

# SAFe® Product Owner/ Product Manager

Delivering Value through  
Effective PI Execution

6.0

Workbook



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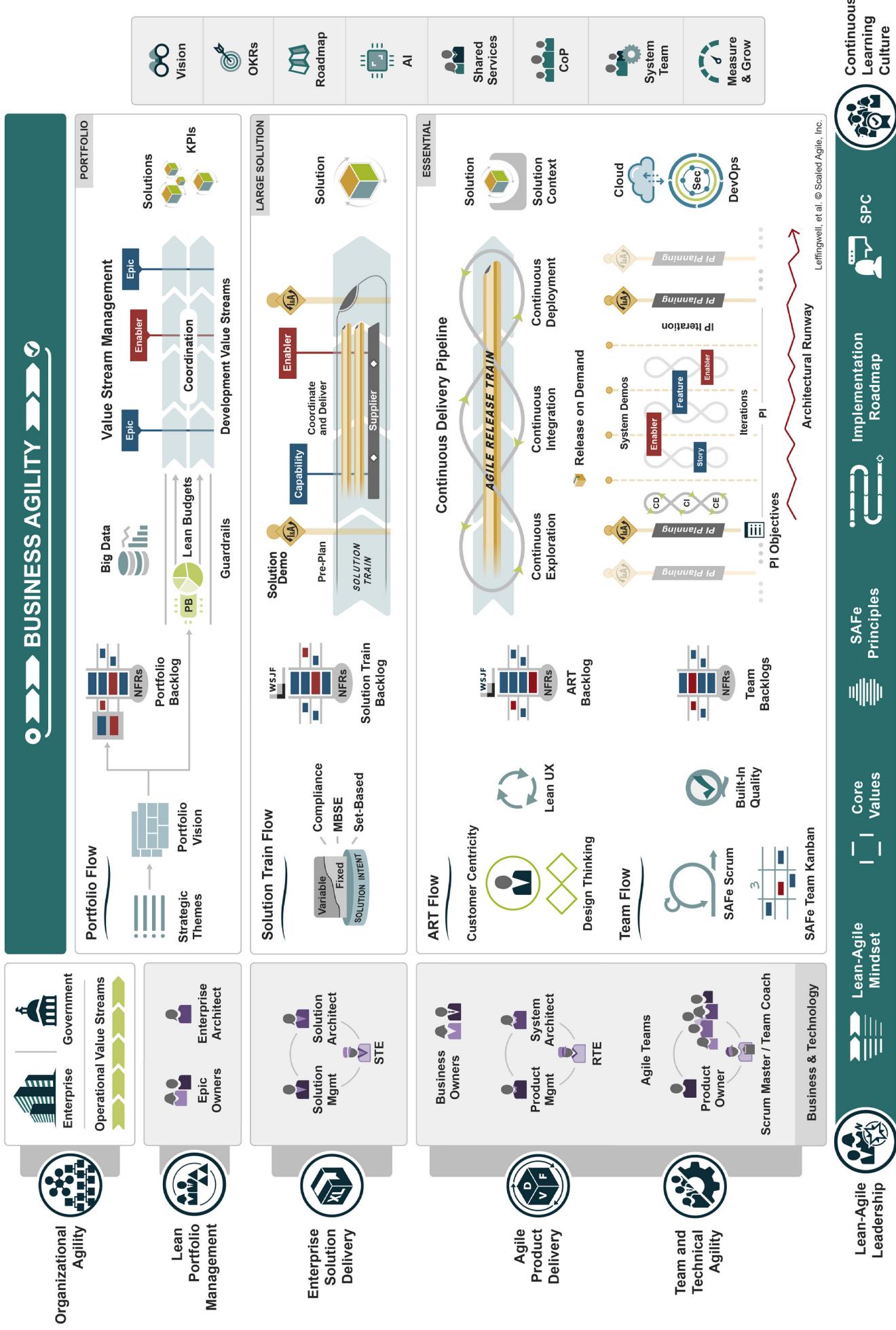
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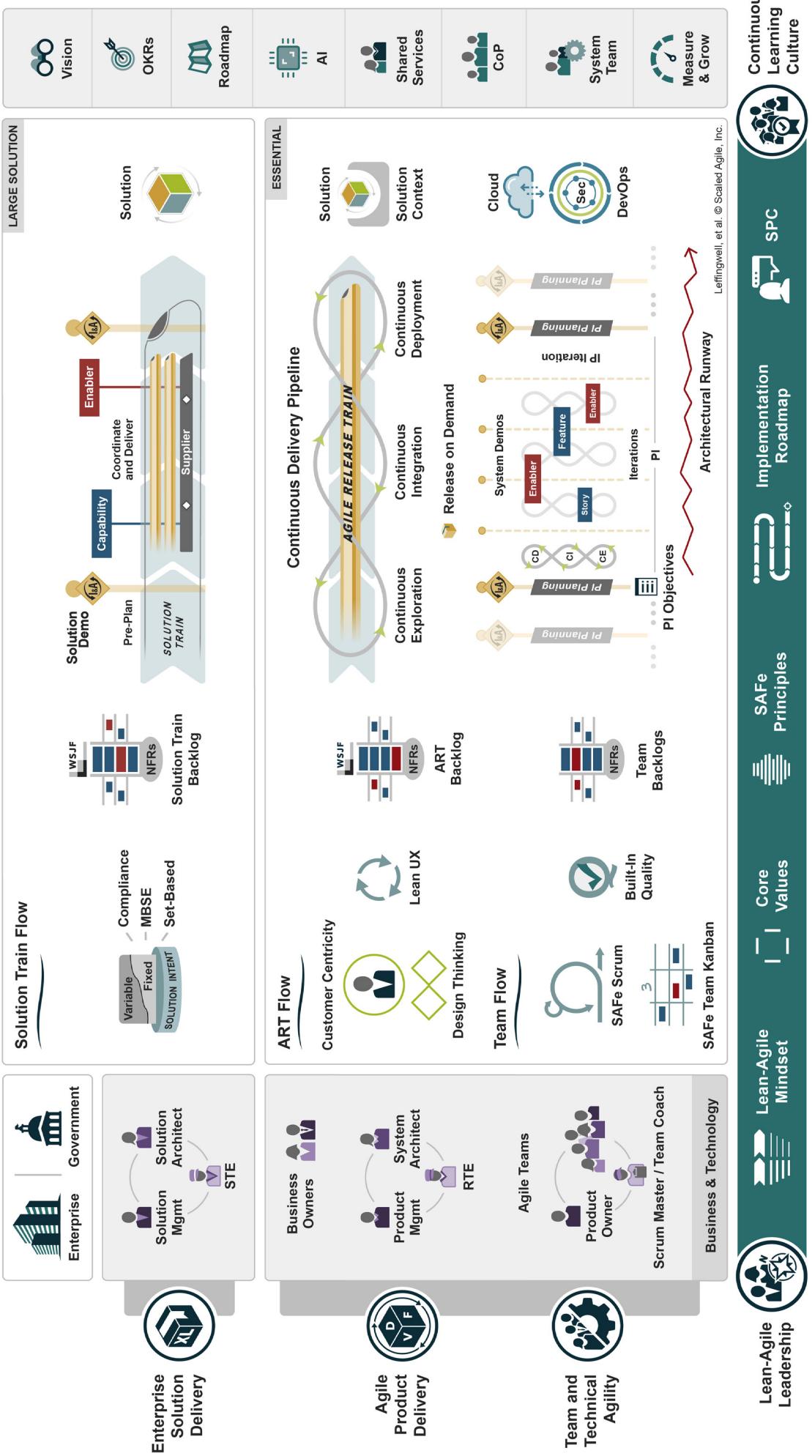
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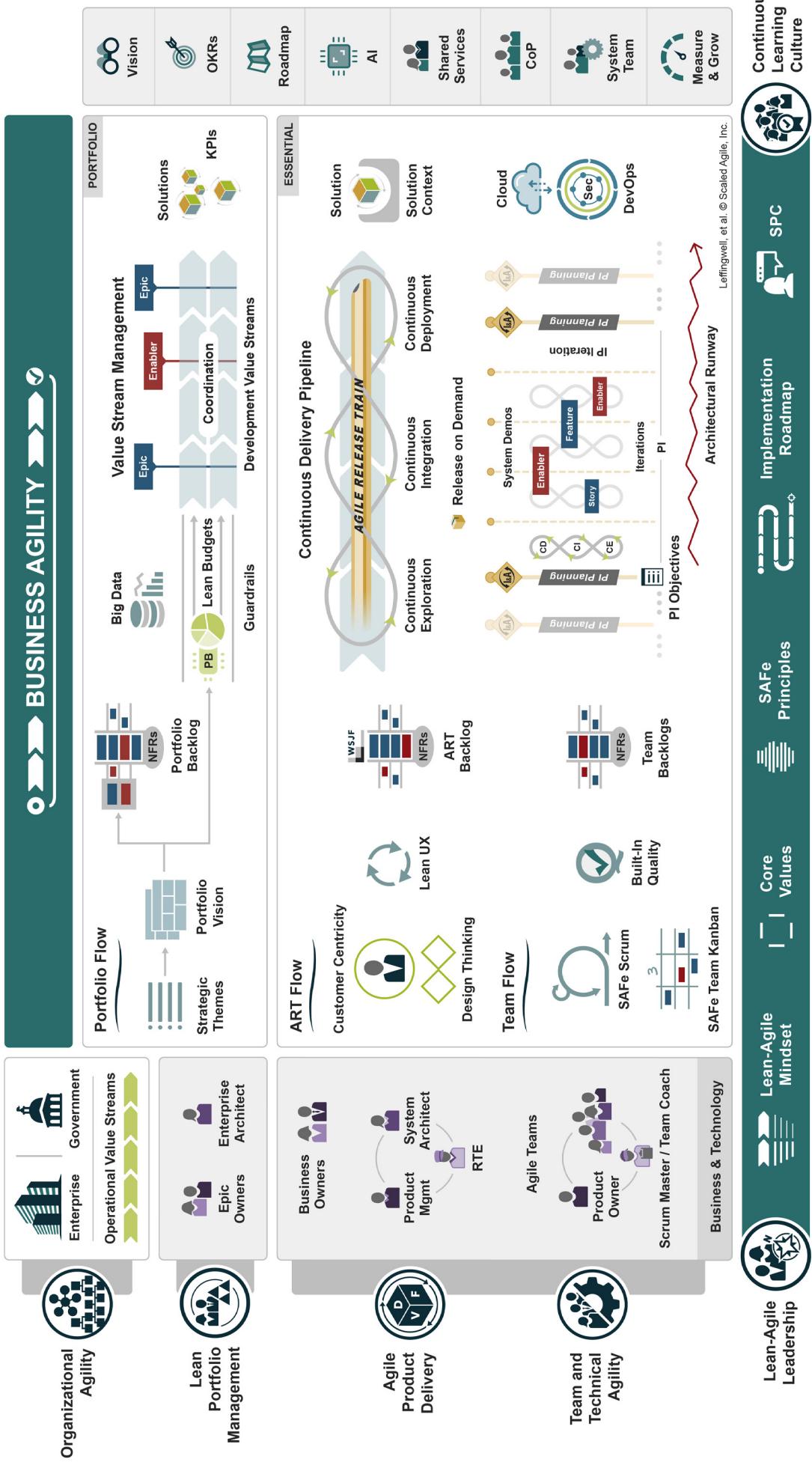


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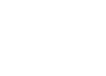


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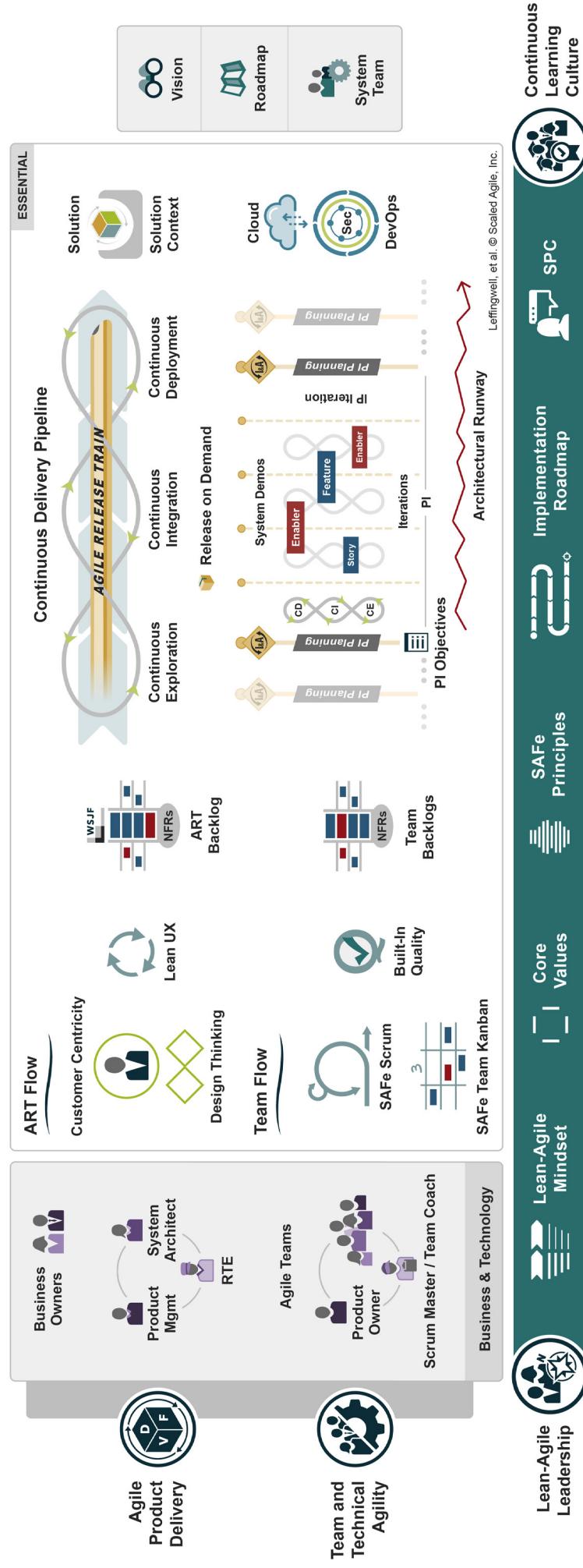
# SAFe® 6.0



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# BUSINESS AGILITY

## Enterprise Solution Delivery



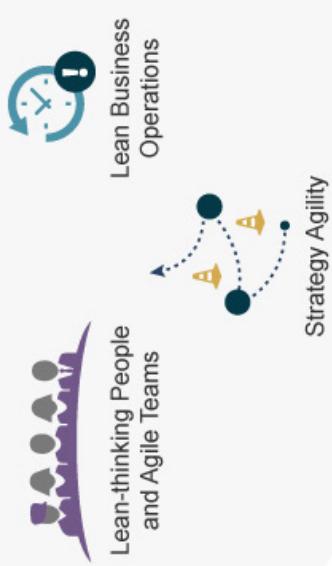
## Lean Portfolio Management



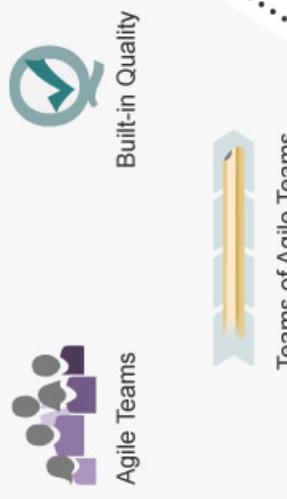
## Agile Product Delivery



## Organizational Agility



## Team and Technical Agility



## Lean-Agile Leadership

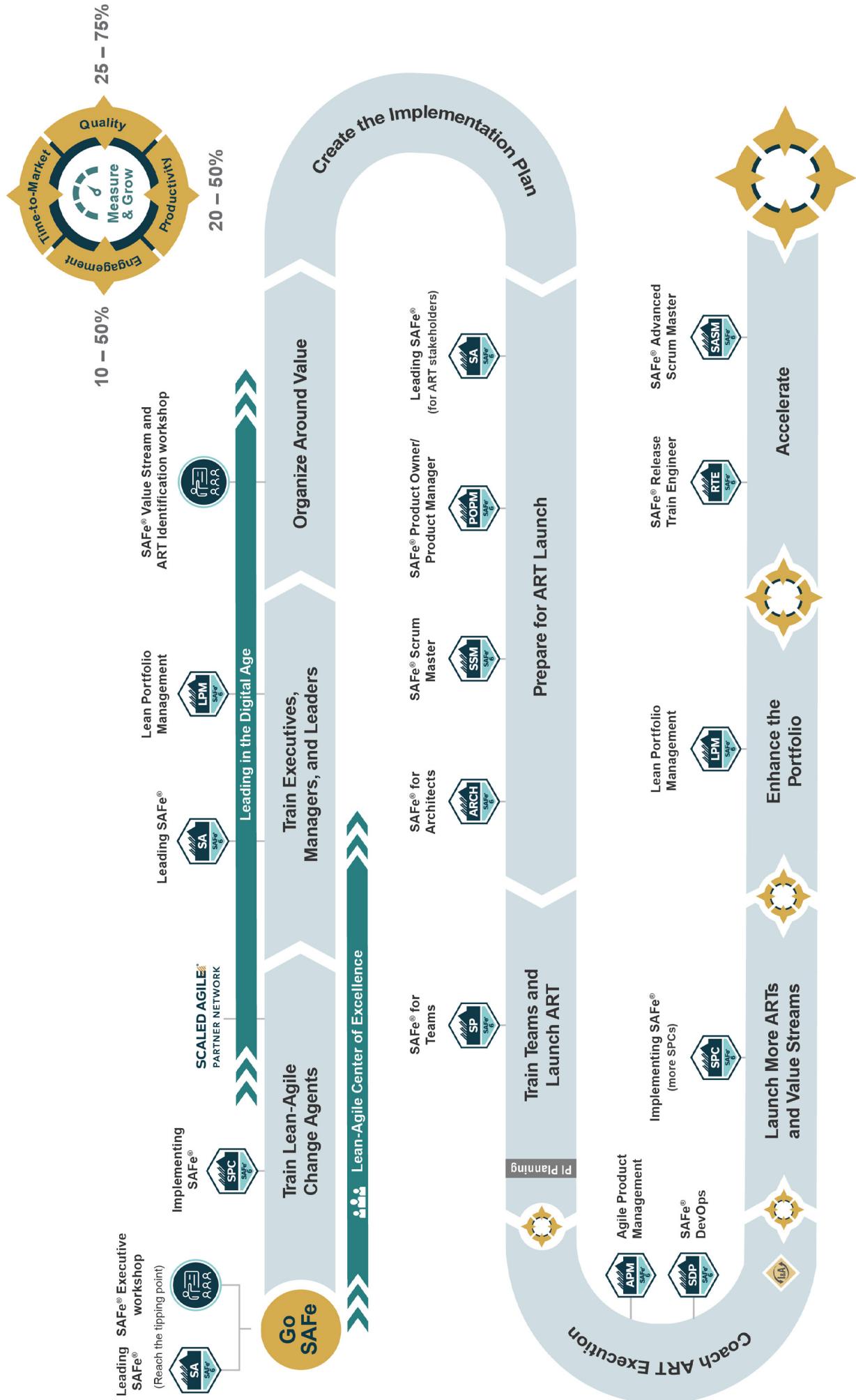


## Continuous Learning Culture



# SAFe® Implementation Roadmap

## Business results



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# SAFe® Product Owner / Product Manager

Delivering value through effective  
PI execution

SAFe® Course - Attending this course gives learners access to the SAFe Product Owner / Product Manager exam and related preparation materials.



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## Logistics

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



## Activity: Access the Class Page

Duration  
5 min

- ▶ **Step 1:** Navigate to the Class Page on the SAFe Community Platform
- ▶ **Step 2:** Select Learn, then My Classes, then Product Owner / Product Manager (6.0)
- ▶ **Step 3:** Click on the link to Download the Product Owner / Product Manager (6.0) workbook (PDF)

The screenshot shows the SAFe Community platform's navigation bar with 'Learn' highlighted. A dropdown menu for 'My Classes' is open, showing options like 'Getting Started', 'My Learning', 'My Classes' (which is selected and highlighted in orange), 'Media Library', 'Role Based Learning', and 'Training and Events Calendar'. Below the menu, a note says: 'The page below contains links to SAFe class pages for classes you've registered for. Click on those pages to view instructor notes, digital workbooks, and other resources to enhance your learning experience.'

Visit the Product Owner / Product Manager Class Page to download the workbook  
<https://bit.ly/Community-MyClasses>

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## Course outline

- ▶ Lesson 1: Exploring Product Owner and Product Management Roles and Responsibilities
- ▶ Lesson 2: Preparing for PI Planning
- ▶ Lesson 3: Leading PI Planning
- ▶ Lesson 4: Executing Iterations
- ▶ Lesson 5: Executing the PI
- ▶ Lesson 6: Practicing SAFe

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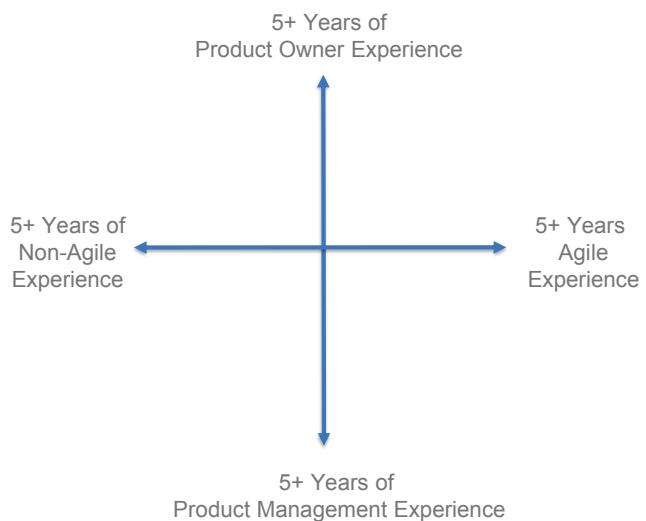
1-4



## Activity: Product Owner and Product Management experience

Duration  
5 min

- ▶ **Step 1:** Introduce yourself to your group
- ▶ **Step 2:** Individually, identify and mark your experience level on the POPM and Agile matrix in terms of:
  - Experience as a Product Owner or Product Manager
  - Experience with Agile, including SAFe certifications and courses



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1-5

## Lesson 1

# Exploring Product Owner and Product Management Roles and Responsibilities

SAFe® Course - Attending this course gives learners access to the SAFe Product Owner / Product Manager exam and related preparation materials.



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## Lesson Topics

**1.1** Introducing SAFe for Product Owners and Product Management

**1.2** The Lean-Agile Mindset

**1.3** Value Streams

**1.4** Responsibilities of Product Owners and Product Management



## Learning objectives

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

- ▶ Define SAFe as it relates to Product Owners and Product Management
- ▶ Summarize the Lean-Agile Mindset for decision-making
- ▶ Explain Value Streams and their benefit
- ▶ Summarize the responsibilities of Product Owners and Product Management



Video: TTC History and Business Context



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

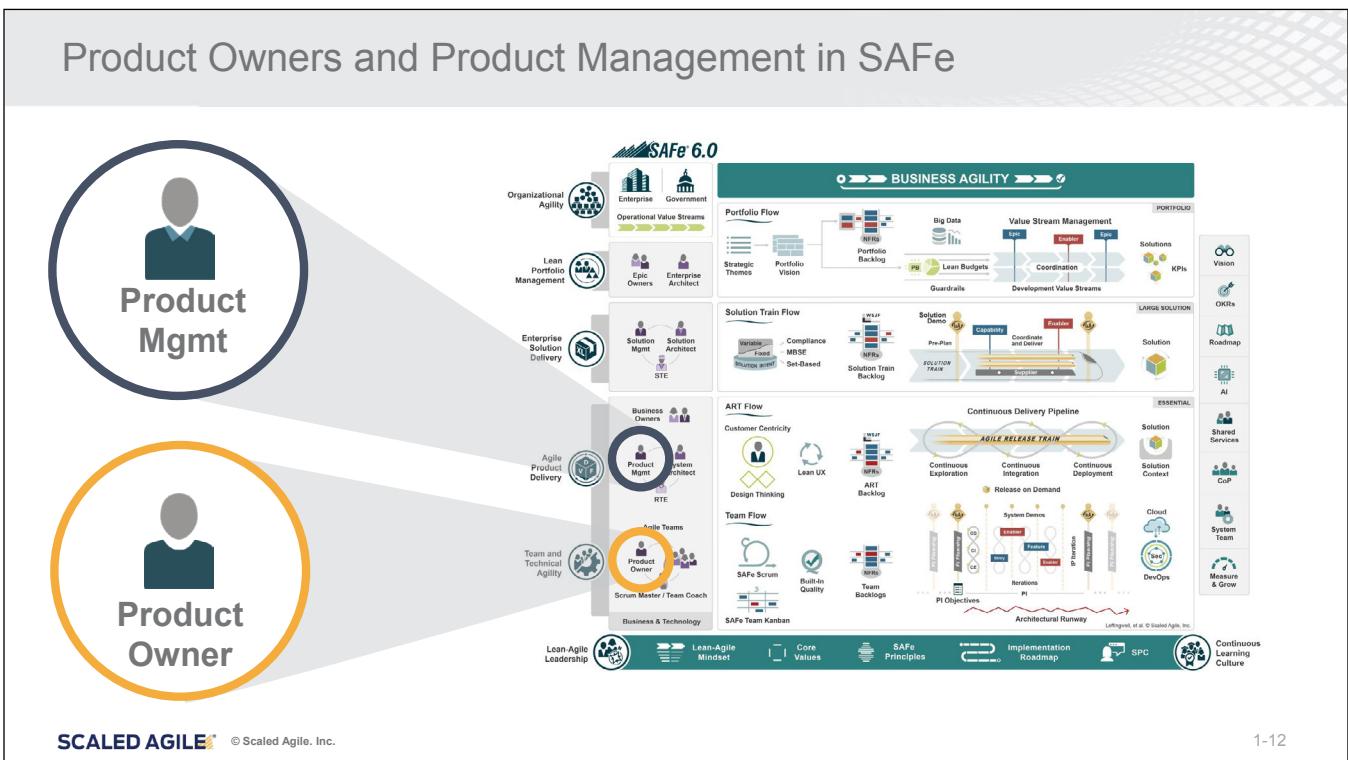
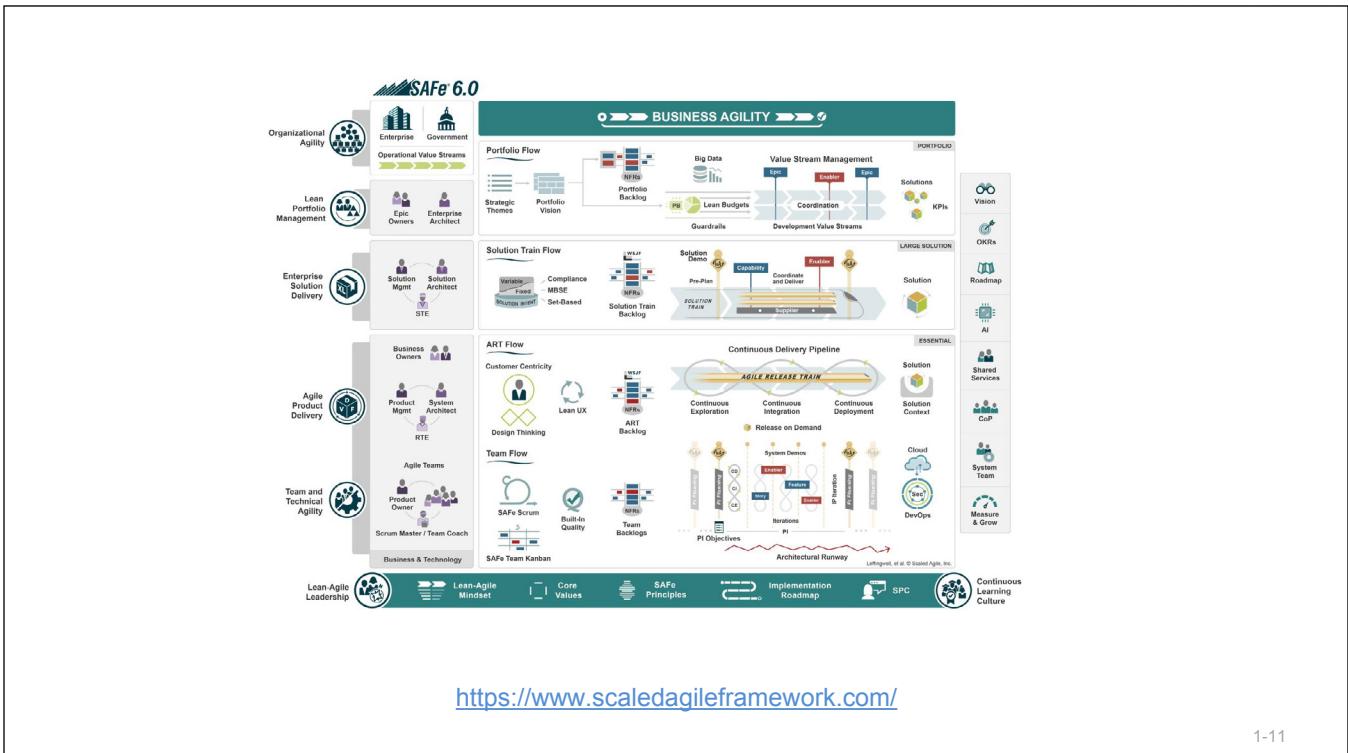
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## 1.1 Introducing SAFe for Product Owners and Product Management

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## Product Owner (PO) areas of responsibility



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## Product Management areas of responsibility



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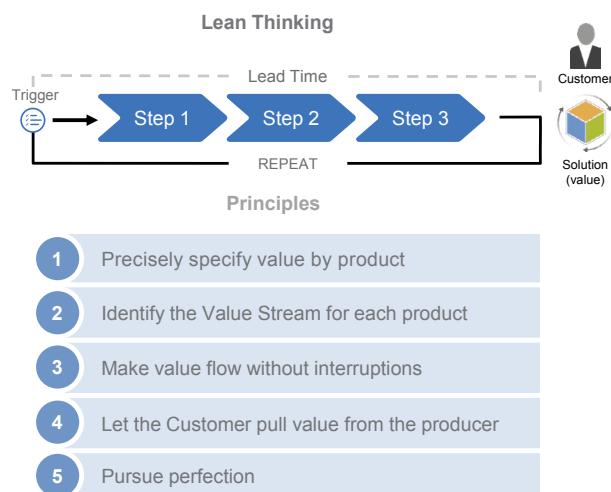
1-14

## 1.2 The Lean-Agile Mindset

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1-15

### Embrace the Lean-Agile Mindset



### 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.

Reference: Agile Manifesto

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1-16

## The Agile Manifesto principles

1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
2. Welcome changing requirements, even late in development.  
Agile processes harness change for the customer's competitive advantage.
3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference for the shorter timescale.
4. Business people and developers must work together daily throughout the project.

## The Agile Manifesto principles

5. Build projects around motivated individuals. Give them the environment and support they need and trust them to get the job done.
6. The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
7. Working software is the primary measure of progress.
8. Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.

## The Agile Manifesto principles

9. Continuous attention to technical excellence and good design enhances agility.
10. Simplicity—the art of maximizing the amount of work not done—is essential.
11. The best architectures, requirements, and designs emerge from self-organizing teams.
12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

## 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



## Discussion: Applying a Lean-Agile Mindset

Duration  
 10 min

- ▶ **Step 1:** Think about the SAFe Lean-Agile Principles
- ▶ **Step 2:** Discuss how the SAFe Lean-Agile Principles might impact your decision-making as a Product Owner or Product Manager

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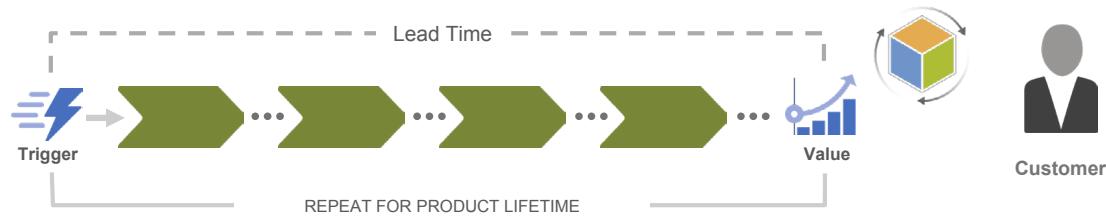
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## 1.3 Value Streams

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## What is a Value Stream?



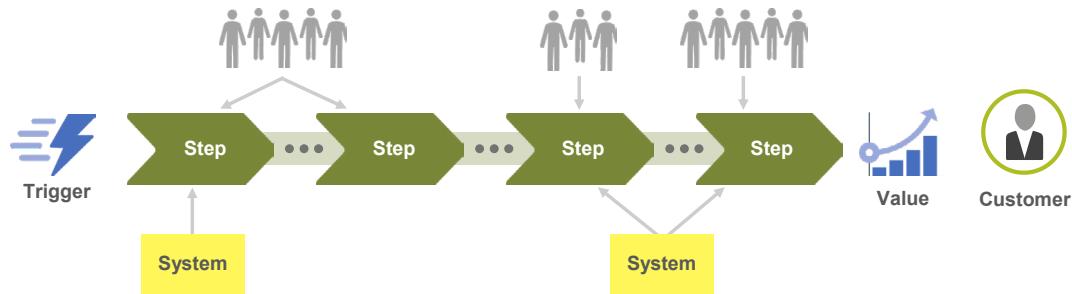
- ▶ Represents the series of steps an organization uses to deliver a product or service to a Customer
- ▶ Persists for as long as Customers continue to derive value
- ▶ Contains the systems, the people who do the work, and the flow of information and materials

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## Operational Value Streams

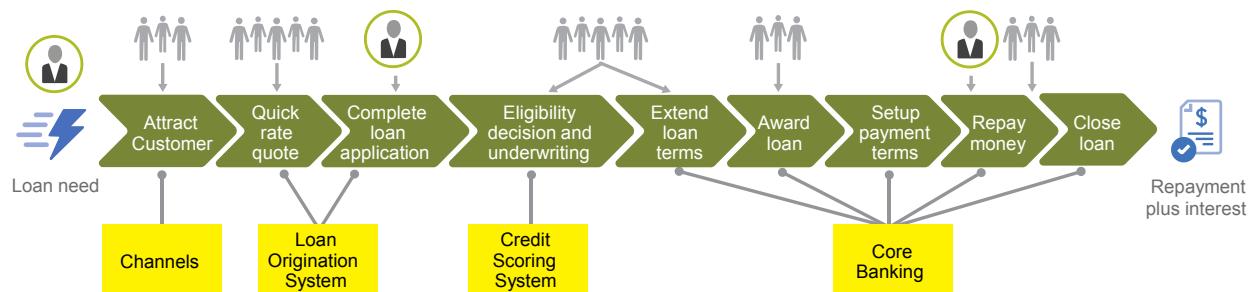
- ▶ The sequence of activities needed to deliver a product or service to a Customer
- ▶ Examples: manufacturing a product, fulfilling an e-commerce order, admitting and treating a patient, providing a loan, or delivering a professional service



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## Consumer loan Operational Value Stream example

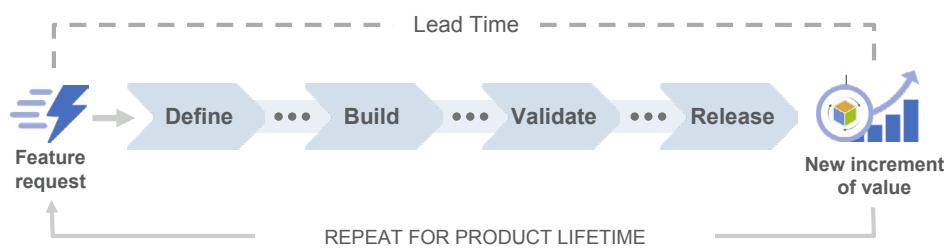


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## Development Value Streams

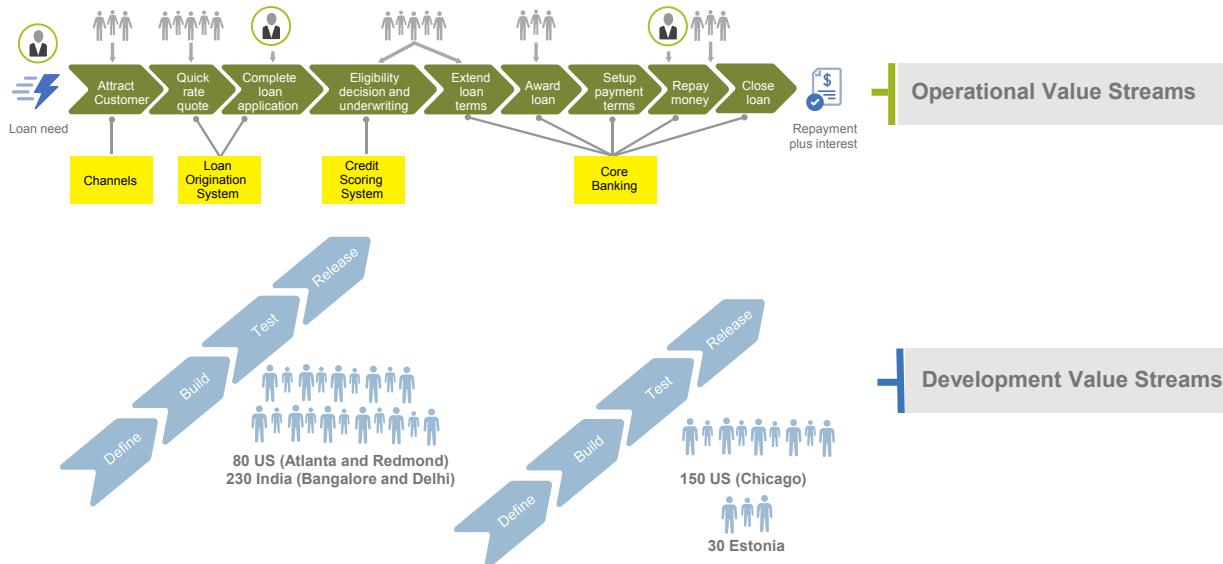
- The sequence of activities needed to convert a business hypothesis into a technology-enabled product or service that delivers Customer value
- Examples: designing and developing a medical device, developing and deploying a Customer Relationship Management (CRM) system, or building an e-commerce web site



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## Development Value Streams support Operational Value Streams

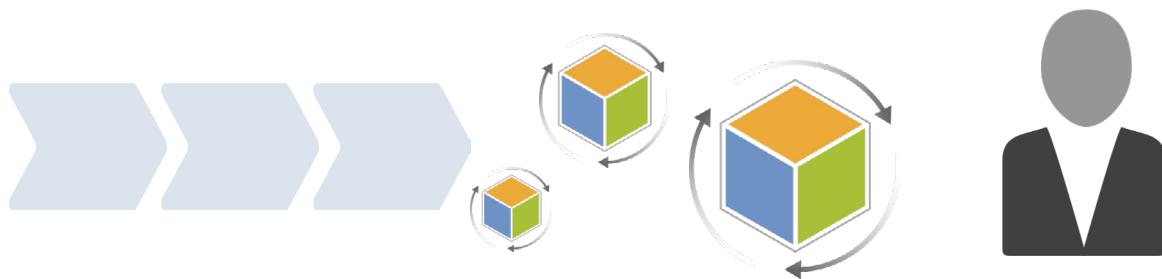


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1-27

## What is a Solution?

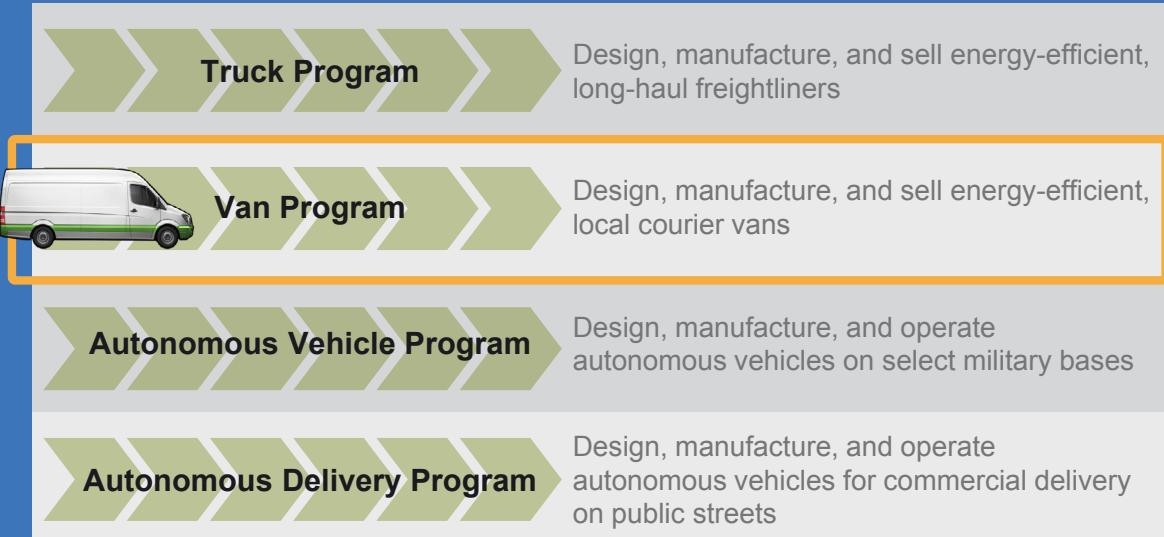
- ▶ A Solution is a product, service, or system delivered to the Customer, whether internal or external to the Enterprise
- ▶ Each Development Value Stream produces one or more Solutions that enable the Operational Value Stream



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1-28

## Operational Value Streams for TTC



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## What is an Agile Release Train (ART)?

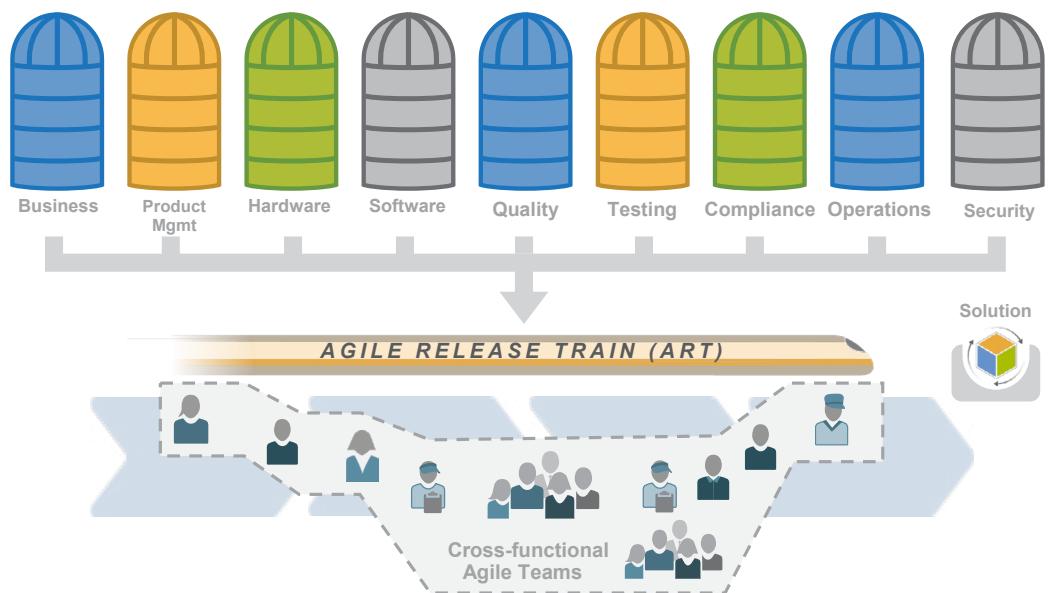
- ▶ Consists of a virtual organization of 5 to 12 teams (50 to 125 individuals)
- ▶ Has all the capabilities—software, hardware, firmware, and other assets—needed to define, implement, test, and deploy new system functionality
- ▶ Operates with the goal of achieving continuous flow of value
- ▶ Synchronizes on common cadence
- ▶ Aligns to a common mission through the ART Backlog



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## An ART is fully cross-functional



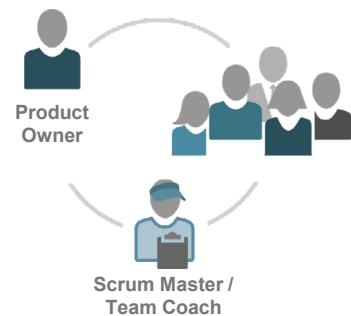
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1-31

## What is an Agile Team?

- ▶ A cross-functional, self-organizing team of 5 to 11 people that defines, builds, tests, and delivers Solution functionality
- ▶ Uses SAFe Scrum or SAFe Team Kanban for Team Agility
- ▶ Applies Built-in Quality practices for Technical Agility
- ▶ Delivers value every Iteration
- ▶ Functions as the basic building block of the SAFe Enterprise

### Agile Team



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## Areas of responsibility of the Agile Team



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## Agile Teams have two specialty roles



### Scrum Master / Team Coach (SM/TC)

- Facilitates PI Planning
- Supports Iteration execution
- Improves flow
- Builds high-performing teams
- Improves ART performance



### Product Owner (PO)

- Connects with the Customer
- Contributes to the Vision and Roadmap
- Manages and prioritizes the Team Backlog
- Supports the team in delivering value
- Gets and applies feedback

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## 1.4 Responsibilities of Product Owners and Product Management

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### Product Management, PO, and Agile Team partnership

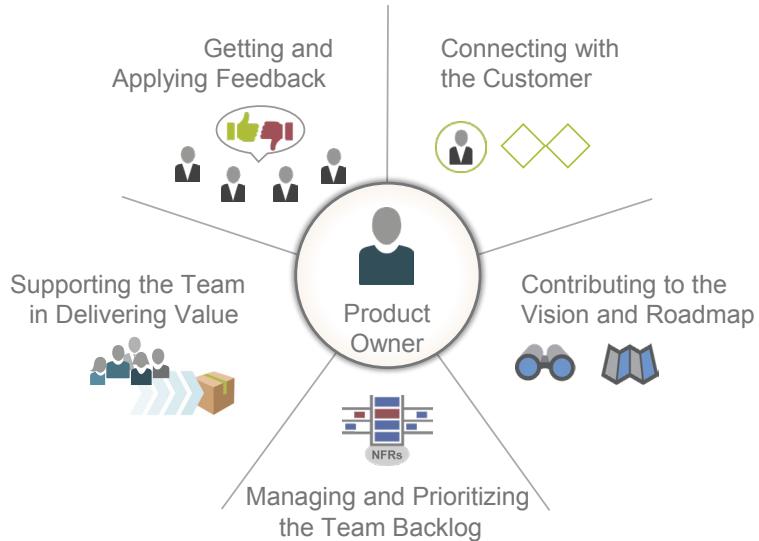
Product Management	Product Owner	Agile Team
Facilitates Continuous Exploration	Connects with the Customer	Continuously evolves product design
Guides the Vision and Roadmap	Contributes to the Vision and Roadmap	Implements the Vision and Roadmap
Manages and prioritizes the ART Backlog	Manages and prioritizes the Team Backlog	Works from the Team Backlog
Defines and quantifies value	Supports the team in delivering value	Builds, tests, and delivers increments of value
All seek and apply feedback frequently		

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Customer

1-36

## PO areas of responsibility



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1-37

## Connecting with the Customer

- ▶ Know the Customer
- ▶ Know the stakeholders
- ▶ Identify the problem to be solved
- ▶ Develop whole-product Solutions

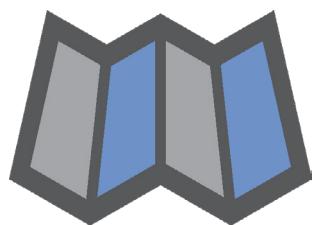
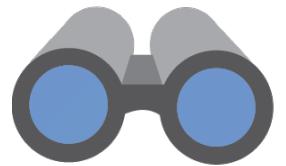


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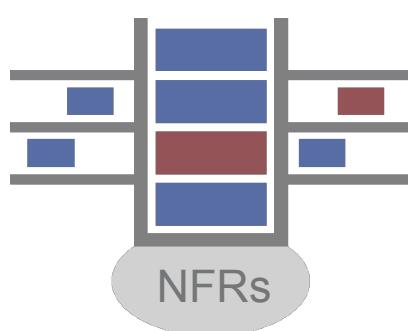
1-38

## Contributing to the Vision and Roadmap

- ▶ Understand market forces
- ▶ Represent the end user
- ▶ Assist with ART Backlog prioritization
- ▶ Educate the ART during PI Planning



## Managing and prioritizing Team Backlog



- ▶ Guide Story creation
- ▶ Prioritize backlog items
- ▶ Accept Stories
- ▶ Support Architectural Runway

## Supporting the team in value delivery

- ▶ Balance stakeholder perspectives
- ▶ Elaborate Stories
- ▶ Foster Built-in Quality
- ▶ Participate in team and ART events



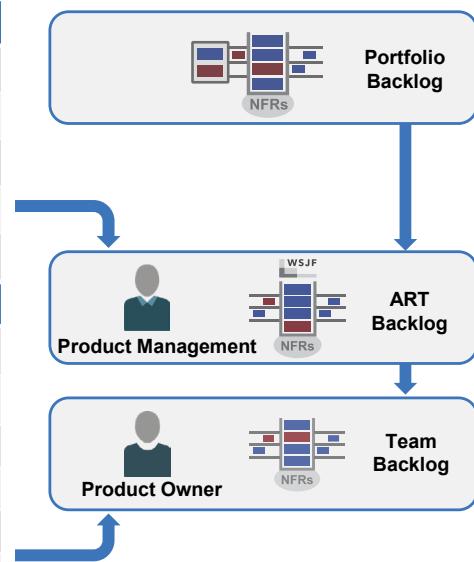
## Getting and applying feedback



- ▶ Test benefit hypotheses
- ▶ Obtain feedback from Customers and stakeholders
- ▶ Share feedback with the ART
- ▶ Evolve Solution design

## PO and Product Management governance: Content authority

Product Management – ART Backlog
▶ Has ART Backlog content authority
▶ Works with the System Architect and team to prioritize Enablers
▶ Has content authority for Vision and Roadmap
▶ Helps guide PI Objectives
▶ Establishes Features and acceptance criteria
Product Owner – Team Backlog
▶ Has Team Backlog content authority
▶ Works with the System Architect to prioritize Enablers
▶ Guides Iteration Goals and content via prioritized Stories
▶ Establishes Story acceptance criteria
▶ Has authority for accepting Stories and team increments
▶ Helps guide PI Objectives at the team level



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1-43



### Activity: Applying PO responsibilities



- ▶ **Step 1:** Individually, think about the responsibilities of the PO and how they apply in your context
- ▶ **Step 2:** On the mind map, draw lines and note specific ways each responsibility applies  
For example: Who are your Customers and how could you connect with them?
- ▶ **Step 3:** Be prepared to share with the class



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1-44

# Activity: Applying PO responsibilities

**Step 1:** Individually, think about the responsibilities of the PO and how they apply in your context

**Step 2:** On the mind map, draw lines and note specific ways each responsibility applies

For example: Who are your Customers and how could you connect with them?

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



## Collaboration with other ART roles

ART Roles		
	<b>Release Train Engineer (RTE)</b>	Acts as the chief coach for the train
	<b>System Architect</b>	Provides architectural guidance and technical enablement to the teams on the train
	<b>System Team</b>	Provides processes and tools to integrate, and evaluates assets early and often
	<b>Business Owners</b>	Serve as the key stakeholders on the train

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1-45



## Action Plan: Exploring the PO/PM roles and responsibilities

Duration  
5 min

Individually, think about the following questions and answer them in the Action Plan in your workbook.

- As you shift to a Lean-Agile Mindset in your practices, what are some things you plan to do differently?
- How can you help others in your organization think and act with a Lean-Agile Mindset?
- Consider how your organization is organized. What steps could you take to improve how the organization organizes around value?

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## Action Plan

Exploring the PO/PM  
roles and responsibilities

## Lesson review

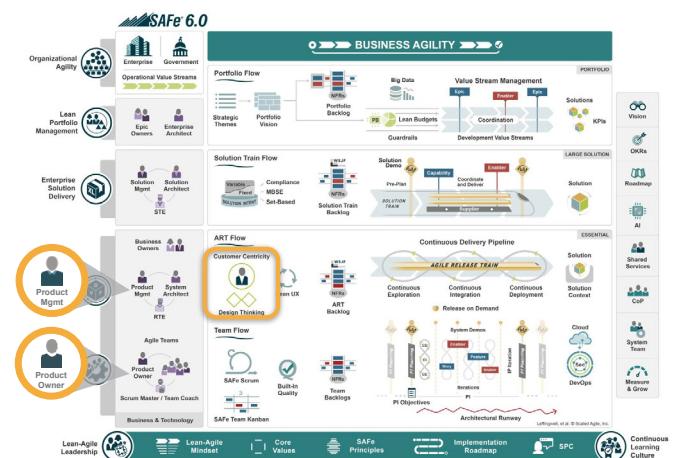
In this lesson, you:

- ▶ Defined SAFe as it relates to Product Owners and Product Management
- ▶ Summarized the Lean-Agile Mindset for decision-making
- ▶ Explained Value Streams and their benefit
- ▶ Summarized the responsibilities of Product Owners and Product Management

## Articles used in this lesson

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

- ▶ "Product Management"  
<https://www.scaledagileframework.com/product-management/>
- ▶ "Product Owner"  
<https://www.scaledagileframework.com/product-owner/>
- ▶ "Customer Centricity"  
<https://www.scaledagileframework.com/customer-centricity/>



## Continue your SAFe journey with the following resources:

Read the Blog Post, "What's a Product Owner to do?" to find out more about being a Product Owner.  
<https://bit.ly/Blog-ProductOwner>

Listen to this 16-minute podcast, "Adopting Lean-Agile UX – Scaled Agile," to learn about Lean-Agile UX, the roles of the PO and Product Manager, servant leadership, and more.

<https://bit.ly/Podcast-RoleofPOPM>

Watch the four-minute video, *The Lean-Agile Mindset*, to learn more about what makes the Lean-Agile Mindset unique.

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

Go to the SAFe Agile Product Managers group to connect with other Product Managers and ask questions.

<https://bit.ly/Community-ProductManagerGroup>

## References

Agile Manifesto. "Manifesto for Agile Software Development." Updated 2001. <https://agilemanifesto.org>.

# Lesson 1 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

## Preparing for PI Planning

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### Lesson Topics

- 2.1 PI Planning
- 2.2 The Solution Vision
- 2.3 Solution and PI Roadmaps
- 2.4 Customer-centric Features
- 2.5 ART Backlog and Kanban

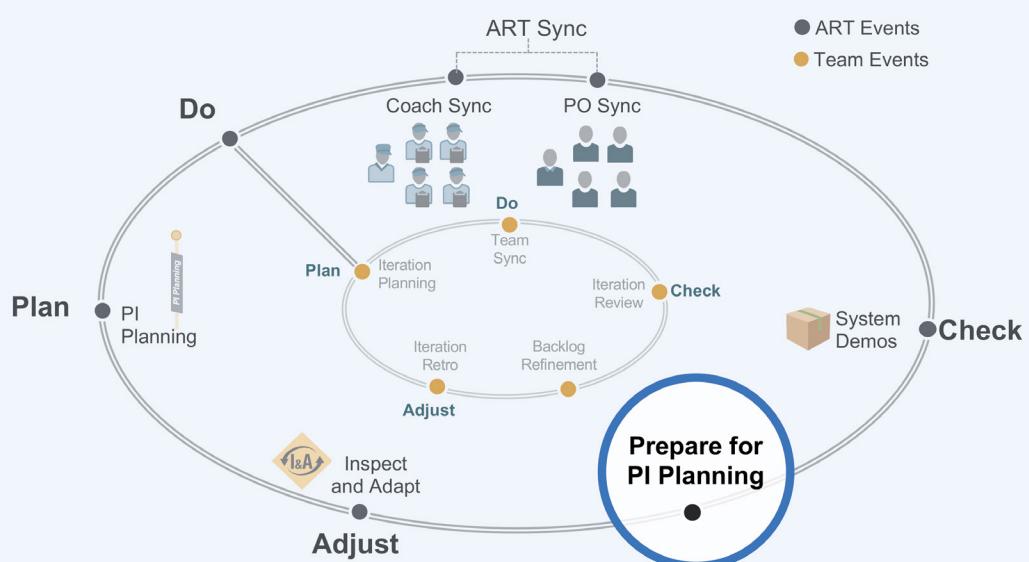


## Learning objectives

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

- ▶ Summarize PI Planning
- ▶ Explain the Solution Vision
- ▶ Illustrate how to forecast work through Roadmaps
- ▶ Plan beneficial Features
- ▶ Identify how to manage the ART Backlog and Kanban

## Preparing for PI Planning



## 2.1 PI Planning

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2-5



Video: SAFe at Travelport: The Power of PI Planning

Duration  
5 min



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

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2-6

## What is a Planning Interval (PI)?

- ▶ A timebox during which an Agile Release Train (ART) delivers incremental value in the form of working, tested software and systems
- ▶ Typically, 8-12 weeks that consists of development Iterations and an Innovation and Planning (IP) Iteration
- ▶ A timebox for planning, building, and validating a full system increment, demonstrating value, and receiving fast feedback

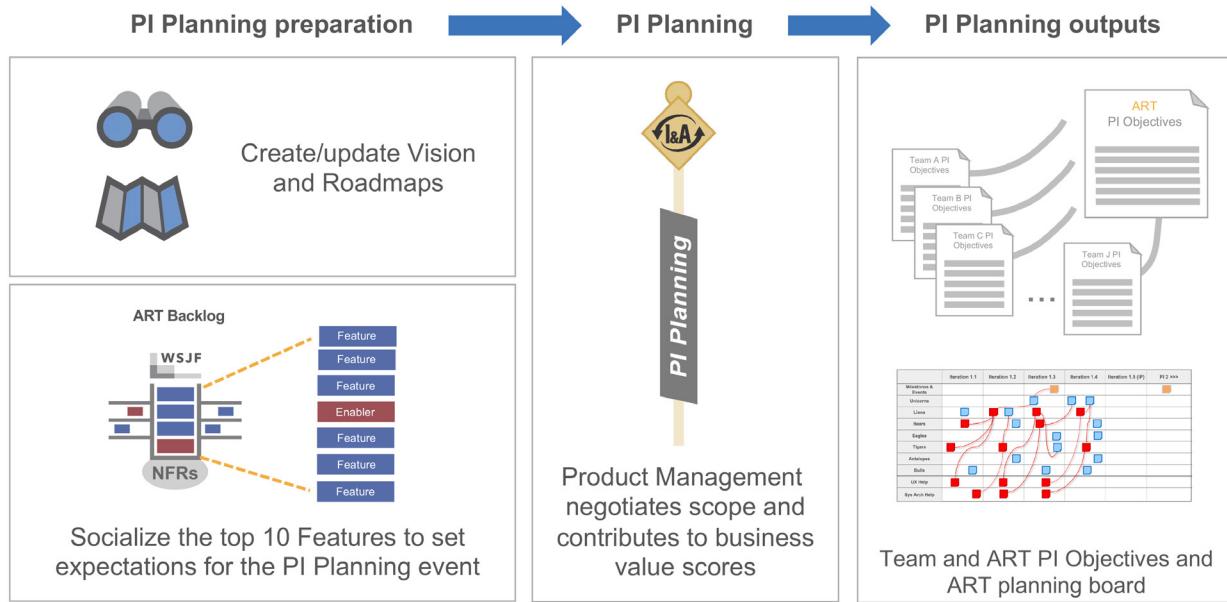


## What is PI Planning?

A cadence-based event that serves as the heartbeat of the ART, aligning all teams on the ART to a shared mission and Vision.

- ▶ For every PI (8–10 weeks), everyone plans together:
  - Two days for in-person
  - Three to four days for virtual
- ▶ Product Management owns Feature priorities
- ▶ Agile Teams own Story planning and high-level estimates
- ▶ Architect and UX work as intermediaries for governance, interfaces, and dependencies

## POs and Product Management are essential to PI Planning



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2-9

## The benefits of PI Planning

- Aligns development to business goals with the business context, Vision, and Team/ART PI Objectives
- Identifies dependencies and fosters cross-team and cross-ART collaboration
- Establishes personal communication across all team members and stakeholders
- Provides the opportunity for just the right amount of architecture and Lean User Experience (UX) guidance
- Matches demand to capacity and eliminates excess work in process (WIP)
- Enables fast decision-making

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2-10

## Two-day PI Planning agenda

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

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2-11

## 2.2 The Solution Vision

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## What is a Solution Vision?

A description of the future state of the product or Solution

- ▶ Where are we headed with this product or Solution?
- ▶ What problem does it solve?
- ▶ What Features and benefit hypotheses do we think it provides?
- ▶ For whom does it provide benefit?
- ▶ What nonfunctional requirements (NFRs), such as performance, reliability, platforms, and so on, does the Solution deliver?

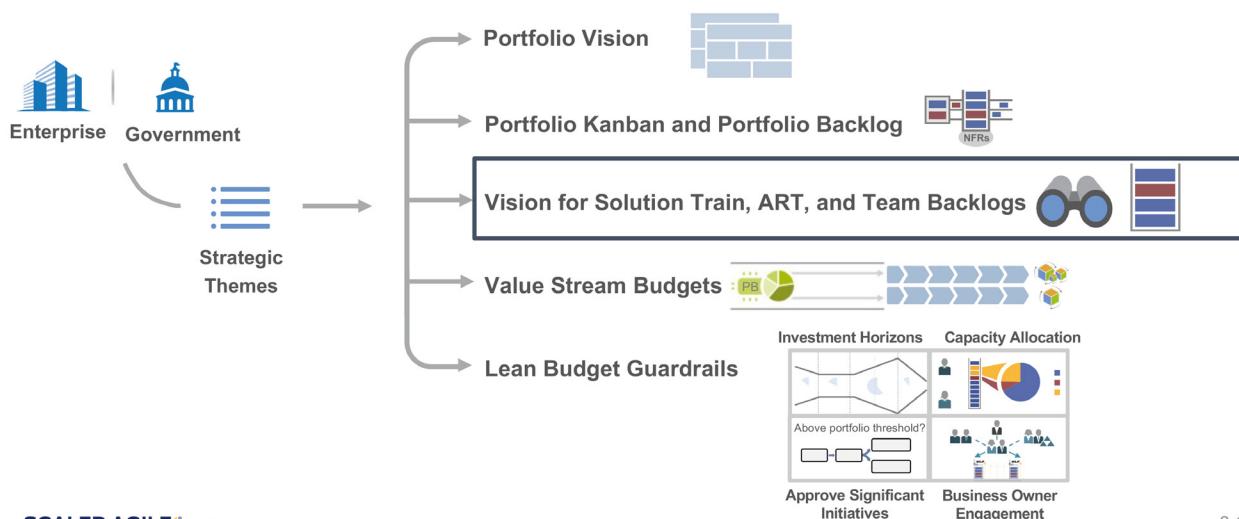


### Common formats

- Rolling wave briefings
- Vision document
- Preliminary data sheet
- Draft press release

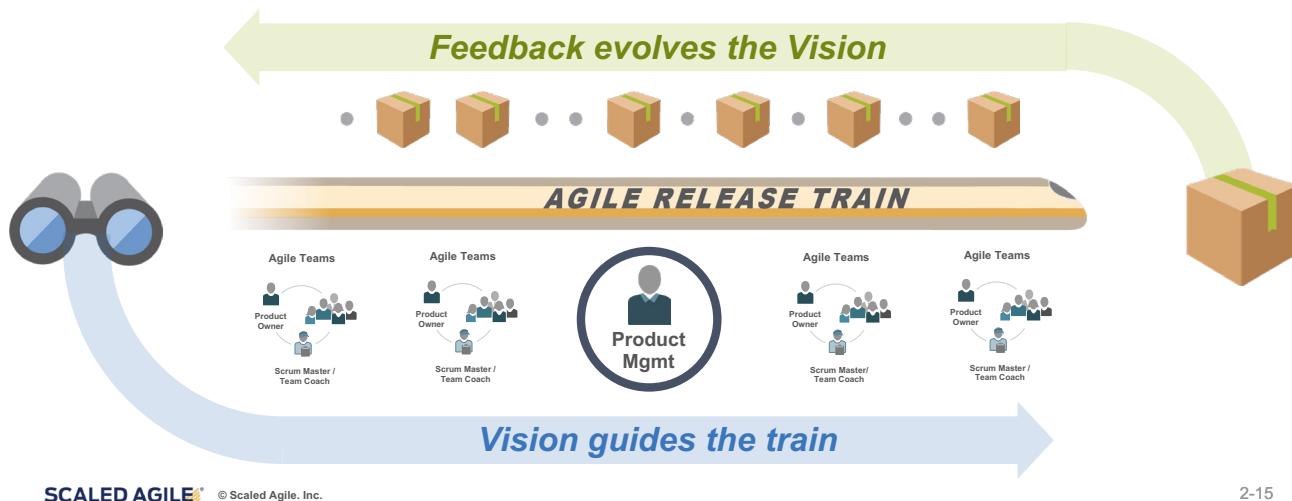
## Influence of Strategic Themes

Strategic Themes influence the Solution Vision



## Product Management creates the Vision for the ART

Product Owners contribute to the Vision, which evolves from Customer feedback.



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2-15

## 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?



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### 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.

Reference: Heath and Heath, *Switch*

2-16

 Video: TTC All Hands

Duration  






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

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2-17

 Discussion: Strategic Themes for the Van Program

Duration  




As a class, discuss how these Strategic Themes will influence the work of POs and Product Management on the Van Program.

Value Streams	Strategic Themes
Truck Program	Increase Truck Program sales volume by 15%
Van Program	Obtain gold safety standard status with Van Program
Autonomous Vehicle Program	Triple Autonomous Vehicle Program revenue within 18 months through commercial expansion
Autonomous Delivery Program	Capture dominant autonomous delivery market share in zones 1 and 2 within 18 months
	Expand the Giving-1 Program to all TTC Locations

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2-18

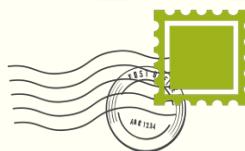
## Postcard from the future for the Van Maintenance Advisor



### Dear Terrific Transport

Thank you for creating the Van Maintenance Advisor. Maintenance schedules customized to each van have reduced our repair costs, increased driver safety, and increased revenue because our vans are on the road more and function reliably.

—Local Courier Services, Inc.



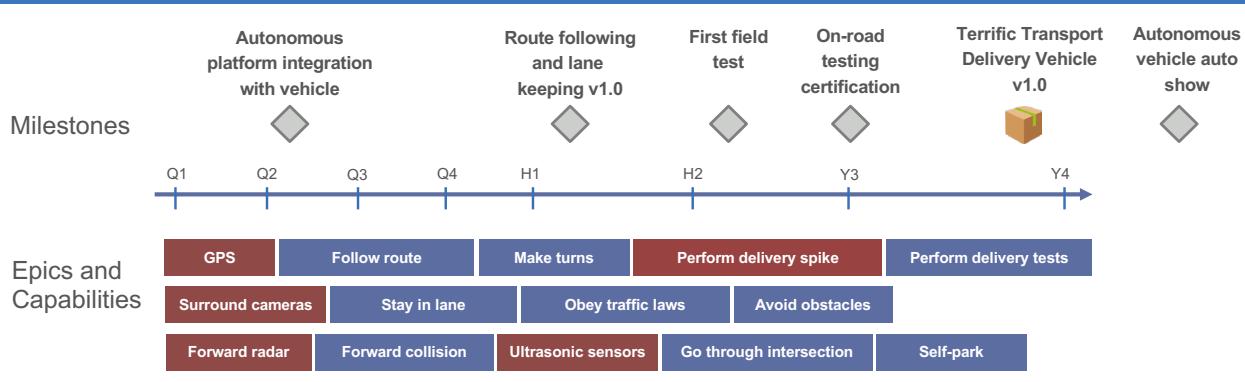
To: Terrific Transport Corporation

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## 2.3 Solution and PI Roadmaps

## Solution Roadmaps provide a multiyear view



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## PI Roadmaps are shorter term with more fidelity

Annual automotive suppliers' event

GPS integrated with vehicle prototype

Camera integration with vehicle prototype

PI 1
Selection of mapping software
Front camera
Radar components
Install communications on mule
<b>— Uncommitted objectives —</b>
Send real-time status

Committed

PI 2
GPS
Rear camera
Follow straight path
Detect fixed obstacles

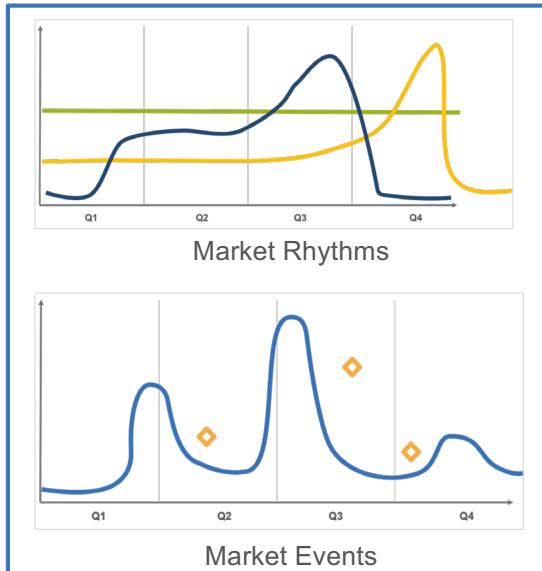
Forecast

PI 3
Surround cameras
Change lane

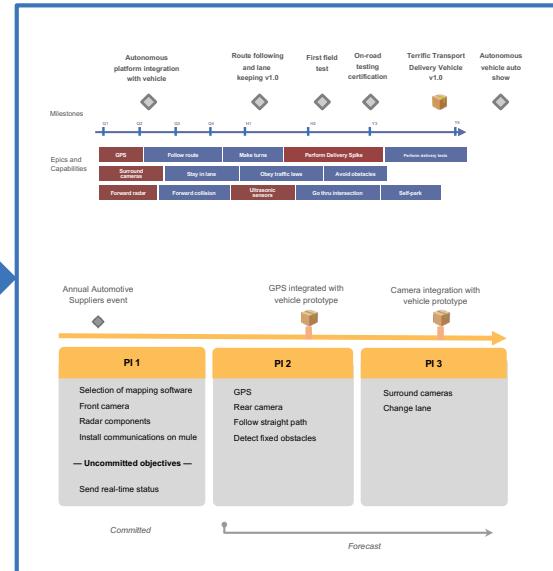
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## Market dynamics influence Solution and PI Roadmaps



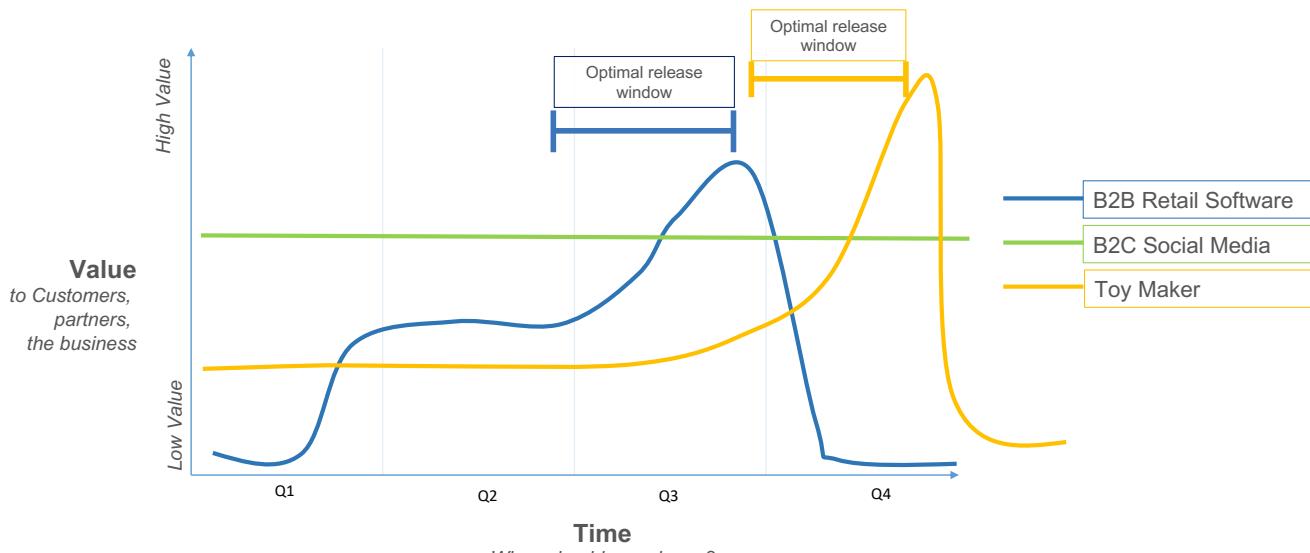
Influence



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2-23

## Market rhythms are cyclical and predictable



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## Market events are ad-hoc and often unpredictable



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### Activity: Consider market rhythms for optimum release timing

The Van Maintenance Advisor requires new hardware. The System Architect has informed the Product Management team that Customers will have to take their vans out of service for approximately one day to install the new hardware.



Approximately 1/3 of your van Customers are serving the local retail market while 1/3 are serving the medical specimen market.

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2-26



## Activity: Consider market rhythms for optimum release timing

Prepare  
5 min

Share  
10 min



- ▶ **Step 1:** In your groups, draw a market rhythms chart for an entire year. Add a line for each market segment considering rhythms that may impact each market.

Example rhythms to consider:

- Holiday shopping, flu season, and so on

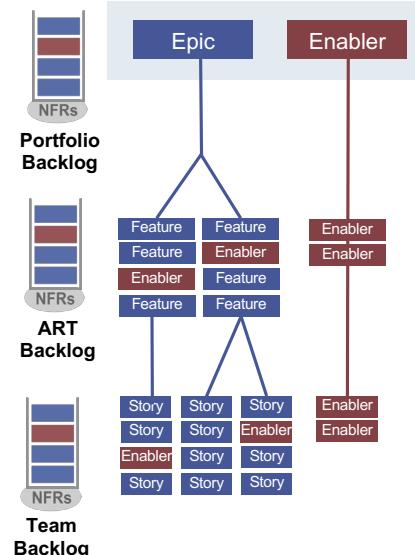
- ▶ **Step 2:** Identify key times to release the new hardware while minimizing disruptions to Customers.

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

## 2.4 Customer-centric Features

## Summary of SAFe requirements

- ▶ **Epic** - An Epic is a container for a significant Solution development initiative that captures the more substantial investments that occur within a portfolio.
- ▶ **Feature** - A Feature is a service that fulfills a stakeholder need. Each Feature includes a name, a benefit hypothesis, and acceptance criteria. A Feature is sized or split, as necessary, to be delivered by an ART in a PI.
- ▶ **Story** - A Story is a short description of a small piece of desired functionality. A Story is written from the perspective of the user.
- ▶ **Enabler** - An Enabler supports the activities needed to extend the Architectural Runway to provide future business functionality. Enablers are captured in various backlogs throughout SAFe.



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2-29

## Creating Epics to fulfill the Vision

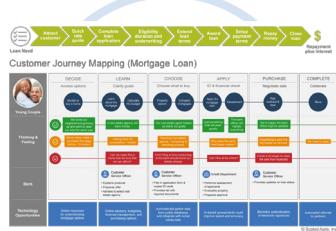
Epic Hypothesis Statement	
Funnel entry date	May 18 <sup>th</sup>
Epic name	TTC Supplemental Insurance
Epic Owner	Pat Bakker
Epic description	<p>Develop a Solution to allow Customers to purchase supplemental insurance for packages.</p> <p><b>For</b> merchants  <b>Who</b> want to provide additional insurance for high-value packages,  <b>The</b> supplemental insurance coverage  <b>Is an</b> optional upgrade  <b>That</b> increases the standard coverage for packages.  <b>Unlike</b> our standard insurance offering,  <b>Our Solution</b> provides additional coverage against theft and natural disaster.</p>
Business outcomes	Higher Customer satisfaction, additional revenue
Leading indicators	20% of all policies are upgraded to supplemental policies in first 90 days following launch
Nonfunctional requirements	Offering must be scalable to all delivery regions



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2-30

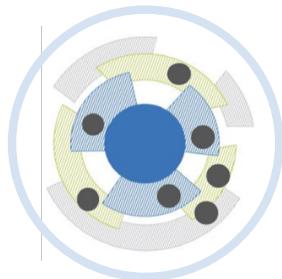
## Design Thinking tools support creating Features



**Customer Journey Maps**



**Personas**

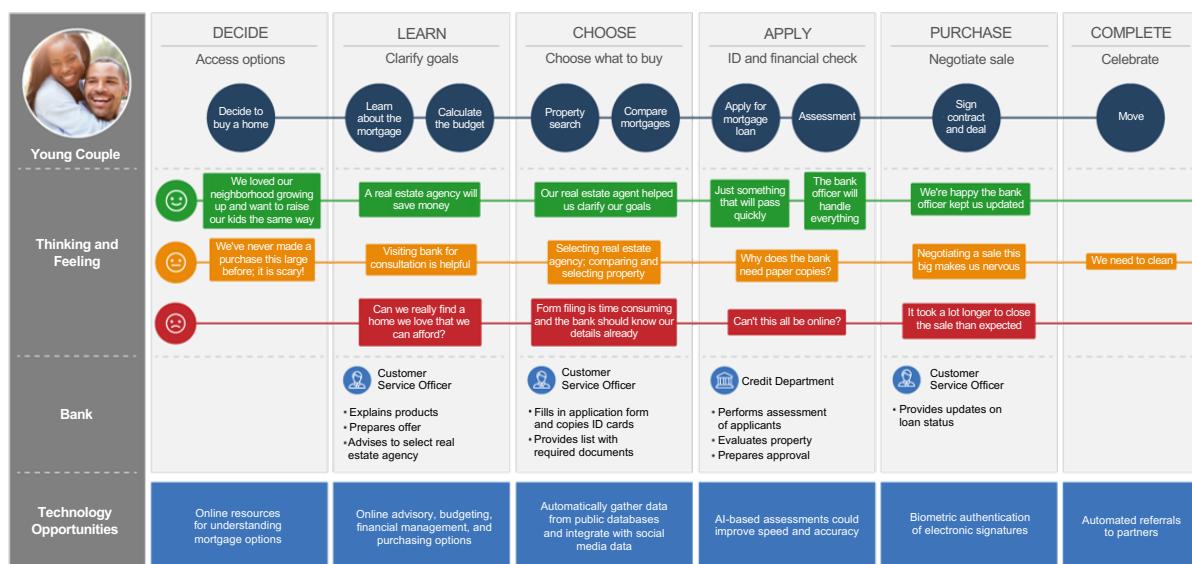


**Whole-Product Thinking**

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



**Customer journey map for a mortgage loan**

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## Personas help 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



**Mike the Fleet Manager**

**Age:** 36  
**Location:** Reno, Nevada, USA  
**Manages:** 50 vans, 80 part-time and full-time drivers

"I started my own courier van service when I was 18. I did everything – delivery, managing the vehicles, and handling Customers. During the last recession I had to shut down my company – but that's okay, because I was getting tired of working alone. I'm now the Fleet Manager for big company. Driver safety is my top priority."

I have an office but I'm in constant motion – my tablet is more useful than my computer.

I used to be a driver and driver safety is a personal priority.

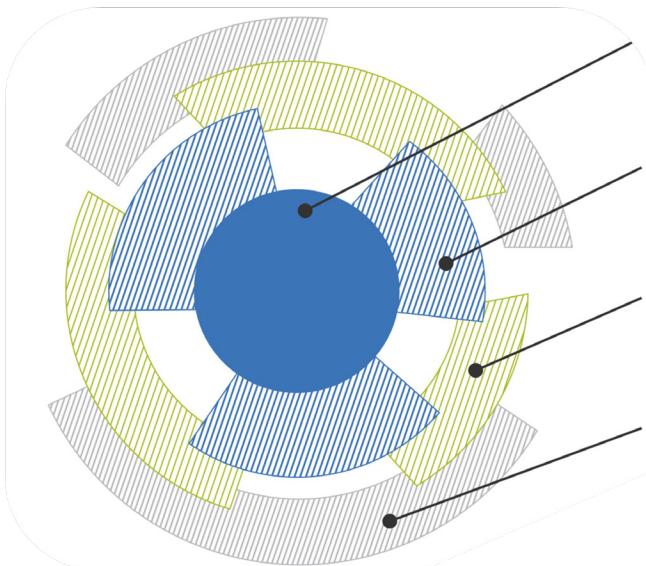
My vans need to be on the road – a van in the shop doesn't make me any money!

I need to be able to respond quickly to emergencies.

Reno weather is hard on vans. I think my maintenance schedule is better than what TTC recommends.

I learned Spanish and some Vietnamese to better communicate with my drivers.

## Whole-product thinking creates a compelling reason to buy



### Generic Product

Minimum to satisfy Customer

### Expected Product

Features typically found in this type of product

### Augmented Product

Features that differentiate this specific product from competitive or alternative products

### Potential Product

Our Vision of future Capabilities that keep Customers

Reference: Levitt, "Marketing Success Through Differentiation—of Anything"



## Video: Features in SAFe

Duration  
5 min



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

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2-35



## Activity: Feature storming

Prepare  
10 min  
Share  
5 min



- ▶ **Step 1:** With your group, break down or decompose the example Epic by creating as many Features as possible. Keep the Customer in mind as you write your Features.
- ▶ **Step 2:** Be prepared to share with the class.

### Examples

#### Feature

Browse available options online

#### Feature

Create insurance packages for purchase

### Epic

Develop a Solution to allow TTC Customers to purchase supplemental insurance for packages

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## Analysis and refinement ensure Features are ready for implementation

Features may start as a one sentence overview with more details added in refinement meetings and during the PI Planning preparation.



### Feature

In-service software update



### Feature

In-service software update

*Benefit hypothesis:*  
Reduced errors, faster  
upgrades, increased  
automation



### Feature

In-service software update

*Benefit hypothesis:*

Reduced errors, faster upgrades,  
increased automation

*Acceptance criteria:*

- Roll back an update
- Provide an audit trail of all updates
- Ensure enabled services are running  
after the update



## Activity: Feature refinement



- ▶ **Step 1:** With your group, take one of the Features that you have created in the previous activity. Refine the Feature with a description, benefit hypothesis, and acceptance criteria.
- ▶ **Step 2:** Identify who is the primary beneficiary of acceptance criteria.
- ▶ **Step 3:** Be prepared to share with the class.

### Example

**Feature description:**

- Supplemental insurance coverage

**Benefit hypothesis:**

- Protects the value of packages from loss or damage during delivery

**Acceptance criteria:**

- Option available any time prior to shipping
- Accessible via website and mobile app
- Integrated with Order Management System

## Relative estimating

- ▶ Agile Teams use Story points and relative estimating to quickly arrive at size estimates for Stories
- ▶ Product managers can use historical data to quickly estimate the size of Features in Story points, as well
- ▶ Feature estimates can then be rolled up into Epic estimates in the Portfolio Backlog
- ▶ Portfolio Managers and other planners can use their ART's capacity allocation to estimate how long a portfolio Epic might take under various scenarios

## Features are implemented by Stories

- ▶ Stories are small increments of value that can be developed in days and are relatively easy to estimate
- ▶ Story form of user voice captures role, activity, and goal
- ▶ Features fit in one PI for one ART; Stories fit in one Iteration for one team



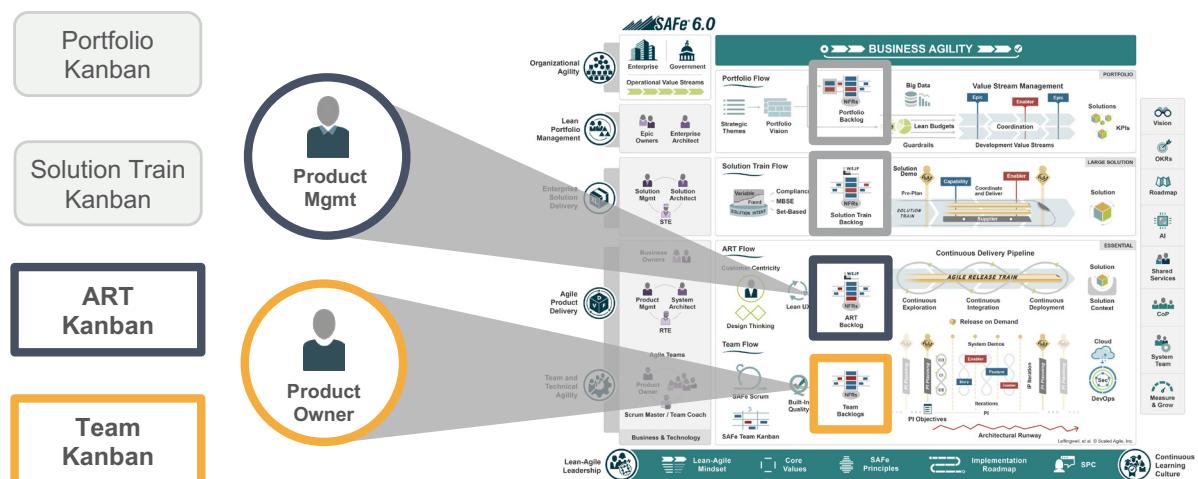
Feature	Enabler Story	User Story
In-service software update <b>Benefit hypothesis:</b> Reduced errors, faster upgrades, increased automation	Set up notification infrastructure	<b>As a Fleet Manager, I want a notification before a van needs service so that I can balance service requests.</b>

## 2.5 ART Backlog and Kanban

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2-41

SAFe has multiple, connected backlogs and Kanban systems

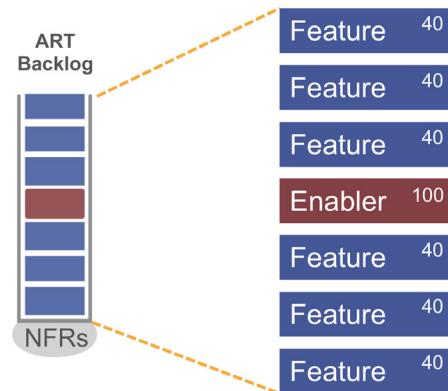


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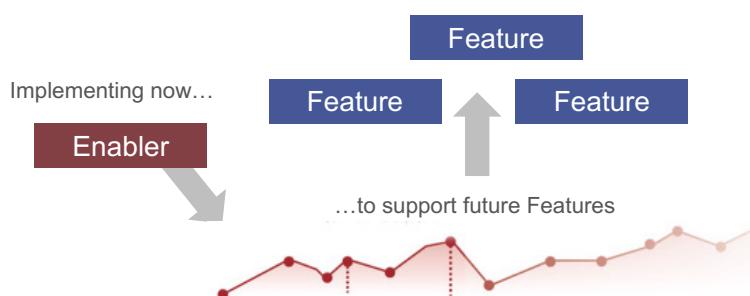
## Features are managed through the ART Backlog

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



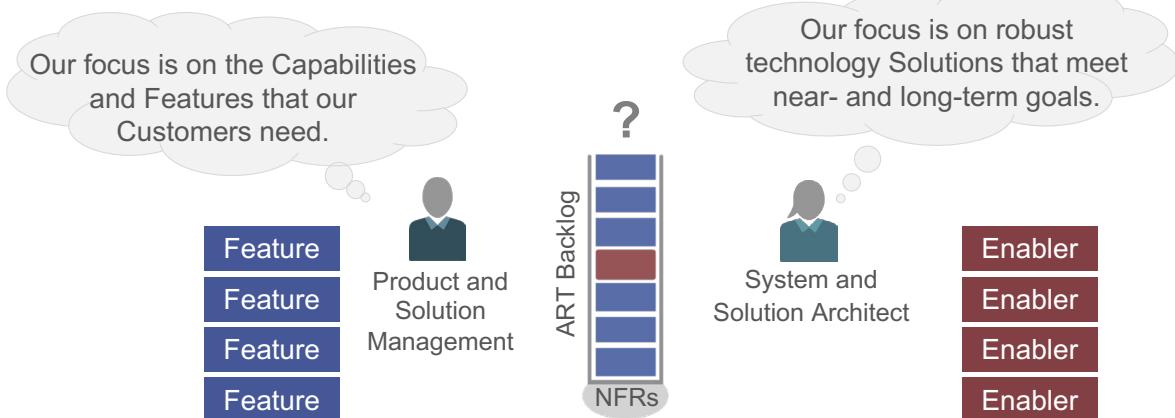
## Partner with System Architects

- ▶ Support Enabler items that provide needed Architectural Runway
- ▶ Work with System Architects to identify Enablers that will enable delivery of future business functionality



## How much architecture?

Product Management collaborates with System Architects to balance business Features and Enablers and to ensure investment in just enough Architectural Runway.



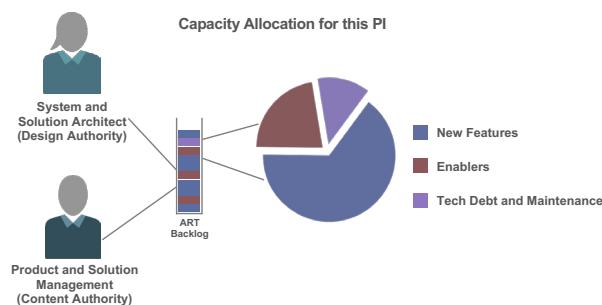
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## Capacity allocation

Helps balance functionality with Architectural Runway

1. Determine how much capacity is to be allocated to each type
2. Establish policies to determine how much work is performed for each type



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### Capacity allocation example policies

1. We agree on the percentage of capacity to be devoted to new Feature development versus Enablers, tech debt, and maintenance at each boundary
2. We agree that the Architect has design authority and prioritizes the work in that class
3. We agree that content authority (Product Management) prioritizes ART Backlog items
4. We agree to collaboratively prioritize our work based on economics
5. We agree to collaborate to sequence work in a way that maximizes Customer value

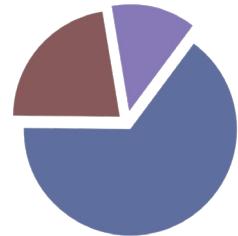
2-46



## Activity: Draft your capacity allocation policy



- ▶ **Step 1:** Individually, consider how you would use capacity allocation in your organization
- ▶ **Step 2:** Draft a capacity allocation policy for your ART that you discuss with your key stakeholders
- ▶ **Step 3:** Be prepared to share with the class

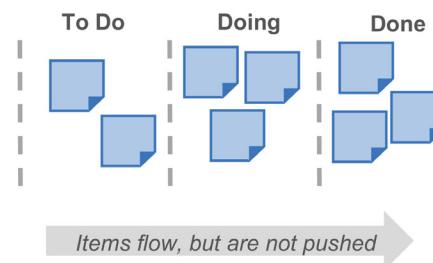


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## Kanban summarized

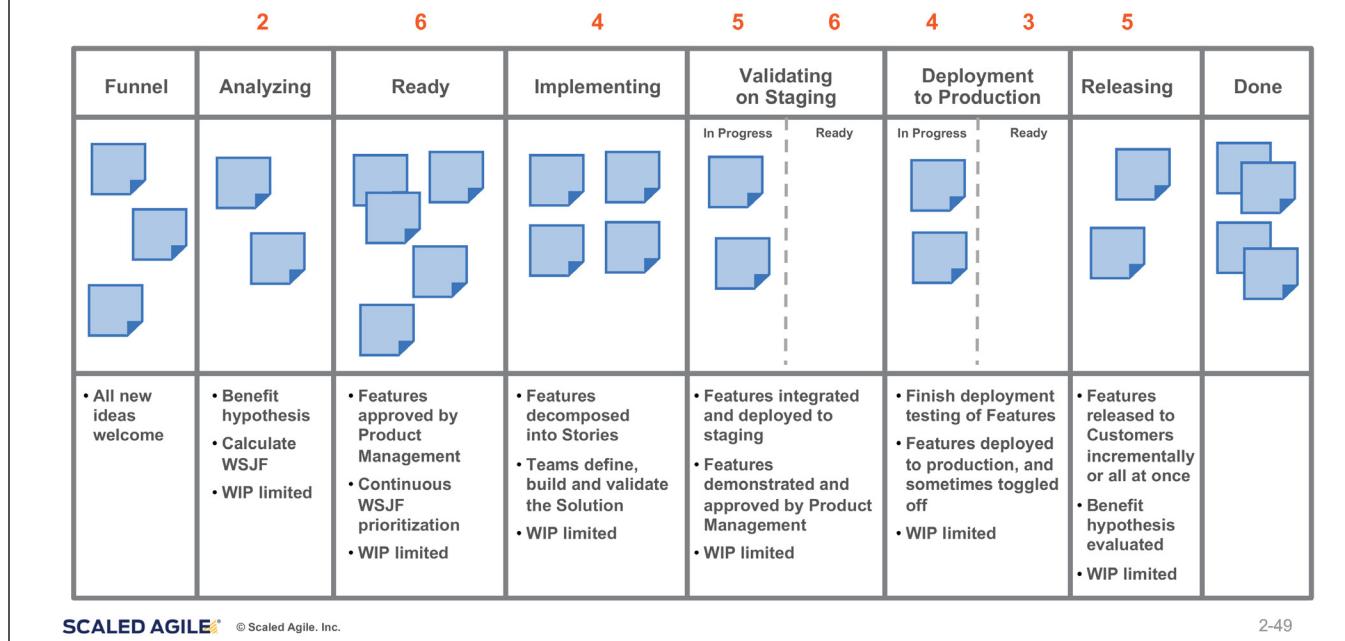
- ▶ Visual tool for monitoring and managing workflow
- ▶ Columns represent steps in the work process
- ▶ Work items (Features, Enablers, Stories, Epics, and Capabilities) flow across the board as capacity allows
- ▶ Explicit process policies define how and when a work item moves across the board
- ▶ Work in process (WIP) promotes flow and the continuous delivery of value



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2-48

## The ART Kanban facilitates flow through the Continuous Delivery Pipeline

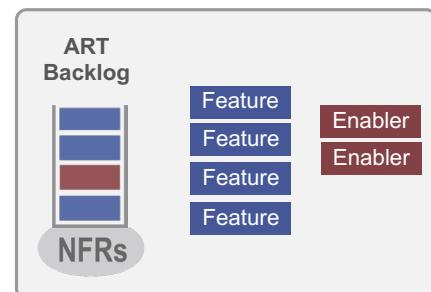


## Prioritize Features for optimal ROI

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 in delivering value
- The cost to implement the valuable thing



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

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

## Prioritization anti-patterns



**HiPPO** - The highest paid person makes the decision.

*"The Senior VP said we should do this project."*



**Squeaky Wheel** - The person who yells the loudest or makes the biggest promise of revenue.

*"Fund my project and we will make a billion dollars!"*



**ROI** - The decision is made based exclusively on profit, without considering other factors.

*"The ROI indicates we will make a 30% profit."*

### Role

I'm the Product Manager, so I should do it!



Product Mgmt

## 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



### What else does this do for our business

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

## Example with equal cost of delay: Which job first?

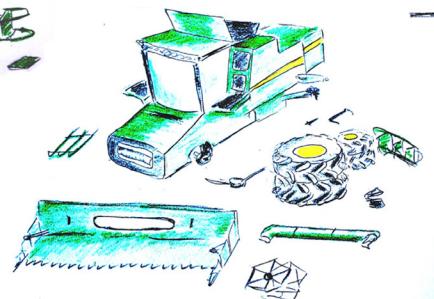
**A** \$\$, 1 day



**B** \$\$, 3 days

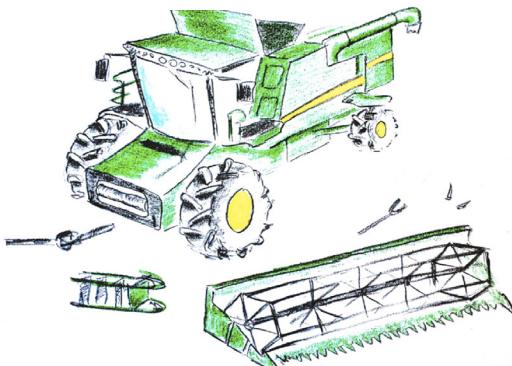


**C** \$\$, 10 days

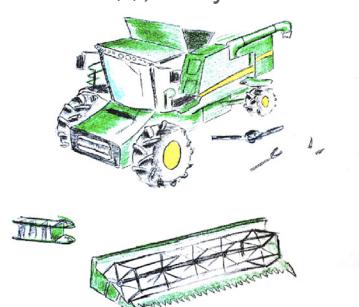


## Example with equal duration: Which job first?

**A** \$\$\$, 3 days



**B** \$\$, 3 days

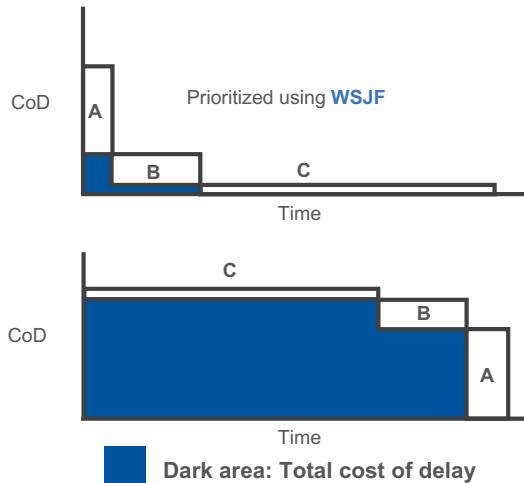


**C** \$, 3 days



## General case: Any cost of delay 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	Cost of delay	WSJF
A	1	10	10
B	3	3	1
C	10	1	0.1

## Calculate WSJF with relative estimating

To calculate WSJF, teams need to estimate cost of delay and duration.

- ▶ For duration, use job size as a quick proxy for duration
- ▶ Relative estimating is a quick technique to estimate job size and relative value
- ▶ WSJF stakeholders: Business Owners, Product Management, POs, and System Architects

$$\text{WSJF} = \frac{\text{User-Business Value} + \text{Time Criticality} + \text{Risk Reduction and/or Opportunity Enablement}}{\text{Job Size}}$$



## Activity: Prioritizing the ART Backlog

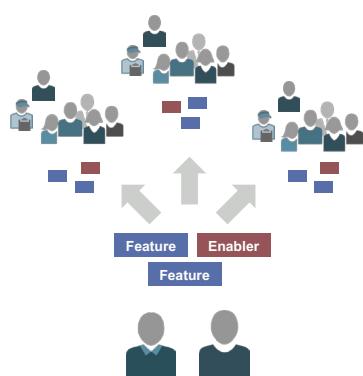


- ▶ **Step 1:** With your group, select three Features from the ‘Feature storming’ activity and prioritize them using WSJF.
- ▶ **Step 2:** Complete one column at a time. Start by selecting the smallest item and labeling it as ‘1.’ Each column of the template must have at least one item labeled ‘1.’
- ▶ **Step 3:** Be prepared to share your WSJF prioritization.

## How much preparation is enough?

Too much preparation and too little preparation can cause problems.

- ▶ More preparation may be needed if creating entirely new Features or the Architectural Runway
- ▶ Too much preparation can inhibit exploration, interaction, and emergent designs/Solutions during PI Planning
- ▶ Ongoing socialization of Features and Enablers, as well as adequate backlog refinement, influence preparedness

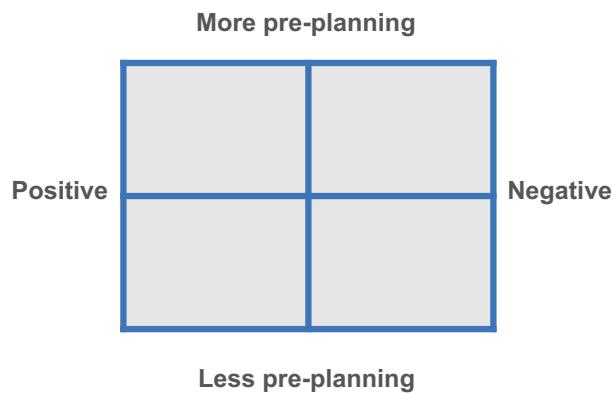




## Discussion: Just enough pre-planning

Duration  
5 min

- ▶ **Step 1:** As a class, discuss how the amount of pre-planning that you do can have positive outcomes and negative outcomes
- ▶ **Step 2:** Consider how the Lean-Agile Mindset and SAFe practices influence and enable PI Planning preparedness



## Action Plan: Preparing for PI Planning

Duration  
5 min

On the Action Plan page in your workbook, answer the following questions:

- ▶ Imagine you are contributing to the Vision for your next PI. What would you need to do?
- ▶ How would market rhythms and events affect your Roadmap?



# Action Plan

## Preparing for PI Planning

## Lesson review

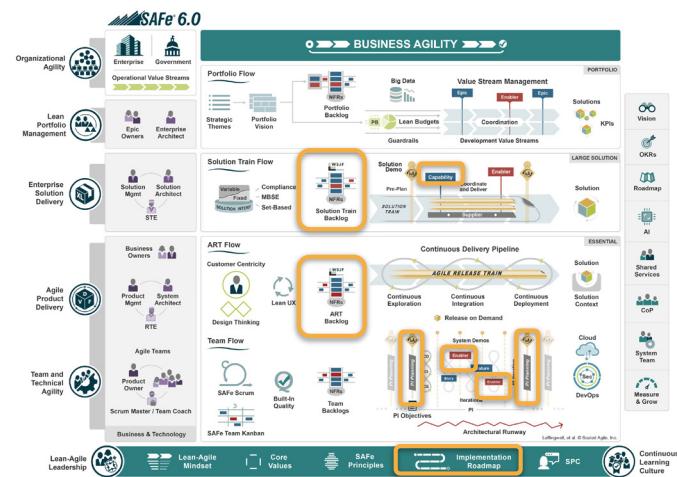
In this lesson, you:

- ▶ Summarized PI Planning
- ▶ Explained the Solution Vision
- ▶ Illustrated how to forecast work through Roadmaps
- ▶ Planned beneficial Features
- ▶ Identified how to manage the ART Backlog and Kanban

## Articles used in this lesson

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

- ▶ "PI Planning"  
<https://www.scaledagileframework.com/pi-planning/>
- ▶ "SAFe Implementation Roadmap"  
<https://www.scaledagileframework.com/implementation-roadmap/>
- ▶ "ART and Solution Train Backlogs"  
<https://scaledagileframework.com/art-and-solution-train-backlogs/>
- ▶ "Features and Capabilities"  
<https://www.scaledagileframework.com/features-and-capabilities/>



## Continue your SAFe journey with the following resources:

Watch this six-minute video, <i>Preparation for PI Planning</i> to help you prepare for PI Planning. <a href="https://bit.ly/Video-PIPlanningPrep">https://bit.ly/Video-PIPlanningPrep</a>	Watch this 10-minute video WSJF playlist—including <i>An Overview of WSJF</i> and <i>Calculating WSJF to Prioritize the ART Backlog</i> —to learn more about how to use WSJF to prioritize work. <a href="https://bit.ly/Playlist-WSJF">https://bit.ly/Playlist-WSJF</a>
Use the <i>Feature Storming and Refining</i> Collaborate template to decompose Epics into Features and refine those Features in preparation for PI Planning. <a href="https://bit.ly/Template-FeatureRefining">https://bit.ly/Template-FeatureRefining</a>	Use the <i>Creating an Epic Hypothesis Statement</i> Collaborate template to capture, organize, and communicate critical information about an Epic. <a href="https://bit.ly/Template-EpicHypothesisStatement">https://bit.ly/Template-EpicHypothesisStatement</a>
Sign up for the Agile Product Management course to learn more about using Design Thinking, fueling Continuous Exploration through innovation, and defining a Vision, strategy, and Roadmap to satisfy existing Customers and attract new ones. <a href="https://bit.ly/SAI-APM">https://bit.ly/SAI-APM</a>	

## References

- Heath, Chip and Dan Heath. *Switch: How to Change Things When Change Is Hard*. New York: Broadway Books, 2010. 76.
- Levit, Theodore. "Marketing Success Through Differentiation—of Anything." *Harvard Business Review*. 1980. <https://hbr.org/1980/01/marketing-success-through-differentiation-ofanything>.
- Reinertsen, Donald G. *The Principles of Product Development Flow: Second Generation of Lean Product Development*. Redondo Beach: Celeritas 2009. 31.

## Lesson 2 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

## Leading PI Planning

SAFe® Course - Attending this course gives learners access to the SAFe Product Owner / Product Manager exam and related preparation materials.



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### Lesson Topics

- 3.1 Communicate the Vision
- 3.2 Establish PI Objectives
- 3.3 Manage dependencies
- 3.4 Manage risks

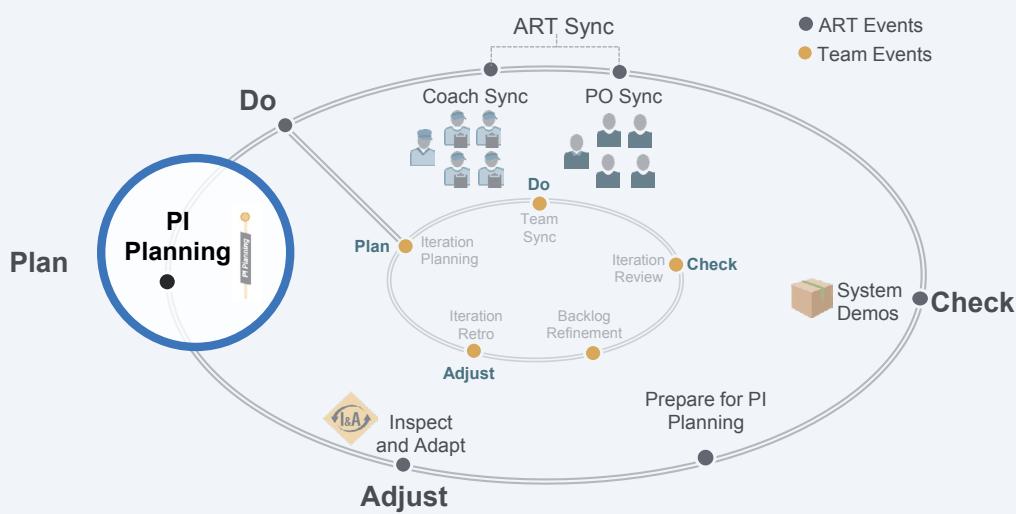


## Learning objectives

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

- ▶ Demonstrate how to communicate the Vision
- ▶ Plan PI Objectives
- ▶ Explain how to organize and manage dependencies
- ▶ Summarize how to analyze risks

## Leading PI Planning



## 3.1 Communicate the Vision

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### What POs and Product Management do during PI Planning – day one

- ▶ Communicate:
  - The Vision
  - Top 10 Features
- ▶ Support team breakouts
- ▶ Collaborate to decompose Features into Stories
- ▶ Negotiate scope
- ▶ Review draft PI plans and provide feedback
- ▶ Participate in management review of draft plans

<b>Business context</b>	8:00 – 9:00
<b>Product/Solution Vision</b>	9:00 – 10:30
<b>Architecture Vision and development practices</b>	10:30 – 11:30
<b>Planning context and lunch</b>	11:30 – 1:00
<b>Team breakouts</b>	1:00 – 4:00
<b>Draft plan review</b>	4:00 – 5:00
<b>Management review and problem solving</b>	5:00 – 6:00

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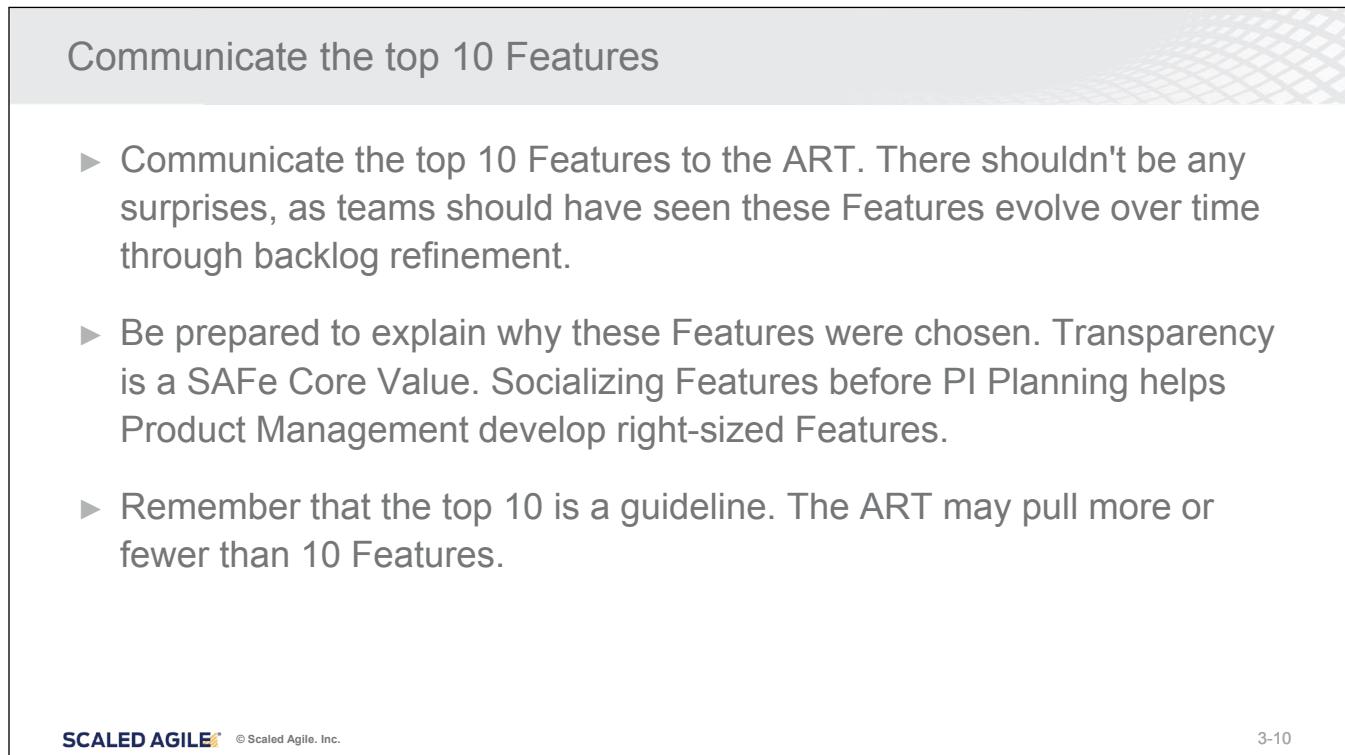
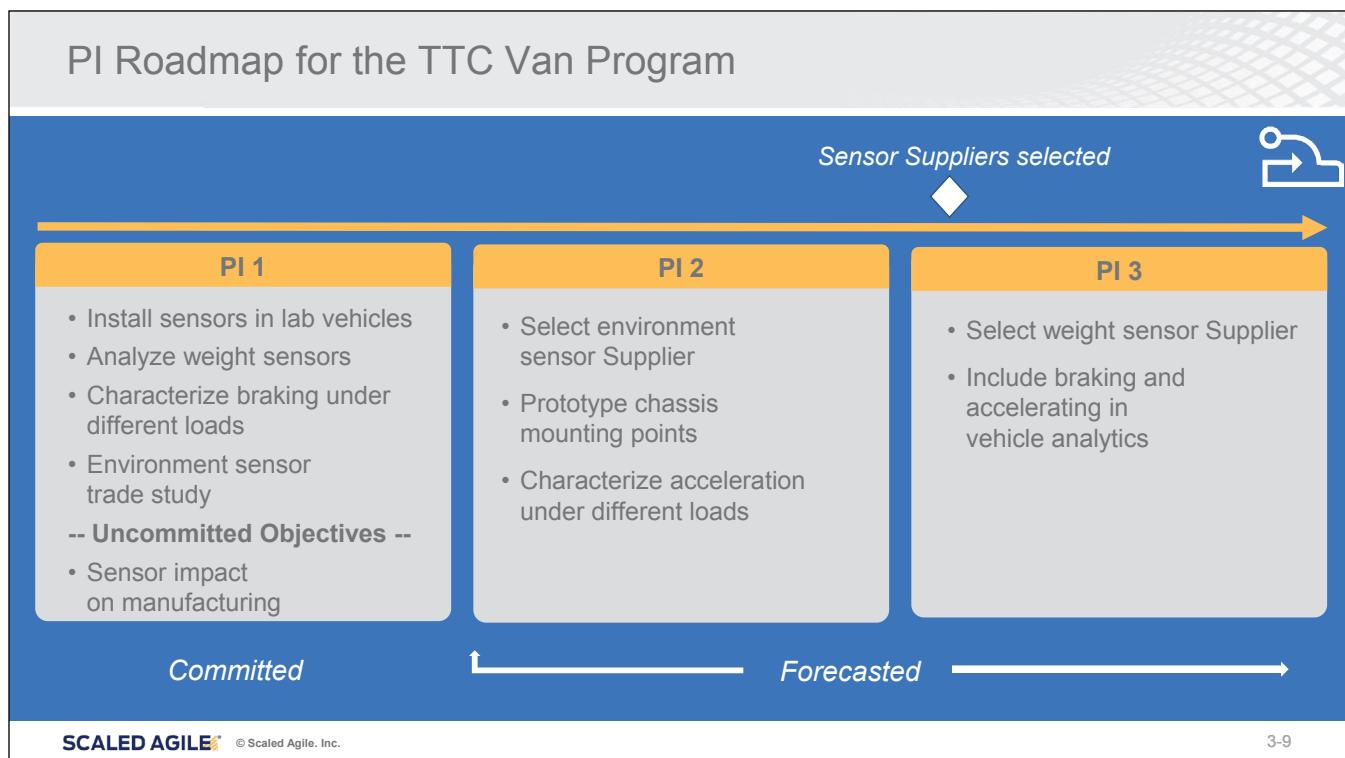
3-6

## Communicate the Vision

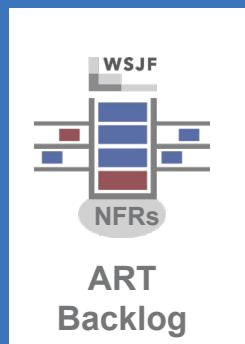
- ▶ Present to the ART how the Vision aligns with Strategic Themes
- ▶ Prepare materials so that each team can see the Vision
- ▶ Provide user personas to illustrate how the Vision improves the experiences of your Customers
- ▶ Explain the importance of NFRs
- ▶ Relate the Vision to Strategic Themes and Solution context

## Communicate the PI Roadmap

- ▶ Show how the PI Roadmap in this PI helps fulfill the Vision
- ▶ Communicate the PI Roadmap as part of your Vision to assist in PI Planning activities
- ▶ Describe how the PI Roadmap supports key Epics and Milestones



## TTC Van Program top 10 Features



### Top Features for PI 1

1. Install sensors in lab vehicles
2. Characterize weight sensors in different vehicle configurations
3. Analyze braking under different loads
4. Model performance under emergency brake conditions
5. Environment sensor trade study
6. Sensor impact on manufacturing
7. Fix cold weather calibration defects
8. Include climate history in oil change calculations
9. Add cargo loads to tire rotation recommendations
10. Research chassis mounting methods

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3-11



### Activity: Communicate the Vision



- ▶ **Step 1:** In your groups, act as Product Management and use the TTC Van Solution Vision, PI Roadmap, and top 10 Features to communicate the Van Solution Vision to your ART
- ▶ **Step 2:** Plan a creative delivery for your Vision
- ▶ **Step 3:** Be prepared to share your Vision



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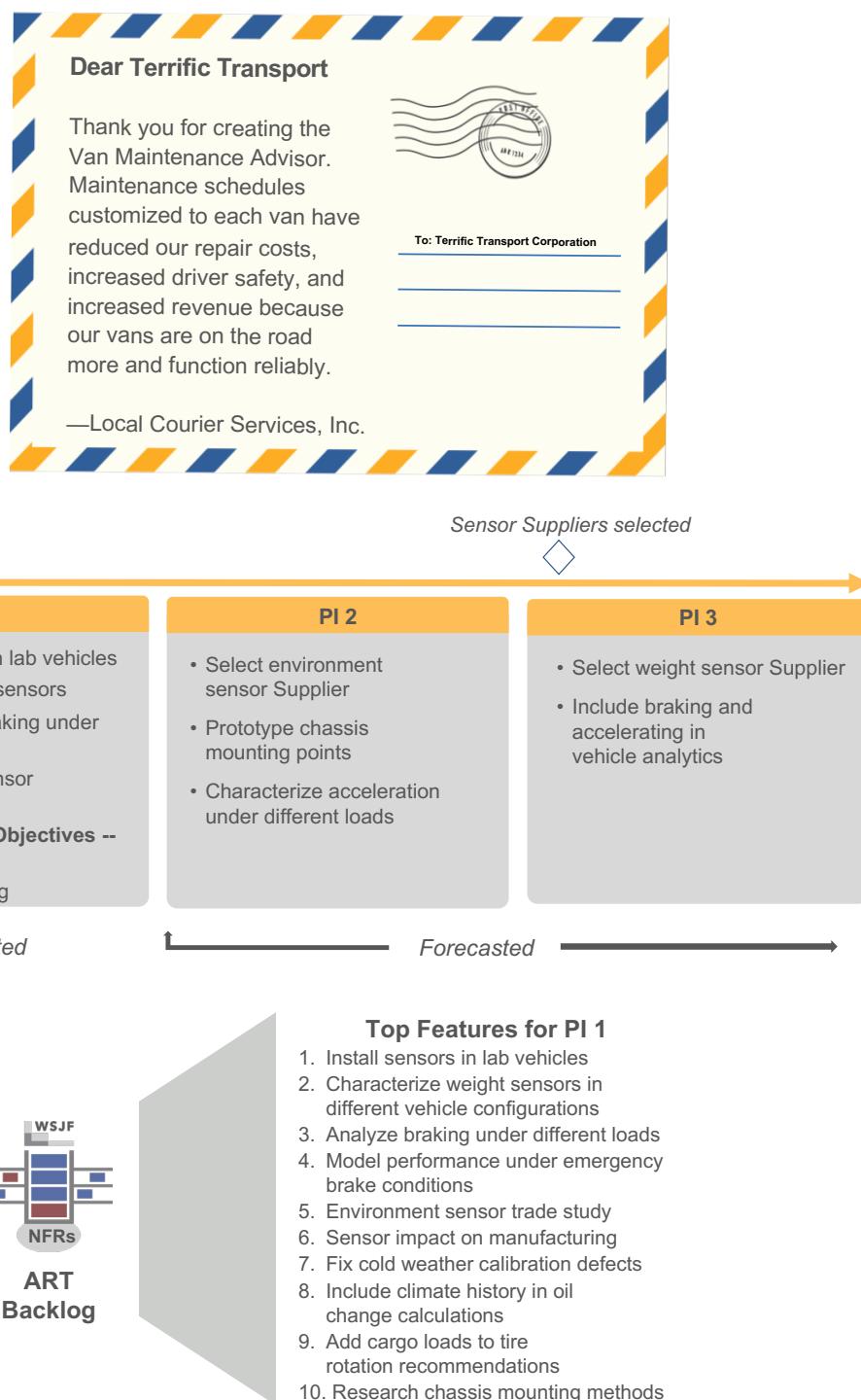
3-12

# Activity: Communicate the Vision

**Step 1:** In your groups, act as Product Management and use the TTC Van Solution Vision, PI Roadmap, and top 10 Features to communicate the Van Solution Vision to your ART

**Step 2:** Plan a creative delivery for your Vision

**Step 3:** Be prepared to share your Vision



## Support team breakouts

- ▶ Team breakouts are a time for Agile Teams to work on planning how they will deliver Features in upcoming Iterations
- ▶ POs lead this activity with their respective teams
- ▶ Product Management supports teams and provides additional insights and guidance

## Present draft plans and participate in management review

- ▶ Teams present their draft plans with draft PI Objectives, potential risks, and dependencies during the draft plan review.
- ▶ At the end of day one, the RTE facilitates the management review and problem-solving meeting.
- ▶ Management negotiates scope changes and resolves other issues by making planning adjustments. The planning adjustments are presented at the start of day two.





## Discussion: Addressing issues during management review and problem-solving

Duration  
10 min



During PI Planning, the team that is spiking Enabler Stories for sensor impact on manufacturing realizes they are also the best equipped team to work on the Feature to install sensors in lab vehicles.

However, they do not believe they have capacity for both Features.

- ▶ **Step 1:** What is the core issue the team is raising?
- ▶ **Step 2:** Discuss solutions Product Management can present to resolve those issues.

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## 3.2 Establish PI Objectives

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## What POs and Product Managers do during PI Planning – day two

- ▶ Support team breakouts
- ▶ Accept team PI Objectives
- ▶ Establish business value with Business Owners
- ▶ Participate in final plan review
- ▶ Provide feedback on ART PI Risks
- ▶ Participate in confidence vote
  - If applicable, rework and contribute to planning retrospective

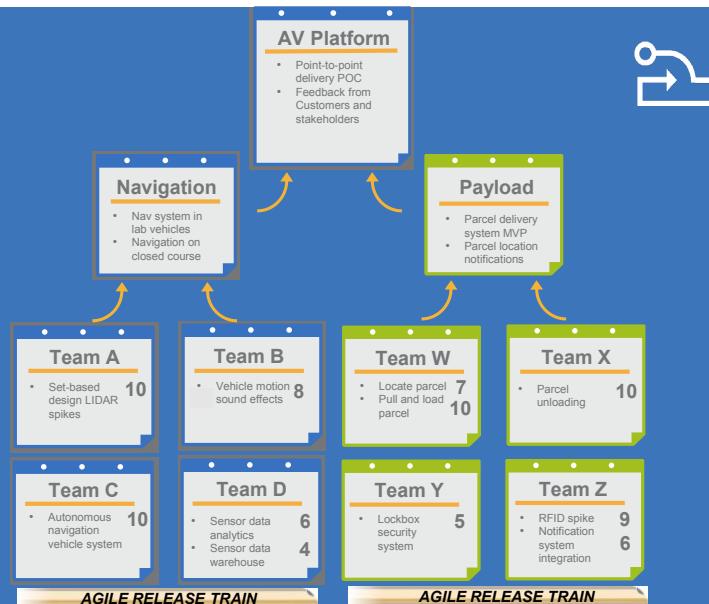
<b>Planning adjustments</b>	8:00 – 9:00
<b>Team breakouts</b>	9:00 – 11:00
<b>Final plan review and lunch</b>	11:00 – 1:00
<b>ART PI Risks</b>	1:00 – 2:00
<b>PI confidence vote</b>	2:00 – 2:15
<b>Plan rework if necessary</b>	2:15 – ???
<b>Planning retrospective and moving forward</b>	After commitment

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## PI Objectives

- ▶ Are a summary of the business and technical goals that each team and the overall ART intend to achieve in the upcoming PI
- ▶ Are built largely from the bottom-up, as the teams estimate and identify them during PI Planning
- ▶ Should reflect what is important to the business as well as other stakeholders



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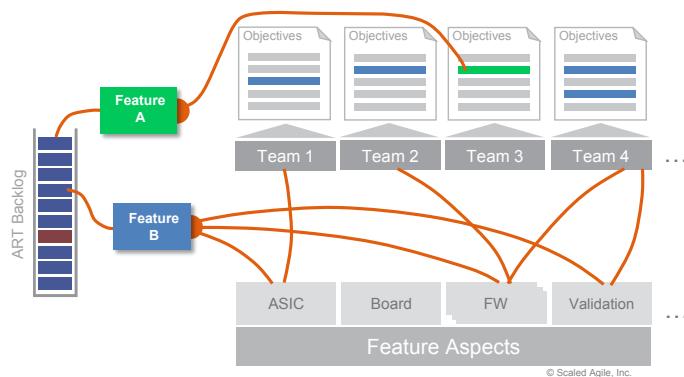
## Why do we use PI Objectives?

- ▶ **Immediate feedback** - Team PI Objectives provide confirmation to business leaders that teams understand desired outcomes.
- ▶ **Decentralized decisions** - The business value of the team PI Objectives promote decentralized decision-making should the team need to adjust planned work.
- ▶ **Predictability without specificity** - Committing to PI Objectives instead of a specific Feature or Story enhances agility. Commitment to PI Objectives allows the team and the Product Owner to modify the planned work based on discovery and Customer input and still achieve the business value.
- ▶ **Commitment** - Teams, not business leaders, commit to the PI Objectives.

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## Distinguish Features from PI Objectives



- ▶ PI Objectives often relate directly to Features
- ▶ Some Features can be delivered by individual teams; others require collaboration
- ▶ In addition to Features and inputs to Features, other team objectives will appear

**Focus on outcomes** - During PI Planning, teams should be asking, "Is our goal to complete the listed Features, or is our goal to provide the outcomes desired by those Features?"

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## Tips for writing effective team PI Objectives

- ▶ Remove jargon so that PI Objectives are understandable to Business Owners and Customers
- ▶ Describe the value and impact
- ▶ Don't use Features or Stories as PI Objectives, as these can change

Write SMART Objectives		
S	Specific	Intended outcome; start with an action verb
M	Measurable	Descriptive, Yes/No, quantitative, a range
A	Achievable	Within team's control
R	Realistic	Recognize factors that can't be controlled
T	Time bound	Can be accomplished within the PI

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## Create alignment with PI Objectives

- ▶ Objectives are business summaries of what each team intends to deliver in the upcoming PI
- ▶ They often directly relate to intended Features in the backlog
- ▶ Other examples:
  - Aggregation of a set of Features
  - A Milestone, such as 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)	—	—

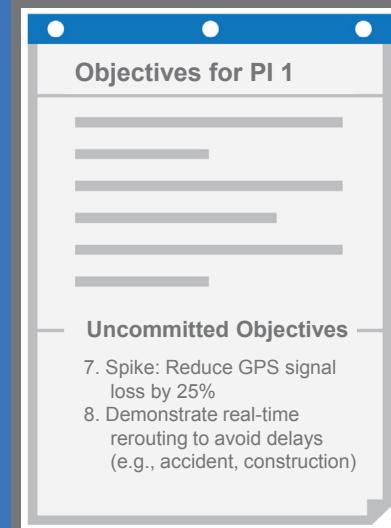
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## Maintain predictability with uncommitted objectives

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"
- ▶ Uncommitted objectives are not included in the commitment, to make the commitment more reliable
- ▶ If a team has low confidence in meeting a PI Objective, the PI Objective should be 'uncommitted'
- ▶ If an objective has many unknowns, consider moving it to 'uncommitted,' and put in early spikes
- ▶ Uncommitted objectives count when calculating load



## Considerations when assigning business value

Consideration	Description
Regulatory value	Legal or infrastructure functionality that, if not deployed, can result in fines, revenue loss, or damage to the Enterprise brand
Commercial value	Product/service functionality that brings new revenue or maintains existing revenue
Market value	Functionality that differentiates the product/service from competing products/services and new functionality needed to stay competitive
Efficiency value	Functionality that reduces operating costs, including technical debt or improvements in the pipeline
Future value	Functionality that focuses on enabling or realizing future value, including Enablers, proofs of concept (POCs), and research spikes

## 3.3 Manage dependencies

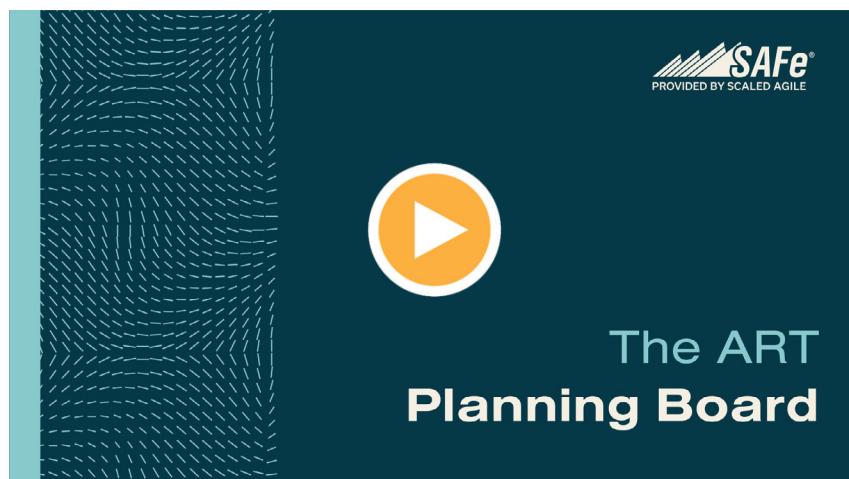
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3-25



Video: PI Planning: The ART Planning Board

Duration  
10 min

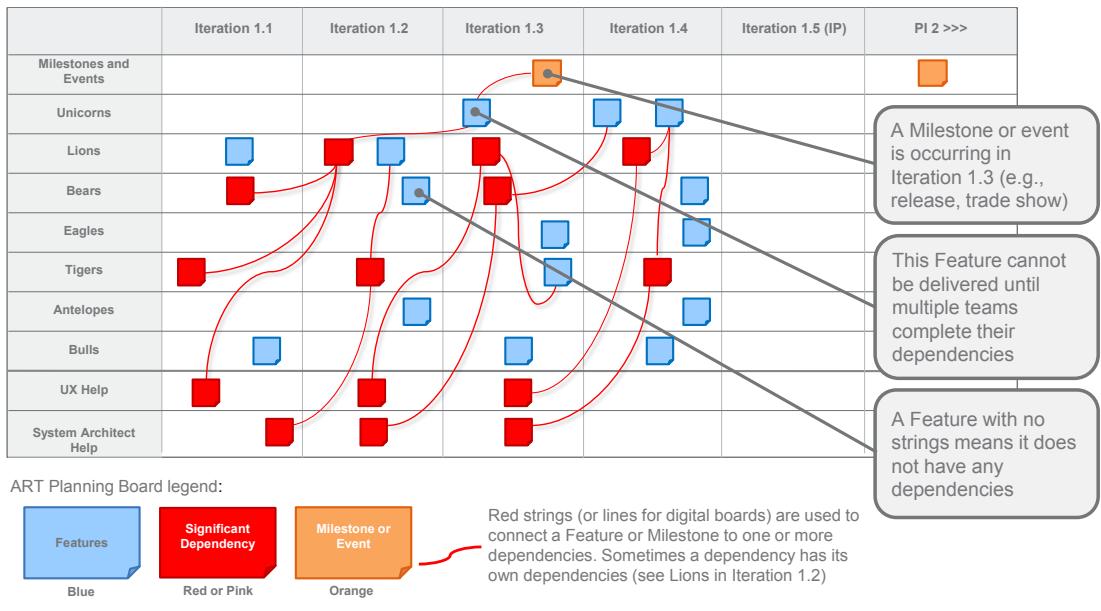


<https://bit.ly/Video-ARTPlanningBoard>

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## Using an ART Planning Board to visualize work



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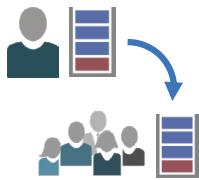
## Strategies for managing dependencies

Challenge	Potential Strategy
Bottlenecks	Distribute work to other teams
Iteration dependencies	Adjust work sequencing to eliminate same Iteration dependencies
Unbalanced teams	Adjust work between teams based on forecasted capacity
Complex critical path	Adjust work between teams or split Features and Stories

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## PI Planning can reveal opportunities to release value sooner



Business priorities

1	Feature
2	Feature
3	Feature
4	Enabler
5	Feature
6	Feature
7	Feature
8	Feature
9	Feature

During PI Planning, a team may suggest a sequence that creates options for releasing value sooner.



Product Management can accept this sequencing or ask the team to retain the original sequencing based on other factors.

Team analysis

3	Feature
4	Enabler
1	Feature
2	Feature
9	Feature
5	Feature
6	Feature
7	Feature
8	Feature

3-29

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Activity: Identify dependency issues and resolve them

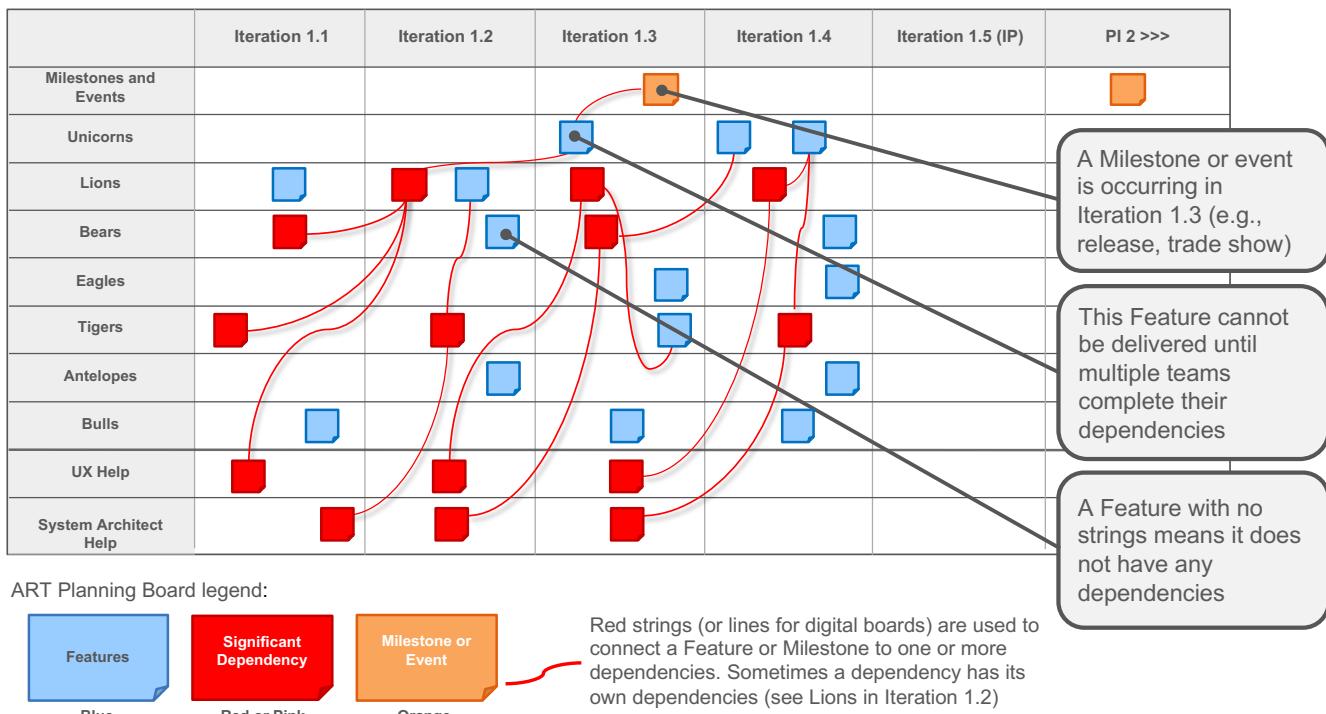


- ▶ **Step 1:** With your groups, review the ART Planning Board
  - What potential issues do you see?
  - Who should POs and Product Management collaborate with to help minimize dependencies and address the issues identified?
- ▶ **Step 2:** Be prepared to share

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3-30

# Activity: Identify dependency issues and resolve them



## Step 1: With your groups, review the ART Planning Board

What potential issues do you see?

Who should POs and Product Management collaborate with to help minimize dependencies and address the issues identified?

## Step 2: Be prepared to share

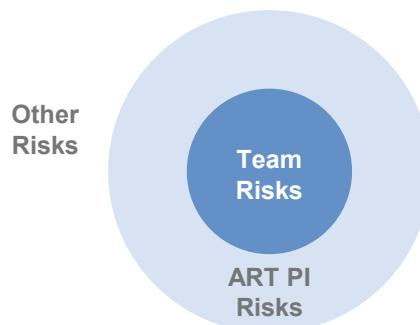
## 3.4 Manage risks

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3-31

### Types of risks

- ▶ Risks to successful ART execution can be local to a team, affect multiple teams (an ART PI Risk), or affect other aspects of the business
- ▶ PI Planning provides the ART with opportunities to localize and address risks



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## Building the final plan

- ▶ All teams review the final plans
- ▶ Business Owners are asked whether they accept the plans
  - If so, the plan is accepted
  - If not, the plans stay in place, and the teams continue planning after the review

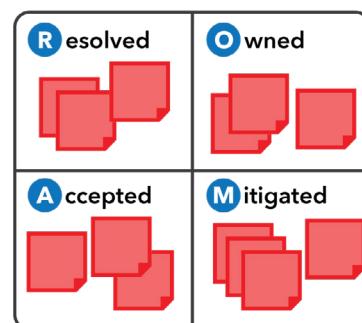


## Addressing ART PI Risks

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

### ROAMing risks:

- ▶ **Resolved** - Has been addressed. No longer a concern.
- ▶ **Owned** - Someone has taken responsibility.
- ▶ **Accepted** - Nothing more can be done. If risk occurs, release may be compromised.
- ▶ **Mitigated** - Team has a plan to adjust as necessary.



## Confidence vote

After dependencies are resolved and risks are 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 upon objectives
2. If facts indicate that an objective is not achievable, teams agree to escalate immediately so that corrective action can be taken



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## Action Plan: Leading PI Planning



On the Action Plan page in your workbook, answer the following questions:

- ▶ What are some strategies you could use to develop PI Objectives with your team?
- ▶ List some things you can do to improve your team's ability to manage dependencies during PI Planning.

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# Action Plan

## Leading PI Planning

## Lesson review

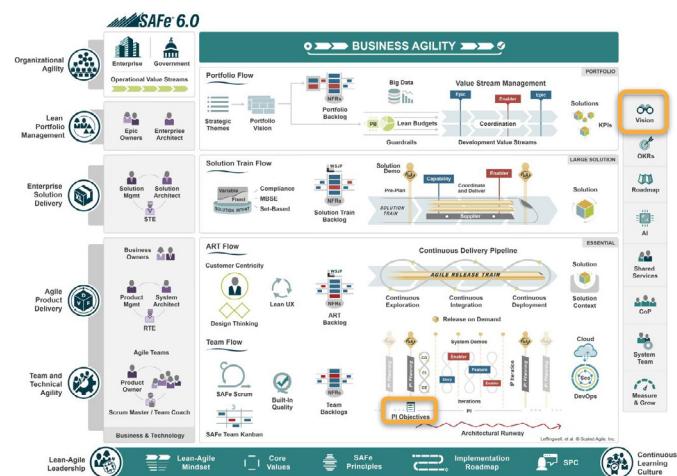
In this lesson, you:

- ▶ Demonstrated how to communicate the Vision
- ▶ Planned PI Objectives
- ▶ Explained how to organize and manage dependencies
- ▶ Summarized how to analyze risks

## Articles used in this lesson

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

- ▶ "Vision"  
<https://www.scaledagileframework.com/vision/>
- ▶ "PI Objectives"  
<https://www.scaledagileframework.com/pi-objectives/>



## Continue your SAFe journey with the following resources:

Watch the four-video playlist, <i>Introduction to PI Planning</i> , to review the PI Planning process. <a href="https://bit.ly/Playlist-PIPlanning">https://bit.ly/Playlist-PIPlanning</a>	Download and share <i>Pre-ILT SMART Objectives</i> for guidance in writing PI Objectives that are more effective by making them specific, measurable, achievable, relevant, and time-bound. <a href="https://bit.ly/Community-SMARTObjectivesPDF">https://bit.ly/Community-SMARTObjectivesPDF</a>
Learn how business value is assigned to PI Objectives by watching the three-minute video, <i>Assigning Business Value During PI Planning</i> . <a href="https://bit.ly/Video-AssigningBVPiplanning">https://bit.ly/Video-AssigningBVPiplanning</a>	

## Lesson 3 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

## Executing Iterations

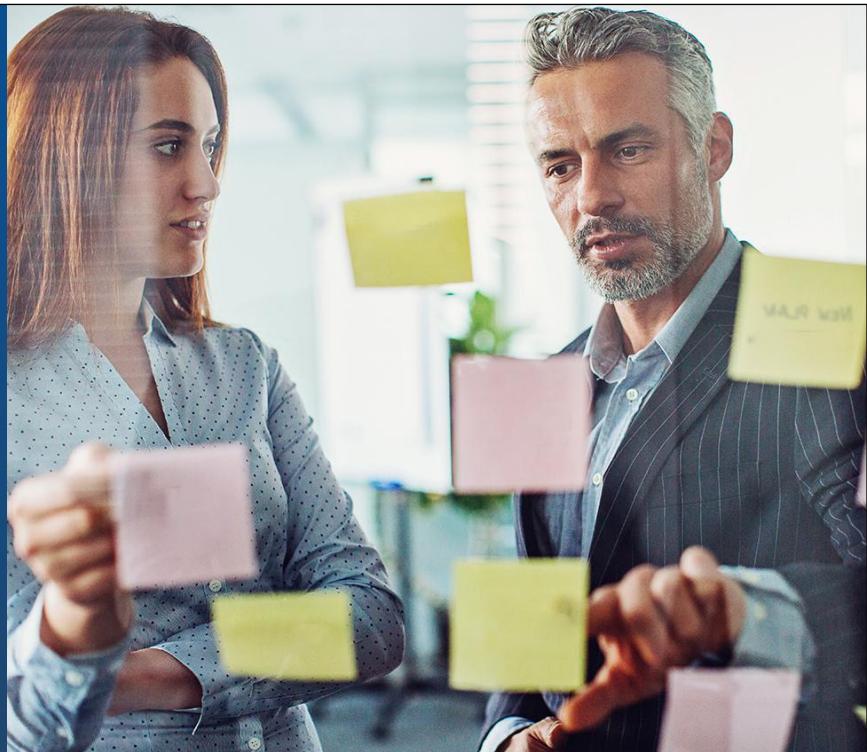
SAFe® Course - Attending this course gives learners access to the SAFe Product Owner / Product Manager exam and related preparation materials.



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### Lesson Topics

- 4.1 Stories and Story maps
- 4.2 Iteration Planning
- 4.3 The Team Kanban
- 4.4 Backlog refinement
- 4.5 Iteration Review and Iteration Retrospective
- 4.6 DevOps and Release on Demand

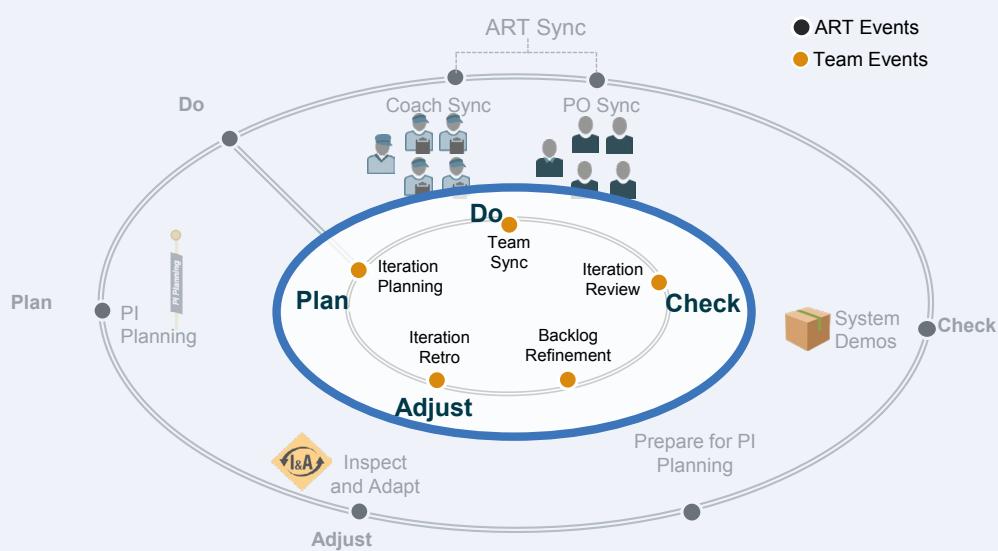


## Learning objectives

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

- ▶ Create Stories
- ▶ Demonstrate how to plan an Iteration
- ▶ Outline how to manage flow with the Team Kanban
- ▶ Summarize how to continuously refine the Team Backlog
- ▶ Plan how to participate in the Iteration Review and Iteration Retrospective
- ▶ Explain how to support DevOps and Release on Demand

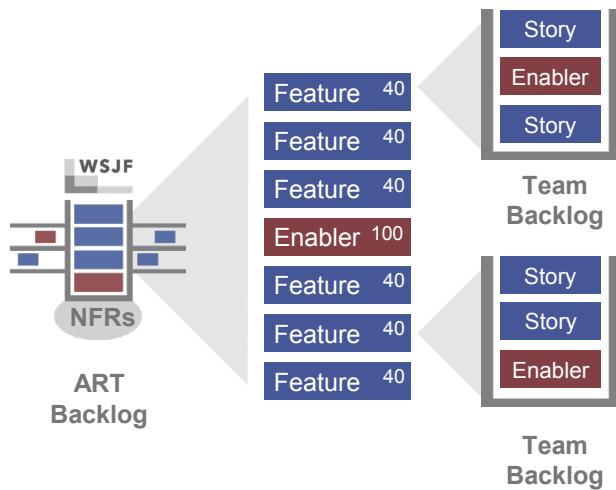
## Executing Iterations



## 4.1 Stories and Story maps

### Features are split into Stories

- ▶ Features are implemented through one or more Stories
- ▶ Features that represent a workflow are visualized with Story maps



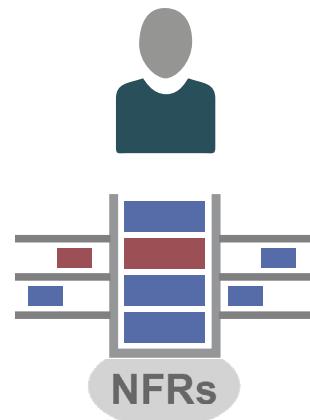
## What are Stories?

Stories are short descriptions of a small piece of desired functionality sized so that they can be completed in a single Iteration.

- ▶ User Stories express desired end-user functionality written in the user's language
- ▶ Enabler Stories support exploration, architecture, infrastructure, and compliance
- ▶ Stories are created during PI Planning as the teams collaborate with POs and Product Management

## The Team Backlog is composed of Stories

- ▶ Contains all the work for the team
- ▶ Created by the PO and the team
- ▶ Prioritized by the PO
- ▶ Contains User and Enabler Stories
  - User Stories provide Customers with value
  - Enabler Stories build the infrastructure and architecture that makes User Stories possible
- ▶ Stories for near-term Iterations are more detailed than Stories for later Iterations
- ▶ NFRs are backlog constraints



## Write User Stories using a standard format

'User voice' format fosters customer-centric design:

**As a (user role), I want (activity) so that (business value).**

- **User role** is the description of the person doing the action
- **Activity** is what the user can do with the system
- **Business value** is why the user wants to do the activity

**As a Fleet Manager, I want** a notification before a van needs service **so that** I can balance service requests.

**As a Fleet Manager, I want** detailed service histories **so that** I can identify and track safety recalls and confirm repairs.

## Writing good Stories: The Three Cs

### Card

Written on a card or in a digital tool and can be annotated with notes

**As a spouse, I want a clean garage so that I can park my car and not trip on my way to the door.**

### Conversation

The details are in a conversation with the PO

What about the bikes?

Oh yeah, we should hang the bikes.

### Confirmation

Acceptance criteria confirm the Story correctness

- Tools have been put away
- Items on the floor have been returned to the proper shelf
- Bikes have been hung

Reference: Jefferies, "Essential XP: Card, Conversation, Confirmation"

## INVEST in a good Story

- ▶ Write Stories that can be developed separately
- ▶ Write Stories in which scope can be negotiated
- ▶ Write Stories that are valuable to the Customer
- ▶ Write Stories that can be estimated
- ▶ Write Stories that can fit into an Iteration
- ▶ Write Stories that are testable



Reference: Wake, "INVEST in Good Stories, and SMART Tasks"

## Stories strive to convey an amount of detail that's just right

**As a Fleet Manager,  
I want to search for vans  
so that I can find the van  
I want.**

Insufficient detail

**As a Fleet Manager,  
I want to search my fleet  
so that I can find the vans  
that need a safety recall.**

Just right

**As a Fleet Manager,  
I want to search for a van  
by its Vehicle Identification  
Number, locator, or driver  
so that I can find the van  
I want.**

Overly constrained

## Relating Features and Stories to personas improves design

### Feature: Safety recall management

Fleet Managers seek to maintain the safety of their vehicles by ensuring that all safety updates are applied to their vans.

#### Benefits:

- Increased driver safety
- Reduced liability
- Increased compliance



**Mike the Fleet Manager**

Age: 36

Location: Reno, Nevada, US

Manages: 50 vans, 80 part-time and full-time drivers

#### Story:

As a Fleet Manager, I want to search my fleet so that I can find the vans that need maintenance. Vans that are overdue or need a safety recall are highlighted.

#### Story:

As a Fleet Manager, I want to review safety recalls so that I can prioritize the maintenance schedules of my fleet.

## Ten patterns for splitting Features into Stories

### Business Feature

**Feature:** Navigate vehicle for delivery request

**Hypothesis:** Vehicle can drive delivery route autonomously

**Acceptance criteria:**

- Pick-up and drop-off are fixed
- Assume well-marked streets with US-only traffic indicators

### User Stories

As a vehicle owner, I want the vehicle to determine the speed limit and set the speed to that limit so that traffic laws are obeyed during delivery.

### Enabler Stories

Characterize the camera's ability to read international speed signs.

1. Workflow steps
2. Business rule variations
3. Major effort
4. Simple/complex
5. Variations in data
6. Data entry methods
7. Defer system qualities
8. Operations
9. Use case scenarios
10. Break out a spike

Reference: Lawrence and Green, "The Humanizing Work Guide to Splitting User Stories"



## Activity: Split Features into Stories

Duration  
10 min



- ▶ **Step 1:** With your group, select one of the Features you previously defined
- ▶ **Step 2:** Split the Feature into Stories using the User Story format:

**As a (user role), I want (activity) so that (business value)**



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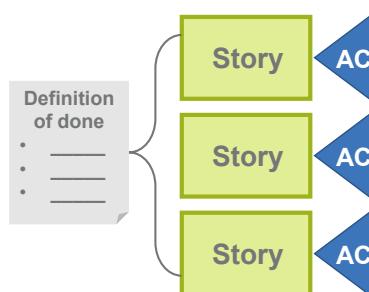
4-15

## When is a Story complete?

A Story is complete when it satisfies the definition of done (DoD).  
The definition of done requires that the Story:

- ▶ Satisfies the acceptance criteria
- ▶ Is accepted by the Product Owner

The definition of done applies to all Stories in the Team Backlog.



Acceptance criteria are unique to each Story.

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4-16

## Stories have acceptance criteria

### Acceptance criteria:

- ▶ Provide the details of the Story from a testing point of view
- ▶ Are created by the PO and the team as Stories are refined

As a Fleet Manager,  
I want a notification before  
a van needs service  
so that I can balance  
service requests.



#### Story:

As a Fleet Manager,  
I want a notification before a van  
needs service  
so that I can balance service requests.

#### Acceptance criteria:

- The notification contains the van ID defined by the Fleet Manager
- The notification is delivered on a schedule determined by the Fleet Manager

## Write acceptance criteria using behavior-driven development (BDD)

- ▶ Behavior is often first described in general terms, which can be ambiguous
- ▶ Specific examples of behavior provide a better understanding
- ▶ Specific examples can directly become tests or can lead to specific behaviors, which then are transformed into tests

Discovery of behavior



Formulation of specific tests



Automation of tests

## Acceptance criteria are testable with ‘Given-When-Then’ syntax

- ▶ **Example 1:** “System delivers scheduled maintenance notifications.”

In ‘Given-When-Then’ syntax:

**Given** a van associated with a maintenance schedule

**When** the van is due for a maintenance activity

**Then** a notification is sent to the designated user

- ▶ **Example 2:** “System delivers scheduled oil change notifications.”

In ‘Given-When-Then’ syntax:

**Given** a van and an oil maintenance schedule

**When** the van is due for an oil change in the next month

**Then** a text message is sent to the Fleet Manager



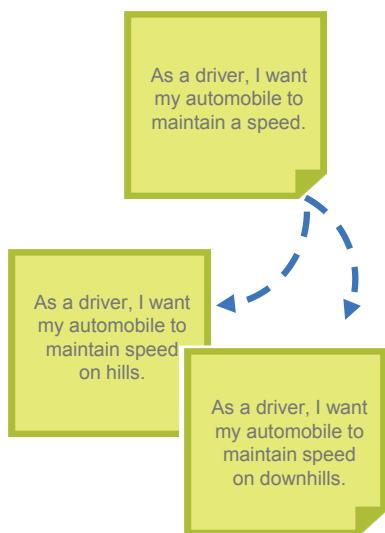
### Activity: Write acceptance criteria



- ▶ **Step 1:** With your group, choose three Stories created in the previous activity
- ▶ **Step 2:** Write acceptance criteria in the ‘Given-When-Then’ format for each of the Stories
- ▶ **Step 3:** Make sure the acceptance criteria are testable
- ▶ **Step 4:** Be prepared to share with the class

## Split Stories that are too big to fit into an Iteration

Stories are split using the same techniques as splitting Features



1. Workflow steps
2. Business rule variations
3. Major effort
4. Simple/complex
5. Variations in data
6. Data entry methods
7. Defer system qualities
8. Operations
9. Use case scenarios
10. Break out a spike

Reference: Lawrence and Green,  
"The Humanizing Work Guide to  
Splitting User Stories"

4-21

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### Activity: Split Stories



- ▶ **Step 1:** With your group, choose a Story from the ones you created that might not fit into one Iteration
- ▶ **Step 2:** Split the Story using the techniques from this lesson
- ▶ **Step 3:** Be prepared to share with the class

Hint: How can you ensure that split Stories provide end-user value?

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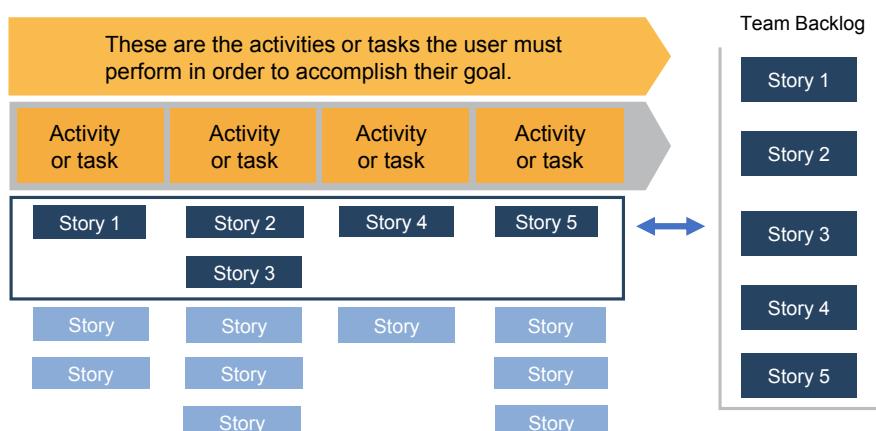
4-22

## Use Story maps to capture workflows

- ▶ A Story map is a Design Thinking tool that captures user workflow and the Stories that support the workflow
- ▶ Story maps help teams:
  - Design workflows
  - Manage the improvement of the product over time by showing how successive Stories can improve the Solution
  - Validate that the Stories in the backlog support all the steps a user needs to accomplish the objective

## Integrating user experience and interface design

- ▶ Story maps support user experience and interface design in creating design prototypes
- ▶ Design prototypes provide fast feedback and help further refine Features and Stories





## Activity: Develop a Story map



- ▶ **Step 1:** With your group, create a Story map for the Feature. Think about:
  - What are the main tasks?
  - What is the minimum number of Stories required to complete the Feature?
- ▶ **Step 2:** Be prepared to share with the class

### Delivery order insurance

#### *Benefit hypothesis:*

Allows user to purchase extra insurance for an existing delivery order

#### *Acceptance criteria:*

- Access insurance catalog from account profile
- Display available insurance options
- Integrate with shopping cart
- Process payment

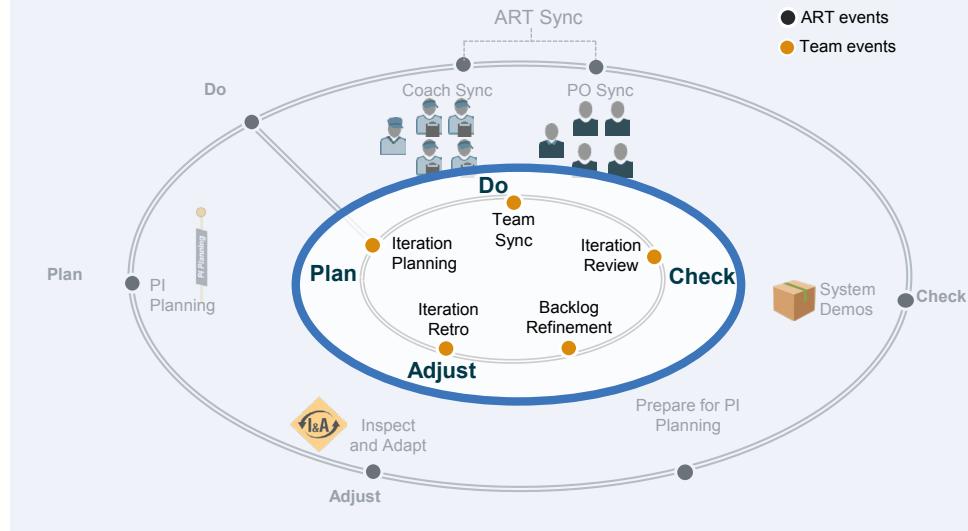
## 4.2 Iteration Planning

## Iterations are the basic building blocks of Agile development



Product Owner

Product Owners participate in all team events.



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4-27

## Iterations are time-boxed events

Here is an example of events in an Iteration that starts on a Wednesday.

Monday	Tuesday	Wednesday	Thursday	Friday
		Iteration Planning	Team Sync	Team Sync
Team Sync	Team Sync and Backlog Refinement	Team Sync	Team Sync	Team Sync
Team Sync and Iteration Review	Iteration Retrospective			

Functionality is demonstrated throughout and can be released at any time as market needs warrant.

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4-28



## Video: The Product Owner and Iteration Planning

Duration  
5 min



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

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4-29

## Product Owners lead Iteration Planning

Iteration Planning refines the Iteration plans created during PI Planning.

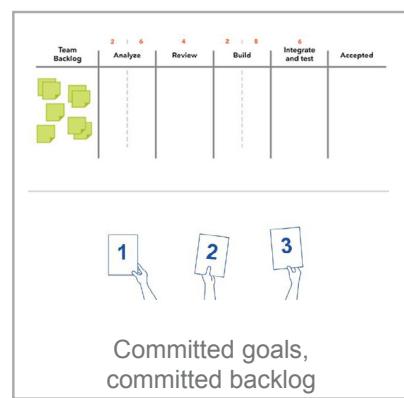
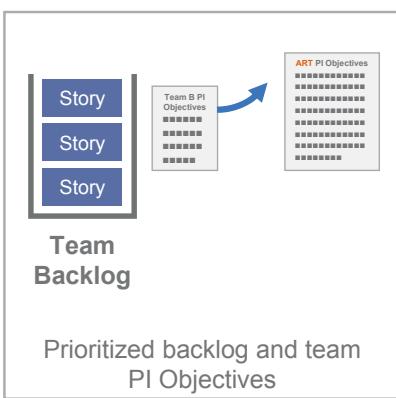
### Iteration Planning Preparation



### Iteration Planning



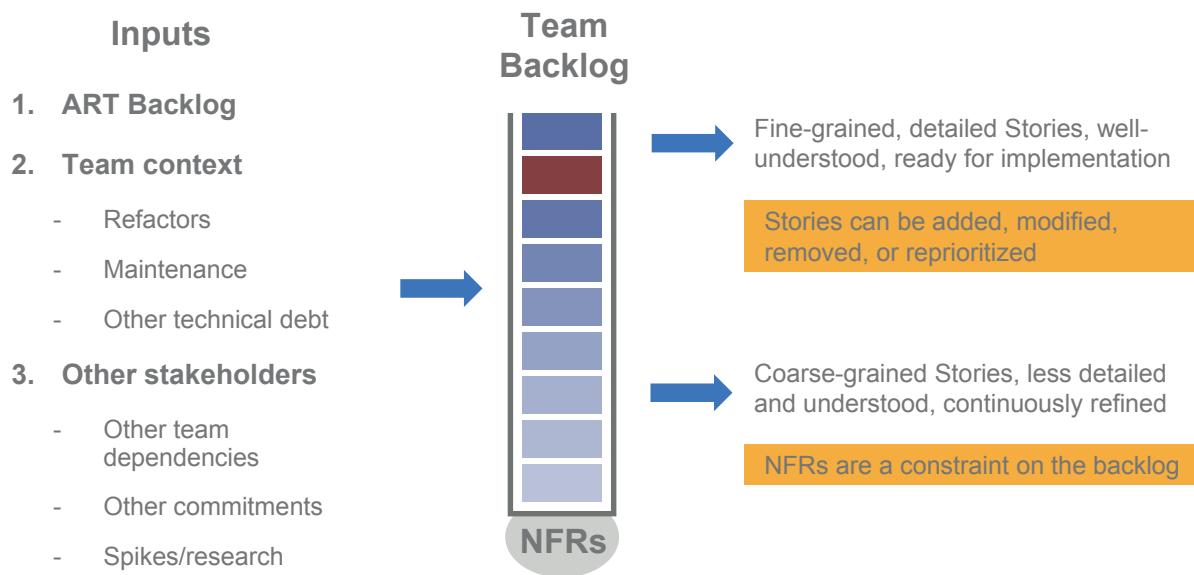
### Iteration Planning Outputs



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4-30

## The Product Owner ensures that the Team Backlog captures all the work



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4-31

## Sequencing Stories

- ▶ Primary economic prioritization happens in the ART Backlog, where Agile Teams sequence work for efficient execution of business priorities
- ▶ The Product Owner and the team sequence work based on:
  - Story priorities inherited from ART Backlog priorities
  - Events, Milestones, releases, and other commitments made during PI Planning
  - Dependencies with other teams
  - Local priorities
  - Capacity allocations for defects, maintenance, and refactors
- ▶ Initial sequencing happens during PI Planning
- ▶ Adjustments happen at Iteration boundaries

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4-32

## Iteration Planning agenda

### Iteration Planning

- Timebox is four hours or less
- This meeting is by and for the team
- SMEs may attend as required

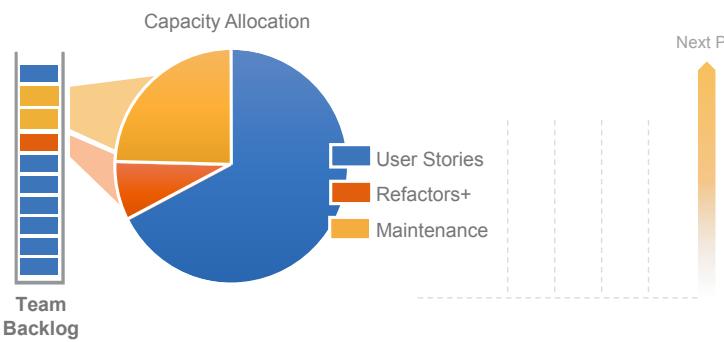
1. Establishing capacity
2. Story analysis and estimating
3. Detailing Stories
4. Developing Iteration Goals
5. Committing to Iteration Goals

## Establishing capacity

- ▶ Team applies capacity allocation to the Team Backlog
- ▶ Team quantifies capacity to perform work in the upcoming Iteration
- ▶ Each team member determines their availability, acknowledging time off and other potential duties
- ▶ The Product Owner, in collaboration with the team, selects the highest priority backlog items for each slice of the capacity allocation to implement in an Iteration

## Capacity allocation for a healthy balance

- ▶ With capacity allocation defined, the PO doesn't need to prioritize unlike things against each other
- ▶ Once the capacity allocation is set, the PO and team can prioritize like things against each other

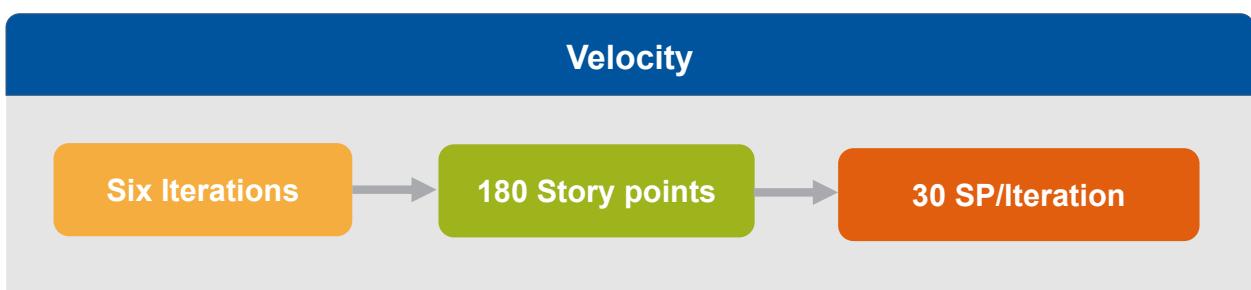


### Capacity allocation

- Helps alleviate velocity degradation due to technical debt
- Keeps existing Customers happy with bug fixes and enhancements
- Can change at Iteration or PI boundaries

## Using velocity to establish capacity

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



## Establishing capacity before historical data exists

- ▶ Give the team eight points for every full-time developer and tester on the team; adjust for part-time individuals
- ▶ Subtract one point for every team member vacation day and holiday
- ▶ Find a small Story that would take about a half day to develop and a half day to test and validate, and assign it one point
- ▶ Estimate every other Story relative to that one-point Story
- ▶ Never look back (don't worry about recalibrating)



**Example:** A seven-person team composed of three developers, two testers, one PO, and one SM/TC, with no vacation, and a two-week Iteration

Note: Exclude PO and SM/TC from the calculation

$$\text{Estimated capacity} = \\ 5 \times 8 \text{ points} = 40 \text{ points/Iteration}$$

## 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:** An eight-point Story should take relatively four times longer than a two-point Story.

## 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

Reference: *Agile Estimating and Planning* by Mike Cohn

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

## Iteration Goals

Iteration Goals provide clarity, commitment, and management information. They serve three purposes:



Align team members to a common purpose



Align teams to common PI Objectives and manage dependencies



Provide transparency and management information

## Iteration Goals: Examples

### Software example

#### Iteration Goals

1. Finalize and push last-name search and first-name morphology
2. Index 80% of remaining data
3. Other Stories:
  - Establish search replication validation protocol
  - Refactor artifact dictionary schema

### Business example

#### Iteration Goals

1. Roll out the incident report procedures
2. Have documentation in one folder for external audit
3. Obtain commitment to audit days from auditors and internal leaders

## Commit to the Iteration Goals

Team commitments are not just to the work.

Teams are committed to other teams, the ART, and the stakeholders.

### A team meets its commitments:

By doing everything they said they would do.

- or -

By immediately raising the concern if it isn't feasible to do so.

### Commitment

Too rigid of a commitment can lead to burnout, inflexibility, and quality problems.



### Adaptability

Too little commitment can lead to unpredictability and lack of focus on results.

## Tips for effective Iteration Planning

Best approaches	Common anti-patterns
Review and reprioritize the Team Backlog ahead of Iteration Planning	Delving too deep into technical discussions
Clearly communicate Story details and priorities to ensure understanding and alignment	Prioritized Stories don't align to the business objectives or the team's PI Objectives
Maintain neutrality so as not to influence the team to over-commit	Bringing Stories that haven't been refined and prioritized
Prior to Iteration Planning, prepare some preliminary Iteration Goals based on the team's progress in the PI, so far	PO directs the team on how the work should be done
Apply capacity allocation to the Team Backlog to make prioritizing unlike work easier	The team under-commits due to fear of failure
	No time is reserved for support activities

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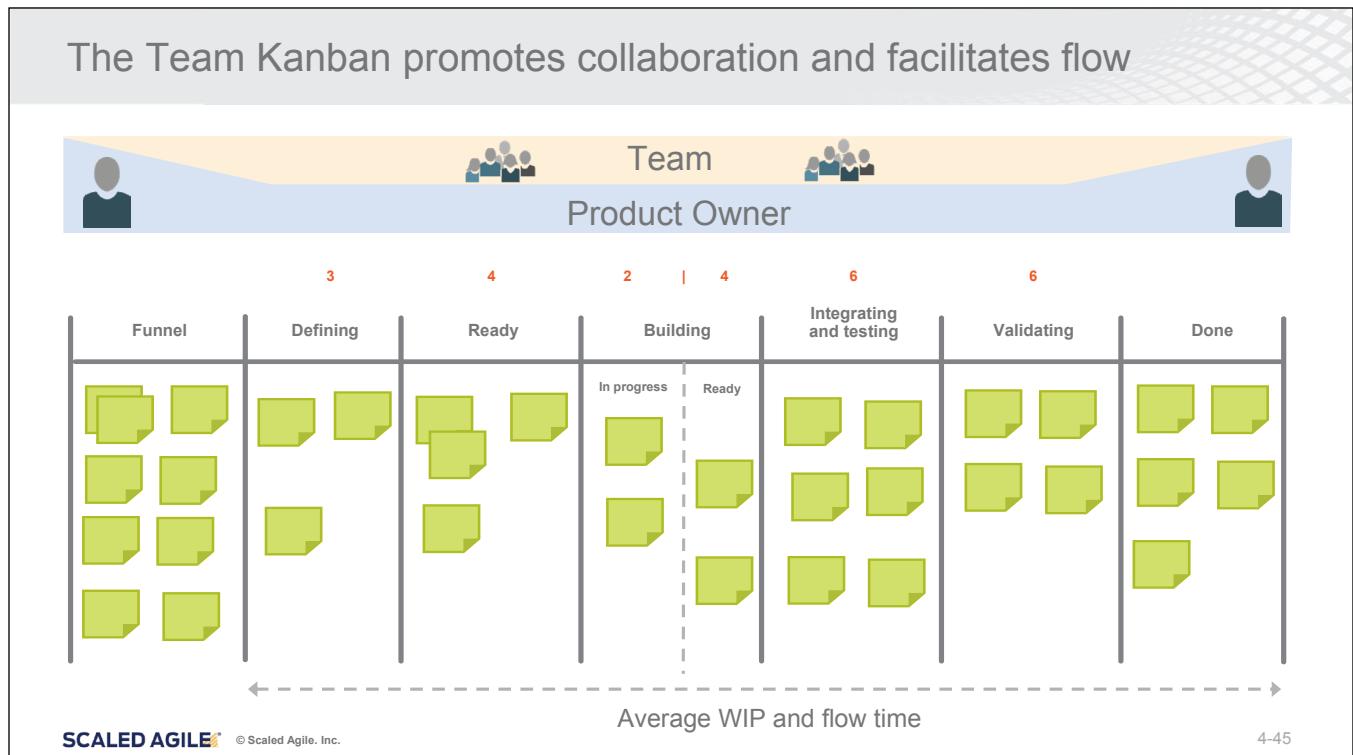
4-43

## 4.3 The Team Kanban

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4-44

## The Team Kanban promotes collaboration and facilitates flow



**Video: The Product Owner and the Team Sync**

Duration: 5 min

**The Product Owner and the Team Sync**

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

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## POs and the Team Sync

### POs:

- ▶ Should attend the Team Sync as members of the Agile Team
- ▶ Should listen carefully to any impediments that they can resolve immediately during the meet-after
- ▶ Should be ready to clarify Story intent and acceptance criteria
- ▶ Can interfere with the Team Sync unintentionally, so don't feel bad if your SM/TC provides helpful advice
- ▶ Should be attentive for opportunities to release value or engage stakeholders based on the team's progress



### Discussion: The PO's role in the Team Sync



In your work as a PO for TTC, you often attend trade shows and industry conferences to support your sales and marketing team, identify industry trends, and assess competitive offerings. You know that you will be gone for two weeks attending a trade show and visiting a few key Customers.



- ▶ **Step 1:** Individually, think about how you and your team might handle your absence in the Team Sync for two weeks
- ▶ **Step 2:** Discuss your ideas with your group

## 4.4 Backlog refinement

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4-49



Video: The Product Owner and Backlog Refinement

Duration  
5 min



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

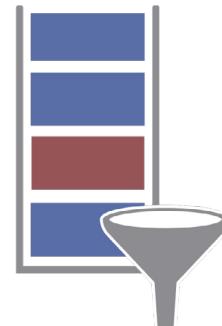
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4-50

## Backlog refinement

Backlog refinement is a preview and elaboration of upcoming Stories.

- ▶ Helps the team think about new Stories prior to Iteration Planning
- ▶ Provides enough time to identify and resolve dependencies and issues that could impact the next Iteration
- ▶ The team can improve Stories, add acceptance criteria, and identify missing information
- ▶ Most of the focus is on the next Iteration, but it allows time to discuss future Iterations and even Features for the next PI



## Tips for effective backlog refinement

Best approaches	Common anti-patterns
Revisit Stories as often as needed to finalize and commit to them in Iteration Planning	Arriving to the Iteration with Stories that are not ready
Maintain the right level of a deep Team Backlog versus ready Team Backlog for two Iterations	Completing team backlog refinement on an inconsistent basis
Make sure all team members participate	Team sees Stories for the first time during Iteration or PI Planning
Invite the right subject matter experts	Feature estimations impact Story estimation
Hold the event on a regular cadence	

## 4.5 Iteration Review and Iteration Retrospective

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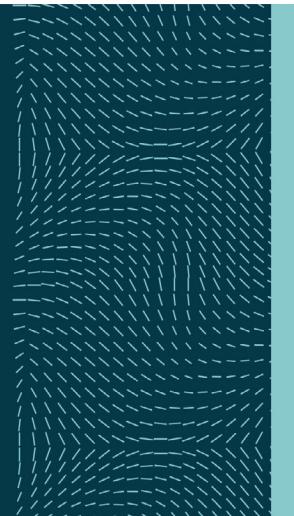
Video: The Product Owner and the Iteration Review

Duration  
5 min

 SAFe®  
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**The Product Owner  
and the Iteration Review**



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

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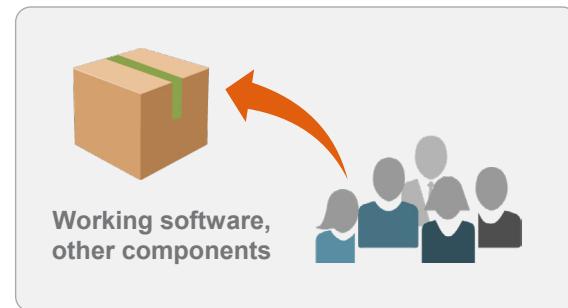
4-54

## The Iteration Review

- ▶ The Iteration Review provides the true measure of progress by showing working software functionality, hardware components, and so on
- ▶ Preparation for the review starts with planning
- ▶ Teams demonstrate every Story, spike\*, refactor, and NFR
- ▶ Attendees are the team and its stakeholders

\*A spike is a research Story, considered an exploration-style Enabler

Demonstrating a working, tested team increment



## Iteration Review guidelines

- ▶ **Timebox** - One to two hours
- ▶ **Preparation** - Review preparation should be limited to one or two hours; minimize presentation and work from the repository of Stories
- ▶ **Attendees** - If a major stakeholder cannot attend, the Product Owner should follow up individually

### Sample Iteration Review Agenda

1. Review business context and Iteration Goals
2. Demo and solicit feedback of each Story, spike, refactor, and NFR
3. Discuss Stories not completed and why
4. Identify risks or impediments
5. Revise Team Backlog and team PI Objectives as needed

## Scalable definition of done



Team Increment	System Increment	Solution Increment	Release
<ul style="list-style-type: none"> <li>Stories satisfy acceptance criteria</li> <li>Acceptance tests passed (automated where practical)</li> <li>Unit tests</li> <li>Cumulative unit tests passed</li> <li>Assets are under version control</li> <li>Engineering standards followed</li> <li>NFRs met</li> <li>No must-fix defects</li> <li>Stories accepted by PO</li> </ul>	<ul style="list-style-type: none"> <li>Stories completed by all teams in the ART and integrated</li> <li>Completed features meet acceptance criteria</li> <li>NFRs met</li> <li>No must-fix defects</li> <li>Verification and validation of key scenarios</li> <li>Included in build definition and deployment process</li> <li>Increment demonstrated; feedback achieved</li> <li>Accepted by Product Management</li> </ul>	<ul style="list-style-type: none"> <li>Capabilities completed by all ARTs meet acceptance criteria</li> <li>Deployed/installed in the staging environment</li> <li>NFRs met</li> <li>System end-to-end integration verification and validation done</li> <li>No must-fix defects</li> <li>Included in build definition and deployment/transition process</li> <li>Documentation updated</li> <li>Solution demonstrated; feedback achieved</li> <li>Accepted by Solution Management</li> </ul>	<ul style="list-style-type: none"> <li>All capabilities done and meet acceptance criteria</li> <li>End-to-end integration and solutions V&amp;V done</li> <li>Regression testing done</li> <li>NFRs met</li> <li>No must-fix defects</li> <li>Release documentation complete</li> <li>All standards met</li> <li>Approved by Solution and Release Management</li> </ul>

4-57

## What to do when a Story isn't done

- ▶ **Split it?** “Now that I see the Story, I’ve realized that I only really need part of it. The rest is a new Story that we can work on later.”
- ▶ **Continue it?** “I still need this Story, and it’s still my top priority. Can we finish this Story in the next iteration?”
- ▶ **Delay it?** “This Story is important to me, but we’ve discovered it’s huge. I’d prefer that we focus on other Stories with better ROI.”
- ▶ **Abandon it?** “If the Story is this difficult to develop, it’s not worth it for me anymore. The Story is too expensive to develop relative to the value.”

**Note:** If a team frequently ends Iterations with incomplete Stories, consider imposing stricter WIP limits on the Team Kanban.

## Measure progress (examples)

Measurement	Related Flow Metric	Quality and test automation
# Stories committed this Iteration	Flow Velocity	Test coverage %
# Stories accepted this Iteration	Flow Velocity	Test automation %
# Stories carried over to next Iteration	Flow Velocity	# Tests executed
# Deployments	Flow Velocity	# Failed tests
# Work items by type committed	Flow Distribution	# New tests created
# Work items by type accepted	Flow Distribution	# New tests automated
Average time to complete a Story	Flow Time	Mean Time to Recover from failure (MTTR)

## Relentless improvement

Agile Teams continuously adapt to new circumstances and improve the methods of value delivery. To support relentless improvement:

- ▶ Understand where you are
- ▶ Foster a Continuous Learning Culture
- ▶ Use retrospectives as summary points but not as limitations
- ▶ Actively engage with the SMs/TCs to drive improvement on the ART



 Video: The Product Owner and Iteration Retrospective

Duration  
5 min



# The Product Owner and the Iteration Retrospective

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

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## Iteration Retrospective

- ▶ **Timebox:** 30 to 60 minutes
- ▶ **Purpose:** Pick one or two items that can be done better for next Iteration
- ▶ **Outcome:** Enter improvement items into the Team Backlog

**Sample Agenda**

Part 1: Quantitative
1. Review the improvement backlog items targeted for this Iteration. Were they all accomplished?
2. Did the team meet the goals (yes/no)?
3. Collect and review the agreed-to Iteration Metrics.

Part 2: Qualitative
1. What went well?
2. What didn't go well?
3. What can we do better next time?

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## Improving everywhere

Address every area that surfaces as a constraint to the team's performance.

### Examples

- Move from manual to automated testing
- Communicate with remote teams, subject matter experts, and so on
- Consider the team's skill set
- Prepare and run the demo
- Include nonfunctional requirements testing
- Provide more efficient and disciplined design sessions

## 4.6 DevOps and Release on Demand



## Video: What is DevOps

Duration  
2 min



### What is DevOps?



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

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4-65



## Video: Continuous Delivery Pipeline

Duration  
5 min



### Continuous Delivery Pipeline



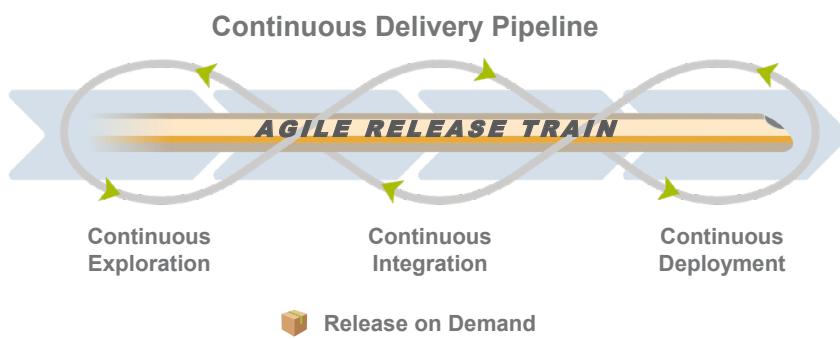
<https://bit.ly/Video-CDP>

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## Building the Continuous Delivery Pipeline with DevOps

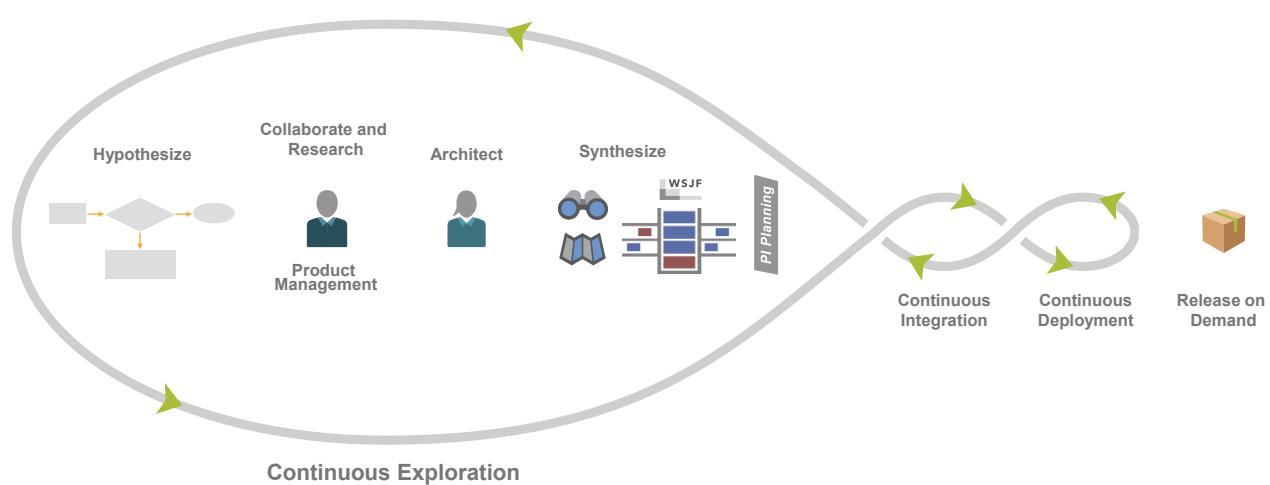
- ▶ The Continuous Delivery Pipeline (CDP) represents the workflows, activities, and automation needed to deliver new functionality more frequently
- ▶ Each ART builds and maintains, or shares, a pipeline
- ▶ Organizations map their current pipeline into this new structure, remove delays, and improve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



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4-67

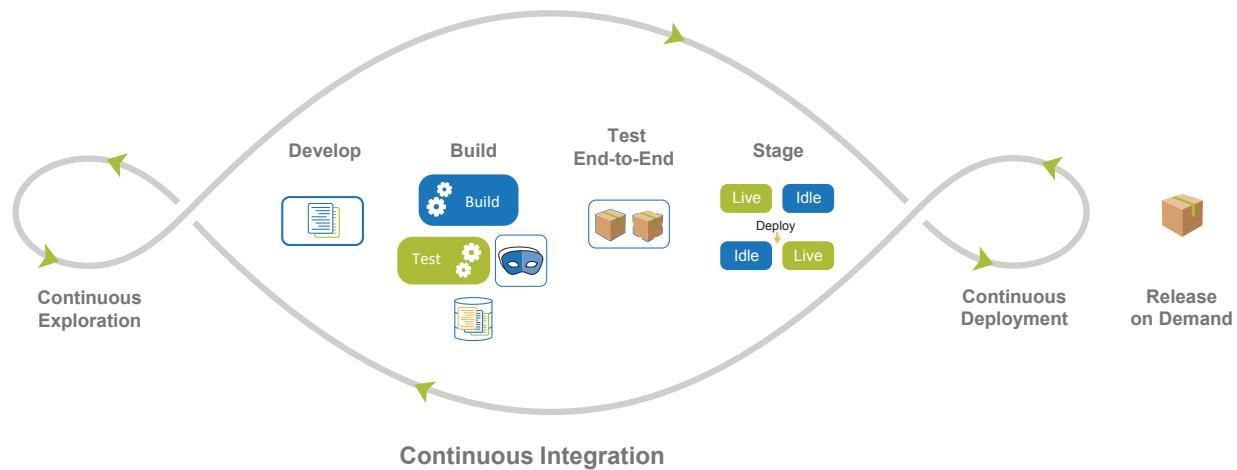
## Continuous Exploration (CE) – Understand Customer needs



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4-68

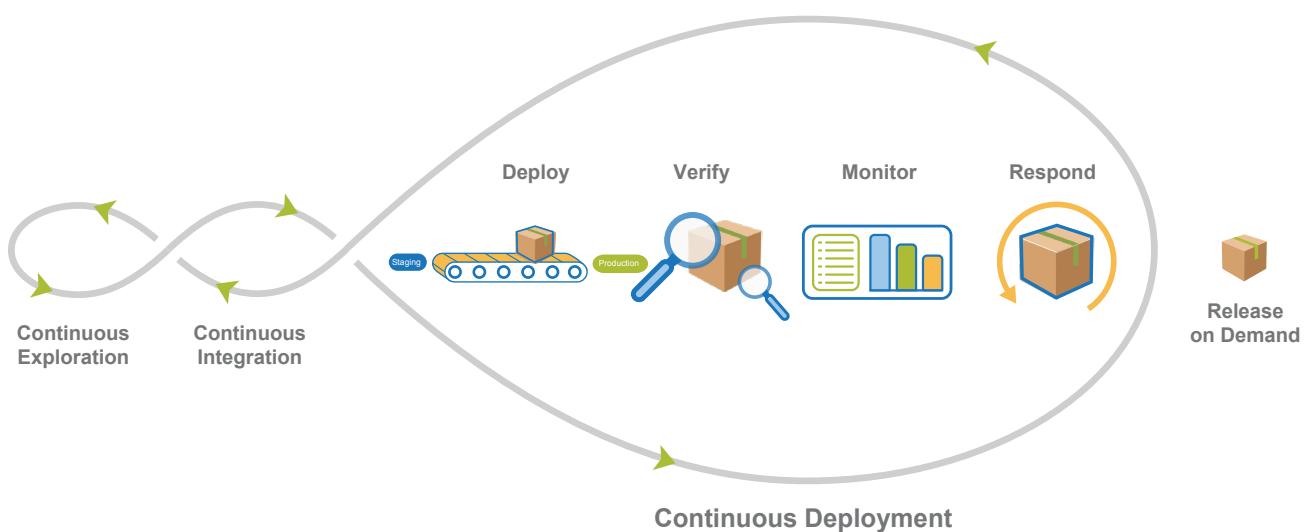
## Continuous Integration (CI) – A critical technical practice of the ART



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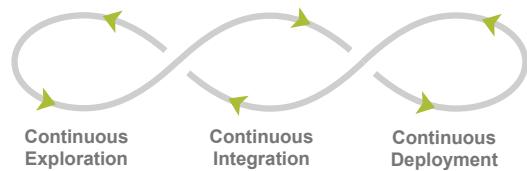
## Continuous Deployment (CD) – Getting to production early



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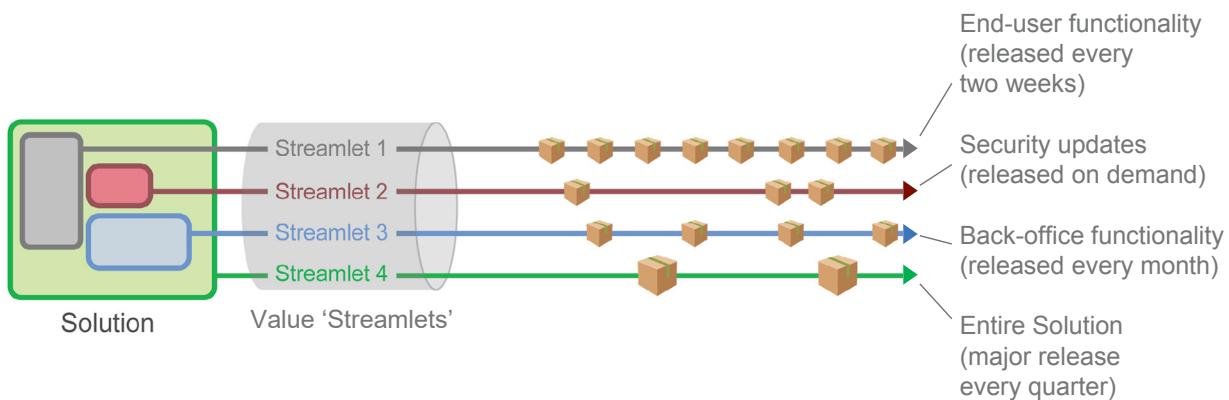
## Release on Demand – Making value available when it's needed



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## Decouple release elements from the total Solution



<https://www.scaledagileframework.com/release-on-demand/>

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## Discussion: Decouple release elements



The TTC Van Maintenance Advisor is a complex Solution. It includes components that operate in the van, a web application, and a smartphone application.

- ▶ **Step 1:** Individually, consider if all the components should be released at the same time. Why or why not?
- ▶ **Step 2:** Discuss as a class.



## Action Plan: Executing Iterations



On the Action Plan page in your workbook, answer the following:

- ▶ Think about two to three specific actions you can take to create and manage Stories with your team. Write a plan for each.
- ▶ Consider and plan one to two ways you could apply Story mapping.
- ▶ Identify one to three actions to improve your participation in Iteration events.



# Action Plan

## Executing Iterations

## Lesson review

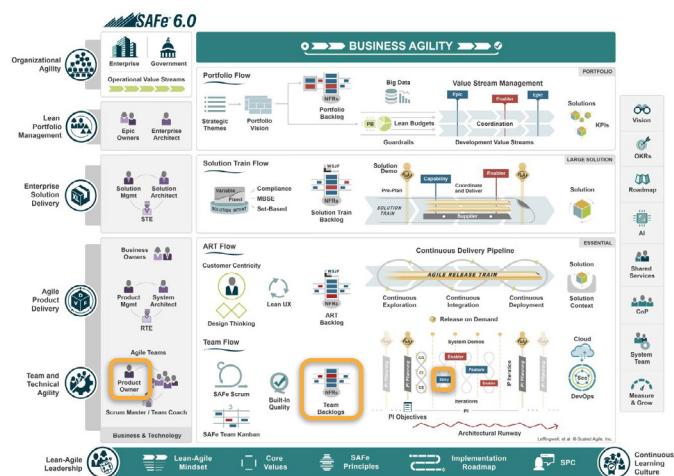
In this lesson, you:

- ▶ Created Stories
- ▶ Demonstrated how to plan an Iteration
- ▶ Outlined how to manage flow with the Team Kanban
- ▶ Summarized how to continuously refine the Team Backlog
- ▶ Planned how to participate in the Iteration Review and Iteration Retrospective
- ▶ Explained how to support DevOps and Release on Demand

## Articles used in this lesson

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

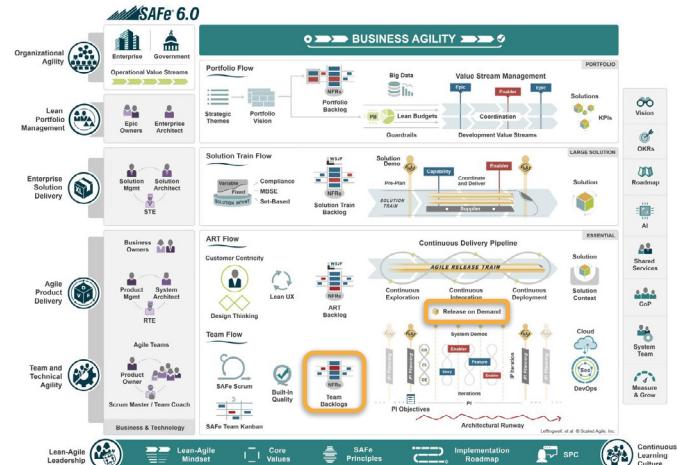
- ▶ "Story"  
<https://www.scaledagileframework.com/story/>
- ▶ "Team Backlog"  
<https://www.scaledagileframework.com/team-backlog/>
- ▶ "Product Owner"  
<https://www.scaledagileframework.com/product-owner/>



## Articles used in this lesson

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

- ▶ "Release on Demand"  
<https://www.scaledagileframework.com/release-on-demand/>
- ▶ "SAFe Team Kanban"  
<https://www.scaledagileframework.com/team-kanban/>
- ▶ "Spikes"  
<https://www.scaledagileframework.com/spikes/>



## Continue your SAFe journey with the following resources:

Use the *Story Storming & Refining* Collaborate template to support your team's Story creation and refinement activities.  
<https://bit.ly/Template-StoryRefining>

Use the *Story splitting on an Agile Team* Collaborate template to lead your team through splitting large Stories and refining smaller Stories.  
<https://bit.ly/Template-StorySplitting>

Use the *Develop a Story Map* Collaborate template to organize a sequence of Stories according to the tasks the team needs to complete in order to accomplish their goals.  
<https://bit.ly/Template-StoryMapping>

Watch and share this eight-minute playlist on *Stories*, including *Introduction to Stories* and *Writing Effective Stories*, to support your understanding of how to make Stories as effective as possible.  
<https://bit.ly/Playlist-Stories>

## Continue your SAFe journey with the following resources:

Use the <i>Facilitator's Guide to SAFe - Backlog Refinement</i> document to successfully prepare for backlog refinement activities. <a href="https://bit.ly/Community-FGBacklogRefinement">https://bit.ly/Community-FGBacklogRefinement</a>	Use the <i>Facilitator's Guide to SAFe - Iteration Planning</i> document to successfully prepare for Iteration Planning activities. <a href="https://bit.ly/Community-FGIterationPlanning">https://bit.ly/Community-FGIterationPlanning</a>
Use the <i>Facilitator's Guide to SAFe - Iteration Review</i> document to successfully prepare for Iteration Review and demo events. <a href="https://bit.ly/Community-FGIterationReview">https://bit.ly/Community-FGIterationReview</a>	

## References

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## Lesson 4 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

## Executing the PI

SAFe® Course - Attending this course gives learners access to the SAFe Product Owner / Product Manager exam and related preparation materials.



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### Lesson Topics

- 5.1** The PO Sync
- 5.2** The System Demo
- 5.3** The Innovation and Planning Iteration
- 5.4** Inspect and Adapt

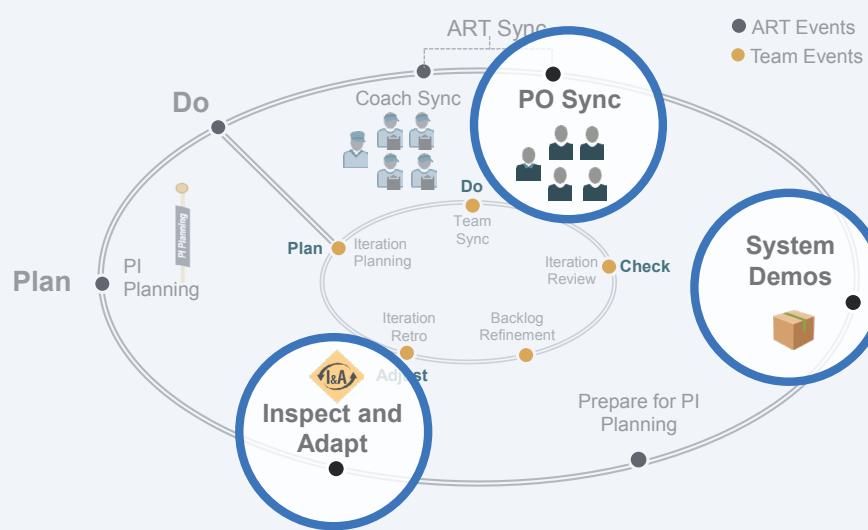


## Learning objectives

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

- ▶ Define how to participate in the PO Sync
- ▶ Plan how to participate in the System Demo
- ▶ Explain how to innovate throughout the PI
- ▶ Summarize how to Inspect and Adapt

## Executing the PI



## 5.1 The PO Sync

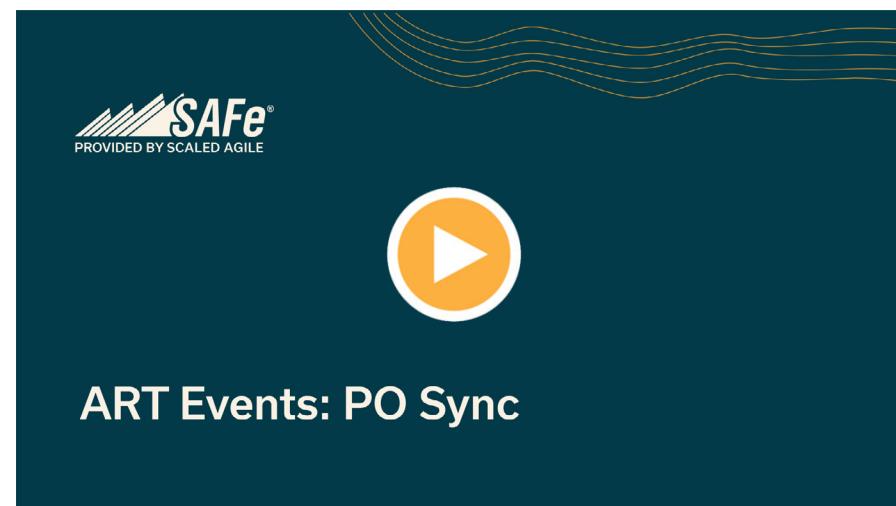
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Video: ART Events: PO Sync

Duration  
5 min



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

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## The PO Sync helps ARTs respond to change

The PO Sync:

- ▶ Provides visibility into how well the ART is progressing toward meeting the ART PI Objectives
- ▶ Provides an opportunity to assess scope adjustments
- ▶ May be used to prepare for the next PI, including sharing learnings from Continuous Exploration, ART backlog refinement, and WSJF (weighted shortest job first) prioritization
- ▶ Is facilitated by the RTE or Product Management
- ▶ Includes Product Managers, POs, stakeholders, and SMEs, as necessary
- ▶ Occurs weekly or more frequently and lasts 30–60 minutes long

POs communicate adjustments to their teams after the sync.

<https://www.scaledagileframework.com/planning-interval/>

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### Discussion: Enabling alignment across the ART with sync events

Duration  
10 min

- ▶ **Step 1:** Individually, think about the various sync events that are part of SAFe (Team Sync, Coach Sync, PO Sync, ART Sync, Architect Sync)
- ▶ **Step 2:** As a class, discuss the following:
  - How can you leverage these sync events as a PO or Product Manager to ensure alignment across the ART?
  - What issues and opportunities might you bring up?
  - What potential solutions might you offer to resolve the issues and follow through with opportunities?

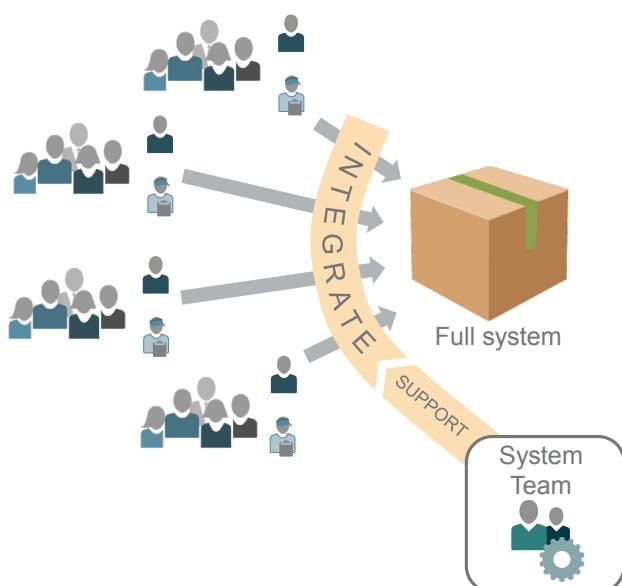
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## 5.2 The System Demo

### 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
- ▶ Demos occur after the Iteration Review
  - May lag by as much as one Iteration, maximum
- ▶ Demo from a staging environment that resembles production as much as possible



## Recommended System Demo agenda

<b>5 min:</b>	Briefly review the business context and the PI Objectives.
<b>5 min:</b>	Briefly describe each new Feature before running the demo.
<b>25 min:</b>	Demo each Feature. Frame each Feature in the context of how a Customer or persona will gain benefit from the Feature or how the Feature will create business value.
<b>15 min:</b>	Identify current risks and impediments.
<b>10 min:</b>	Open discussion for questions and feedback, and summarized progress.

Apply the meet-after pattern to keep the System Demo focused.

## Tips for effective System Demos

Best approaches	Common anti-patterns
Begin to consider how and what to demo in Iteration Planning	A lot of time is spent preparing for the demo
Make sure the right participants are present	Demo does not showcase Customer value
Ensure that the team celebrates its accomplishments and that stakeholders acknowledge them	POs and Product Management see things for the first time in the System Demo
Make sure different team members have the opportunity to demo	System Demo is not done because “the Team Demo is enough”
Ensure that the team is ready for the System Demo and coordinates with the System Team	Team members are not invited to the System Demo to save time
	Demos are not interesting or relevant to ART level stakeholders
	Using test data

## 5.3 The Innovation and Planning Iteration

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### 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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## Innovation and Planning (IP) Iteration

PI Planning occurs on cadence within the IP Iteration, which facilitates reliability, PI readiness, planning, and innovation.

- ▶ **Innovation** - Opportunity for innovation, hackathons, and infrastructure improvements
  - ▶ **Planning** - Provides for cadence-based planning
  - ▶ The IP Iteration also provides an estimating guard band for cadence-based delivery

“Provide sufficient capacity margin to enable cadence.”

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

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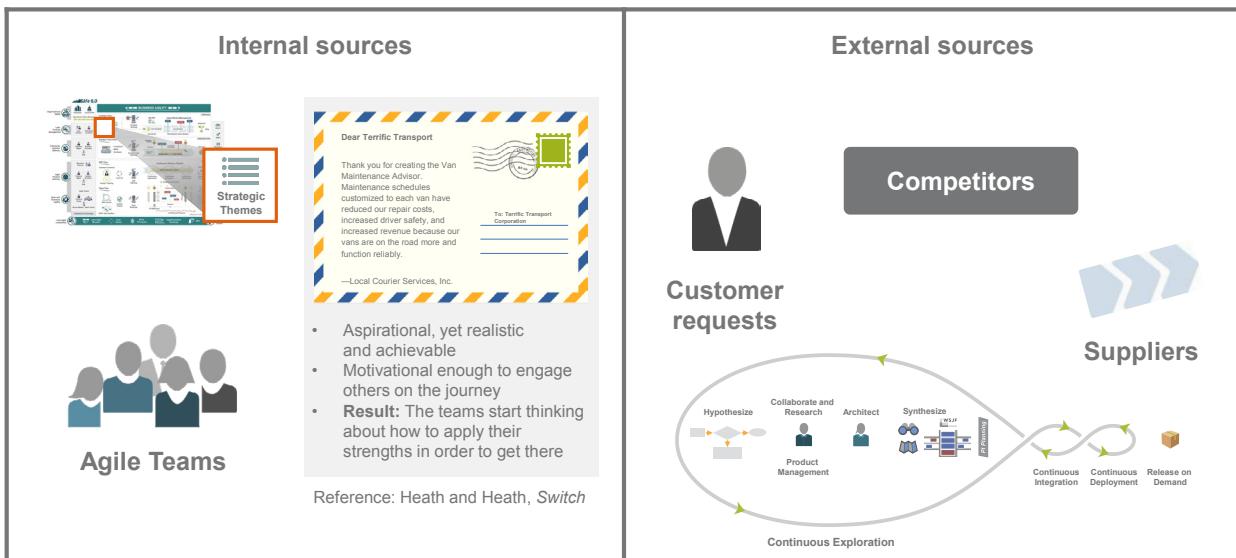
The IP Iteration

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
	Buffer for leftover work					
	Final verification and validation, and documentation (if releasing)					
	Innovation					
	PI Planning readiness					
8	9	10	11	12	13	14
	Solution Train pre-PI Planning	Continuing education	PI Planning day one	PI Planning day two	Optional time for distributed planning	
	Innovation continues	Inspect and Adapt workshop				
	PI Planning readiness				Solution Train post-PI Planning	

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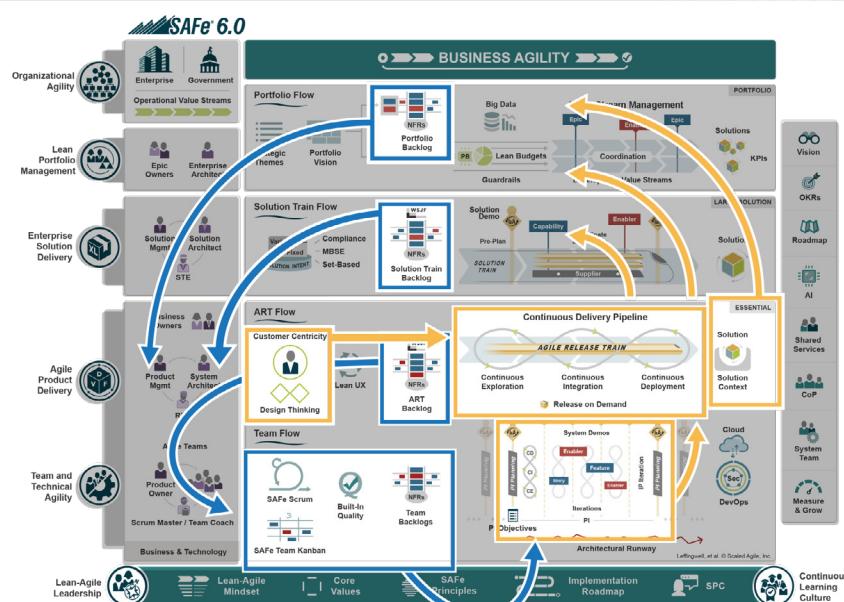
## Innovative ideas come from many sources



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## SAFe has many ways to promote and capture innovation



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## Organize a hackathon

- ▶ A hackathon is a one-day or two-day event in which teams work on new ideas that are often added to the ART Kanban
- ▶ Two key guidelines balance creativity and focus:
  - People can work on whatever they want, with whomever they want, as long as the work reflects the mission of the company
  - The teams demo their work to others at the end of the hackathon



## Organize a Supplier showcase

- ▶ A Supplier showcase is a structured demo from an internal or external Supplier designed to help your teams better leverage the products or services offered by the Supplier
- ▶ A Supplier showcase helps teams:
  - Reduce work by better leveraging the Supplier's product ("Did you know that our API provides automatic routing? Here's how it works.")
  - Enable Architects, Product Owners, and Product Managers to identify Enablers and improve Roadmaps
- ▶ A Supplier showcase helps Suppliers by providing them direct feedback on what they need to supply to the teams

## Explore some spikes

- ▶ A spike is an exploration Enabler Story designed to gain the knowledge necessary to reduce the risk of a technical approach, better understand a requirement, or increase the reliability of a Story estimate
- ▶ While spikes can be added to Team Backlogs at any time during a PI to reduce risk, spikes are commonly used to explore new ideas or determine feasibility of Epics
- ▶ Spikes increase learning within the team

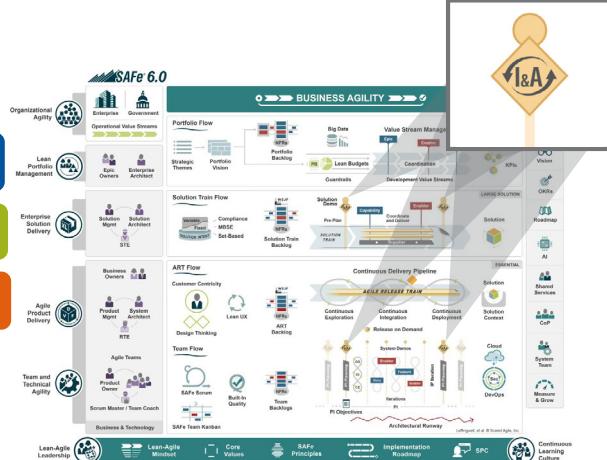
## 5.4 Inspect and Adapt

## Improving results with the Inspect and Adapt event

Three parts of Inspect and Adapt (I&A):

1. The PI System Demo
2. Quantitative and Qualitative Measurement
3. Retrospective and Problem-Solving Workshop

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



<https://www.scaledagileframework.com/inspect-and-adapt/>

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## 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, Product Owners, and the System Team
- ▶ Attended by Business Owners, ART stakeholders, Product Management, RTE, Scrum Masters/Team Coaches, and teams



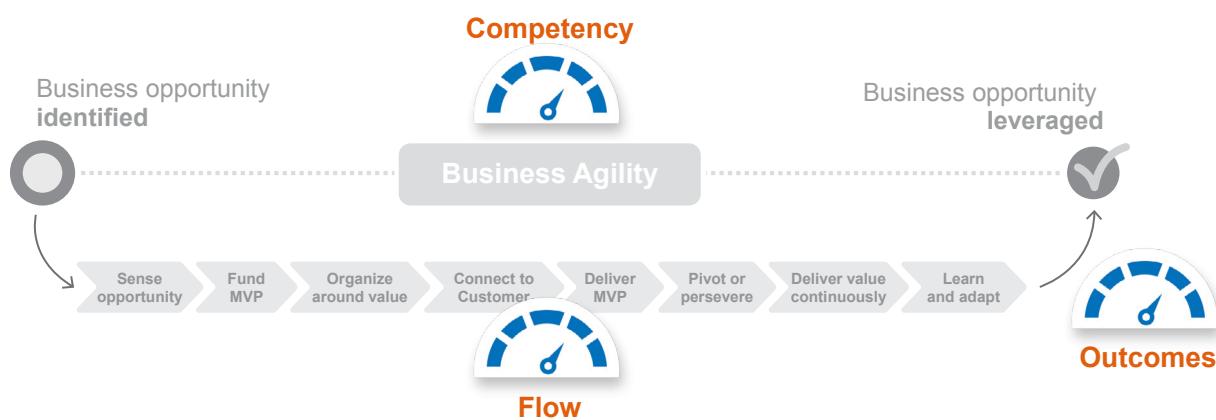
<https://www.scaledagileframework.com/system-demo/>

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## Review relevant Metrics

Three SAFe measurement domains support Business Agility.



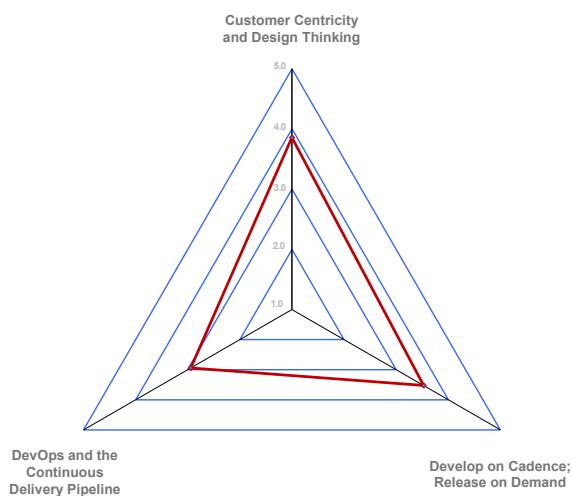
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## Competency assessments

- ▶ One assessment for each one of the Seven Core Competencies
- ▶ Assess at a greater level of detail to generate deeper insights
- ▶ Measure the progress being made toward a specific core competency
- ▶ Identify specific practices for potential improvement

### Agile Product Delivery Assessment



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## Flow Metrics

Metric	Description
Flow Distribution	The amount of each type of work in the system over time
Flow Velocity	The average number of work items that can be completed in a given timeframe
Flow Time	How long it takes for a work item to go through the system
Flow Load	The overall amount of WIP in the system
Flow Efficiency	How much of the overall flow time is spent in value-added work activities vs. waiting between steps
Flow Predictability	Overall planned vs. actual business value achieved

Reference: Kersten, *Project to Product*

<https://www.scaledagileframework.com/metrics/>

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## 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 lengths
7. Optimize time ‘in the zone’
8. Remediate legacy policies and practices



<https://www.scaledagileframework.com/make-value-flow-without-interruptions/>

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## Outcome Metrics

Do our Solutions deliver the expected benefits to the business?

- ▶ **Key performance indicators (KPIs)** - Measure how a Value Stream is performing against its business objectives
- ▶ **Objectives and Key Results (OKRs)** - A goal-setting framework that evaluates progress (Key Results) toward achieving a set of business outcomes (Objectives)
- ▶ **Employee engagement** - Measure how motivated individuals are in supporting the achievement of the organization's goals and values



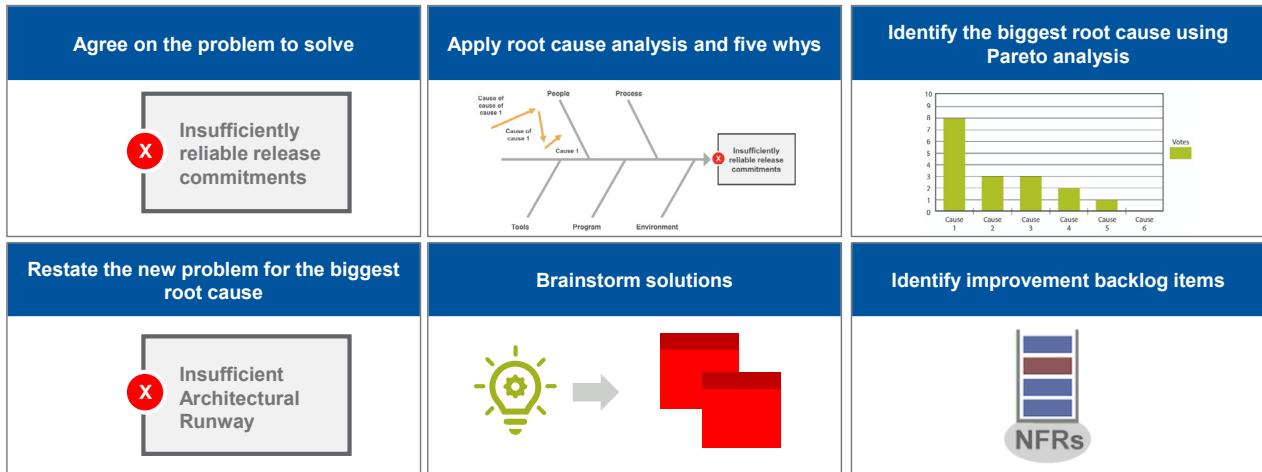
Video: Inspect and Adapt: The Retrospective and Problem Solving Workshop Overview

Duration  
4 min



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

## The problem-solving workshop



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- 
- Discussion: Apply Metrics
- Prepare      Share
- 5 min      10 min
- ▶ **Step 1:** Identify which flow and outcome Metrics would be best to apply in your organization
  - ▶ **Step 2:** Discuss what you think those flow and outcome Metrics would reveal about your organization's delivery effectiveness

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## Lesson review

In this lesson, you:

- ▶ Defined how to participate in the PO Sync
- ▶ Planned how to participate in the System Demo
- ▶ Explained how to innovate throughout the PI
- ▶ Summarized how to Inspect and Adapt



## Action Plan: Executing the PI



On the Action Plan page in your workbook, answer the following questions:

- ▶ How might you change your participation in and collaboration around the PO Sync, System Demo, and Inspect and Adapt event?
- ▶ What kinds of innovation opportunities would you like to encourage and make time for with your Agile Team?
- ▶ What kinds of Metrics do you plan to start collecting and reviewing during your Inspect and Adapt workshops?



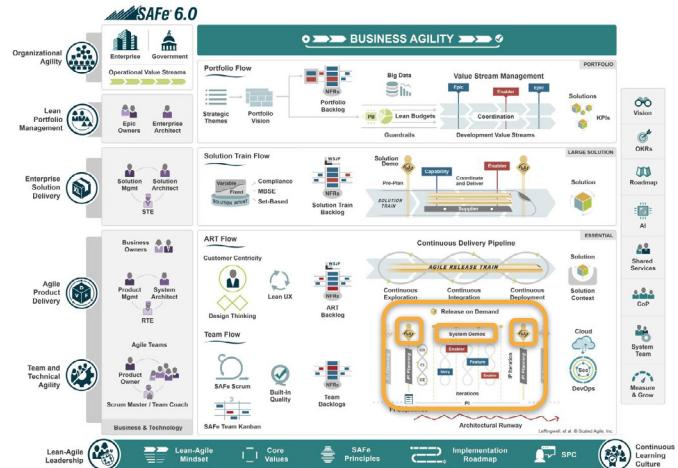
# Action Plan

## Executing the PI

## Articles used in this lesson

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

- ▶ “Planning Interval”  
<https://www.scaledagileframework.com/planning-interval/>
- ▶ “System Demo”  
<https://www.scaledagileframework.com/system-demo/>
- ▶ “Metrics”  
<https://www.scaledagileframework.com/metrics/>
- ▶ “Inspect and Adapt”  
<https://www.scaledagileframework.com/inspect-and-adapt/>
- ▶ “Make Value Flow Without Interruptions”  
<https://www.scaledagileframework.com/make-value-flow-without-interruptions/>



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## Continue your SAFe journey with the following resources:

Download the *Facilitator's Guide to SAFe - System Demo* and *Facilitator's Guide to SAFe - PO Sync* from SAFe Toolkits and Templates.  
<https://bit.ly/Community-ToolkitsAndTemplates>

Download the *PO Sync FAQ Sheet* from the SAFe ART and Team Events page for answers to frequently asked questions regarding the PO Sync.  
<https://bit.ly/ART-Events>

Watch the two-minute *Coaching Tips: The System Demo* video to gain coaching tips and tricks on how to run a successful System Demo.  
<https://bit.ly/Video-CoachingTipsSystemDemo>

Watch the five-part *Inspect and Adapt Series* playlist that provides an overview of Inspect and Adapt as well as different aspects of the event.  
<https://bit.ly/Video-InspectandAdapt>

Download the *Facilitator's Guide to SAFe - Inspect and Adapt* to prepare for and engage the ART in the event from the Inspect and Adapt page.  
<https://bit.ly/FG-DistributedInspectAndAdapt>

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## References

- Heath, Chip and Dan Heath. *Switch: How to Change Things When Change Is Hard*. New York: Currency, 2010.
- Kersten, Mik. *Project to Product: How to Survive and Thrive in the Age of Digital Disruption with the Flow Framework*. IT Revolution: Portland, 2018. Kindle Edition.
- Reinertsen, Donald G. *The Principles of Product Development Flow: Second Generation of Lean Product Development*. Redondo Beach: Celeritas 2009. 178.

## Lesson 5 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

## Practicing SAFe®

SAFe® Course - Attending this course gives learners access to the SAFe Product Owner / Product Manager exam and related preparation materials.



### Video: SAFe Certification Benefits

Duration  
3 min

A video thumbnail featuring a woman in a business suit smiling and looking towards the right. A large orange play button icon is overlaid on the lower right side of the thumbnail.

**SAFe**  
Certification  
Benefits

**SAFe**  
PROVIDED BY SCALED AGILE

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

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## A path towards certification

Access exam study guides and practice tests

Download your certificate of course completion

Take the **certification exam**

Showcase your **digital badge** and get recognized as a certified SAFe professional

**Becoming a certified SAFe professional**

SAFe Certified badge

SAFe Certified badge

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### Video: Welcome to the SAFe Community Platform

Duration: 2 min

Welcome to the **SAFe Community Platform**

SAFe® PROVIDED BY SCALED AGILE

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

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## SAFe toolkits



Use toolkits to support your ART and team events

### SAFe® Iteration Execution Toolkit



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### SAFe® PI Execution Toolkit



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## Community video hub



Access videos to support your learning and grow your skills



Introduction to  
PI Planning  
A Quick Overview



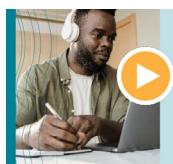
Inspect and Adapt  
The Retrospective and Problem  
Solving Workshop Overview



How to run an effective  
Backlog Refinement  
Workshop



An Overview of  
WSJF



Introduction to  
Stories



What's new in  
SAFe



What is DevOps?  
with Morgan Campbell



Coaching Tips  
The System  
Demo

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## Online learning resources



**Discover and develop skills through 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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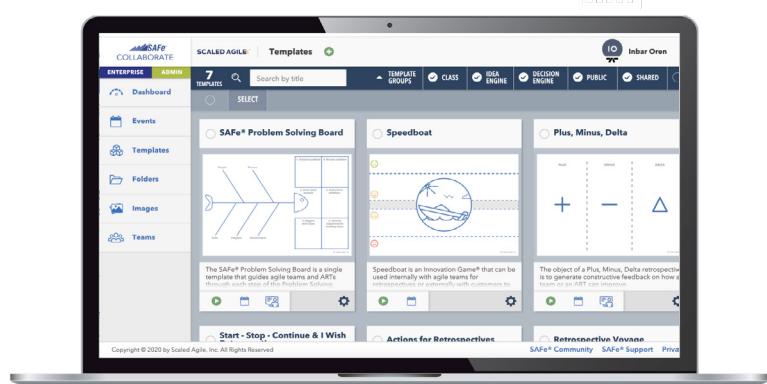
6-7

## SAFe Collaborate



**Organize and run virtual SAFe events in real time**

**SAFe Collaborate** is a visual, cloud-based workspace where organizations can easily and effectively orchestrate virtual SAFe events and activities with predesigned and customizable templates.



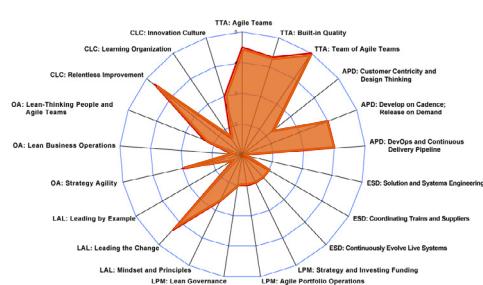
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## SAFe assessments



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](#)



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## SAFe forums



Join the SAFe POPM community to connect with other Product Owners and Product Managers

The screenshot shows two posts in a forum:

- Post 1:** A user asks for advice on collaborating with Product Owners. The post has 5 comments and 30 views.
- Post 2:** Another user asks for recommendations on resources/tools for furthering SAFe and Product Owner knowledge. This post has 7 comments and 30 views.

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## SAFe FAQs

**When you need support, check the FAQ page for your question or contact SAI support directly**

The screenshot shows the SAFe Support FAQ page. At the top, there's a blue header with the SAFe logo and a search bar. Below the header, a large section titled "Frequently Asked Questions" is divided into four main categories: "I'm A Learner", "I'm An Instructor", "I'm A Partner", and "General Support". Each category has a small thumbnail image and a list of links below it. The "I'm A Learner" category includes links for Certifications, Digital Badges, Practice Tests, Exams, Training, Forums, and Remote Learner. The "I'm An Instructor" category includes links for Resource Downloads, Course Administration, and Access to Materials.

SAFe SUPPORT

Home Topics

Frequently Asked Questions

I'm A Learner I'm An Instructor I'm A Partner General Support

I'm A Learner  
Certifications  
Digital Badges  
Practice Tests  
Exams  
Training  
Forums  
Remote Learner

I'm An Instructor  
Resource Downloads  
Course Administration  
Access to Materials

General Support

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

<https://community.scaledagile.com/>

The advertisement features a blue background with a network of white silhouettes of people connected by lines, symbolizing a community. In the center, the SAFe logo is displayed with the word "SAFE" in a large, stylized font above the word "COMMUNITY".

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6-12

# SAFe Glossary



## SAFe Glossary:

Visit the Scaled Agile Framework site ([www.scaledagileframework.com/glossary/](http://www.scaledagileframework.com/glossary/)) to download glossaries translated into other languages.