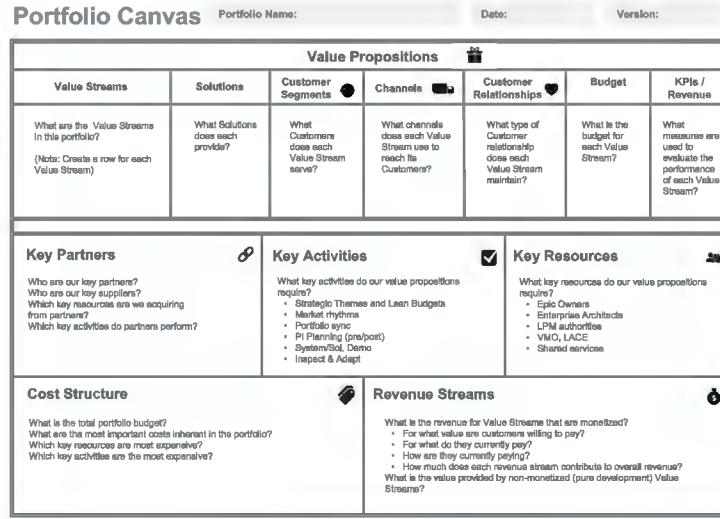
Multiple Portfolios

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5-8

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



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5-9

5.2 Connecting the portfolio to the Enterprise strategy

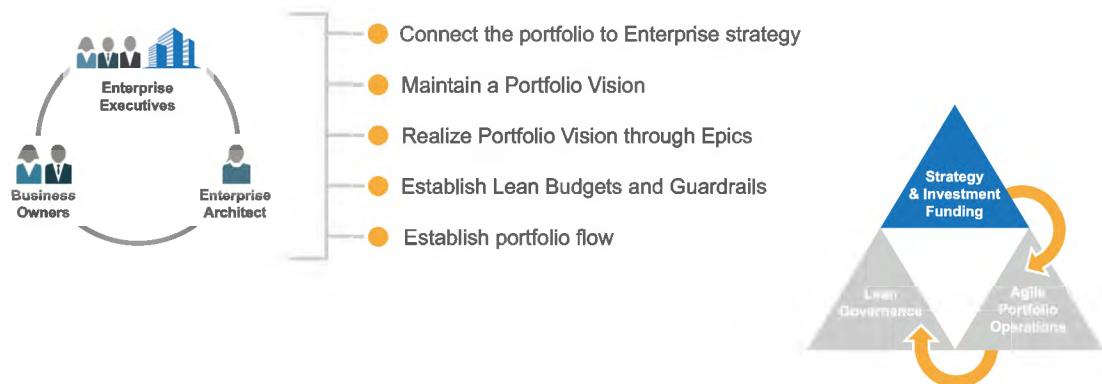
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5-10

Strategy and investment funding: collaboration and responsibilities

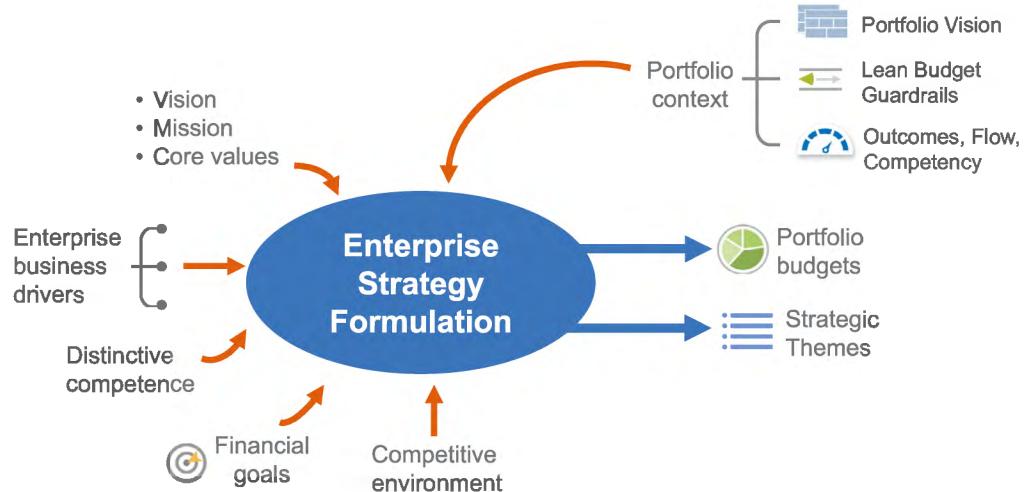
Strategy and investment funding ensures that the entire portfolio is aligned and funded to create and maintain the Solutions needed to meet business targets.



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5-11

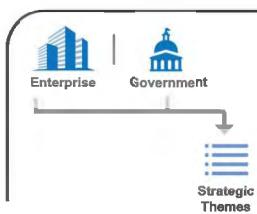
Elements of Enterprise strategy formulation



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5-12

Connect the portfolio to the Enterprise with 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

Expand autonomous delivery into retail

Bad examples of Strategic Themes

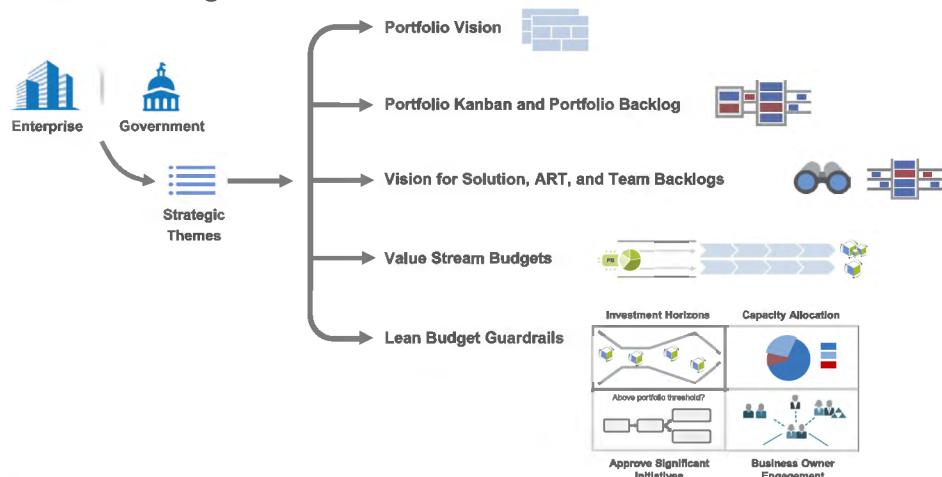
Increase shareholder wealth

Expand autonomous delivery into healthcare

Maximize corporate wealth

Influence of Strategic Themes

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





Activity: Identify Strategic Themes

Prepare
5 min

Share
3 min

- ▶ **Step 1:** Individually, in your workbook, identify three Strategic Themes that help define the strategy of your portfolio in the upcoming year.
 - Are these differentiators for your business, or business as usual?
- ▶ **Step 2:** Be prepared to share with the class.

5.3 Maintaining the Portfolio Vision

Identify Strategic Themes

Instructions: Identify three Strategic Themes that help define the strategy of your portfolio in the upcoming year. Are these differentiators for your business, or business as usual?

Strategic Theme #1

Strategic Theme #2

Strategic Theme #3

Identify Strategic Themes

Strategic Theme #4

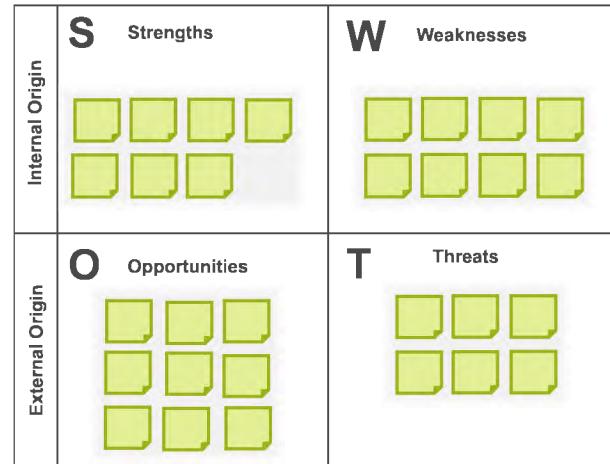
Strategic Theme #5

Strategic Theme #6

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



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TOWS strategic options matrix

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

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

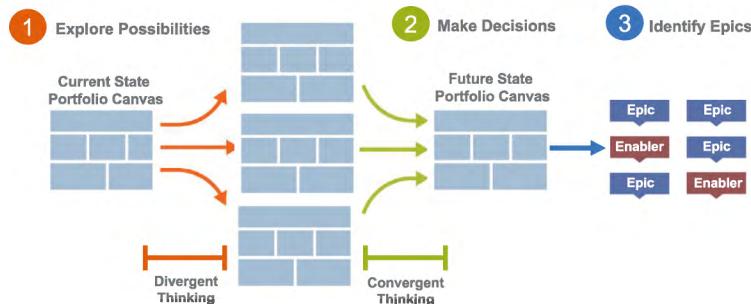
A SWOT analysis is a great way to uncover the current situation of your Value Stream, product, or portfolio

	External Opportunities (O)	External Threats (T)
Internal Strength (S)	1. 2. 3. 4.	1. 2. 3. 4.
	SO How can your strengths be used to exploit and maximize opportunities?	ST How can you apply your strengths to overcome present and potential threats?
Internal Weaknesses (W)	1. 2. 3. 4.	WO How can your opportunities be leveraged to overcome weaknesses? WT How can you minimize weaknesses and avoid threats?

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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



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5-19

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



- ▶ 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.

'A postcard from the future,' adapted from *Switch* by Chip Heath and Dan Heath.

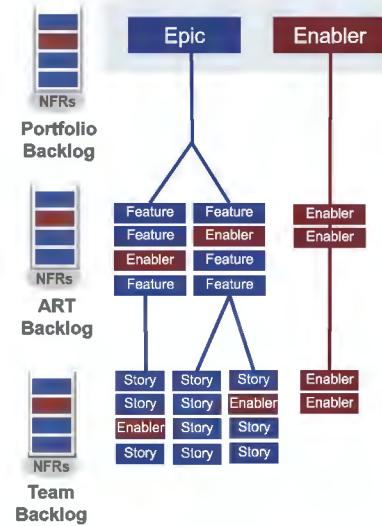
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5-20

5.4 Realizing the 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.



Epics are initially described with the Epic hypothesis statement

Epics are described with four major fields:

- ▶ **Epic Hypothesis Statement** - Describes the Epic in detailed terms, including the "for-who-the..." portion
- ▶ **Business Outcomes** - 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:	
Business Outcomes:	<The measurable benefits that the business can anticipate if the epic hypothesis is proven to be correct.>
Leading Indicators:	
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):	<Nonfunctional requirements (NFRs) associated with the epic.>

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5-23



Activity: Epic writing



- ▶ **Step 1:** Individually, in your workbook, identify an Epic from your context.
- ▶ **Step 2:** Write the Epic hypothesis statement.
- ▶ **Step 3:** Be prepared to share with the class.

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:	
Business Outcomes:	<The measurable benefits that the business can anticipate if the epic hypothesis is proven to be correct.>
Leading Indicators:	
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):	<Nonfunctional requirements (NFRs) associated with the epic.>

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Epic writing

Instructions: Identify an Epic from your context. Write the Epic hypothesis statement.

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 writing

Epic Hypothesis Statement

Funnel Entry Date:

Epic Name:

Epic Owner:

Epic Description:

Business Outcomes:

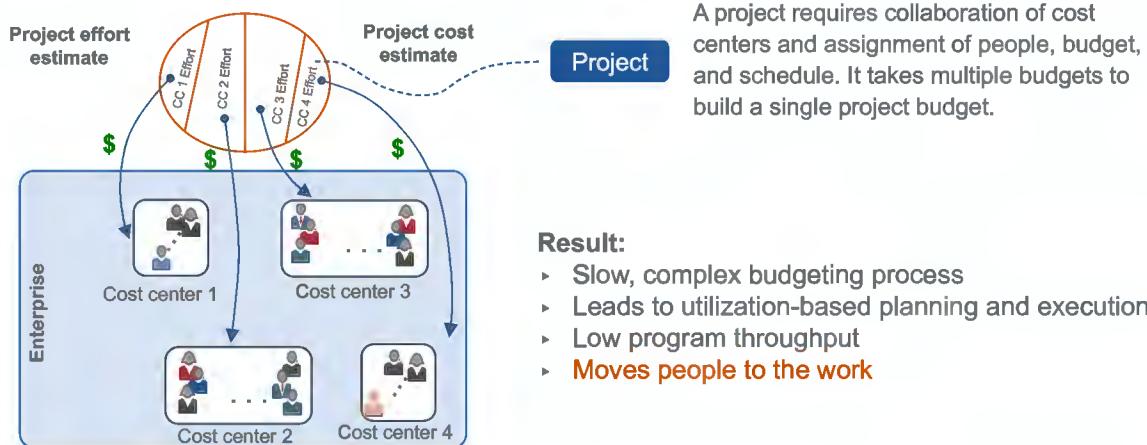
Leading Indicators:

Nonfunctional Requirements (NFRs):

5.5 Establishing Lean Budgets and Guardrails

Problem: cost-center budgeting

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



Project overruns cause re-budgeting and increase costs of delay



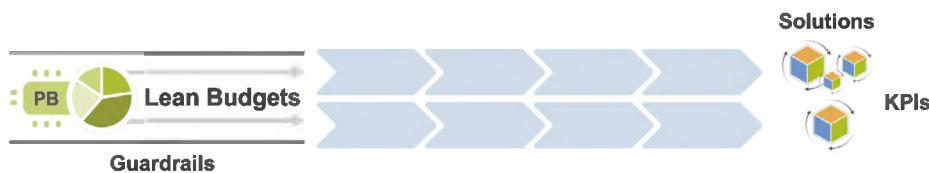
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Solution: fund Value Streams, not projects

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

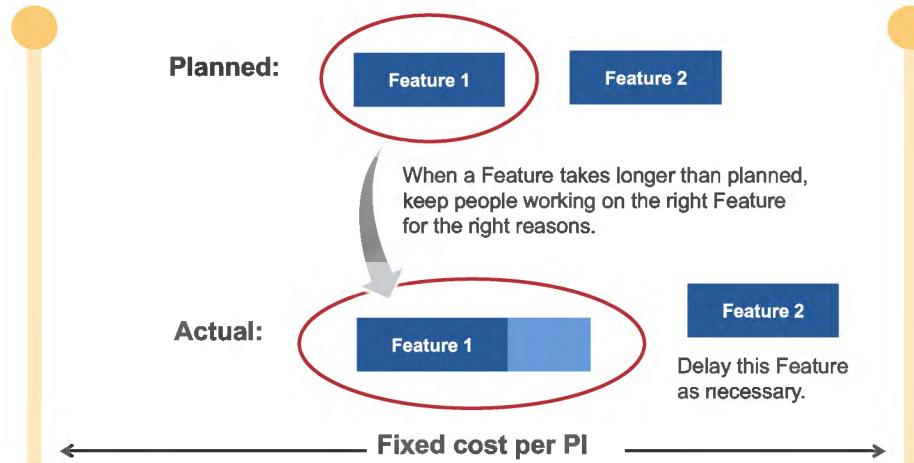
- ▶ No costly and delay-inducing project cost variance analyses
- ▶ No resource reassessments
- ▶ No blame game for project overruns



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Budgets are not affected by Feature overruns or changing priorities



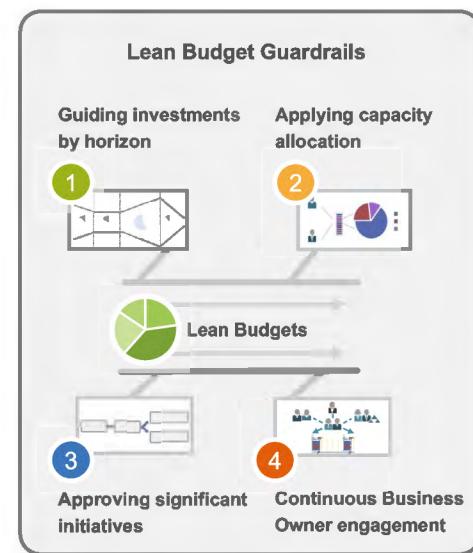
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Each portfolio establishes a set of budget Guardrails

Guardrails describe portfolio-level budgeting, spending, and governance policies that:

1. Ensure the mix of investments balance near-term opportunities with long-term strategy and growth
2. Balance the backlog of new Features with the need to continuously invest in the Architectural Runway
3. Ensure large, significant investments (Epics) are approved appropriately
4. Actively engage Business Owners to ensure the alignment of ART and portfolio priorities



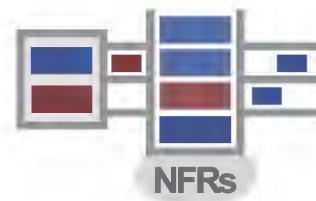
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5-30

5.6 Establishing portfolio flow

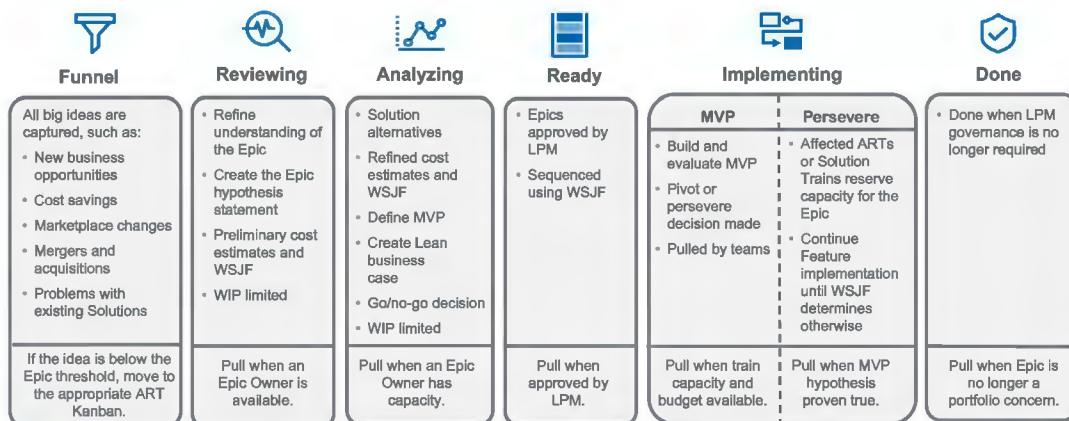
Manage Epic flow with the Portfolio Kanban

- ▶ 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



Epics flow through the Portfolio Kanban

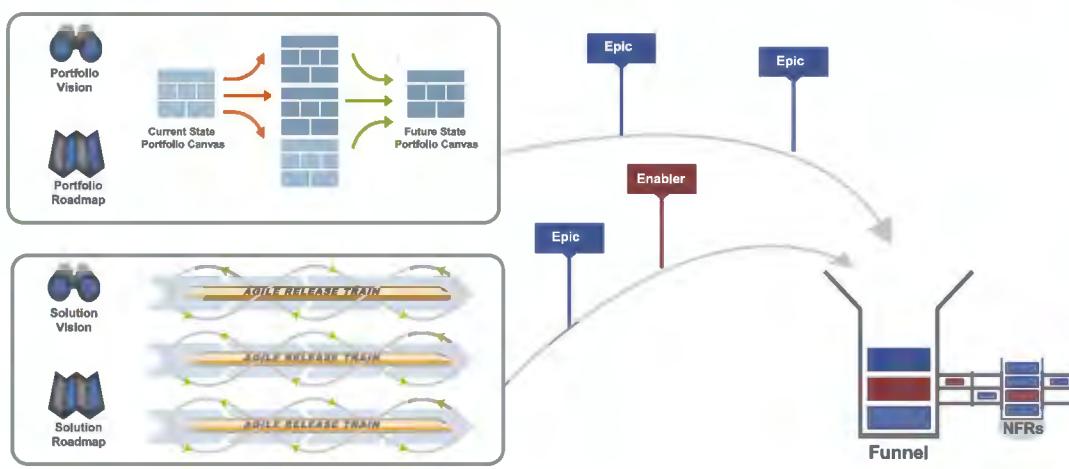
The Portfolio Kanban system describes the process states that an Epic goes through from the funnel to done.



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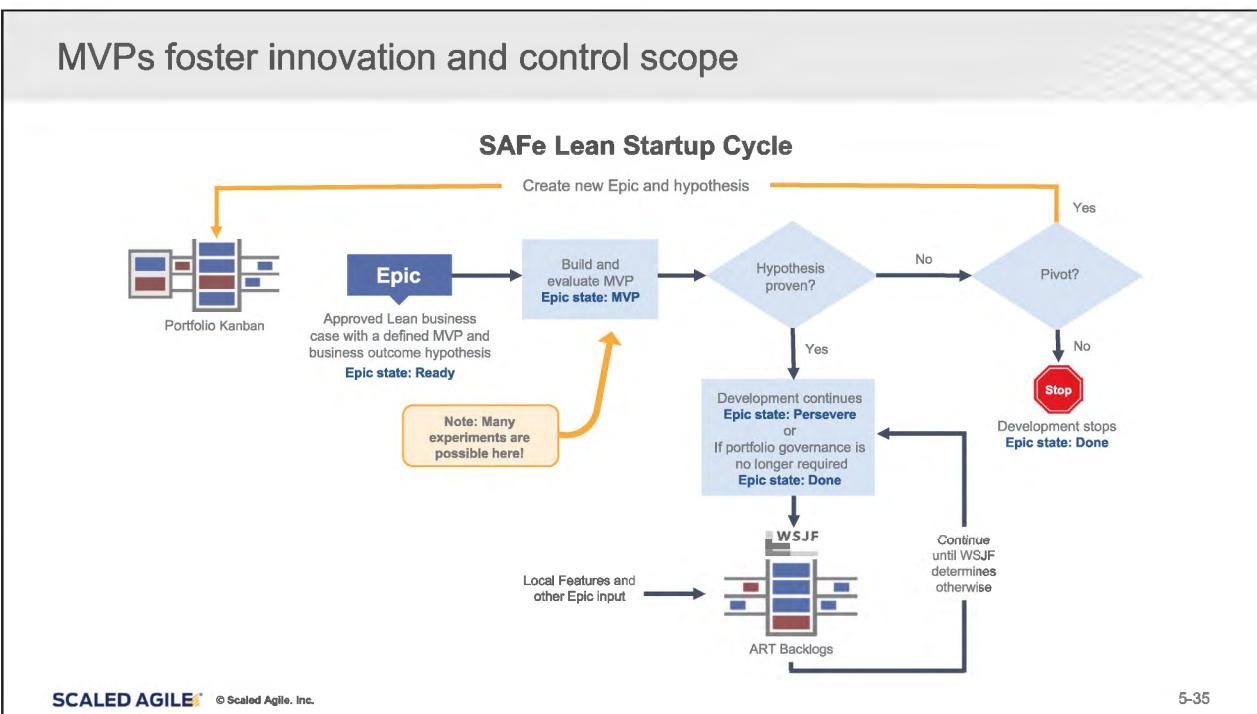
Feed the portfolio funnel



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5-34

MVPs foster innovation and control scope



LPM addresses the challenges of a traditional approach

Traditional Approach	Lean-Agile Approach
People organized in functional silos and temporary	People organized in Value Streams/ARTs; continuous value flow
Fund projects and project-cost accounting	Fund Value Streams; Lean budgets and Guardrails
Big up-front, top-down, annual planning and budgeting	Value Stream budgets adjusted dynamically; Participatory Budgeting
Centralized, unlimited work intake; project overload	Strategic demand managed by Portfolio Kanban; decentralized intake by Value Streams and ARTs
Overly detailed business cases based on speculative ROI	Lean business cases with MVP business outcome hypothesis, Agile forecasting and estimating
Projects governed by phase gates; waterfall Milestones, progress measured by task completion	Products and services governed by self-managing ARTs; objective measures and Milestones based on working Solutions

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5-36

Lesson review

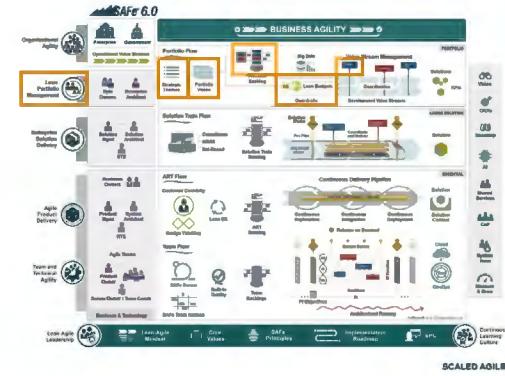
In this lesson you:

- ▶ Described the purpose and elements of a SAFe portfolio
- ▶ Constructed well-written Strategic Themes
- ▶ Employed the portfolio canvas to describe the current and future state
- ▶ Created Epic hypothesis statements to inform the Vision
- ▶ Distinguished traditional and Lean budgeting approaches
- ▶ Constructed a Portfolio Kanban

Articles used in this lesson

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

- ▶ “Lean Portfolio Management”
<https://www.scaledagileframework.com/lean-portfolio-management/>
- ▶ “Strategic Themes”
<https://www.scaledagileframework.com/strategic-themes/>
- ▶ “Portfolio Vision”
<https://www.scaledagileframework.com/portfolio-vision/>
- ▶ “Lean Budgets”
<https://www.scaledagileframework.com/lean-budgets/>
- ▶ “Lean Budget Guardrails”
<https://www.scaledagileframework.com/guardrails/>
- ▶ “Portfolio Kanban”
<https://www.scaledagileframework.com/portfolio-kanban/>
- ▶ “Epic”
<https://www.scaledagileframework.com/epic/>



Continue your SAFe journey with the following resources:

Watch this six-minute video, <i>An Introduction to LPM</i> , to revisit key themes: https://bit.ly/Video-IntroductionLPM	Use the “SWOT / TOWS Analysis” Collaborate template to identify strategic options for a better future state: https://bit.ly/Template-SWOTandTOWSAnalysis
Complete the “LPM Current State Portfolio Canvas” template to define the key elements of the portfolio: https://bit.ly/Template-PortfolioCanvas	Use the “Creating an Epic Hypothesis Statement” Collaborate template to define a statement for each of your significant 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 opportunities: https://bit.ly/Community-MeasureAndGrow

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5-39

References

- Heath, Chip and Dan Heath. *Switch: How to Change Things When Change Is Hard*. New York: Currency, 2010.
- Moore, Geoffrey A. *Escape Velocity: Free Your Company's Future from the Pull of the Past*. New York: HarperCollins, 2011. 3.
- Strategyzer. “Business Model Canvas – Download the Official Template.” Canvas. <https://www.strategyzer.com/canvas/business-model-canvas>.

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5-40

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 learners 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 these individuals 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 and Principles



Lean-Agile Mindset Core Values SAFe Principles

Leading by Example



- Inevitable learning
- Authenticity
- Emotional competence
- Courage
- Growing others
- Decentralized decision-making

Leading Change



6-3

Learning objectives

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

- ▶ Explain the skills and behaviors necessary to lead by example
- ▶ Discuss techniques for leading successful change
- ▶ Recognize the steps in the SAFe Implementation Roadmap

6.1 Leading by example

Leading by example

"[Setting an] example is not the main thing. It is the only thing."

—Albert Schweitzer, as quoted by Eugene Exman, "God's Own Man"

- ▶ **Insatiable learning** - Depicts how leaders engage in the ongoing, voluntary, and self-motivated pursuit of knowledge and growth, and they encourage and support the same in others
- ▶ **Authenticity** - Requires leaders to model desired professional and ethical behaviors
- ▶ **Emotional competence** - Describes how leaders identify and manage their emotions and those of others through self-awareness, self-regulation, motivation, empathy, and social skills
- ▶ **Courage** - Is essential for leaders to guide their organizations through the rapidly changing dynamics of the digital age
- ▶ **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





Activity: Exploring leadership skills

Prepare
7 min

Share
3 min

- ▶ **Step 1:** Individually, in your workbook, reflect on the leading by example attributes on the previous slide.
- ▶ **Step 2:** Identify one or two of these to focus on in your current context and consider their potential impacts.
- ▶ **Step 3:** Be prepared to share with the class.

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6.2 Leading the change

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Exploring leadership skills

Instructions: Reflect on the leading by example attributes on the previous slide. Identify one to two of these to focus on in your current context and consider their potential impacts.

Notes

Keys to leading successful change

Change Accelerators



"The 8-Step Process for Leading Change" by Kotter, Inc.

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Change Principles

The key to successfully navigating complex change is embodied in four critical principles that unlock the full power of the eight-accelerator methodology.

- 1 Management + Leadership**
In order to capitalize on windows of opportunity, leadership must be paramount—and not just from one executive. It's about vision, action, innovation, and celebration, as well as essential managerial processes.
- 2 "Have to" + "Want to"**
Those who feel included in a meaningful opportunity will help create change in addition to their normal responsibilities. Existing team members can provide the energy—if you invite them.
- 3 Head + Heart**
Most people aren't inspired by logic alone, but rather by the fundamental desire to contribute to a larger cause. If you can give greater meaning and purpose to your effort, extraordinary results are possible.
- 4 Select Few + Diverse Many**
More people need to be able to make change happen—not just carry out someone else's directives. Done right, this uncovers leaders at all levels of an organization; ones you never knew you had.

<https://www.kotterinc.com/8-step-process-for-leading-change/>

6-9

Keys to leading successful change

- 1. Create a sense of urgency** - Communicates the need for change and the importance of acting immediately
- 2. Build a guiding coalition** - Recognizes that a volunteer army needs a coalition of effective people to coordinate and communicate activities and guide the change
- 3. Form a strategic vision** - Identifies the opportunity that changing circumstances offer and motivates people to action
- 4. Enlist a volunteer army** - Recognizes that large-scale change can only occur when optimal numbers of people rally around a common opportunity

<https://www.kotterinc.com/8-step-process-for-leading-change/>

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Keys to leading successful change

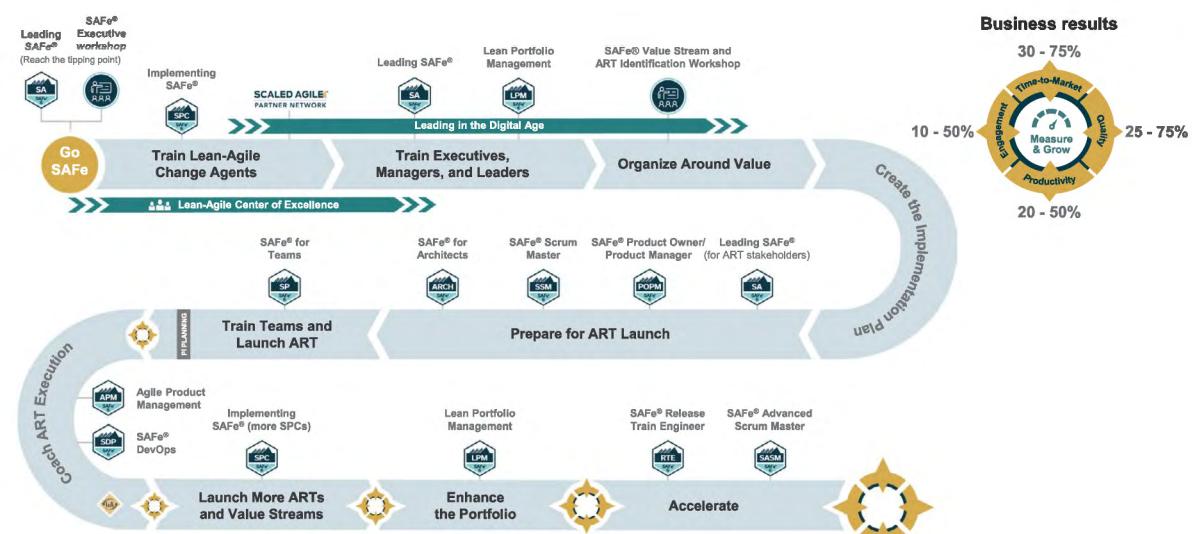
5. **Enable action by removing barriers** - Engages the volunteer army to remove barriers to work across silos and generate real impact
6. **Generate short-term wins** - Communicates visible successes as soon as possible to track progress and energize volunteers to persist
7. **Sustain acceleration** - Promotes change until the Vision is a reality
8. **Institute change** - Replace old habits and traditions with new behaviors and organizational success

<https://www.kotterinc.com/8-step-process-for-leading-change/>

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SAFe Implementation Roadmap



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Train everyone. Launch trains.

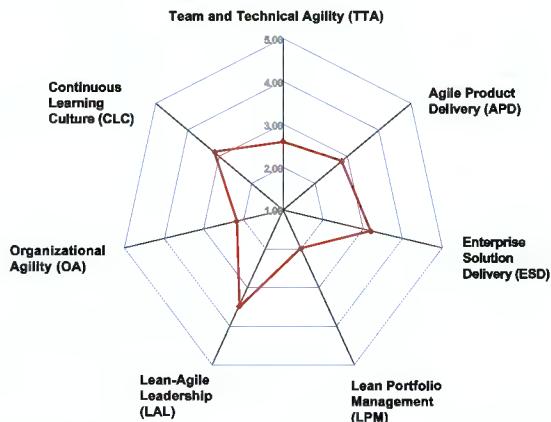
6-13

Measure your progress toward Business Agility

Measure and Grow is the way each portfolio evaluates its progress toward Business Agility and determines its 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



Access the online assessments: <https://bit.ly/Community-MeasureAndGrow>

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Action Plan: Leading the change

Prepare



Share



- ▶ **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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Lesson review

In this lesson you:

- ▶ Explained the skills and behaviors necessary to lead by example
- ▶ Discussed techniques for leading successful change
- ▶ Recognized the steps in the SAFe Implementation Roadmap

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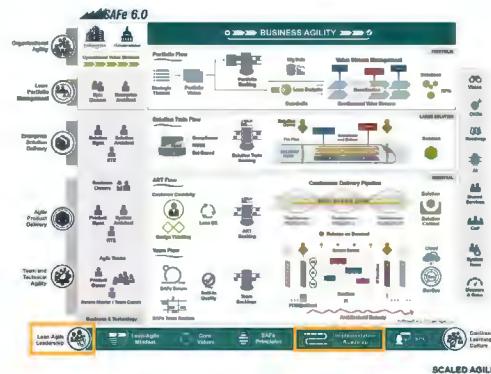
Action Plan

Leading the change

Articles used in this lesson

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

- ▶ “Lean-Agile Leadership”
<https://www.scaledagileframework.com/lean-agile-leadership/>
- ▶ “SAFe Implementation Roadmap”
<https://www.scaledagileframework.com/implementation-roadmap/>



Continue your SAFe journey with the following resources:

Use the “Introducing SAFe Toolkit” 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>

Listen to the twenty-five-minute podcast, “Deep Dive: Measuring Business Agility – Agile Scaling” with SAFe Fellow Inbar Oren:
<https://bit.ly/Podcast-MeasuringBusinessAbility>

References

- Kotter, John. "The 8-Step Process for Leading Change." Kotter, Inc., November 24, 2021. <https://www.kotterinc.com/8-step-process-for-leading-change/>.
- Schweitzer, Albert. "God's Own Man." By Eugene Exman. United Nations World (1952): 34.

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 learners access to the SAFe Agilist exam and related preparation materials.



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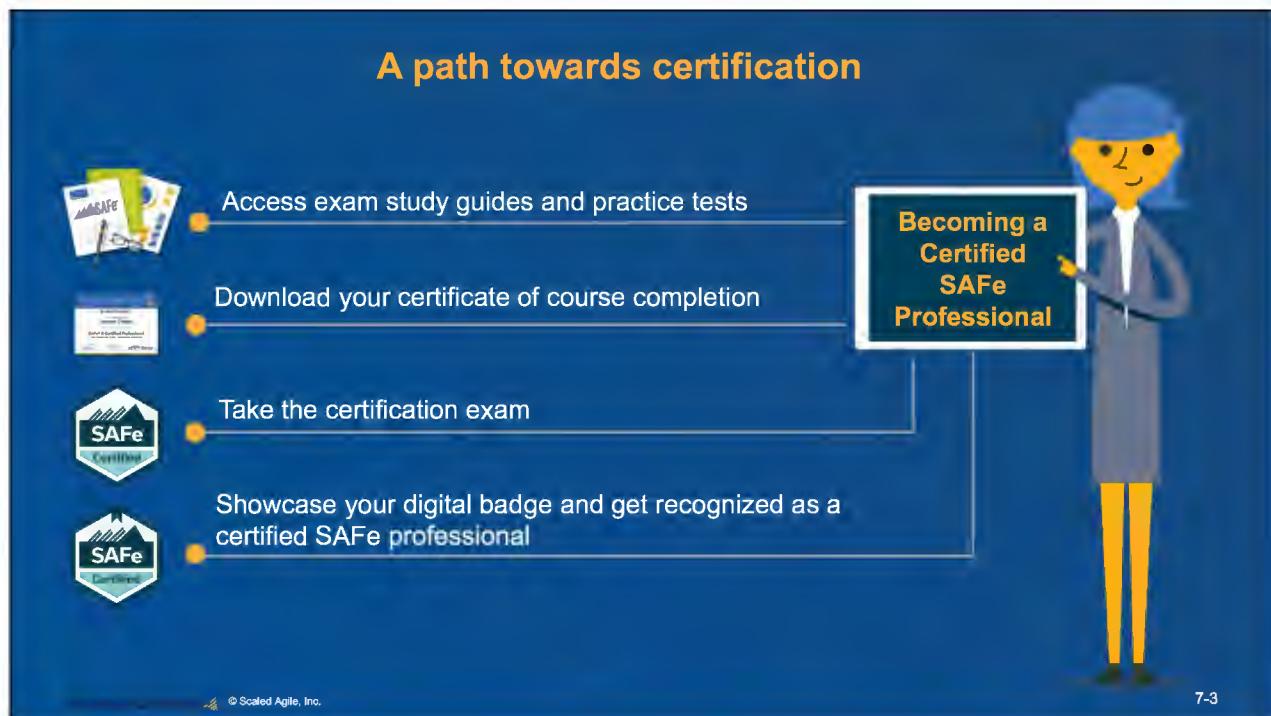


Video: SAFe Certification Benefits

Duration
3 min



<https://bit.ly/Video-SAFECertificationBenefits>



Video: Welcome to the SAFe Community Platform

Welcome to the SAFe® Community Platform!

SALEAD AGILE®
Provider of SAFe®

<https://bit.ly/Video-WelcomeSAFeCommunityPlatform>

SALEAD AGILE © Scaled Agile, Inc.

7-4

Leading SAFe class page

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

The screenshot shows the SAFe Community website's navigation bar with options like Home, Learn, Implement, Measure, Connect, Teach, Partner, and Support. The 'Learn' option is highlighted with a red box. Below the navigation, there's a 'My C' section with 'Getting Started' and 'My Learning' tabs. The 'My Classes' tab is also highlighted with a red box. A note below says: 'This page contains links to SAFe class pages for classes you've registered in those pages to view instructor notes, digital workbooks, and other assets to optimize your learning experience.' Below this, a 'Training and Events Calendar' is shown with four categories: Before Class, During Class, Practicing SAFe, and Additional Resources. Each category has a video thumbnail and a brief description. The 'Before Class' section includes 'Agile Basics' (30-45 minutes), 'SAFe Lean-Agile Principles' (30-45 minutes), 'What Is SAFe' (15-30 minutes), and 'SAFe Core Values' (15-30 minutes).

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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



The screenshot shows the SAFe ART & Team Events page with a navigation bar similar to the previous page. The main content area features a 'Support for ART and Team Events' section with a globe icon and a brief description. To the right, a 'What's on this page?' section lists three items: 1. Videos, checklists, toolkits, and more to help guide you in preparing for and facilitating SAFe ART and Team events. 2. SAFe Collaborative Templates specifically curated for each SAFe event. 3. How to SAFe Collaborative Play guidance for using that tool here as well. Below this, there are three sections: 'Events', 'Program Increment (PI) Planning', and 'Insipred and Adapt (I&A)'. Each section has a thumbnail image and a brief description. At the bottom, there's a 'Need help? Check out our FAQs' link and a 'SCALED AGILE® © Scaled Agile, Inc.' footer.

7-6

Community video hub



Access videos to support your learning and grow your skills.



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7-7

Online learning resources

Discover and develop skills through self-paced, interactive online learning modules to achieve your personal and professional goals.



Agile Basics

E-learning

Learn what Agile is, where it comes from, why it continues to be used and needed, and how it supports teams and organizations to do what they do better.

⌚ 30 - 45 Minutes



What is SAFe

E-learning

Become more familiar with the goals and methods of SAFe to achieve Business Agility.

⌚ 15 - 30 Minutes



SAFe Foundations: Core Values

E-learning

Build your understanding of the core values of SAFe and how they are applied in practice.

⌚ 15 - 30 Minutes

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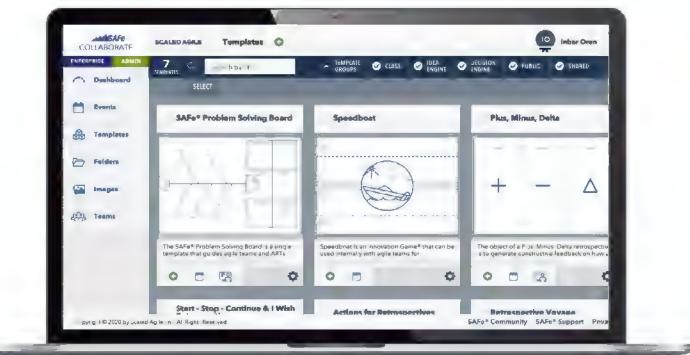
7-8

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 and activities easily and effectively with predesigned and customizable templates.



SAFECOLLABORATE SCALED AGILE © Scaled Agile, Inc.

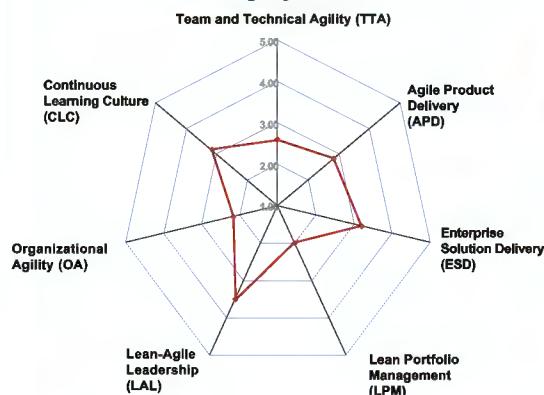
7-9

Measure and Grow



Evaluate progress towards Business Agility with the SAFe assessments, Measure and Grow workshop, and our assessment partners.

Business Agility Assessment



Measure and Grow Workshop Toolkit

SAFe Measure and Grow Workshop Toolkit
PDF
Find the tools and resources needed to facilitate successful Measure & Grow Workshops in your organization.
[Download](#)

agilityhealth[®]
enabling business agility

comparative agility

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7-10

**Good luck on your
SAFe practice
with the
SAFe Community
Platform!**

<https://community.scaledagile.com>



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 (www.scaledagileframework.com/glossary/) to download glossaries translated into other languages.