

SAFe® Release Train Engineer

Facilitating Lean-Agile Program Execution
5.0

SAFe® Course Attending this course gives students access to the SAFe® Release Train Engineer exam and related preparation materials.



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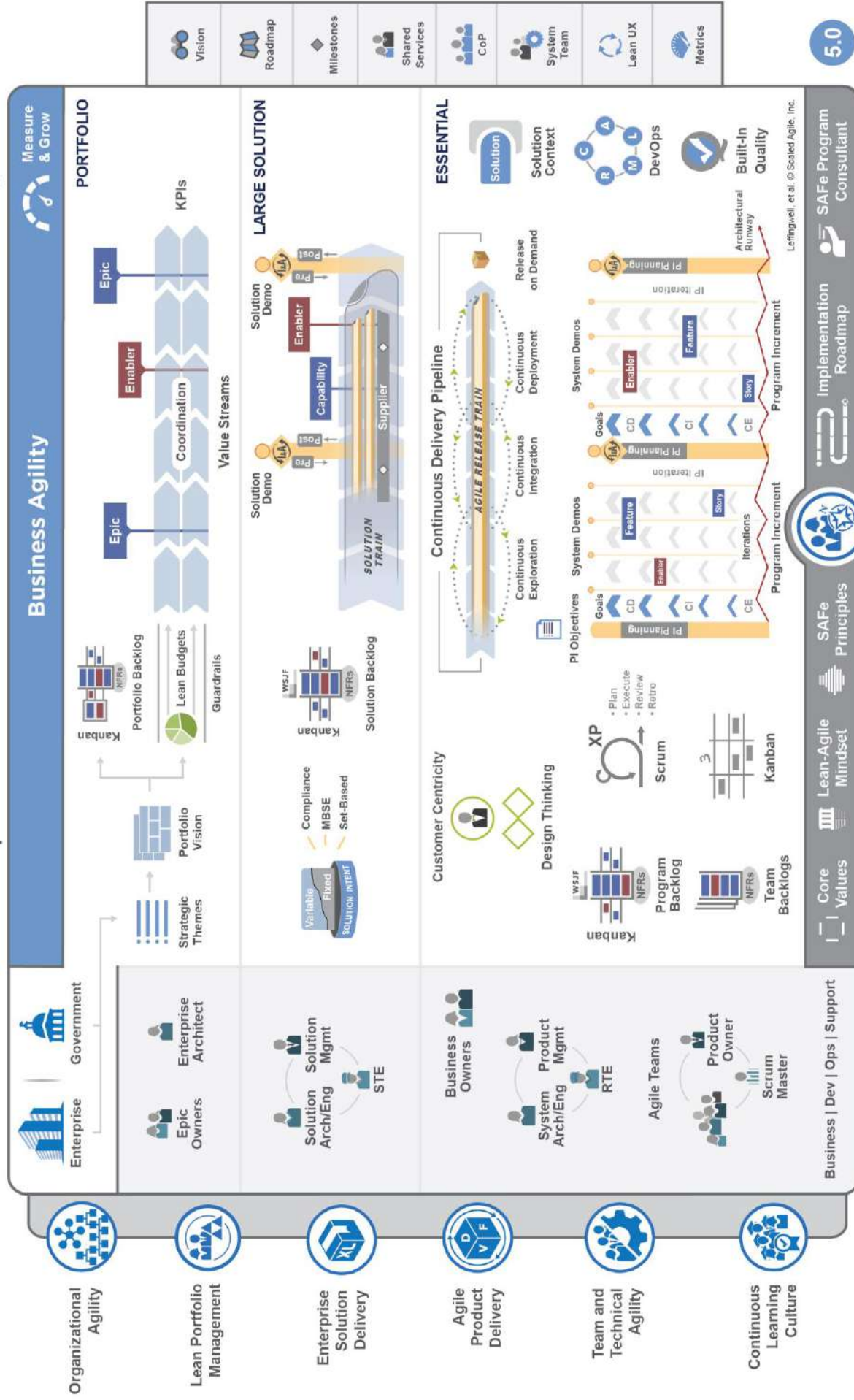
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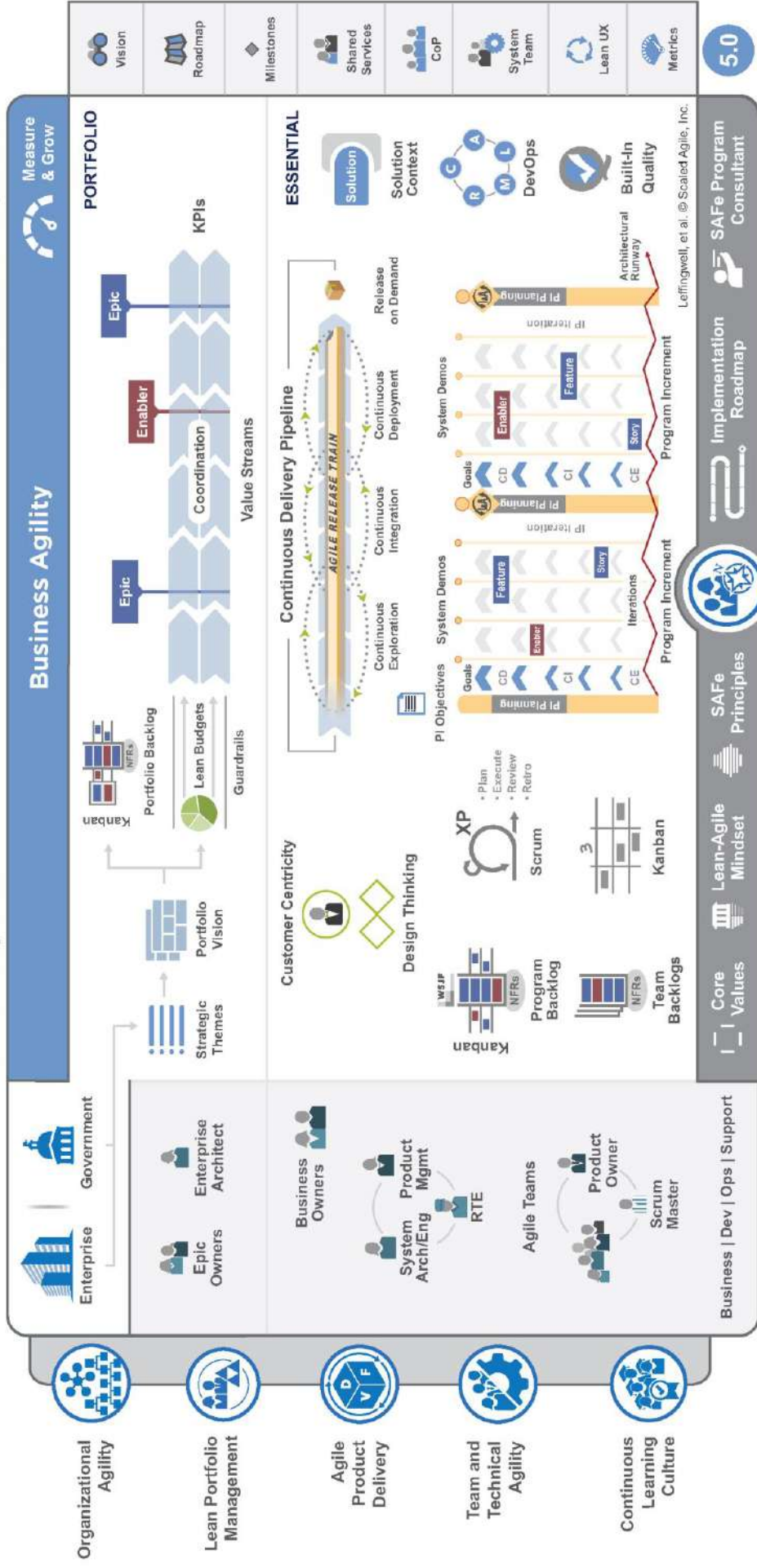
Full Configuration



Lean-Agile Leadership

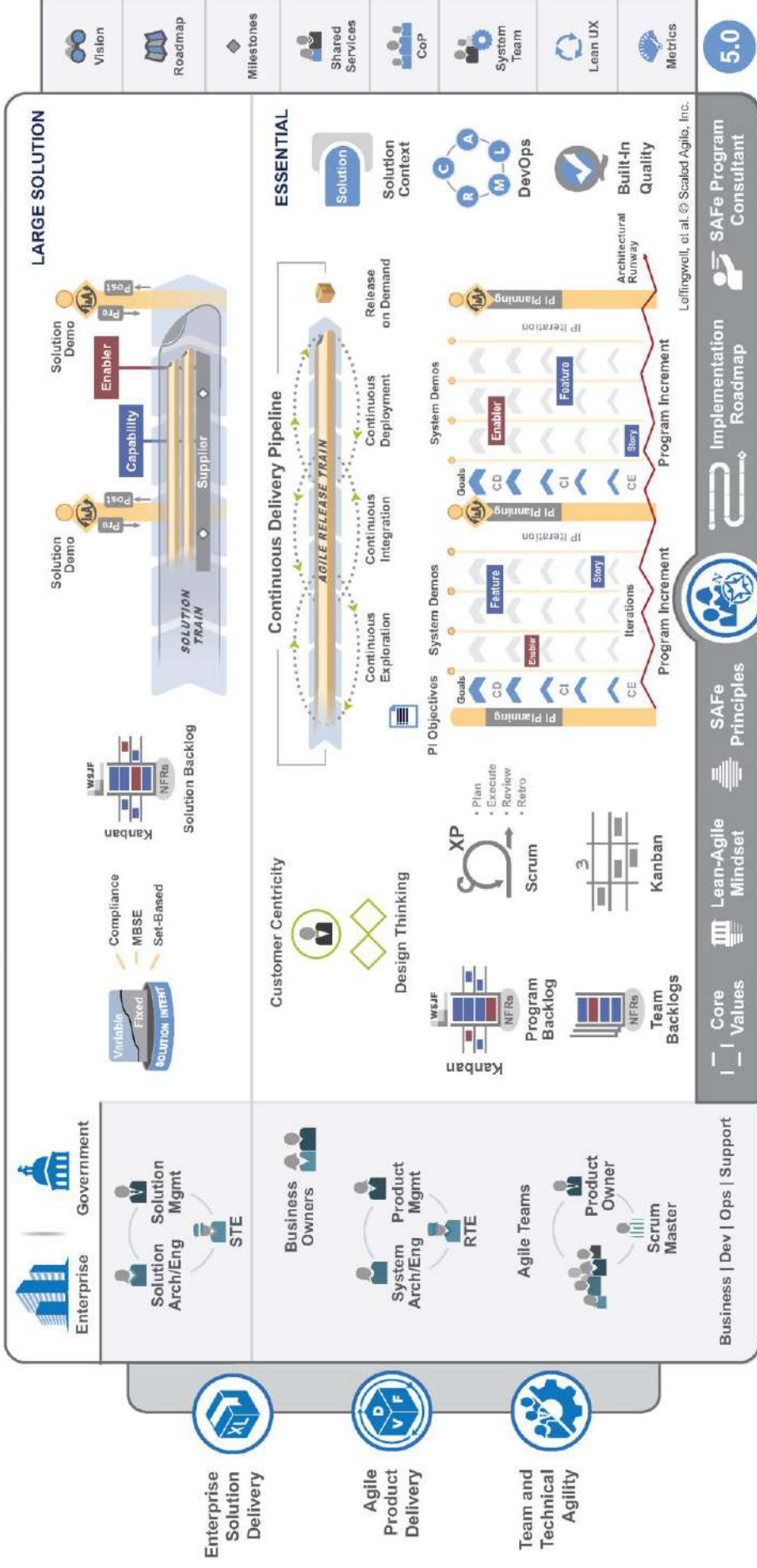
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Portfolio Configuration



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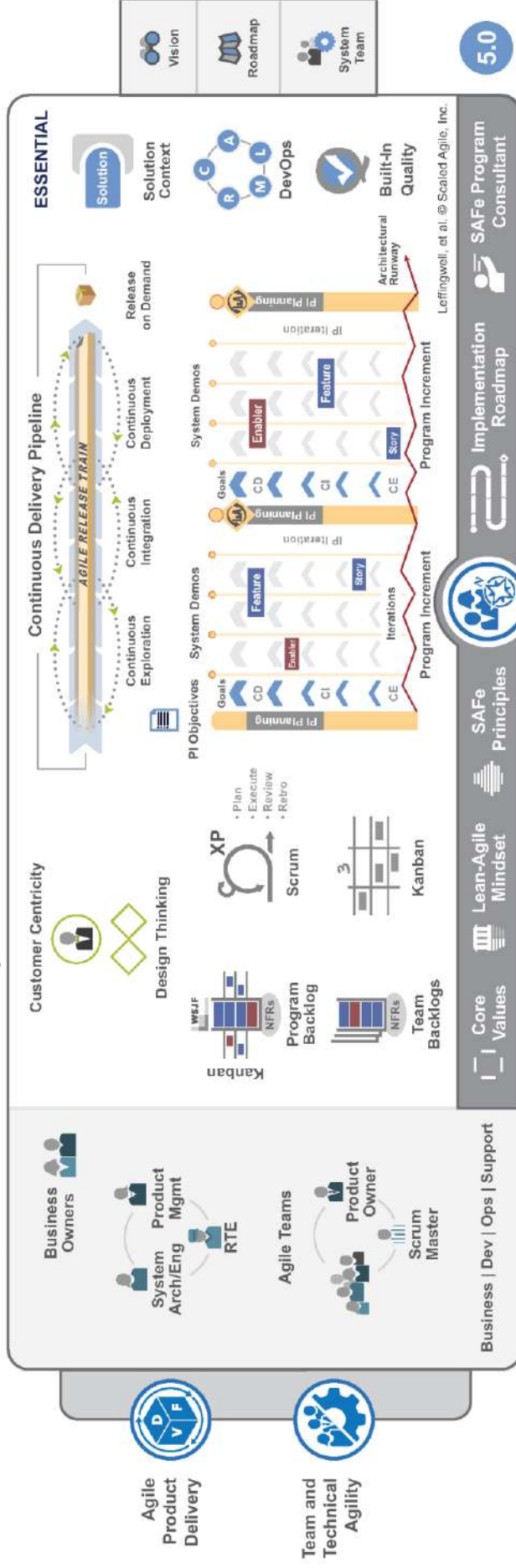
Large Solution Configuration

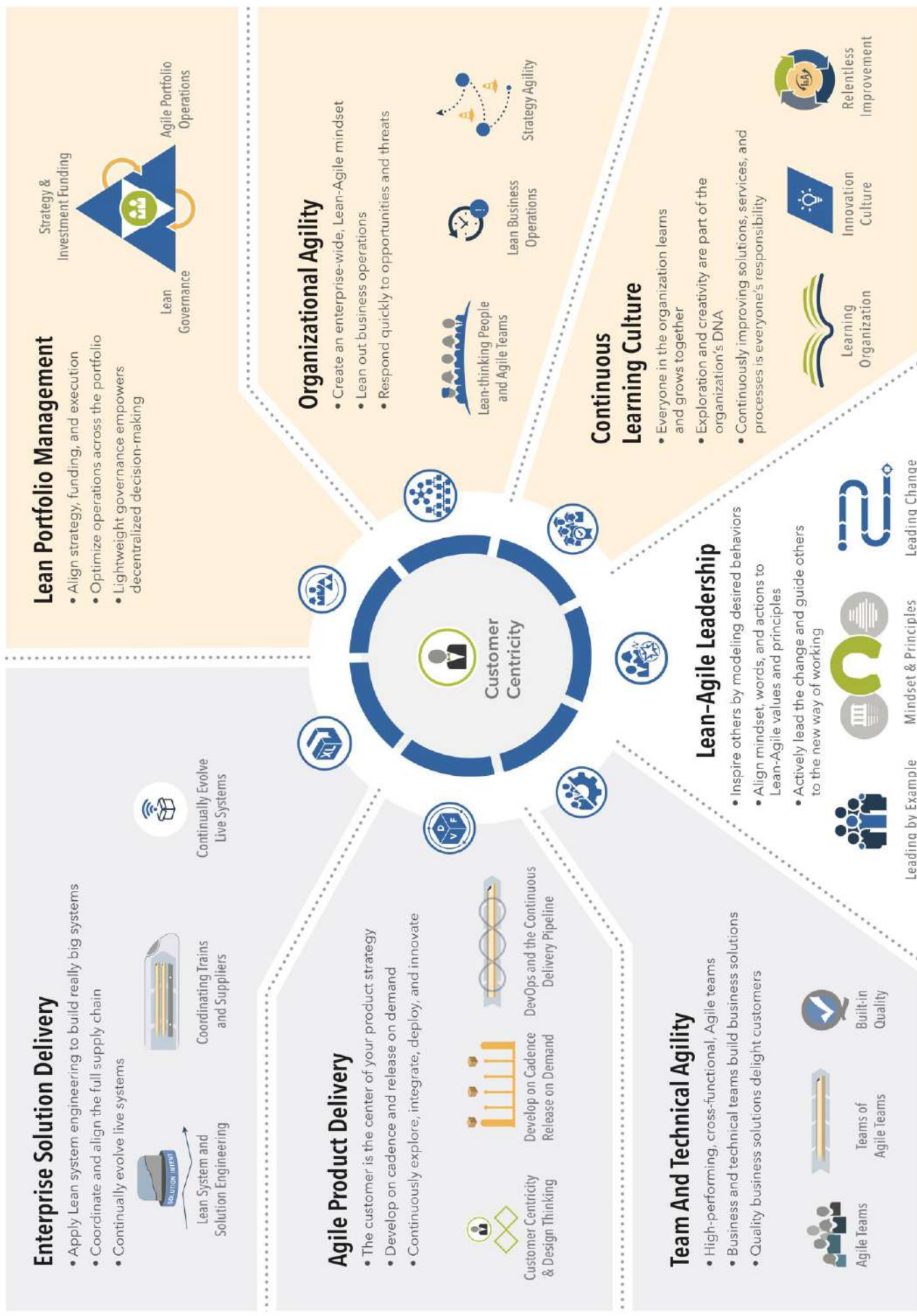


Lean-Agile Leadership

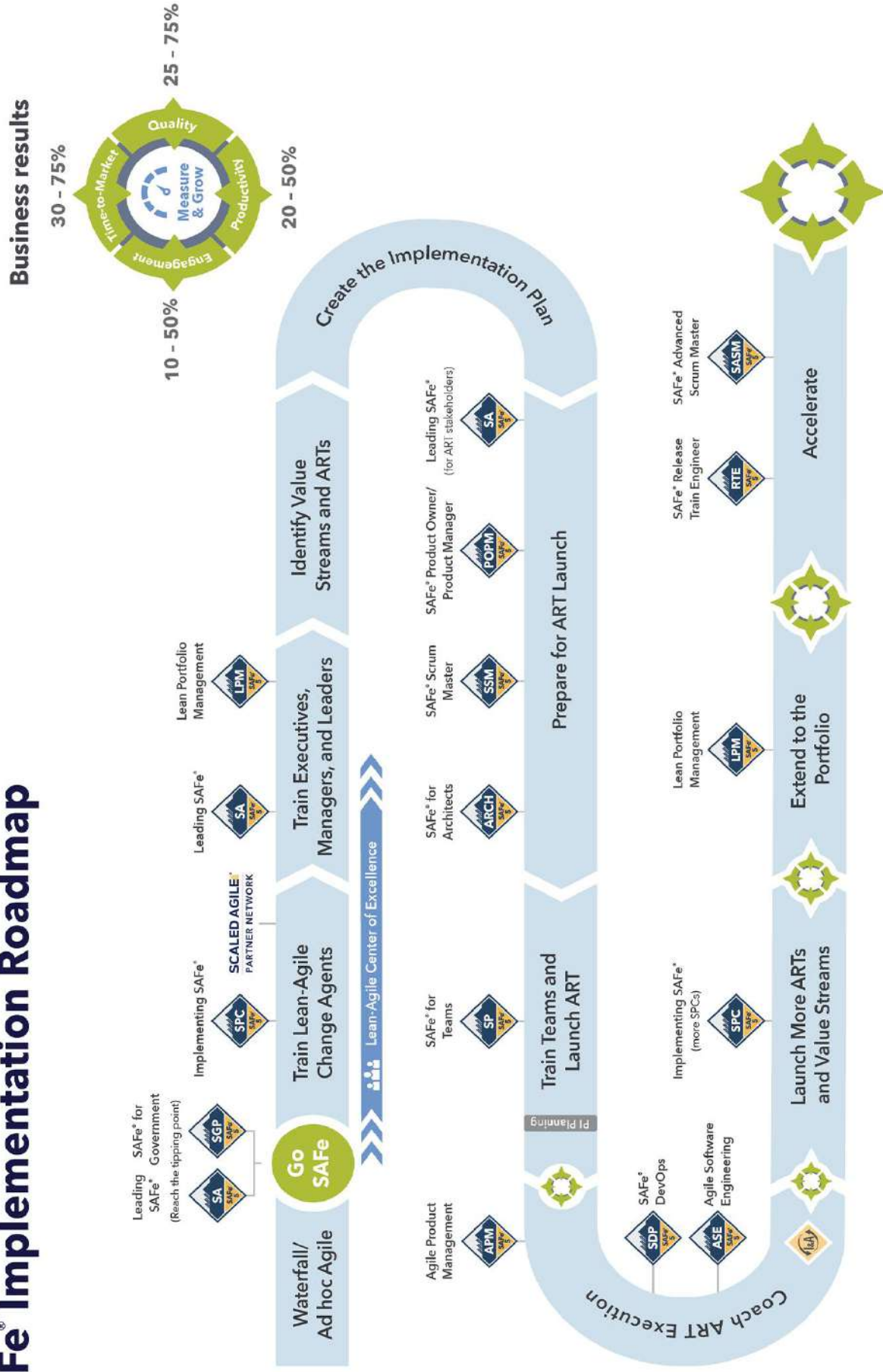
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Essential Configuration





SAFe® Implementation Roadmap



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SAFe® Courses and Certifications














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

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Digital Workbook User Guide

Frequently Asked Questions

Q: How can I take notes in my digital workbook?

A: After each lesson, there is a notes page that allows you to type notes directly into the workbook. At the end of the workbook, there is an action plan which also has fields that allow you to type notes. Remember to save your workbook to your personal computer to save any content you may have added.

If you open the digital workbook with a product like Adobe Acrobat, there are functions that allow you to add your own text boxes, add bookmarks, highlight text, and add comments. Remember to save your workbook to your personal computer to save any content you may have added.

Q: What other features are included in the digital workbook?

A: Action plan slides are clickable and will take you to the action plan at the end of the workbook. All videos have a hyperlink directly below the slide that will take you to the correct URL. If you click on assets in the front matter, you will be taken to ScaledAgileFramework.com resources like the Implementation Roadmap and course certification pages.

Q: How do I fill out the action plan in my digital workbook?

A: To add text to a blue text field, click within the blue box and type. Remember to save your workbook to your personal computer to save any content you may have added.

Q: Is my digital workbook saved on the community platform?

A: The original digital workbook file will always be available to you in your Learning Plan on the SAFe Community Platform. However, any text or content added to your digital workbook must be saved on your personal computer. Remember to save your workbook to your personal computer to save any content you may have added.

Q: Can I share my digital workbook with my coworkers?

A: No. You cannot share your digital workbook. It is for personal use only, so you may not reproduce or distribute it.

Q: Can I print the digital workbook?

A: Yes. You may print the digital workbook for your personal use. The file is in full color, so if you'd prefer to print the workbook in black and white only, make sure to adjust your printing preferences.

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Notes:

Logistics

- ▶ Course meeting times
- ▶ Breaks
- ▶ Eliminate distractions
- ▶ Ask questions
- ▶ Be patient
- ▶ Working agreements

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Notes:



Discussion: Welcome and introductions



- ▶ **Step 1:** Find someone you don't know
- ▶ **Step 2:** Introduce yourself and share with them:
 - One thing you already know about the RTE role
 - One thing you hope to learn about the RTE role during this course
- ▶ **Step 3:** After five minutes, team up with another pair and take turns introducing the person you just met

Notes:

Course map

- ▶ Lesson 1: Exploring the RTE Role and Responsibilities
- ▶ Lesson 2: Applying SAFe Principles
- ▶ Lesson 3: Organizing the ART
- ▶ Lesson 4: Planning a Program Increment
- ▶ Lesson 5: Executing a Program Increment
- ▶ Lesson 6: Fostering Relentless Improvement
- ▶ Lesson 7: Serving the ART
- ▶ Lesson 8: Continuing Your Learning Journey
- ▶ Lesson 9: Becoming a Certified SAFe Professional

Notes:



Activity: Organize into diverse tables



- ▶ **Step 1:** Stand in a matrix in the room
 - X axis – Number of PIs as an RTE
 - Y axis – How far you traveled today to get to class
 - Talk to each other to see where you fit in line
- ▶ **Step 2:** Self-organize into tables that have a diverse range of RTE experience

Notes:

Lesson 1

Exploring the RTE Role and Responsibilities

Learning Objectives:

- 1.1 Connect the RTE role to SAFe
- 1.2 Examine the responsibilities of the RTE role
- 1.3 Identify effective RTE behaviors
- 1.4 Outline the benefits of being an RTE



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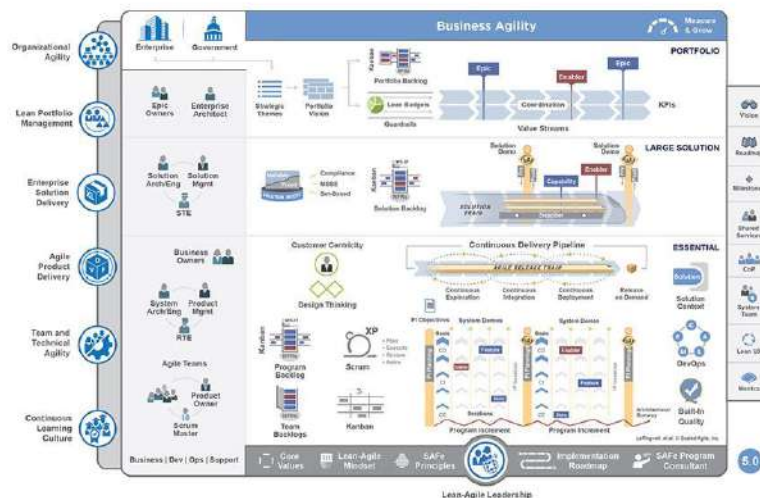
1.1 Connect the RTE role to SAFe

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Notes:

Serve the Lean Enterprise with the Scaled Agile Framework® (SAFe®)



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Notes:

Team and Technical Agility is the engine

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



Notes:

Agile Product Delivery provides the focus on Customer and Execution

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



Notes:

1.1 Connect the RTE role to SAFe

Enterprise Solution Delivery provides the tools to deliver really big solutions

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

Lean System and Solution Engineering



Coordinate Trains and Suppliers



Continually Evolve Live Systems



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Notes:

Lean Portfolio Management aligns execution to strategy

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



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Notes:

Organizational Agility provides the flexibility to change

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

Lean-thinking People and Agile Teams



Lean Business Operations



Strategy Agility



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Notes:

Continuous Learning Culture transforms the culture

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

Learning Organization



Innovation Culture



Relentless Improvement



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Notes:

Lean-Agile Leadership provides the foundation

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

Leading by Example



Mindset & Principles



Leading Change




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Notes:

1.1 Connect the RTE role to SAFe

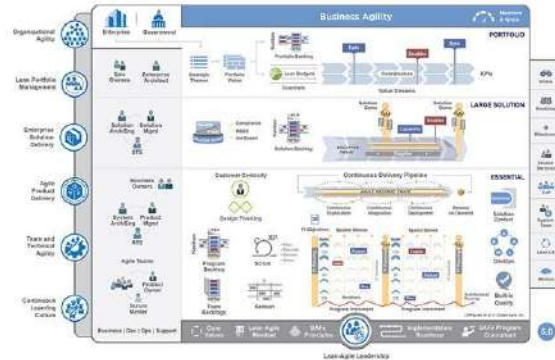


Activity: Identify RTE connections

Duration

7
min

- ▶ **Step 1:** As a table, use the Framework image in your workbook to draw connections from the RTE to other Framework elements, based on:
 - Communication
 - Collaboration
 - Problem-solving
 - Inputs/outputs
 - Other ideas you have
- ▶ **Step 2:** Be ready to present and discuss the identified connections

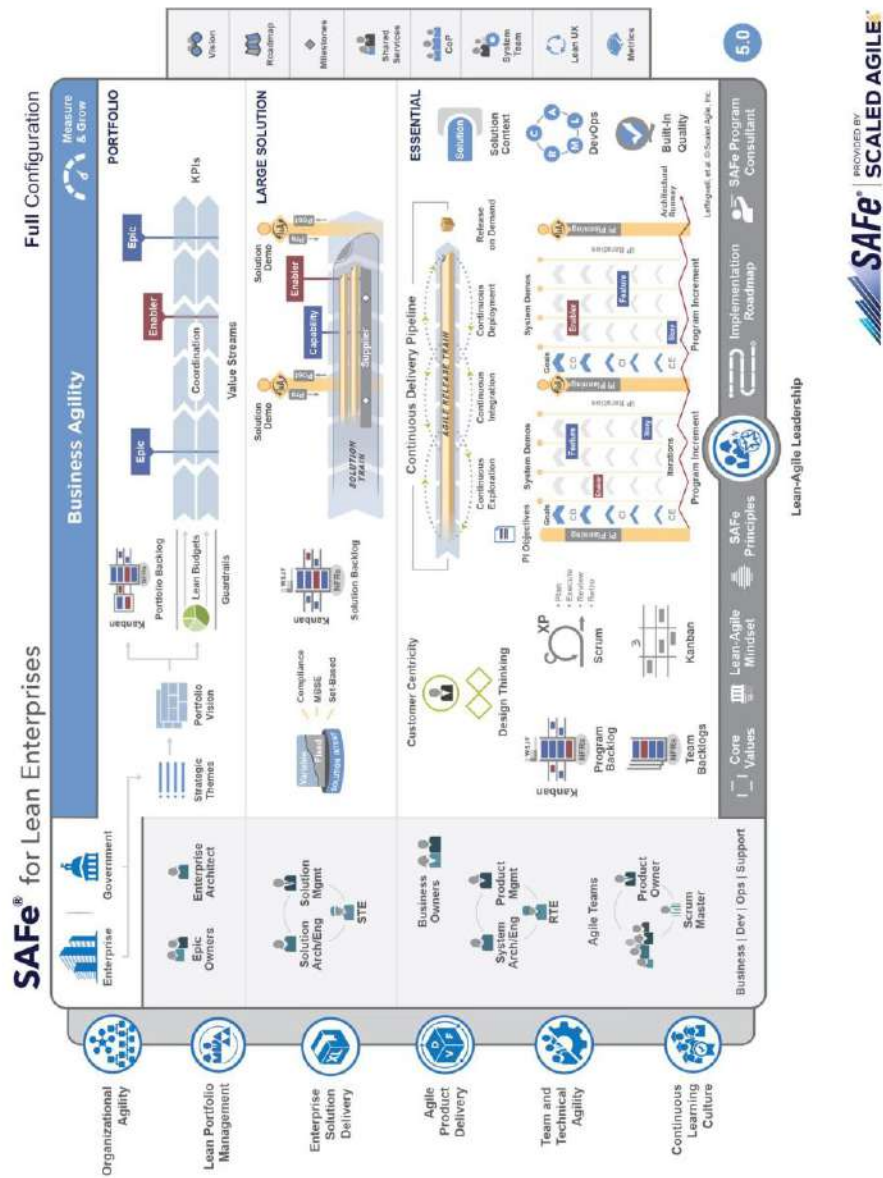


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Notes:

1.1 Connect the RTE role to SAFe




1.2 Examine the responsibilities of the RTE role

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Notes:

1.2 Examine the responsibilities of the RTE role



Activity: The RTE role and responsibilities

Prepare
9 min

Share
3 min

- ▶ **Step 1:** As a table, read the article in your workbook Release Train Engineer/Solution Train Engineer
- ▶ **Step 2:** Review and discuss the key responsibilities of the RTE role
- ▶ **Step 3:** List the key responsibilities you discussed in your workbook
- ▶ **Step 4:** Be ready to present your findings to the class

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Notes:

List the key responsibilities of the RTE role:



Release Train Engineer and Solution Train Engineer

Article from <http://v5.scaledagileframework.com/release-train-engineer-and-solution-train-engineer/>

"It is a misuse of our power to take responsibility for solving problems that belong to others." —Peter Block

The **Release Train Engineer (RTE)** is a servant leader and coach for the Agile Release Train (ART). The RTE's major responsibilities are to facilitate the ART events and processes and assist the teams in delivering value. RTEs communicate with stakeholders, escalate impediments, help manage risk, and drive relentless improvement.

The **Solution Train Engineer (STE)** plays an equivalent role in a Solution Train, facilitating and guiding the work of all ARTs and Suppliers in the Value Stream.

Although ARTs and Solution Trains are composed of self-organizing and self-managing teams, trains don't drive or steer themselves on autopilot. That responsibility falls to the RTE or STE, who operate most effectively as servant leaders. They have a solid grasp of how to scale Lean and Agile practices and understand the unique opportunities and challenges associated with facilitating and continuously aligning a large development program.

Details

The RTE and the STE facilitate ART and Solution Train processes and execution, respectively. They escalate impediments, manage risk, help ensure value delivery, and help drive relentless improvement. Many also participate in the Lean-Agile transformation, coaching leaders, teams, and Scrum Masters in the new processes and mindsets. They help configure SAFe to the organization's needs, standardizing and documenting practices.

Responsibilities

RTEs and STEs typically fulfill the following responsibilities:

- ▶ Manage and optimize the flow of value through the ART and Solution Train using various tools, such as the Program and Solution Kanbans and other information radiators
- ▶ Establish and communicate the annual calendars for Iterations and Program Increments (PIs)
- ▶ Facilitate PI Planning readiness by fostering a Continuous Exploration process which drives the synthesis of a Vision, a Roadmap, and Backlogs, and through Pre- and Post-PI Planning meetings
- ▶ Facilitate the PI planning event
- ▶ Summarize Team PI Objectives into Program PI Objectives (the RTE) and publish them for visibility and transparency
- ▶ Summarize program PI objectives into Solution PI Objectives (the STE) and publish them for visibility and transparency
- ▶ Assist tracking the execution of features and capabilities (see Metrics)
- ▶ Facilitate periodic synchronization meetings, including the ART sync at the Program Level and the value stream sync for Solution Trains
- ▶ Assist with economic decision-making by facilitating feature and capability estimation by teams and the roll-up to Epics, where necessary
- ▶ Coach leaders, teams, and Scrum Masters in Lean-Agile practices and mindsets
- ▶ Help manage risks and dependencies
- ▶ Escalate and track impediments
- ▶ Provide input on resourcing to address critical bottlenecks
- ▶ Encourage collaboration between teams and System and Solution Architects/Engineering
- ▶ Work with Product and Solution Management, Product Owners, and other stakeholders to help ensure strategy and execution alignment Improve the flow of value through value streams by improving and assessing the DevOps and Release on Demand competency
- ▶ Help drive the Lean User Experience (UX) innovation cycle Work with the Agile Program Management Office (APMO) on program execution and operational excellence (see Lean Portfolio Management)
- ▶ Understand and operate within Lean Budgets and ensure adherence to Guardrails
- ▶ Facilitate System Demos and Solution Demos
- ▶ Drive relentless improvement via Inspect and Adapt workshops; assess the agility level of the ART and Solution Train and help them improve
- ▶ Foster Communities of Practice and the use of engineering and Built-In Quality practices

Reporting Structure

SAFe doesn't prescribe a reporting structure, but the RTE and STE typically report to the development organization or an APMO, which, in SAFe, is considered a part of Lean Portfolio Management. For enterprises with existing PMO organizations, a program manager often plays this role.

RTEs and STEs are Servant Leaders

While new RTEs and STEs typically have the organizational skills to perform their roles, they may need to learn and adopt Lean-Agile Mindsets. They may need to transition from directing and managing activities to acting as a servant leader. Servant leadership is a philosophy that implies a comprehensive view of the quality of people, work, and community spirit.

The focus is on providing the support needed by the teams, ARTs, and Solution Trains to be self-organizing and self-managing. Characteristic servant leader actions include:

- ▶ Listen and support teams in problem identification and decision-making
- ▶ Create an environment of mutual influence
- ▶ Understand and empathize with others
- ▶ Encourage and support the personal development of each individual and the development of teams
- ▶ Coach people with powerful questions rather than use authority
- ▶ Think beyond day-to-day activities; apply systems thinking
- ▶ Support the teams' commitments
- ▶ Be open and appreciate openness in others

As Robert Greenleaf, the father of servant leadership, said, "Good leaders must first become good servants." Just as there are Lean-Agile transformational patterns for the LPM function, there are also transformational patterns for a traditional manager moving to a servant leader.

The 'from' and 'to' states are:

- ▶ From coordinating team activities and contributions to coaching the teams to collaborate
- ▶ From deadlines to objectives
- ▶ From driving toward specific outcomes to being invested in the program's overall performance
- ▶ From knowing the answer to asking the teams for the answer
- ▶ From directing to letting the teams self-organize and hit their stride
- ▶ From fixing problems to helping others fix them

Learn more:

- ▶ *Leffingwell, Dean. Agile Software Requirements: Lean Requirements Practices for Teams, Programs, and the Enterprise. Addison-Wesley, 2011.*
- ▶ *Trompenaars, Fons and Ed Voerman. Servant-Leadership Across Cultures: Harnessing the Strengths of the World's Most Powerful Management Philosophy. McGraw-Hill, 2009.*


The RTE acts as the servant leader for the ART

Responsibilities of the RTE include:

- ▶ Managing and optimizing the flow of value through the ART
- ▶ Fostering collaboration between teams and ART stakeholders
- ▶ Facilitating PI Planning readiness and the event itself
- ▶ Tracking and communicating key ART execution Metrics
- ▶ Escalating and tracking ART impediments
- ▶ Facilitating relentless improvement for the ART



Notes:



Activity: A typical PI for an RTE

Prepare
7 min

Share
3 min

- ▶ **Step 1:** As a table, use a flip chart and brainstorm the typical activities an RTE would be involved in during a PI. List a minimum of 10 things.
- ▶ **Step 2:** Estimate the percentage of time you would spend on each activity.
- ▶ **Step 3:** What conclusions can you make? Document these in your workbook.

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My conclusions:

1.3 Identify effective RTE behaviors

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Notes:

Candidates for the RTE role

- ▶ Scrum Masters
- ▶ Lean-Agile coaches
- ▶ Program and Project Managers



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Notes:

1.3 Identify effective RTE behaviors



Notes:


1.3 Identify effective RTE behaviors



Activity: Identify effective RTE behaviors

Duration
13 min

- ▶ Step 1: Working as a table, answer the following question:
 - What behaviors does an need RTE to exhibit to be effective in the role?
- ▶ Step 2: Capture your ideas in your workbook
- ▶ Step 3: Form a pair with someone at your table or another table. Using the notes in your workbook about the RTE:
 - Role
 - Responsibilities
 - Behaviors
- ▶ Step 4: Take turns teaching each other the most important things you have learned.

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Notes:

List behaviors a RTE need to exhibit to be effective in their role:

The RTE is a servant leader

- ▶ Guides people in problem identification and decision-making
- ▶ Creates an environment of mutual influence
- ▶ Empathizes with others
- ▶ Encourages the personal development of teams
- ▶ Persuades rather than uses authority
- ▶ Applies systems thinking
- ▶ Supports the commitments made by the teams



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Notes:


1.4 Outline the benefits of being an RTE

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Notes:

1.4 Outline the benefits of being an RTE



Activity: Identify the organizational benefits to having an RTE

Duration
7 min

- ▶ **Step 1:** Working as a table, answer the following question:
 - What are the benefits of being an RTE in the Lean Enterprise?
- ▶ **Step 2:** Capture your ideas in your workbook
- ▶ **Step 3:** Be ready to share with the room


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Notes:

What are the benefits from being an RTE?


1.4 Outline the benefits of being an RTE




RTE Action Plan

Duration
5 min

- ▶ **Step 1:** Locate the RTE Action Plan section in your workbooks
- ▶ **Step 2:** Begin adding tools to the Action Plan by brainstorming the following:
 - What is your current role? How does the RTE role connect to your role within your organization?
 - What do you imagine the RTE doing during the PI? Map out what a PI would look like for you as an RTE.
- ▶ **Step 3:** Share one of your insights with the class



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Notes:

Lesson review

In this lesson you:

- ▶ Applied the RTE role within SAFe
- ▶ Explored the role and responsibilities of the RTE
- ▶ Identified effective RTE behaviors
- ▶ Explored RTE benefits

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Notes:

Lesson 1 notes



Click below to type your thoughts.

Lesson 2

Applying SAFe Principles

Learning Objectives:

2.1 Identify SAFe Principles that are important to the RTE



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2.1 Identify SAFe Principles that are important to the RTE

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Notes:

Why SAFe Principles?

SAFe's practices are grounded on 10 fundamental principles that have evolved from Agile principles and methods, Lean product development, systems thinking, and observation of successful Enterprises.

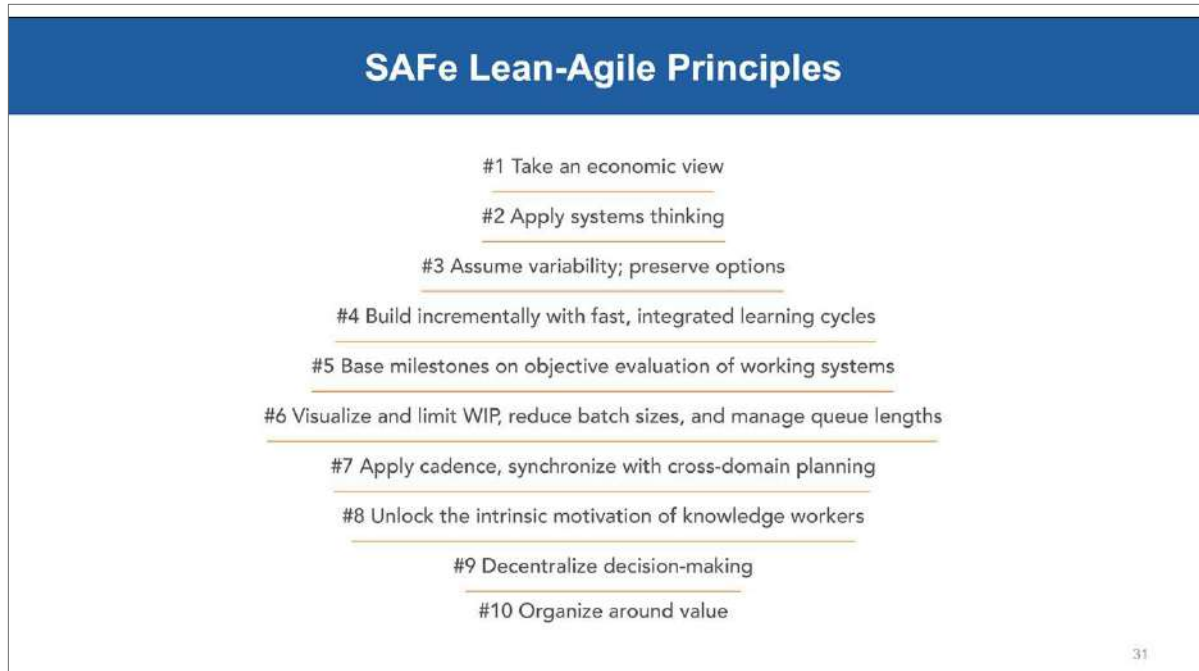
- ▶ RTEs must understand why the practices work; it's part of 'knowing what it is they must do'
- ▶ If a practice needs to change, understanding the principles will assure the change moves the ART in the right direction
- ▶ Shared understanding of the principles will help decentralize the decision-making by the teams and roles on the ART

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Notes:



Notes:

2.1 Identify SAFe Principles that are important to the RTE





Activity: Building an RTE and SAFe Principles poster

Prepare
15 min

Share
15 min


- ▶ Each group will build a poster
- ▶ The poster will include one SAFe Principle
- ▶ Every principle poster includes:
 - The principle (e.g., “Apply systems thinking”)
 - A storyline (with at least one picture) that exemplifies the principle applied by the RTE at the ART
 - A clear statement about the principle, how it is applied, and how it connects to the RTE
- ▶ The poster should fit on a single flip chart



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Notes:

 Thought organizer

2.1 Identify SAFe Principles that are important to the RTE

Without a shared understanding of principles...

- ▶ There is no systematic way to adapt practices to local context
- ▶ Business outcomes do not significantly improve
- ▶ Practices and measures that were once beneficial become problematic
- ▶ Lean-Agile Mindset is unachievable
- ▶ Conflict and disagreement on processes and practices are difficult to resolve



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Notes:

The RTE and applying SAFe Principles

Applying all 10 SAFe Principles in the ART is a key responsibility of the RTE.

- ▶ Reconnect to the principles when discussing existing practices or potential improvements for the ART
- ▶ Build a shared understanding with stakeholders and the ART on why the principles-based practices work
- ▶ Periodically ask the train to self-assess on how well the principles are applied



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Notes:

2.1 Identify SAFe Principles that are important to the RTE



RTE Action Plan

Duration
5 min

- ▶ **Step 1:** Locate the RTE Action Plan section in your workbooks
- ▶ **Step 2:** Begin adding tools to the Action Plan by brainstorming the following:
 - Why is it important to align on the principles?
 - How will you apply to the principles to your role of RTE in your organization?
- ▶ **Step 3:** Share one of your insights with the class



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Notes:

Lesson review

In this lesson you:

- ▶ Identified SAFe Principles that are important to the RTE

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Notes:

Lesson 2 notes



Click below to type your thoughts.

2.1 Identify SAFe Principles that are important to the RTE

Lesson 3

Organizing the ART

Learning Objectives:

- 3.1 Identify the attributes of an effective ART organization
- 3.2 Examine key ART roles and responsibilities
- 3.3 Identify the responsibilities of the System Team



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3.1 Identify the attributes of an effective ART organization

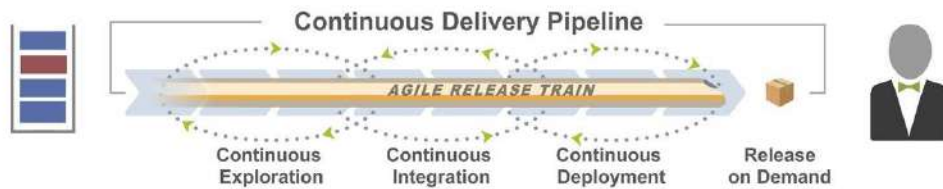
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Notes:

Agile Release Trains (ARTs) continuously deliver value

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




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Notes:

3.1 Identify the attributes of an effective ART organization



Activity: Dunbar's number

Duration
4 min

- ▶ **Step 1:** As a table, draw a big circle on a flip chart and add three dots along the edges. Draw all possible connections between the dots and write down the total number of lines used so far.
- ▶ **Step 2:** Continue adding dots along the edges and connect all the dots drawing lines between them, noting the number of possible connections at each step in a list.
- ▶ **Step 3:** Add as many dots and connections as possible during the timebox.

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Notes:

What conclusions can you make about group size and communication?

3.1 Identify the attributes of an effective ART organization

Group collaboration and group size

Effective group collaboration is limited by neurobiological factors.

There is a cognitive limit to the number of individuals with whom any one person can maintain stable relationships, that this limit is a direct function of relative neocortex size, and that this in turn limits group size.

— Robin Dunbar



Source: Wikipedia

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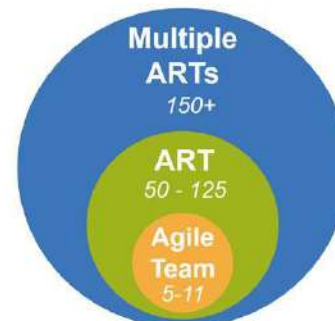
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Notes:

The Dunbar Numbers

The Dunbar Numbers are the neurobiological constraints for which we optimize the size of teams on the train and the size of the ART.

- ▶ 5 – 11 people is average small troop size through military history
- ▶ 125 – 150 is the limit for village sizes historically. At this size, villages have split into two villages.
- ▶ In SAFe we organize around these numbers to optimize for effective communication and stable social relationships. This creates strong collaboration.



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Notes:

3.1 Identify the attributes of an effective ART organization

Organizing teams around value

Maximize velocity by minimizing dependencies and handoffs, while sustaining architectural robustness and system qualities.

A team can be organized around:

- Features
- Components

It is far less desirable to organize around:

Software Example	Business Example
Architectural layer (Platform, middleware, UI, DB, business logic, etc.)	Service intake vs fulfillment vs customer interaction
Other (Programming language, spoken language, technology, location)	Business function
	Sub-process

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Notes:



Activity: Your ART team organization

Prepare



Share



- ▶ **Step 1:** Work in pairs to answer the following questions in your workbook:
 - How are the teams on your ARTs organized today? Is it around Features or Components?
 - From both the perspective of architectural robustness and a value delivery perspective, what is positive and negative about the current way your teams are organized?
- ▶ **Step 2:** Be prepared to share with the class.

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Notes:

How are your teams organized today?

Positives:

Negatives:

3.1 Identify the attributes of an effective ART organization

Moving to Continuous Deployment and Release on Demand



A common scenario is migrating from component teams to feature teams as the ART matures and even shorter lead times are needed to deploy and release.

- ▶ Create Enablers to architect for deploying and releasing more frequently
- ▶ Carefully rotate team members between different component teams to spread knowledge
- ▶ Cross-train and pair-program to mitigate bottlenecks and create T-shaped skills on the train

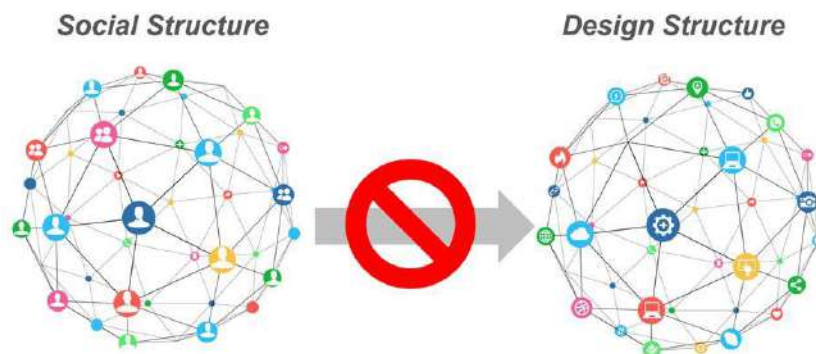
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Notes:

Don't implement Conway's Law when organizing your ARTs

Organizations that design systems are constrained to produce designs that are copies of the communication structures of these organizations.



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Notes:

3.2 Examine key ART roles and responsibilities

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Notes:

Roles on the Agile Release Train

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



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



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



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



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



Business Owners are key stakeholders on the Agile Release Train.

AGILE RELEASE TRAIN

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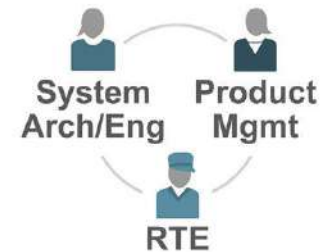
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Notes:

Key ART roles


Overall ART leadership is collaboratively handled by the three key ART roles, each focusing on one area.

- ▶ **Program Execution:** The RTE facilitates optimizing the flow of value through the ART.
- ▶ **Content Management:** Product Management is the internal voice of the customer on the ART.
- ▶ **Technology:** The System Architect/Engineer defines the overall architecture for the system.



Notes:

3.2 Examine key ART roles and responsibilities



Activity: Key ART collaboration

Duration
7 min

- ▶ **Step 1:** In your groups, read the definitions of the three key ART roles that you find in the workbook.
- ▶ **Step 2:** Together, write the answers to these questions on flip charts:
 - How can an RTE facilitate connections between these three principal roles on the train?
 - What possible anti-patterns can arise in this group?
 - How can an RTE mitigate these anti-patterns?

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Notes:

3.2 Examine key ART roles and responsibilities

See next page for the definitions of the three key ART roles >>>

How can an RTE facilitate collaboration between these three principal roles on the train?

What possible anti-patterns can arise in this group?

How can an RTE mitigate these anti-patterns?

Definitions of the three key ART roles

Release Train Engineer

The Release train Engineer acts as the 'Chief Scrum Master' for the ART. The RTE serves as a leader to facilitate Lean-Agile value delivery at the program level.

Primary responsibilities of the RTE include:

- Managing and optimizing the flow of value through the ART
 - Fostering collaboration between teams and system-level stakeholders
 - Facilitating PI Planning readiness and the event itself
 - Tracking and communicating key ART execution metrics
 - Escalating and tracking of ART impediments
 - Facilitate relentless improvement for the ART
-

Product Manager

The Product Manager owns the Program Backlog. This is important, as assumptions about requirements need to be validated. Teams must quickly feed emerging knowledge back into the Solution.

Primary responsibilities of the Product Manager include:

- Understanding the Customer needs; and validate Solutions
 - Working with System Architect/Engineering to understand the value of Enablers
 - Developing and communicating ART Vision and Roadmap
 - Managing and prioritizing the flow of work to the ART
 - Preparing for and participating in PI Planning
 - Participating in demos and Inspect and Adapt
 - Building an effective Product Manager / Product Owner team
-


System Architect

The System Architect has technical content authority. They align the teams to a common technical direction toward accomplishment of the mission, Vision, and Roadmap.

Primary responsibilities of the System Architect include:

- Working with teams on the ART to define subsystems and their interfaces
- Establishing critical NFRs at the solution level; participate in the definition of others
- Defining, exploring, and supporting the implementation of Enablers
- Planning and developing the Architectural Runway
- Working with PM to determine capacity allocation
- Supervising and fostering Built-in Quality


3.2 Examine key ART roles and responsibilities



Activity: Key ART collaboration teach back

Duration
8 min

- ▶ **Step 1:** Form a pair with someone from your group
- ▶ **Step 2:** Use the notes that you made in your workbook during the previous activity. Take turns (four minutes per person) to teach each other what you have learned about the collaboration between the key ART roles. Be sure to cover the answers to the last two questions!

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Notes:


Business Owners

Primary responsibilities of Business Owners:

- ▶ Ensure that business objectives are comprehended and agreed to by key stakeholders of the train
- ▶ Play a primary role in PI Planning activities and assign business value to objectives
- ▶ Watch for external commitments and dependencies
- ▶ Attend the System and/or Solution Demo to view progress and provide feedback
- ▶ Help drive investment in the Continuous Delivery Pipeline
- ▶ Help align a DevOps culture of shared responsibilities



Notes:



Activity: Where are the Business Owners?

Duration
5 min

In your four groups, discuss and write the answers to the following two questions in your workbook:

- ▶ In your current context, who are the Business Owner(s) for the ART?
- ▶ If you are not working as part of an ART, who in your organization could potentially fulfill the role, and why would they be the right person(s)?

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Notes:

3.2 Examine key ART roles and responsibilities

In your current context, who are the Business Owner(s) for the ART?

If you are not working as part of an ART, who in your organization could potentially fulfill the role and why would they be the right person(s)?

Identifying Business Owners

The Business Owners can be identified by answering the following questions:

- ▶ Who can steer this train in the right direction, participate in planning and execution, and help eliminate impediments?
- ▶ Who can speak on behalf of development, the business, and the Customer?
- ▶ Who can approve and defend a set of PI plans, knowing that they will never satisfy everyone?



It cannot be emphasized enough:

Active participation of Business Owners is a critical success factor for the train!

Notes:

3.3 Identify the responsibilities of the System Team

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Notes:

System Team

The teams on the ART are collectively responsible for delivering larger system and solution value. To support this work a System Team is often formed. The System team:

- ▶ Creates and maintains infrastructure, including Continuous Integration, automated builds, and automated build verification testing
- ▶ Performs end-to-end system integration and Solution performance testing
- ▶ Assists in staging System and Solution Demos
- ▶ Supports DevOps and Continuous Delivery Pipeline activities, including Release on Demand




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Notes:

3.3 Identify the responsibilities of the System Team



Activity: The System Team

Prepare
5 min

Share
4 min

Individually, write the answers to the following questions in your workbook:

- ▶ What could possibly happen if you don't have a dedicated System Team on the train?
- ▶ In your context, do you have a dedicated System Team? If not, who performs the System Team tasks today?
- ▶ When can the System Team turn into a bottleneck or impediment?
- ▶ What is the role of the RTE with the System Team?

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Notes:

3.3 Identify the responsibilities of the System Team

What could possibly happen if you don't have a dedicated System Team on the train?

In your context, do you have a dedicated system team? If not who performs the system team tasks today?

When can the system team turn into a bottleneck/impediment?

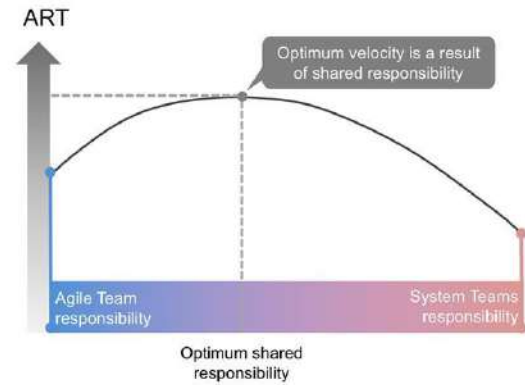
What is the role of the RTE with the System Team?

3.3 Identify the responsibilities of the System Team

Balancing Solution integration and testing effort


The System Team can never be the entire Solution to the integration challenge. Maximizing ART velocity requires a sense of balance between Agile Teams and the System Team.

- ▶ Shared NFR testing across teams and System Team
- ▶ Shared understanding of infrastructure and tooling across the teams on the train
- ▶ Overall, avoid turning the System Team into a bottleneck



Notes:


3.3 Identify the responsibilities of the System Team



RTE Action Plan

Duration
5 min

- ▶ **Step 1:** Locate the RTE Action Plan section in your workbooks
- ▶ **Step 2:** Begin adding tools to the Action Plan by brainstorming the following:
 - How will you bridge connections between the three roles on the train?
 - How will you support the Agile teams on the train and mitigate challenges?
 - Identify your System team and their responsibilities
- ▶ **Step 3:** Share one of your insights with the class



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Notes:

Lesson Review

In this lesson you:

- ▶ Identified the attributes of effective Agile teams
- ▶ Examined the key ART roles and responsibilities
- ▶ Identified the responsibilities of the System Team

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Notes:

Lesson 3 notes



Click below to type your thoughts.

3.3 Identify the responsibilities of the System Team

Lesson 4

Planning a Program Increment

Learning Objectives:

- 4.1 Identify preparation activities for the PI Planning event
- 4.2 Facilitate Day 1 activities for the PI Planning event
- 4.3 Facilitate final PI plan development and commitment
- 4.4 Explore facilitation of PI Planning across multiple locations



SAFe® Course Attending this course gives students access to the SAFe® Release Train Engineer exam and related preparation materials.

4.1 Identify preparation activities for the PI Planning event

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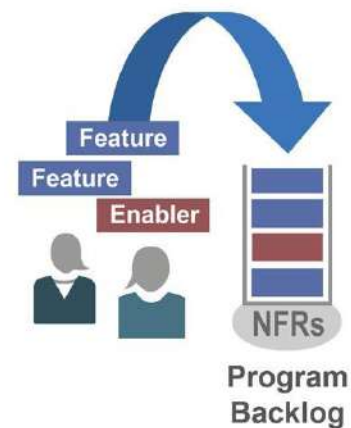
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Notes:

Preparing the Program Backlog for PI Planning

The weeks prior to PI planning is a very busy time. Product Management does the final program backlog preparation together with System Architects and ART stakeholders.

- ▶ As an RTE, you will be more active in coaching a new ART when preparing the backlog
- ▶ Over time, the Product Management and the System Architect should be able to handle most of this preparation work
- ▶ The RTE will be one of the backlog stakeholders, often focused on infrastructure Enablers and improvement items.

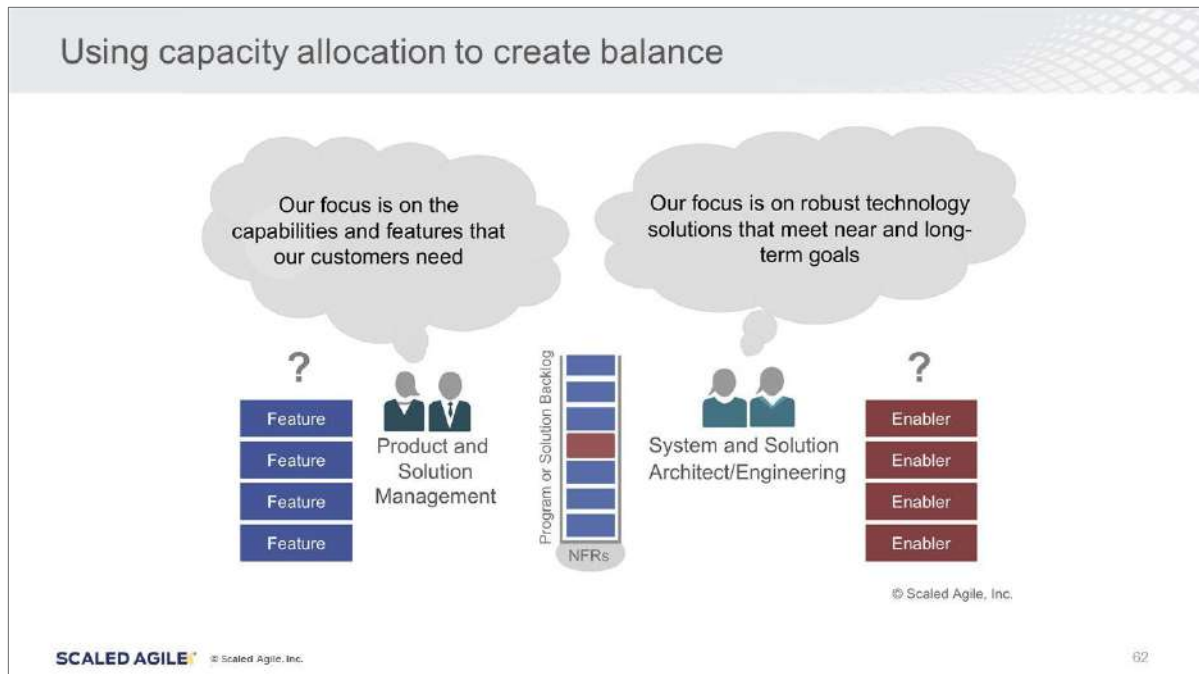


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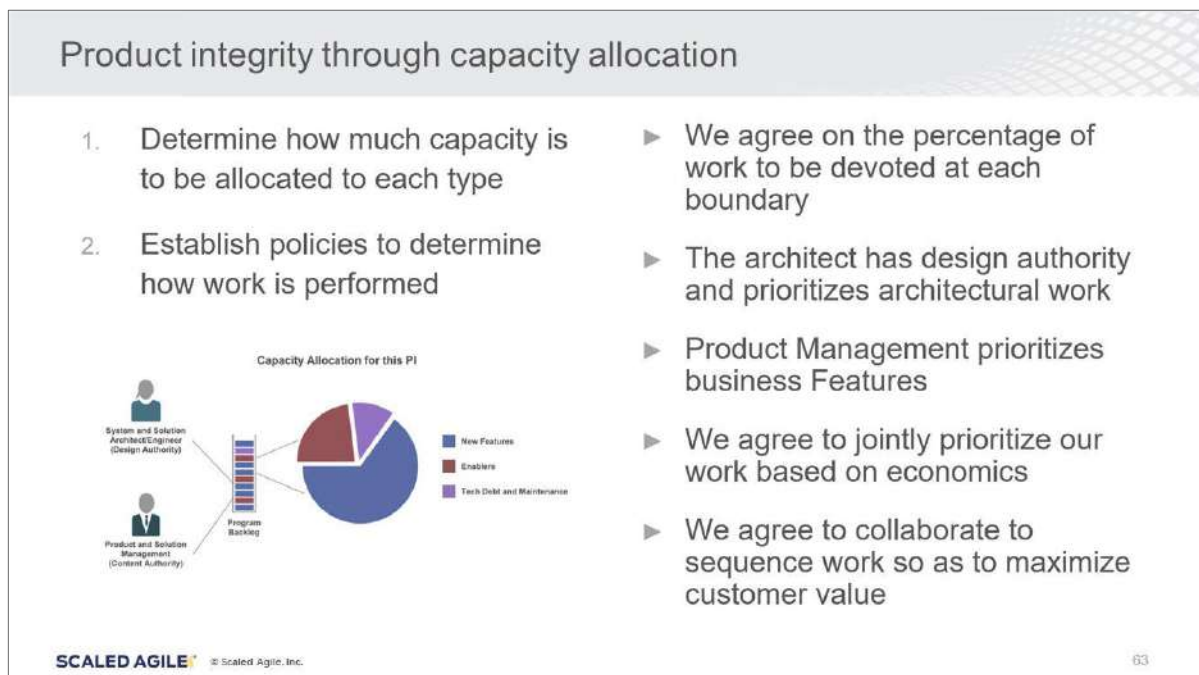
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Notes:

4.1 Identify preparation activities for the PI Planning event




Notes:



Notes:

4.1 Identify preparation activities for the PI Planning event



Discussion: What can capacity allocation be used for?

Prepare
5 min

Share
4 min

- ▶ Other than allocating dedicated capacity for Enablers, what other work types can leverage capacity allocation, either when preparing for PI Planning or during PI Planning?

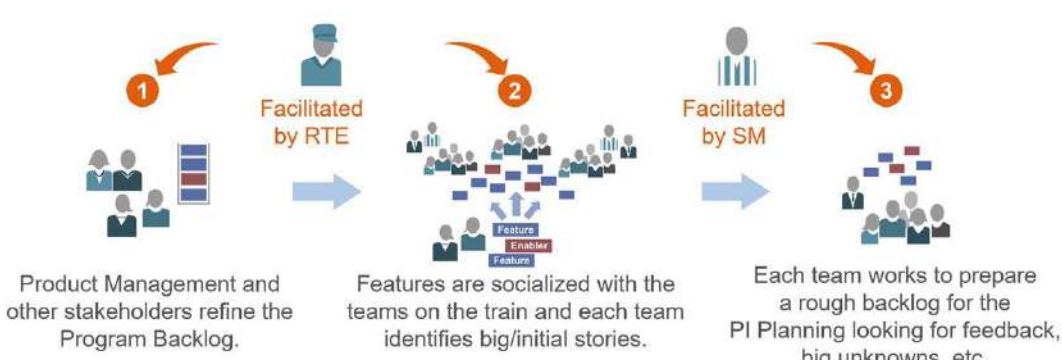
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Notes:

Socializing Features and Enablers

Making sure that the Features and Enablers are socialized with the teams solves a lot of problems later, during PI Planning.




- 1 Product Management and other stakeholders refine the Program Backlog. Facilitated by RTE
- 2 Features are socialized with the teams on the train and each team identifies big/initial stories. Facilitated by SM
- 3 Each team works to prepare a rough backlog for the PI Planning looking for feedback, big unknowns, etc. Facilitated by SM

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Notes:

4.1 Identify preparation activities for the PI Planning event



Activity: How much preparation is enough?

Prepare
7 min

Share
1 min

- **Step 1:** At your table, explore the positives and negatives of doing more preparation and doing less preparation before the PI Planning event.
- **Step 2:** Fill out the diagram in your workbook. List the positives and negatives of each alternative in the quadrants.
- **Step 3:** Be ready to present the findings with a pop-up activity.

Positive

	More pre-planning	
	Less pre-planning	

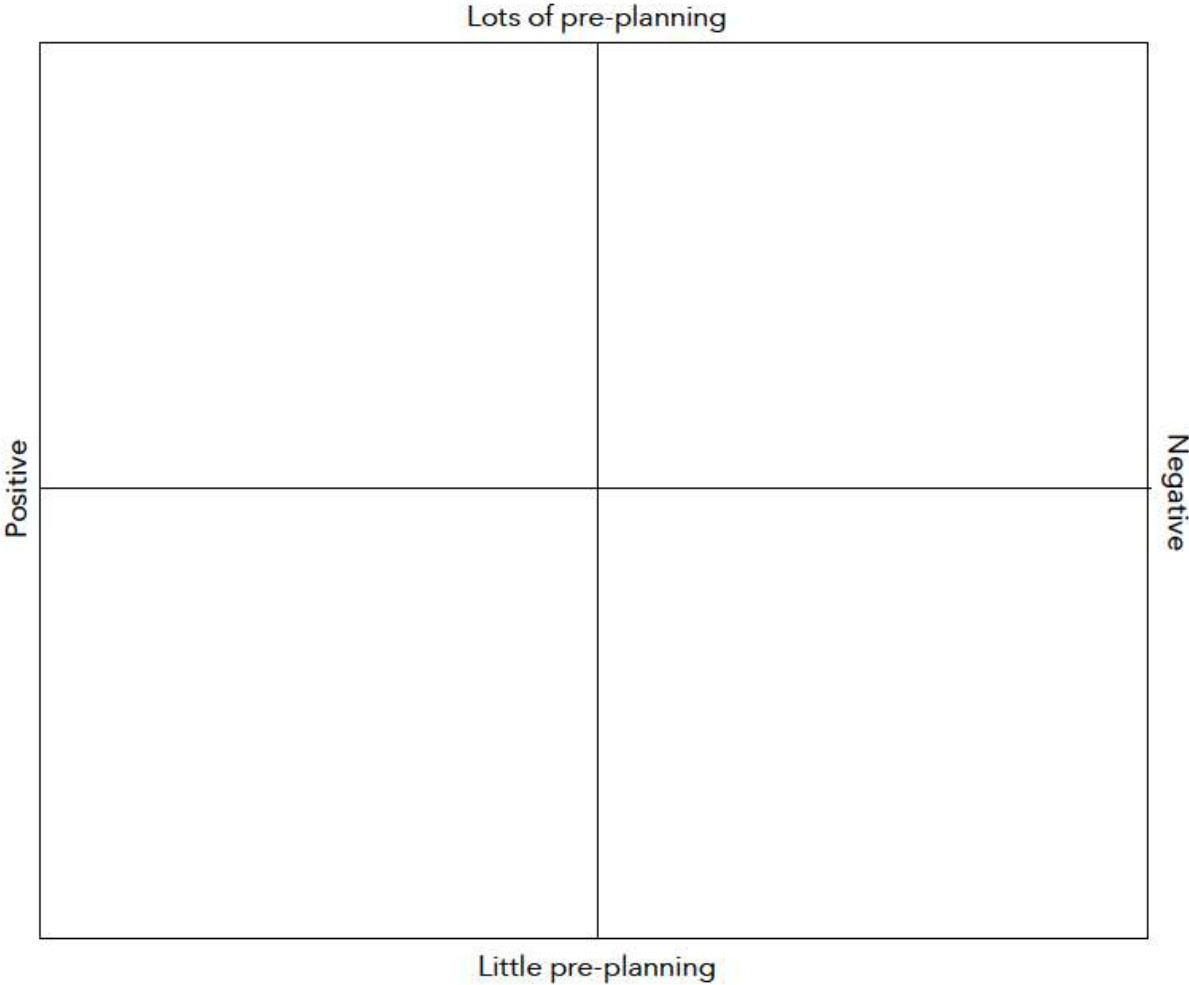
Negative

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Notes:

4.1 Identify preparation activities for the PI Planning event

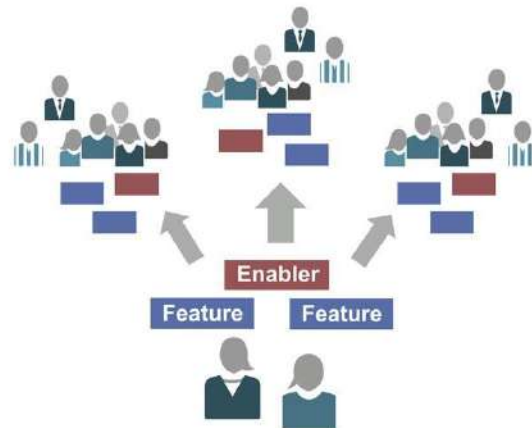


4.1 Identify preparation activities for the PI Planning event

How much preparation is enough?

Both too much and too little preparation can cause problems. The RTE needs to help the teams and stakeholders find a good trade-off.

- ▶ You might need to do more planning if you create entirely new architecture or functionality.
- ▶ However, too much can cause PI Planning to have too little exploration, interaction, and emergent designs/solutions happening.
- ▶ Have **enough** preparations so you will get the maximum amount of interaction in the event itself. That is ideal!



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Notes:

PI Planning content readiness – Day 1 presentations

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

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Notes:

4.1 Identify preparation activities for the PI Planning event

The Program Increment Planning Toolkit

Certified RTEs have access to the latest Program Increment Planning Toolkit, a set of ART tools and artifacts. This includes useful tools and checklists to help you prepare for PI Planning, including:

- ▶ Preparing Day 1 Briefings
- ▶ Facilities checklist
- ▶ PI Planning meeting template
- ▶ ART Events Calendar
- ▶ SoS radiator
- ▶ And more!



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Notes:

Assess and evolve PI Planning readiness

The SAFeART Readiness Workbook in the PI Planning Toolkit will guide you through PI Planning preparation.

1. Readiness checklist (14 preparation questions)
2. Team summary
3. Team roster
4. ART roster
5. Content
6. Facilities
7. Supplies



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Notes:

4.1 Identify preparation activities for the PI Planning event

15 preparation questions for ART readiness

	Area	Question	Y/N/D
1	Planning scope and context	Is the scope (product, system, technology domains) of the planning process understood? Have we identified our Value Stream(s) and ARTs?	
2	Release Train Engineer	Have we identified the Release Train Engineer? Does he/she understand the scope of the role in preparing the organization and preparing for the PI Planning meeting?	
3	Planning time frame, iteration, and PI cadence	Have we identified the PI Planning dates, the iteration cadence, and the PI cadence?	
4	Agile Teams	Does each Feature/Component team have an identified SM and PO?	
5	Team makeup/ commitment	Are there dedicated team members on every team?	
6	Agile team attendance	Are all team members present in person or are arrangements made to involve them remotely?	
7	Executive, Business Owner participation	Do we know who will set the business context and present the product/solution vision?	
8	Business alignment	Is there reasonable agreement on priorities among the Business Owners and Product Management?	

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Notes:

15 preparation questions for ART readiness


	Area	Question	Y/N/D
9	Vision and program backlog	Is there a clear vision of what we are building, at least over the next few PIs? Have we identified the top 10 or so features that are the subject of the first PI?	
10	System team	Has the System Team been identified and formed?	
11	Shared Services	Have the Shared Services (User Experience, Architecture, etc.) been identified?	
12	Other attendees	Do we know what other key stakeholders (IT, infrastructure, etc.) should attend?	
13	Agile project management tooling	Do we know how and where Iterations, PIs, Features, Stories, status, etc., will be maintained?	
14	Development infrastructure	Do we understand the impact on and/or plans for environments (for example, continuous integration and build environments)?	
15	Quality practices	Is there a strategy for unit testing and test automation? Are there any other practice guidelines?	

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Notes:

4.1 Identify preparation activities for the PI Planning event




Activity: Good enough preparation

Prepare



5 min

Share



4 min

- ▶ **Step 1:** Using your workbook, determine which items on the ART Readiness checklist must be in place from an RTE perspective in order to launch your ART
- ▶ **Step 2:** Add any other items you may feel are relevant
- ▶ **Step 3:** Be prepared to discuss your choices

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Notes:

ART Readiness				
No.	Item	Description	Y/N	Notes, Risks, Mitigations, etc.
1.1	Planning scope and context	Is the scope (product, system, technology domains) of the planning process understood? Have we identified our Value Stream(s) and Agile Release Train(s)?		
1.2	Release Train Engineer	Have we identified the Release Train Engineer? Does he/she understand the scope of the role in preparing the organization and preparing for the PI Planning meeting?		
1.3	Planning timeframe, iteration and PI cadence	Have we identified the PI Planning dates, the iteration cadence, and the PI cadence?		
1.4	Agile Teams (SMs, POs)	Does each feature/component team have an identified Scrum Master and Product Owner?		
1.5	Team makeup/commitment	Are there dedicated team members on every team?		
1.6	System Team	Has the System Team been identified and formed?		
1.7	Shared Services	Have the Shared Services (User Experience, Architecture, etc.) been identified?		
1.8	Other attendees	Do we know what other key stakeholders (IT, infrastructure etc) should attend?		
1.9	Agile Team attendance	Are all team members present in person or are arrangements made to involve them remotely?		
1.10	Executive, Business Owner participation	Do we know who will set the business context and present the Product/Solution vision?		
1.11	Business alignment	Is there reasonable agreement on priorities amongst the Business Owners and Product Management?		
1.12	Agile project management tooling	Do we know how and where Iterations, PIs, Features, Stories, status, etc., will be maintained?		
1.13	Development infrastructure	Do we understand the impact on and/or plans for environments (for example, continuous integration and build environments)?		
1.14	Quality practices	Is there a strategy for unit testing and test automation? Any other practice guidelines?		
1.15	Program Backlog	Will the top Features be ready for PI Planning?		


4.2 Facilitate Day 1 activities for the PI Planning event

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Notes:

4.2 Facilitate Day 1 activities for the PI Planning event



Activity: RTE and PI Planning schedule, flow, and the RTE role

Prepare
15 min

Share
5 min

- **Step 1:** With your group, build a two-day PI Planning schedule on two flip chart sheets. Use the two PI Planning agendas found in your workbook as a guide.
- **Step 2:** Mark each item with:
 - Who performs the activity?
 - What are the RTE responsibilities during the activity?
 - Who can assist the RTE during this activity if needed?



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Notes:

4.2 Facilitate Day 1 activities for the PI Planning event



Presented by RTE

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



Presented by RTE

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

The RTE in the PI Planning event

The RTE is the key role, the heartbeat and facilitator of PI Planning.

- ▶ The RTE is often very busy and needed during all parts of PI Planning
- ▶ Be sure to use the whole room during the event, move around, and be visible and available if you are needed by someone
- ▶ Be careful not to become a bottleneck. Make sure to get Product Management, the System Architect, as well as Product Owners and Scrum Masters, to help you.



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Notes:

Presentations at the start of Day 1

The day starts with the content presentations, creating a shared understanding of the business context and the boundaries inside which the teams are planning the PI.

- ▶ Double- and triple-check that the audio/video equipment works. Microphones will be needed in most cases.
- ▶ Have one slideshow deck and one computer for presentations. Avoid having to switch to keep it flowing smoothly.
- ▶ Have room for a short Q&A after each presentation but manage the timebox and break out any discussions into meet-afters if needed.



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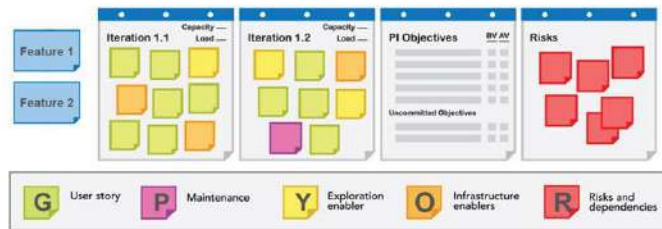
Notes:

4.2 Facilitate Day 1 activities for the PI Planning event

Team breakout #1

The teams create a draft PI plan for all Iterations, write draft PI objectives, and identify program risks and impediments.

- ▶ Visual radiators for planning create transparency and collaboration in the room
- ▶ Make sure all planning boards use the same layout and colors
- ▶ Ask Scrum Masters to assist in preparing and setting up each team area



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Notes:

Team planning radiators in detail

Iterations



- ▶ If a story has a dependency, put a red sticky note on it describing the dependency. Put a check mark through it once the dependency has been addressed.
- ▶ If a risk is broader in nature, put it on the risk sheet
- ▶ If needed, allocate a percentage of capacity for unplanned activities, such as maintenance and production support

IP Iteration



- ▶ The last Iteration will be used for Innovation and Planning (IP)
- ▶ You should have a capacity but not a load on the IP Iteration, since it should not contain any user value stories

Objectives



- ▶ PI Objectives should be written so that they are understandable by someone outside the team
- ▶ Uncommitted objectives are in the team plan and fits in the capacity, but the team is unsure if they can deliver

Risks



- ▶ Program risks are those that are outside of the team's control and need to be escalated. They will be captured and "ROAMed" after the final plan review.
- ▶ Team risks are those under the team's control. They won't be presented and are handled by the team themselves.

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Notes:

4.2 Facilitate Day 1 activities for the PI Planning event

Team breakout: Hourly scrum of scrums checkpoints

The scrum of scrums checkpoints help keep teams on track and facilitate early identification of risks.



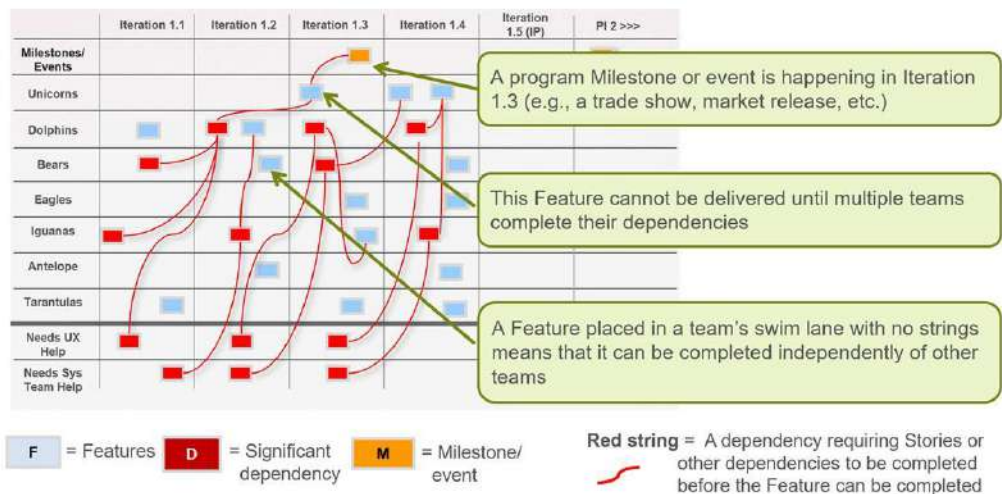
Day 1	
1:00 pm	Getting started
2:00 pm	Iteration Planning progress
3:00 pm	Team Objectives progress
3:45 pm	Draft plan readiness
Day 2	
10:30 am	Progress check-in
11:30 am	Final plan readiness

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Notes:

Program board: Feature delivery, dependencies, and Milestones




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Notes:

4.2 Facilitate Day 1 activities for the PI Planning event



Activity: Reading the program board in PI Planning

Prepare
10 min

Share
5 min

- **Step 1:** With your group, look at the three different program board examples in your workbook
- **Step 2:** Write down answers to the following questions for each scenario in your workbook:
 - What problems do you see?
 - How would you, the RTE, act if you could see these on the program board at the end of Day 1 in PI Planning?
 - What could be a potential solution for the specific problems?

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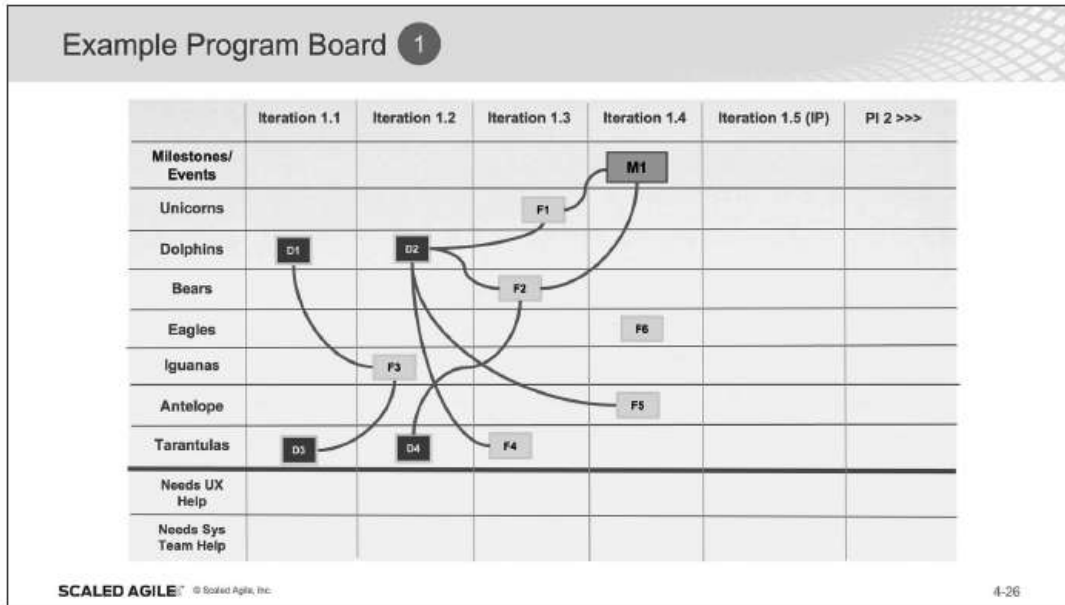
Notes:

The three different Program Board examples, along with space for your answers, are on the following three pages >>>



Thought organizer

4.2 Facilitate Day 1 activities for the PI Planning event

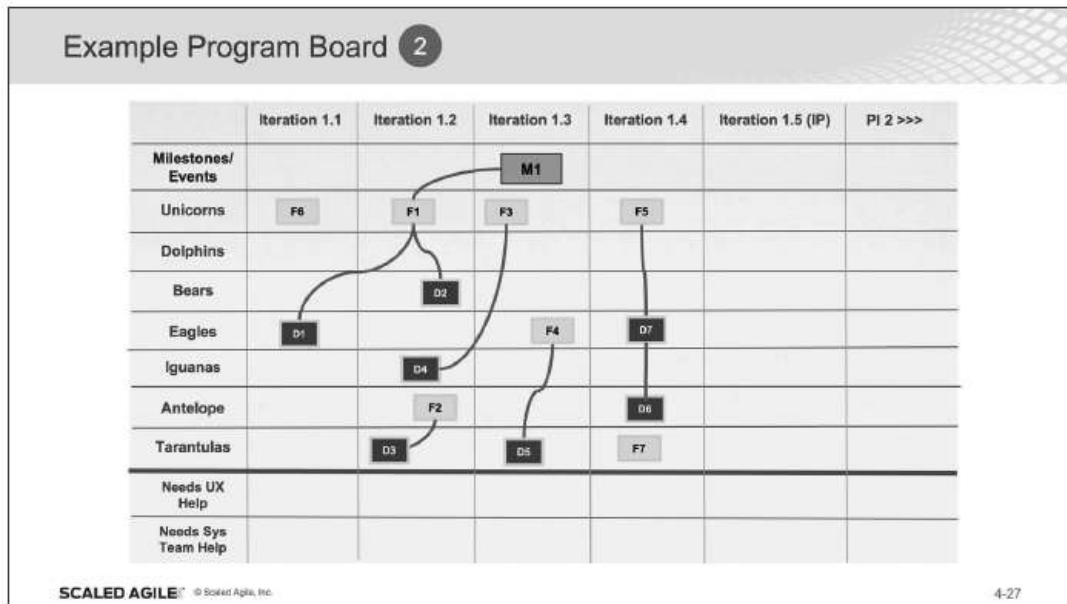


What problems can you see?

How would you as an RTE act if you could see these on the program board at the end of day 1 in the PI Planning?

What could be the potential solution for the specific problems?

4.2 Facilitate Day 1 activities for the PI Planning event

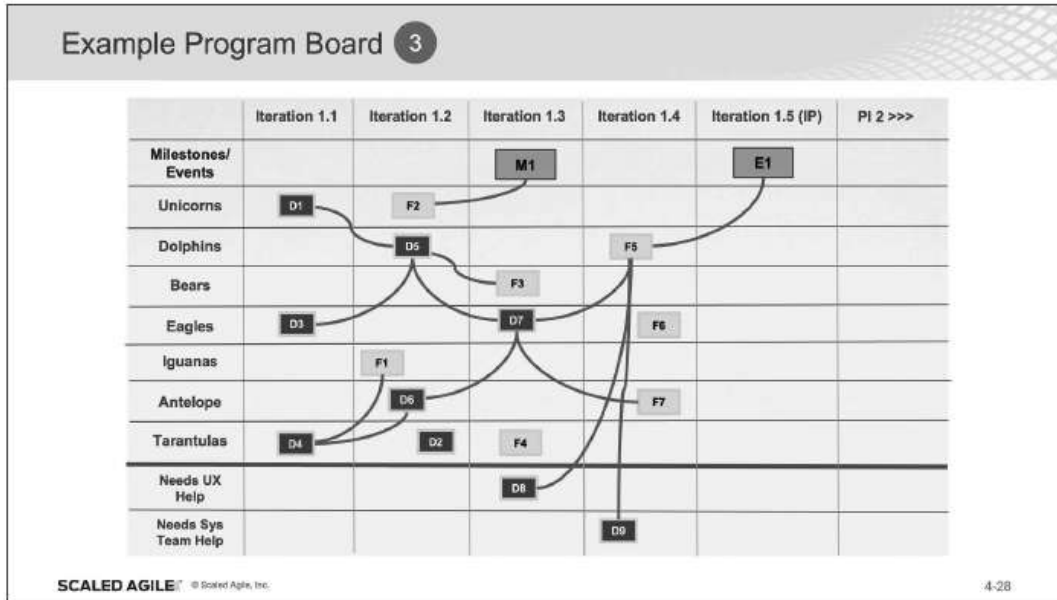


What problems can you see?

How would you as an RTE act if you could see these on the program board at the end of day 1 in the PI Planning?

What could be the potential solution for the specific problems?

4.2 Facilitate Day 1 activities for the PI Planning event



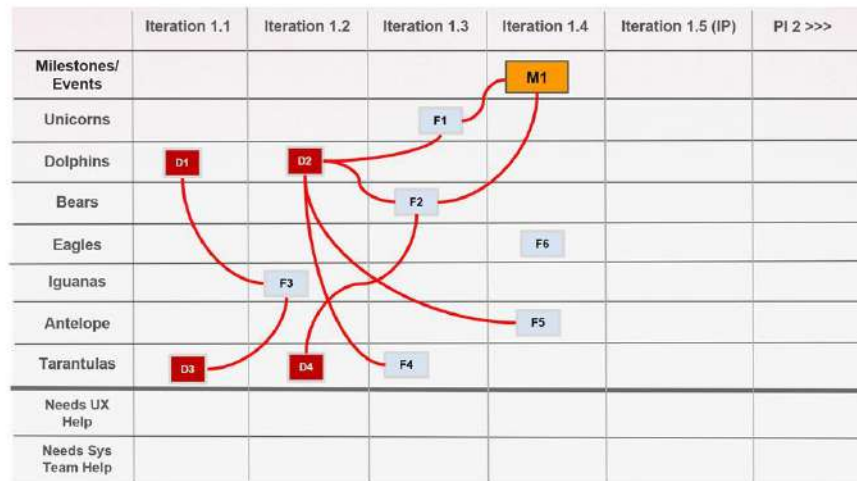
What problems can you see?

How would you as an RTE act if you could see these on the program board at the end of day 1 in the PI Planning?

What could be the potential solution for the specific problems?

4.2 Facilitate Day 1 activities for the PI Planning event

Example program board #1

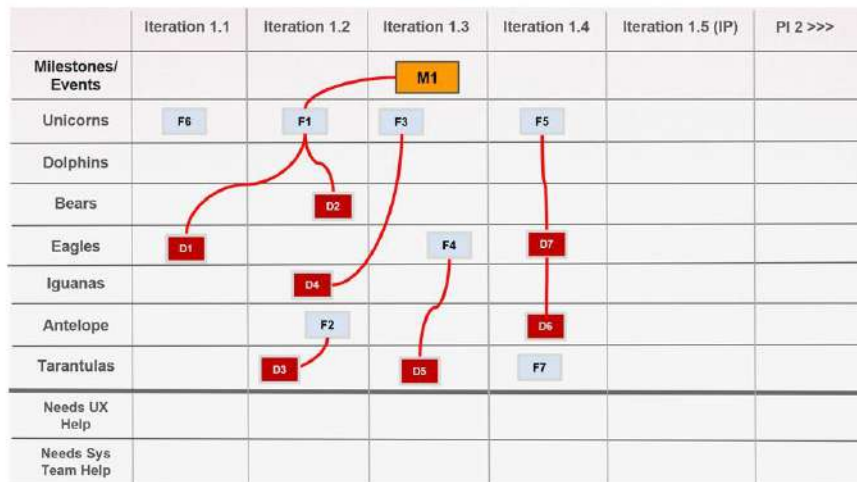


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Notes:

Example program board #2



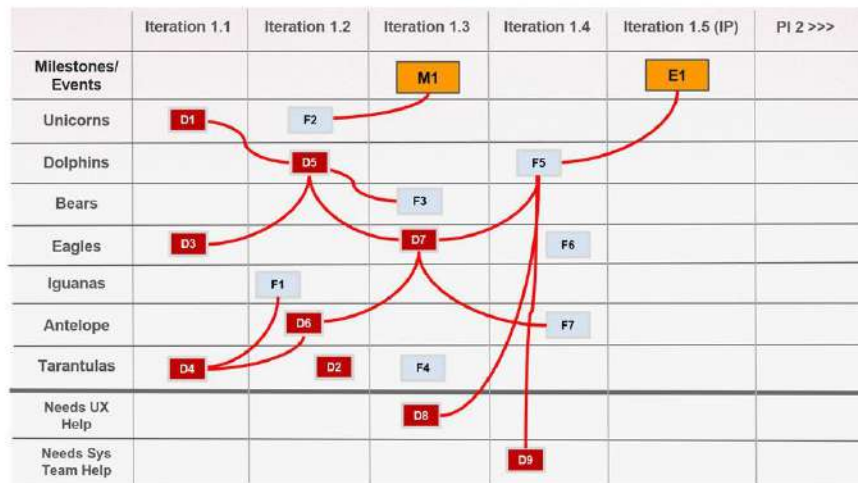
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Notes:

4.2 Facilitate Day 1 activities for the PI Planning event

Example Program Board #3



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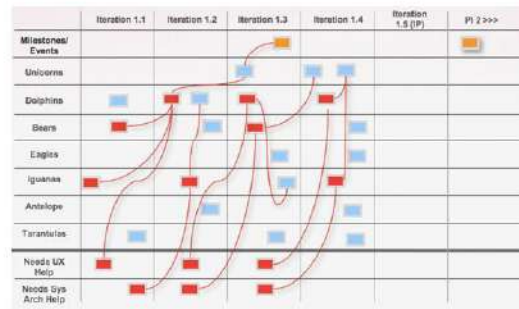
85

Notes:

Using the program board

The program board is a critical artifact during and after PI Planning, as it visually shows the sequence of inter-team dependencies that lead to Feature delivery.

- ▶ The most important thing is to visualize where Features are planned to be delivered on the timeline
- ▶ Each red sticky note is an agreed-upon and planned action that will resolve an inter-team dependency that supports feature delivery



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Notes:

Writing draft PI and Uncommitted objectives

Day 1 draft objectives create transparency in PI Planning and help engage the Business Owners and stakeholders in the planning process.

- ▶ Get early/initial versions that are presented at the end of Day 1
- ▶ If the team objectives cannot fit on one sheet, there are probably too many of them, or they are too granular
- ▶ Remind everyone to move team objectives to stretch if it is planned, but the team confidence is not 100%

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

Notes:

Draft plan review

At the end of Day 1, the RTE facilitates the session where each team presents their draft plan to everyone present.

- ▶ The main purpose is to get everyone in the room thinking about dependencies, problems, and opportunities for tomorrow
- ▶ Make sure everyone follows the agenda when presenting and make the agenda visible to everyone!
- ▶ Ask the team to stand up and visually point to or show their planning radiators to everyone when presenting

Draft plan review agenda:

1. Current capacity and load for each iteration
2. Draft PI Objectives
3. Identified program risks and impediments

Notes:

4.2 Facilitate Day 1 activities for the PI Planning event

Management review and problem-solving

At the end of Day 1 in PI Planning, the management review and problem-solving meeting takes place.

- ▶ Attendees are key ART roles and ART stakeholders
- ▶ The input to the session are the ART and PI:
 - Risks
 - Problems
 - Opportunities and challenges
- ▶ The outputs are the planning adjustments that will be communicated to the teams at the start of the following day




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Notes:




Activity: Management problem-solving meeting

Prepare
10 min

Share
5 min

- ▶ With your group, on a flip chart create a suggestion for how, as an RTE, you would facilitate the management problem-solving meeting.
- ▶ Be sure to include:
 - How to select attendees
 - How to find and select the inputs
 - A story that tells *how* you would facilitate the session with at least one picture
 - How to create the outputs



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Notes:

Facilitating the management review and problem-solving meeting

The RTE is the facilitator of the management review and problem-solving meeting and is responsible for making sure that the session produces an output.

- ▶ The RTE needs to have a clear idea on *how* to facilitate the meeting, so it is effective
- ▶ Work with the key ART roles, teams, and stakeholders during the entire Day 1 to identify potential inputs for the meeting
- ▶ Invite selected team members that can help clarify problems and find solutions
- ▶ Make sure to document inputs and outputs from the meeting
- ▶ Over time, evolve how you facilitate the meeting



Notes:

4.3 Facilitate final PI plan development and commitment

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Notes:

Planning adjustments

At the beginning of Day 2, the outcome of the previous evening's management review is communicated to the teams.

- ▶ Ensure that the changes are actionable for the teams on the train
- ▶ Relevant stakeholders should present the changes to the teams, not the RTE
- ▶ Host a short Question & Answer after each presented topic or outcome
- ▶ The RTE should manage the timebox



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Notes:

4.3 Facilitate final PI plan development and commitment

Team breakout #2

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

- ▶ Focus on getting all Feature deliveries and dependencies visualized on the program board
- ▶ Assist the teams and Scrum Masters in getting all deliveries and dependencies visualized on the program board
- ▶ Help the teams to write readable, understandable, and S.M.A.R.T PI Objectives
- ▶ Be available for facilitating discussions that might happen when assigning business value to objectives



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Notes:

PI Objectives should be S.M.A.R.T.

During the second team breakout, assist the teams in writing their PI Objectives using the **S.M.A.R.T.** format.

S	Specific	State the intended outcome as simply, concisely, and explicitly as possible. (<i>Hint: Try starting with an action verb.</i>)
M	Measurable	It should be clear what a team needs to do to achieve the objective. The measures may be descriptive, yes/no, quantitative, or provide a range.
A	Achievable	Achieving the objective should be within the team's control and influence.
R	Realistic	Recognize factors that cannot be controlled. (<i>Hint: Avoid making assumptions.</i>)
T	Time-bound	The time period for achievement must be within the PI. Therefore, all objectives must be scoped appropriately.

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Notes:

Assigning business value to PI Objectives

- ▶ As the PI Objectives are finalized, each objective is assigned business value by the ART Business Owners on a scale of 1 – 10.
- ▶ Walking the room, in face-to-face conversation, the ART Business Owners assign business value to each of the teams' individual PI Objectives
- ▶ Business value is intended to communicate the potential business impact of achieving an objective, helping the teams on the train prioritize work
- ▶ At times, especially during the first PIs, the RTE might need to be available in the room to facilitate this conversation

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

Notes:



Activity: Conflicting views of value

Prepare

6 min

Share

1 min

- ▶ **Step 1:** Consider the following story:
 - Your ART is at the breakout session on Day 2 of PI Planning. Business Owners have assigned a value of “2” to the PI Objective: “Reduce GPS signal loss by 25%” They have requested that the team move the objective to uncommitted. The team believes this function provides a critical architectural enablement to the entire program in this PI. The team is clearly disappointed and concerned that an important technical item is ranked so low. “We just don’t see much business value in it now,” said the vice president of product.
- ▶ **Step 2:** At your table, discuss what your steps should be for solving this problem.

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

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Notes:

Final plan review

The RTE facilitates the session where everyone in the room participates in peer-reviewing the final plans for all teams, and the Business Owners accept the plan.

- ▶ Make sure everyone follows the agenda when presenting. Make it visible in the room.
- ▶ Validate that presented risks and impediments are outside of the teams' control before accepting them as program risks.
- ▶ Manage the timebox for the Q&A.
- ▶ After each review, the RTE asks the Business Owners in the room if they accept the plan.

Final plan review agenda:

1. Changes to capacity and load for each iteration
2. Final PI Objectives with Business Values
3. Program risks and impediments
4. Q&A

Notes:

ROAMing risks

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

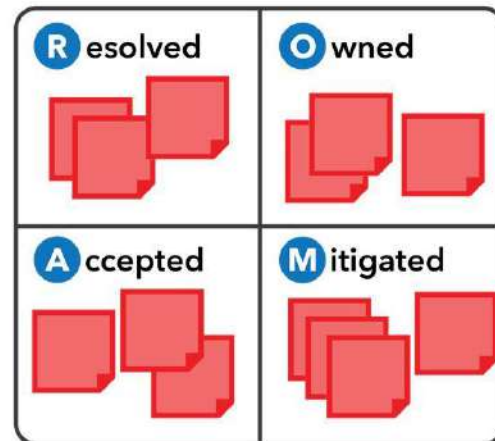
ROAMing risks:

Resolved – Has been addressed; no longer a concern

Owned – Someone has taken responsibility


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

Mitigated – Team has a plan to adjust as necessary



Notes:

4.3 Facilitate final PI plan development and commitment



Activity: ROAM and program risks

Prepare
7 min

Share
3 min

- ▶ **Step 1:** In pairs, read through the six risks provided in the workbook
- ▶ **Step 2:** Develop a clear plan for how you, the RTE, would facilitate ROAMing the risks. Try to address as many as you can in the 7-minute timebox.
- ▶ **Step 3:** Document the approach for each risk in your workbook. Indicate what ROAM you would suggest and why. Focus on *how* you would facilitate finding the solution in the room during PI Planning, not *what* the solution would be.
- ▶ **Step 4:** Be prepared to share with the class

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Notes:

4.3 Facilitate final PI plan development and commitment

PI Planning - Program Risk

Team member X is a bottleneck. He is only one who can handle critical parts of the implementation for an important feature that is scheduled for delivery in iteration.

What is your strategy for handling this risk?
What ROAM would you suggest? Why?

PI Planning - Program Risk

In iteration 3, an important supplier might be delayed with their crucial delivery. They have been late before, and this time it might impact several teams.

What is your strategy for handling this risk?
What ROAM would you suggest? Why?

PI Planning - Program Risk

No ART system team is available yet. The integration infrastructure is in bad shape and could put integration/system demo at risk.

What is your strategy for handling this risk?
What ROAM would you suggest? Why?

4.3 Facilitate final PI plan development and commitment

PI Planning - Program Risk

Two teams have a shared Product Owner. This might have a negative impact on the team iteration planning and demos.

What is your strategy for handling this risk?
What ROAM would you suggest? Why?

PI Planning - Program Risk

The QA team is pointing out the application performance might be at risk during iteration 3 when there will be an influx of new users. We are unsure how this might impact us, but it could be very risky.

What is your strategy for handling this risk?
What ROAM would you suggest? Why?

PI Planning - Program Risk

There is a holiday mid-PI holiday. Many people will be on vacation.

What is your strategy for handling this risk?
What ROAM would you suggest? Why?

PI Planning program risks

Team member X is a bottleneck. They are the only one who can handle critical parts of the implementation for an important Feature that is scheduled for delivery in the Iteration.

No ART System Team is available yet. The integration infrastructure is in bad shape and could put the integration and/or system demo at risk.

Two teams have a shared Product Owner. This might have a negative impact on the team Iteration Planning and demos.

The QA team is pointing out the application performance might be at risk during Iteration 3 when there will be an influx of new users. We are unsure how this might impact us.

In Iteration 3, an important supplier might be delayed with their crucial delivery. They have been late before, and this time it might impact several teams.

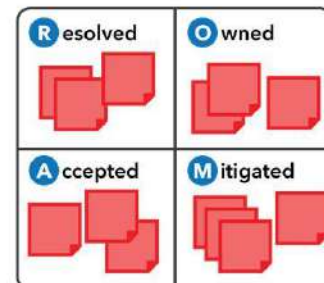
There is a holiday mid-PI and many people will be on vacation.

Notes:

The risk ROAMing session

The risk ROAM session can be challenging if you are new to the train as the RTE.

- ▶ Make sure to continuously look at risks as they appear in the planning session, so you can have a plan for how to ROAM them
- ▶ Ask the Scrum Masters to be proactive and come to you if their teams find big risks when planning
- ▶ Be the facilitator when doing the ROAMing, avoid trying to find the solution yourself, and ask the room for help
- ▶ The Product Management and System Architect should be a very active part of the ROAMing process



Notes:

Confidence Vote: Team and Program

After dependencies are resolved and risks are addressed, a confidence vote is taken by each team on their own plan, as well as an overall vote on the combined program plan.

Ask a clearly defined question out loud to each team:

- ▶ *"How confident are you in the plan created by your team?"*

When all teams have completed the confidence vote, ask the entire room:

- ▶ *"Given what you know now, how confident are you that we as a team of teams can deliver on this plan together?"*



No confidence



Little confidence



Good confidence




High confidence



Very high confidence

Notes:



Activity: Confidence not high? Plan rework.

Prepare
7 min

Share
3 min

If necessary, teams may need to rework their plans until a high confidence level can be reached. This is one occasion where alignment and commitment are valued more highly than adhering to a timebox.

In pairs, discuss a plan rework scenario. Answer the following questions:

- ▶ How would you facilitate this?
- ▶ What agreements would you put in place?
- ▶ Be prepared to share your facilitation plan with the class.

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Notes:

4.3 Facilitate final PI plan development and commitment

How would you facilitate a plan rework?

What agreements would you put in place?

PI Planning retrospective

PI Planning will evolve over time. Ending it with a quick and focused retrospective will help it continuously improve.


- ▶ By this time, everyone in the room is exhausted and wants to go home. Make it as focused and quick as possible.
- ▶ Keep the focus on collecting opinions, ideas, and data; you can sort and prioritize later.
- ▶ Make sure to change how you run the retrospective over time to keep it fun and energizing.



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Notes:



Activity: Running the PI Planning retrospective

Prepare
7 min

Share
7 min

- ▶ **Step 1:** In your group, create one or two suggestions for how you, the RTE, would facilitate the PI Planning retrospective.
- ▶ **Step 2:** Write the suggestions in your workbook
- ▶ **Step 3:** After seven minutes, choose a person at your table who will go to another group and present your ideas

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Notes:

4.3 Facilitate final PI plan development and commitment

How would you facilitate a PI Planning retrospective?

Ideas from other tables on facilitating a PI Planning retrospective:

4.3 Facilitate final PI plan development and commitment

After the PI Planning event

Following the PI Planning event the RTE needs to take care of a number of key outputs and artifacts. The rest should be managed by the teams and Scrum Masters. Articulate the next steps. (e.g., *Iteration planning is on Monday*)

- ▶ If appropriate, make sure the work is tracked in Agile project management tooling
- ▶ Move the Program Board to a dedicated location
- ▶ Capture the decisions that were made during the Risk ROAMing
- ▶ Set up meetings for recurring ART events.
- ▶ Create a set of Integrated Program PI Objectives



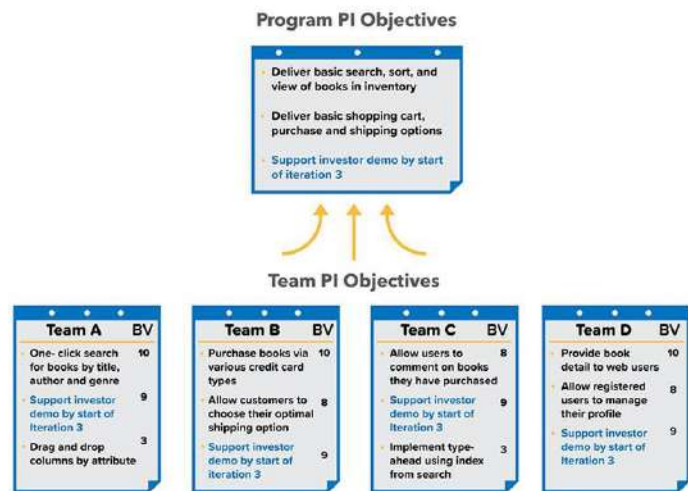
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Notes:

RTE takeaway: Integrated PI Objectives

Program PI Objectives are the synthesis of each team's PI Objectives.



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Notes:

4.4 Explore facilitation of PI Planning across multiple locations

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Notes:



Activity: Facilitating a distributed PI Planning

Prepare
15 min

Share
5 min

- ▶ **Step 1:** In your group, on a flip chart create an agenda for a distributed PI Planning event with large time zone differences
- ▶ **Step 2:** On individual sticky notes, list ideas for what you, the RTE, would do differently to effectively prepare and facilitate this PI Planning event
- ▶ **Step 3:** Be prepared to present to the room

Tip: If you get stuck, look at the example agenda included in your workbook for inspiration.

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Notes:

4.4 Explore facilitation of PI Planning across multiple locations

Distributed Teams - agenda day 1

Time Zone 1	Time Zone 2	Subject	Description & Presenter
08:00 – 8:30 am	08:30 – 09:00 pm	Opening	<ul style="list-style-type: none"> Introduction, agenda, objectives, and working agreements (Facilitator) Planning Context and Deliverables (Facilitator) ART and PI Planning context as needed (Facilitator) Review of release cadence -iterations and PIs (Facilitator)
08:30 – 09:00 am	09:00 – 09:30 pm	Business Context	<ul style="list-style-type: none"> State of the business (Executive) Upcoming objectives (Executive)
09:00 – 10:30 am	09:30 – 11:00 pm	Product/Solution Vision	<ul style="list-style-type: none"> Vision of solution, products/services, and prioritized features (Product Management) Vision of solution features or components (Individual Solution Owners)
10:30 – 10:45 am	11:00 – 11:15 pm	Break	
10:45 – 11:15 am	11:15 – 11:45 pm	Architecture Vision	<ul style="list-style-type: none"> Vision for architecture, new architecture epics, common frameworks, and program-level NFRs (Technology Office, System Architect)
11:15 – 11:45 am	11:45 – 12:15 am	Development Practices	<ul style="list-style-type: none"> Updates on project setup, agile tooling, improvements in engineering practices, etc. (Development Management)
11:45 – 12:15 pm	12:15 – 12:45 am	Planning Requirements	<ul style="list-style-type: none"> Specific planning process, draft plan acceptance criteria, etc. (Facilitator)
12:15 – 01:00 pm		Meal Break	
01:00 – 04:00 pm		Team Breakouts (1 of 2) Hourly Scrum of Scrums Checkpoint	<ul style="list-style-type: none"> Features broken into stories (each team) PI plan and objectives drafted (each team) Risks and impediments identified (each team) Hourly Scrum of Scrums checkpoint to discuss planning status, program impediments, and dependencies (Scrum Masters) Program Feature Board continuously updated (Scrum Masters) Architects and Product Managers circulate

Distributed Teams - agenda day 2

Time Zone 1	Time Zone 2	Subject	Description & Presenter
	05:30 – 08:30 pm	Team Breakouts (1 of 2) Hourly Scrum of Scrums Checkpoint	<ul style="list-style-type: none"> Features broken into stories (each team) PI plan and objectives drafted (each team) Risks and impediments identified (each team) Hourly Scrum of Scrums checkpoint to discuss planning status, program impediments, and dependencies (Scrum Masters) Program Feature Board continuously updated (Scrum Masters) Architects and Product Managers circulate
08:00 – 09:00 am	08:30 – 09:30 pm	Team Synchronization	<ul style="list-style-type: none"> Distributed teams collaborate with Product Management and Solution Owners to synchronize
09:00 – 10:00 am	09:30 – 10:30 pm	Draft Plan Review	<ul style="list-style-type: none"> Velocity and Load Overview of plan flow Draft PI objectives Program risks, impediments, and Program Board dependencies
10:00 – 10:15 am	10:30 – 10:45 pm	Break	
10:15 – 11:15 am	10:45 – 11:45 pm	Managers Review and Problem Solving	<ul style="list-style-type: none"> Discussion of scope, challenges to plan, risks, and impediments (Line Management, Product Management, Architects, and Team Representatives) Conducted with all teams in attendance Adjustments of scope and resources as necessary (same as above)
11:15 – 11:45 am	11:45 – 12:15 am	Planning Adjustments	<ul style="list-style-type: none"> Management review and problem solving meeting readout – adjustments to plan, scope, resources, etc. (Managers)
11:30 – 12:30 pm	12:15 am – finish	Meal	
12:30 – 03:00 pm		Team Breakouts (2 of 2) Hourly Scrum of Scrums Checkpoint	<ul style="list-style-type: none"> PI plan and objectives finalized Risks and impediments finalized Hourly Scrum of Scrums checkpoint to discuss planning status, program impediments, and dependencies (Scrum Masters) Program Feature Board continuously updated (Scrum Masters) Architects and Product Managers circulate Business Owners review objectives and assign business value

Distributed planning meetings

Distributed planning meetings require significantly more preparation and facilitation.

- ▶ Have a dedicated RTE-proxy and tech support person at each location.
- ▶ Test audio, video, and presentation-sharing connectivity. Then test it again!
- ▶ Have a common understanding of how plans will be shared (video, wiki, emailing PPT, etc.).
- ▶ Establish team-based audio/video communication for breakout sessions.



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Notes:

Tips for large time zone differences

- ▶ For large time zone differences, hold the PI event over 2.5 or even 3 days, allowing for overlapping hours
- ▶ Respect people and culture: avoid asking teams to stay up all night
- ▶ Avoid asking teams to commit to their PI Objectives in a sleep-deprived state

*A template is included in
your Program Increment
Planning Toolkit*




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Notes:


4.4 Explore facilitation of PI Planning across multiple locations



Action Plan: RTE Action Plan

Duration
5 min

- ▶ **Step 1:** Locate the RTE Action Plan section in your workbooks
- ▶ **Step 2:** Begin adding tools to the Action Plan by brainstorming the following:
 - Reflect on the PI planning and facilitation process from the perspective of the RTE and how you will run a successful PI Planning event.
- ▶ **Step 3:** Share one of your insights with the class



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Notes:

Lesson review

In this lesson you:

- ▶ Identified preparation activities for a PI Planning event
- ▶ Facilitated Day 1 activities for the PI Planning event
- ▶ Facilitated final PI plan development and commitment
- ▶ Explored facilitation of PI Planning across multiple locations

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Notes:

Lesson 4 notes



Click below to type your thoughts.

Lesson 5

Executing a Program Increment

Learning Objectives:

- 5.1 Identify key team Iteration events
- 5.2 Examine the events and tools needed to manage ART flow
- 5.3 Explore Metrics used to measure PI execution
- 5.4 Prepare and facilitate IP Iteration activities
- 5.5 Examine DevOps culture to achieve Release on Demand



SAFe® Course Attending this course gives students access to the SAFe® Release Train Engineer exam and related preparation materials.

5.1 Identify key team Iteration events

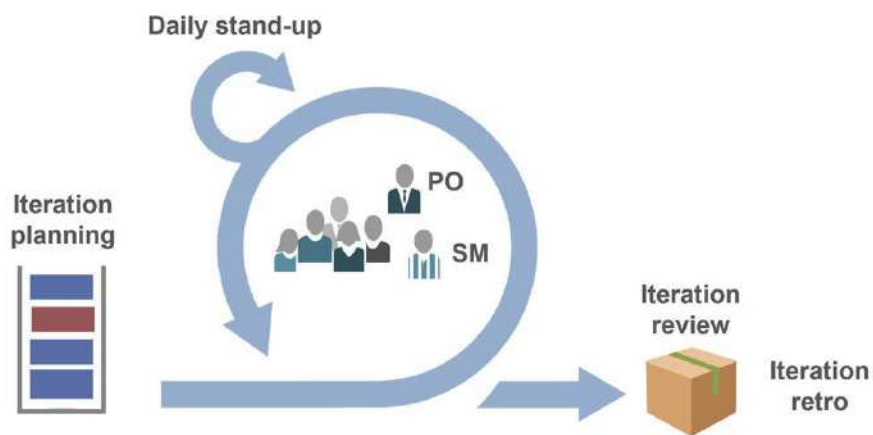
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Notes:

Agile Team Iteration execution

Agile Teams plan, integrate, demo, deploy, release, and learn together




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Notes:

5.1 Identify key team Iteration events



Activity: The RTE and Iteration execution

Prepare
10 min

Share
7 min

- **Step 1:** At your table, discuss the team Iteration cycle from an RTE perspective. Use the article in your workbook from the Scaled Agile Framework site as reference. (v5.scaledagileframework.com)
- **Step 2:** Using the team Iteration cycle image in your workbook on the prior page, write the most important inputs and outputs for each team event and explain why they are important from an RTE perspective.
- **Step 3:** Be prepared to share with the class.

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Notes:

Iterations

Article from the Scaled Agile Framework

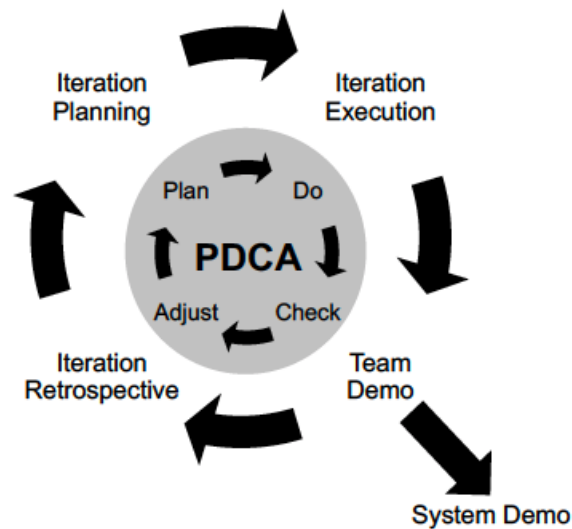
None of my inventions came by accident. I see a worthwhile need to be met and I make trial after trial until it comes.

—Thomas Edison

Abstract

The Iteration is the basic building block of Agile development. Each iteration is a fixed timebox wherein the teams build an incremental element of business or product functionality. SAFe's two-week iterations provide the basic development cadence for Agile Teams building Features and components. During this short period, the team executes the Stories in their iteration backlog, integrates the output with that of the other teams, and prepares and participates in a System Demo. Each iteration is followed by another, providing the basic tempo of continuous value development and delivery.

The iteration cadence is the first cadence in SAFe, but SAFe also provides a nested harmonic of short iterations grouped into a longer Program Increment (PI) timebox. This timebox provides the outer cadence for all the teams on an Agile Release Train



(ART) to be able to plan together, integrate and demo together, and learn together.

Details

Since fast learning is the key goal of SAFe's Learning Cycles, Agile Teams execute a full Plan-Do-Check-Adjust cycle as quickly as possible, as illustrated in Figure 1 above.

Each PDCA cycle is an Iteration, which serves as the regular, predictable development cadence to produce an increment of value, as well as to refine previous increments. Each team plans, builds tests, integrates, and demonstrates their work in the context of a full system increment every two weeks. These short iterations help the team, Product Owners, Product Managers, and other stakeholders test the technical and business hypotheses on a working system.

Each iteration also anchors an integration point, a 'pull event' that pulls together various system aspects—functionality, quality, alignment, and fitness for use—across all the teams' individual contributions.

Plan the Iteration

The Iteration Planning meeting is the 'Plan' step of the PDCA cycle. It aligns all team members to the common goals of the team, as described by the Team PI Objectives, and to the outcome that will be demoed at the Team and System Demos.

While the specifics of the planning function will differ based on whether the team works in ScrumXP or Kanban, the team reviews the Team Backlog and comes up with a set of Iteration Goals, detailing—from a system perspective—what will be ready for integration and demo by the end of the iteration.

Execute the Iteration

Iteration Execution is the process of how the work takes place. During the iteration, the team completes the 'Do' part of the PDCA cycle by building and testing the new functionality. Teams deliver Stories in an incremental fashion, demoing ready stories to the Product Owner as soon as they are done; they arrive at the demo ready to show their progress.

During execution there is also a smaller PDCA cycle, as represented, in part, by the daily stand-up. Every day, team members meet to evaluate their progress toward the iteration goals and update each other on their progress. This meeting represents a full, daily PDCA cycle, which allows the team to plan, check, and adjust their iteration plan every day.

Team Demo

The team demo is the 'check' step in the PDCA cycle. In the demo, the teams show a tested increment of value to the Product Owner and receive feedback on what has been produced. The outcome of this meeting will help shape the team backlog for the next iteration. Some stories will be accepted and others refined by the learning gained during the iteration.

Following the team demo, team members participate in an integrated system demo. This is the first required, formal integration point among teams on the Agile Release Train (ART), and it serves as a pull event to ensure early integration and validation at the Program Level. Within the iteration, teams integrate and evaluate as continuously as their system context allows.

Improve the Process

The Iteration Retrospective serves as the 'adjust' step for the overall iteration. Here, the team evaluates its process and any improvement stories it had from the previous iteration, identifies problems and their root causes as well as bright spots, and comes up with improvement stories that enter the team backlog for the next iteration. This frequent retrospective is one of the key ways to ensure that relentless improvement (one of the pillars of SAFe's Lean-Agile Mindset) is happening at the Team Level. Iteration retrospectives also drive program level changes to process either immediately or at the Inspect and Adapt workshop.

Before the next planning begins, the backlog is refined to include the decisions from the demo and retrospective. The Product Owner refactors and reprioritizes new and old backlog items as needed.

Learn More

[1] Cockburn, Alistair. "Using Both Incremental and Iterative Development." STSC CrossTalk 21 (2008): 27 - 30.

[2] Maurya, Ash. Running Lean: Iterate from Plan A to a Plan That Works. O'Reilly Media, 2012.

Deploy and Release Definitions:

Deploy - to place a solution or something of value into production.

Release - to make a solution or valuable item available to customers.

5.1 Identify key team Iteration events

Team Iteration goals

Iteration goals provide clarity, commitment, and transparency.



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They provide the following benefits:

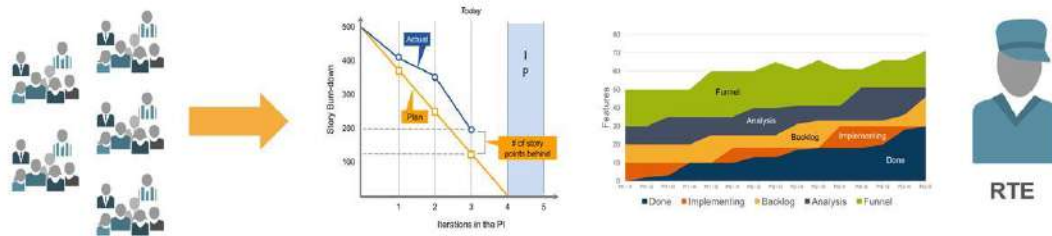
1. Align the team members and the Product Owner to the mission
2. Align the people to the Program Increment Objectives
3. Provide context for understanding and addressing cross-team dependencies

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Notes:

Aggregating ART Metrics

- ▶ At the end of each Iteration, the RTE collects and aggregates the agreed-upon ART Metrics to better understand PI progress and ART health.
- ▶ Get help from Scrum Masters to summarize the Metrics for each team after the Iteration Review
- ▶ Follow up on the Metrics for PI progress and trends in the ART sync



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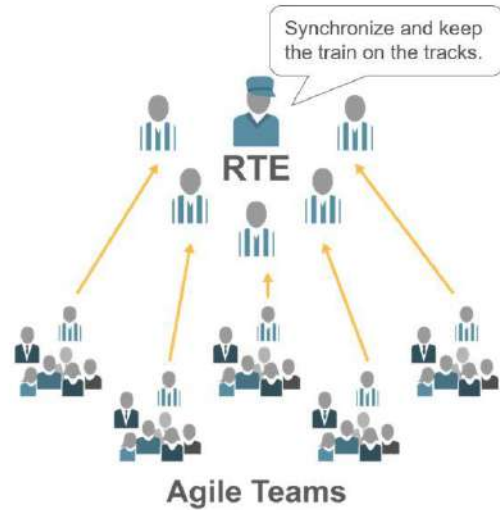
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Notes:

Escalation of team impediments

If a team needs program help to reach the commitment, they will escalate to the RTE and ask for help.

- ▶ Team impediments often surface in the team daily stand-ups
- ▶ Scrum of scrums is the built-in forum for impediment escalation
- ▶ The RTE facilitates the escalation of impediments further if it cannot be solved with the ART



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Notes:

5.2 Examine the events and tools needed to manage ART flow

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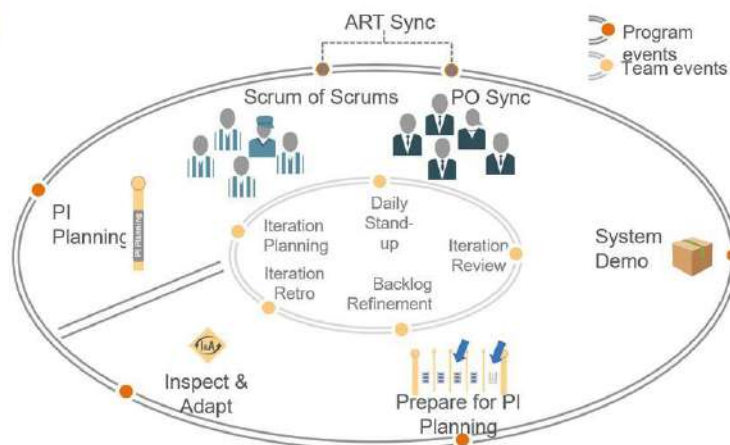
Notes:

Program execution

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

Key PI execution events:

1. Scrum of scrums
2. PO sync
3. ART sync
4. System Demo




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Notes:

5.2 Examine the events and tools needed to manage ART flow



Activity: The RTE and the ART events

Prepare
15 min

Share
15 min

Step 3: Be ready to do a share with the room

- ▶ The presentation (three minutes max) can be on a flip chart, whiteboard, role play, or any other form
- ▶ Use the event descriptions in your workbook as a guide, but also build on your own experience
- ▶ Include:
 - A clear statement about the purpose of the event and why the RTE should care
 - List of facilitators and attendees, plus suggested agenda for the event with timing and how often it is run
 - Identify key inputs and outputs
 - Possible event anti-patterns, what would happen if this event is cancelled?
 - Success criteria for the RTE
 - General tips

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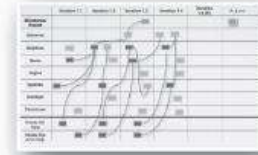
Notes:

Event descriptions for the exercise:

Scrum of Scrums

The RTE facilitates regular SoS meetings that are focused on overall program execution and impediment escalation.

- › Facilitate the SoS using a focused and visible agenda and timebox
- › Always bring up the most important questions for PI Execution:
 - “Will we meet our PI commitments?”
 - “If not, what do we need to do to meet them?”
- › Run the meeting in front of the program board, discuss the visible iteration dependencies
- › Scrum Masters escalate impediments and risks



PO Sync

The PO Sync is used to create visibility into how well the ART is progressing toward meeting the program PI Objectives, discuss problems or opportunities with feature development, and to assess any scope adjustments.

- › Visibility into progress, scope, and priority adjustments
- › Facilitated by RTE or PM
- › Participants: PMs, POs, other stakeholders, and SMEs as necessary
- › Weekly or more frequently, 30 – 60 minutes
- › Time boxed, and followed by a “meet after”



ART Sync

Sometimes the Scrum of Scrums and PO Sync are combined into one meeting, often referred to as an ART sync.



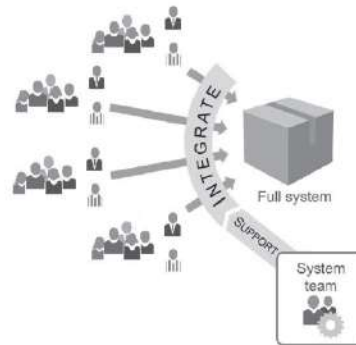
- › Needs a clear agenda and RTE facilitation to be effective as this can be a big group
- › Focus should always primarily be on: “Will we meet our PI commitments?”

Event descriptions for the exercise:

System Demo

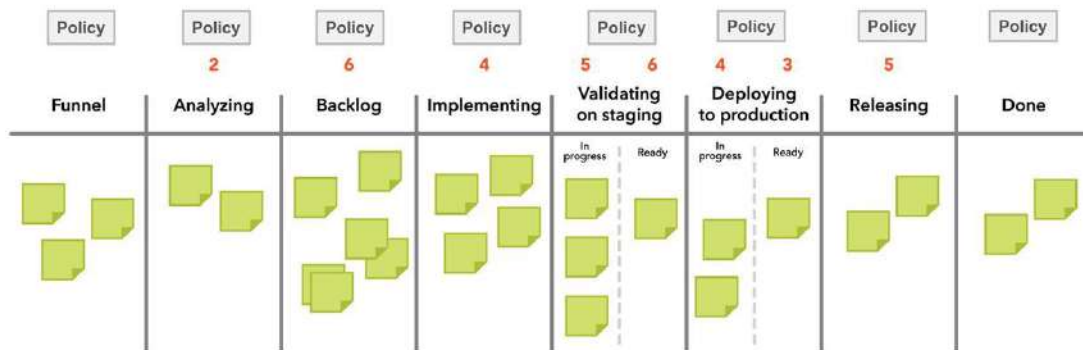
Demonstrate the full Solution increment to stakeholders every Iteration.

- › Features are functionally complete or “toggled” so as not to disrupt demonstrable functionality
- › New Features work together, and with existing functionality
- › Architectural Runway work in process is scaffolded and toggled
- › System is continually verified via Story and Feature acceptance tests
- › All practical NFR testing is done continuously



Understanding Kanban boards

Let's learn about Kanban using a Program Kanban board example.



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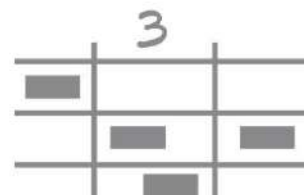
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Notes:

Visualize the workflow using Kanban boards

Working with Kanban boards is lightweight and disciplined.

- ▶ All work is visualized and the progress of individual items is continuously tracked
- ▶ The Kanban board contains defined states that work moves through
- ▶ It has explicit policies detailing how work is managed in each state
- ▶ Stakeholders agree on work in process (WIP) limits for selected states and adjust as necessary to improve flow
- ▶ The flow through the Kanban board is measured which informs future improvements



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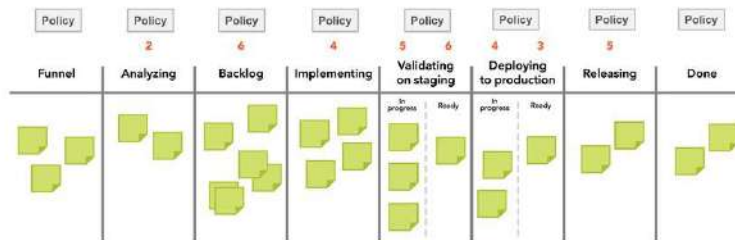
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Notes:

The Kanban board cards

The Kanban board visualizes the flow of items from left to right. Each item on the board is a unit of value that can be created and delivered, which is represented as cards on the board.

- ▶ Each card can be individually created, validated, and delivered
- ▶ Similarly-sized pieces of work enable smoother flow through the board



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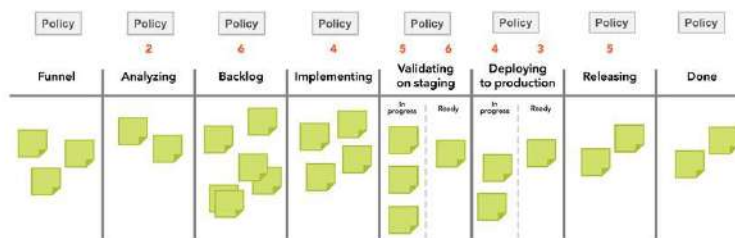
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Notes:

The Kanban board columns

The columns define the individual steps in the identified workflow that the Kanban board visualizes.

- ▶ Each column represents one state in the defined workflow
- ▶ The columns can be split into a work area and a buffer if more granular visualization is needed



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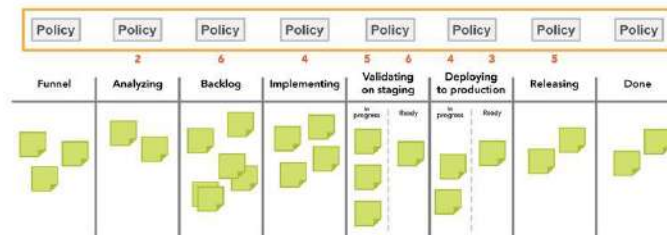
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Notes:

The Kanban board explicit policies

The agreed-upon explicit policies for each step in the workflow are displayed above each state in the board.

- These are the things that need to be done for the card to move to the next column
- The visualization of these policies encourages collaboration and removes uncertainty



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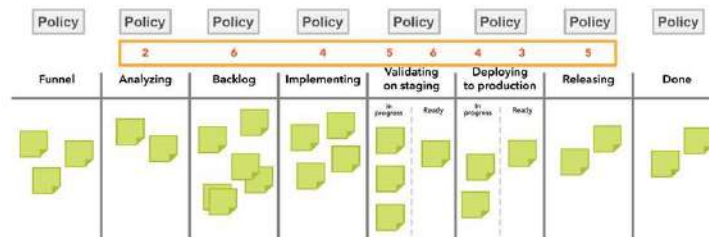
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Notes:

The Kanban board WIP limits

The agreed-upon work in process (WIP) limits are displayed above each column. These are the limits for how many cards each column can contain at any time.

- WIP limits adjust demand to capacity at bottlenecks and help the flow through the board.
- WIP limits are initially a hypothesis. They will evolve over time as you learn.



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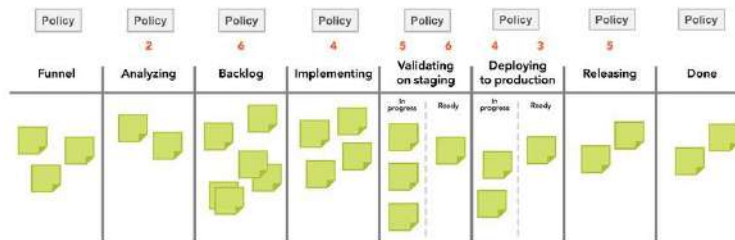
Notes:

5.2 Examine the events and tools needed to manage ART flow

The Program Kanban Board

A Program Kanban Board is a powerful tool to visualize the flow of Features and Enablers through the ART.


- ▶ It helps visualize PI Planning readiness and PI execution progress
- ▶ It is a useful tool for the SoS, PO sync, and ART sync meetings and problem solving
- ▶ RTE and stakeholders have easy access to Program flow measurements
- ▶ Makes process policies and decisions visible to the entire ART



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Notes:

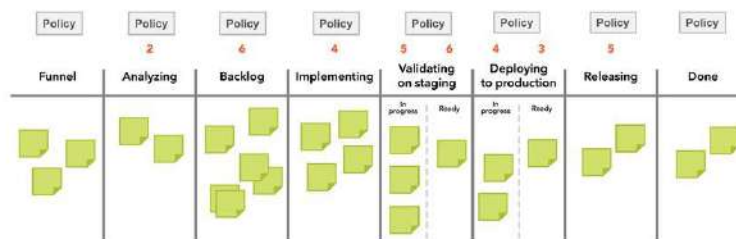


Activity: Build your own Program Kanban Board

Prepare
15 min

Share
5 min

- ▶ **Step 1:** In your group, select one person's context
- ▶ **Step 2:** Together, build a Program Kanban Board using the tools described in the past slides. Be sure to:
 - Understand the actual workflow for Features
 - Decide how to map it to the board (columns, policies, etc.)
 - Determine initial WIP limits



The diagram illustrates a Program Kanban Board with the following columns and policies:

- Funnel**: No policy.
- Analyzing**: Policy 2.
- Backlog**: Policy 6.
- Implementing**: Policy 4.
- Validating on staging**: Policy 5. Sub-columns: 'In progress' (Policy 6), 'Ready'.
- Deploying to production**: Policy 4. Sub-columns: 'In progress' (Policy 3), 'Ready'.
- Releasing**: Policy 5.
- Done**: No policy.

Green squares representing work items are distributed across the board, showing their current stage and progress.

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Notes:

5.3 Explore Metrics used to measure PI execution

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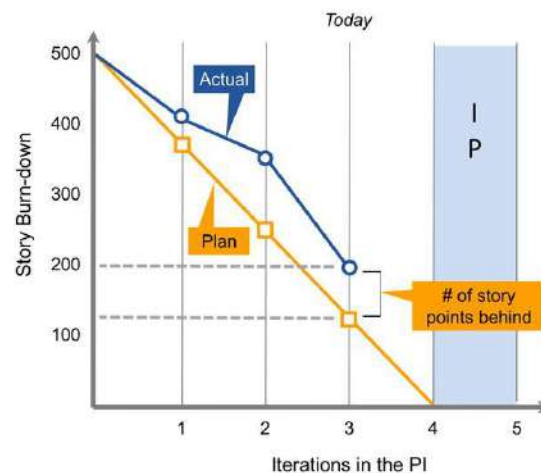
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Notes:

Program execution Metrics – PI burn-down chart

The PI burn-down chart shows the progress being made toward the Program Increment timebox.

- ▶ The horizontal axis of the PI burn-down chart shows the Iterations within the PI
- ▶ The vertical axis shows the aggregated amount of work (Story points) remaining across the ART
- ▶ Has the most meaning at Iteration boundaries



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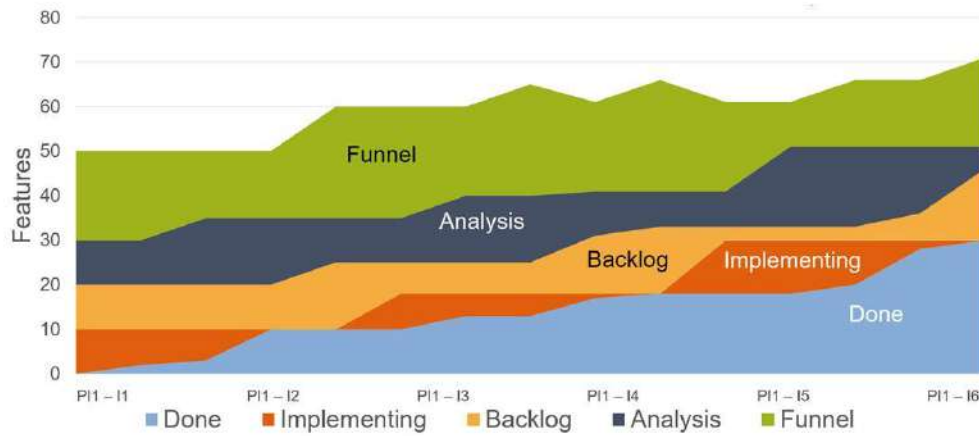
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Notes:

5.3 Explore Metrics used to measure PI execution

Program execution Metrics – Cumulative flow diagram (CFD)

The CFD is made up of a series of lines or areas representing the amount of work in the different Kanban states.



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Notes:

Typical program measures in a CFD

Typical program measures in a CFD

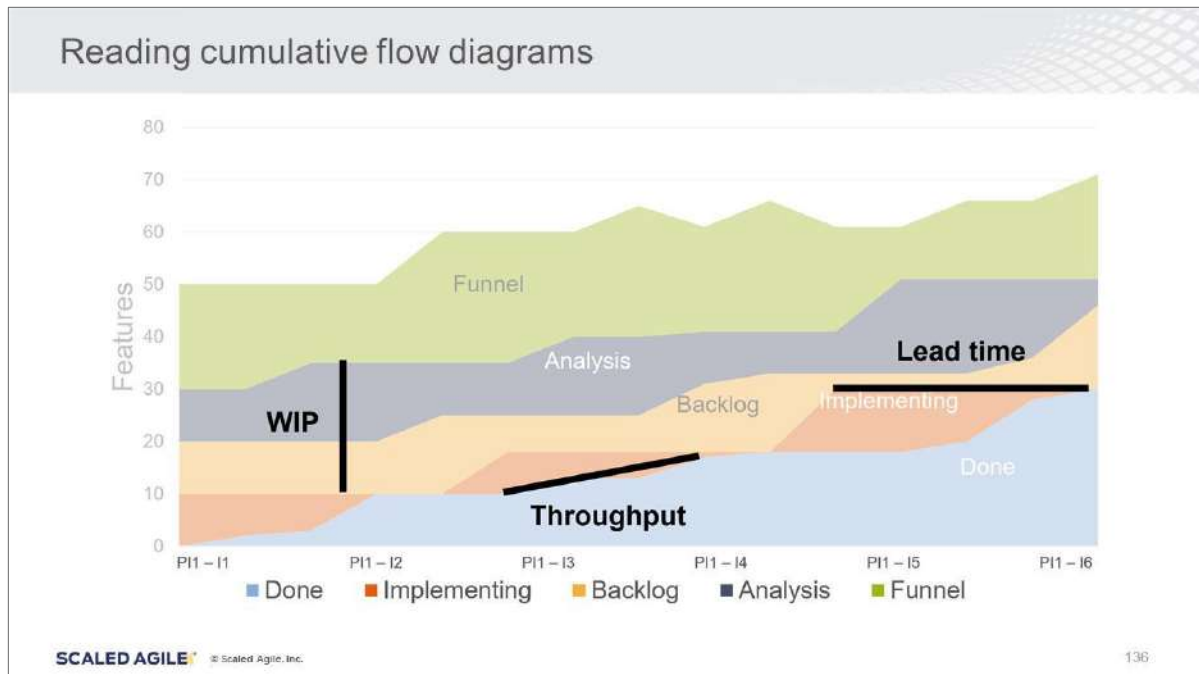
Lead time:	The time a backlog item spends in the system after it's been pulled from the backlog and before it is accepted.
WIP in the system:	The number of backlog items currently in progress (all items between funnel and done).
Throughput:	The number of items that can be finished per unit of time.

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Notes:

5.3 Explore Metrics used to measure PI execution



Notes:

Activity: Reading cumulative flow diagrams

Prepare 5 min Share 2 min

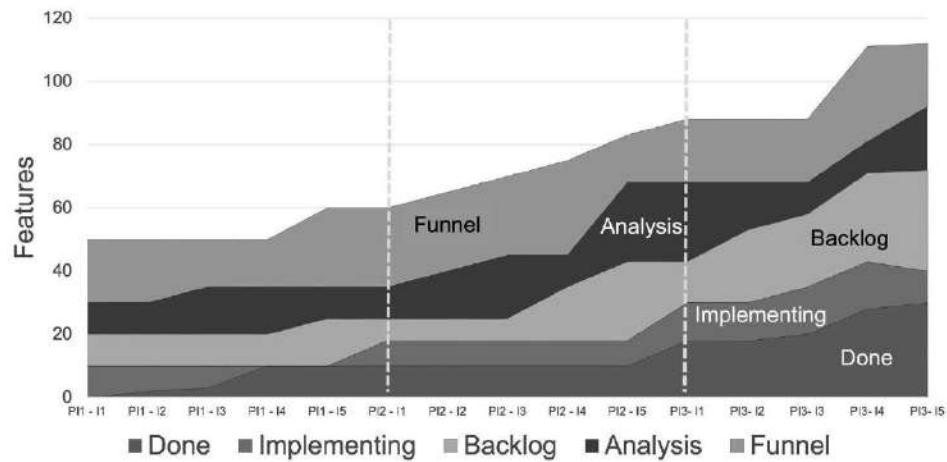
- **Step 1:** Review the two CFD example charts in your workbook
 - What problems do you see?
 - How do you know these are problems?
- **Step 2:** Write your answers below the charts in your workbook
- **Step 3:** Be prepared to share with the class

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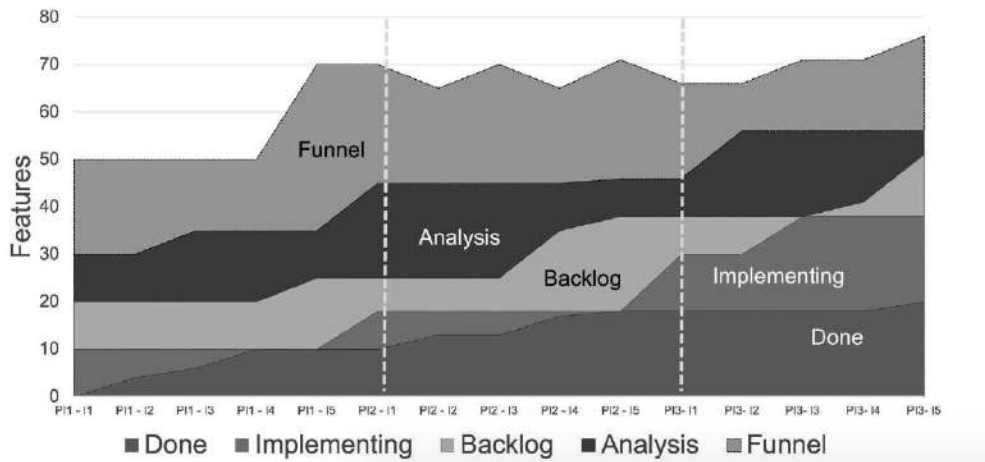
Notes:

5.3 Explore Metrics used to measure PI execution

Example 1



Example 2



Example 1

What problems do you see?

How do you know these are problems?

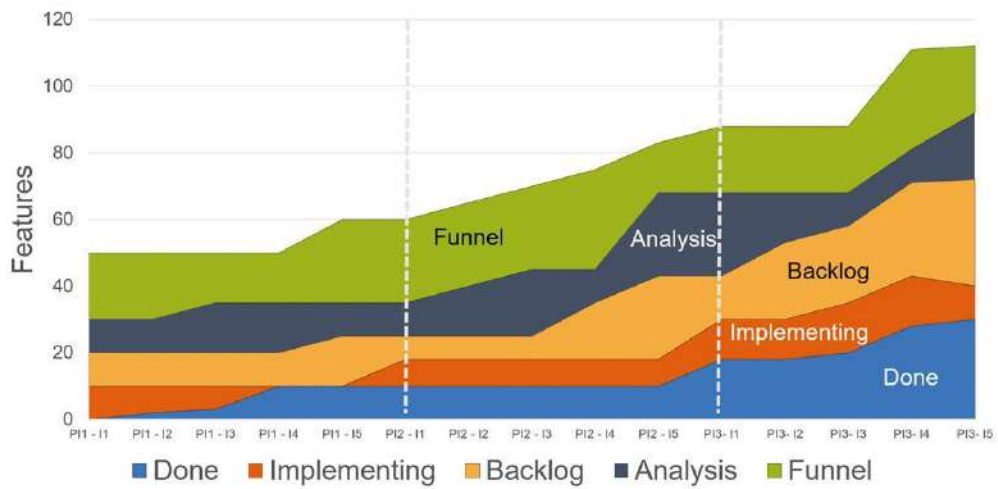
Example 2

What problems do you see?

How do you know these are problems?

5.3 Explore Metrics used to measure PI execution

Cumulative Flow Diagram – Example 1

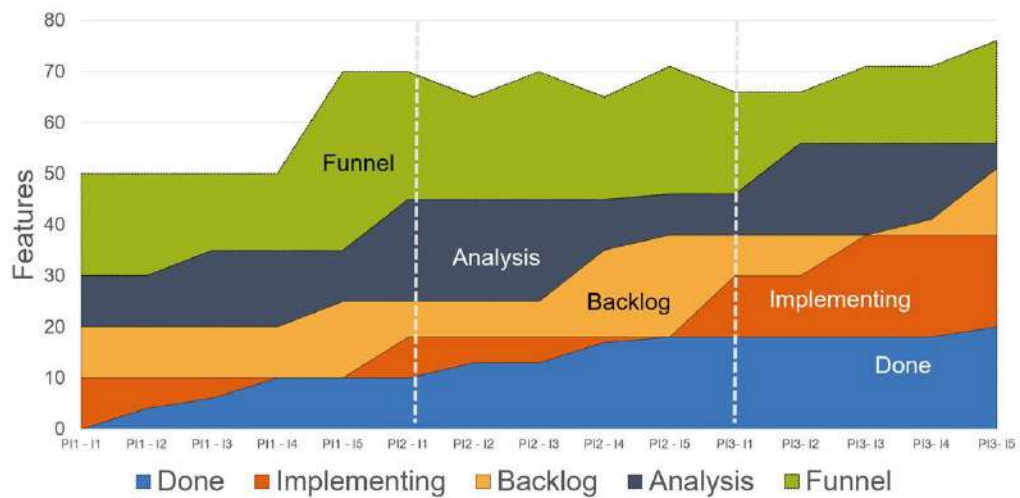


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Notes:

Cumulative Flow Diagram – Example 2



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Notes:

5.4 Prepare and facilitate IP Iteration activities

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Notes:

Innovation and Planning Iteration

Provide sufficient capacity margin to enable cadence.

— Don Reinertsen,
Principles of Product
Development Flow

Definitions

Innovation: Opportunity for innovation spikes, hackathons, and infrastructure improvements

Planning: Provides for cadence-based planning and is an estimating guard band for cadence-based delivery

Common anti-patterns

Planning work for the IP Iteration in PI Planning

Leaving testing or bug fixing to the IP Iteration

Leaving integration of the whole system to the IP Iteration

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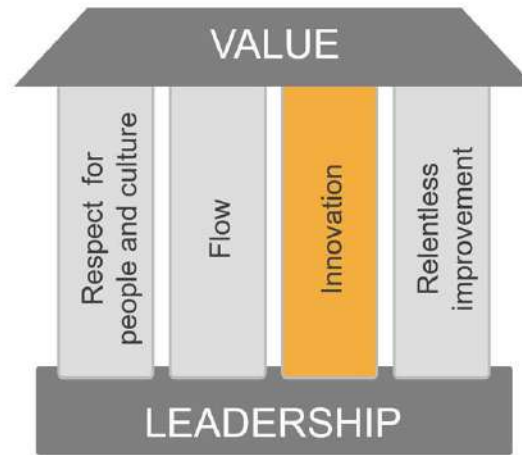
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Notes:

The Lean-Agile Mindset: Innovation

One of the four pillars of SAFe's Lean-Agile Mindset is innovation.

- ▶ Customers want the next thing that will improve their lives, but they may not know what that is
- ▶ Producers innovate, Customers validate
- ▶ Create time for innovation, exploration, and creativity
- ▶ Avoid succumbing to the tyranny of the urgent
- ▶ Enable education and learning



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Notes:

Sample IP Iteration calendar


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

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Notes:




Activity: The IP Iteration

Prepare

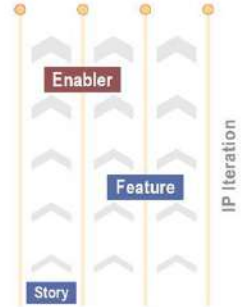


Share



► **Step 1:** As a table, discuss and write answers to the following questions in your workbooks:

- Looking at the sample IP Iteration calendar on the previous page, rank the different activities in priority with 1 = most important and 10 = least important
- What kind of preparation does the RTE need to do before the IP Iteration?
- What could potentially happen if there was no IP Iteration?



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Notes:

5.4 Prepare and facilitate IP Iteration activities

Looking at the sample IP Iteration calendar on the previous page, rank the different activities in priority with 1 being most important and 10 being the least important:

What preparation does the RTE need to do before the IP Iteration?

What would be the could potentially happen if there were no IP Iteration?

Without the IP Iteration ...

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



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Notes:

5.5 Examine DevOps culture to achieve Release on Demand

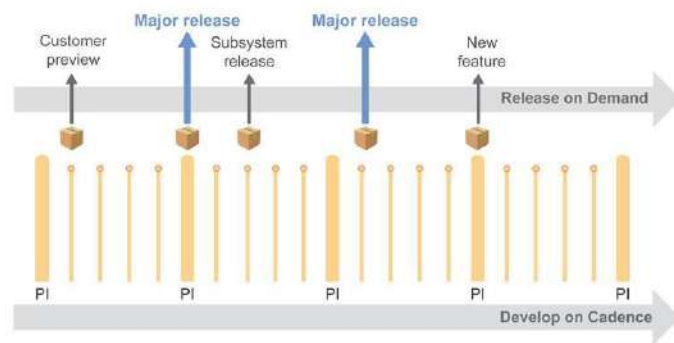
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Notes:

Develop on Cadence. Release on Demand.

Development cadence limits variability to a single PI interval.
Releasing is a separate concern and can be done anytime.

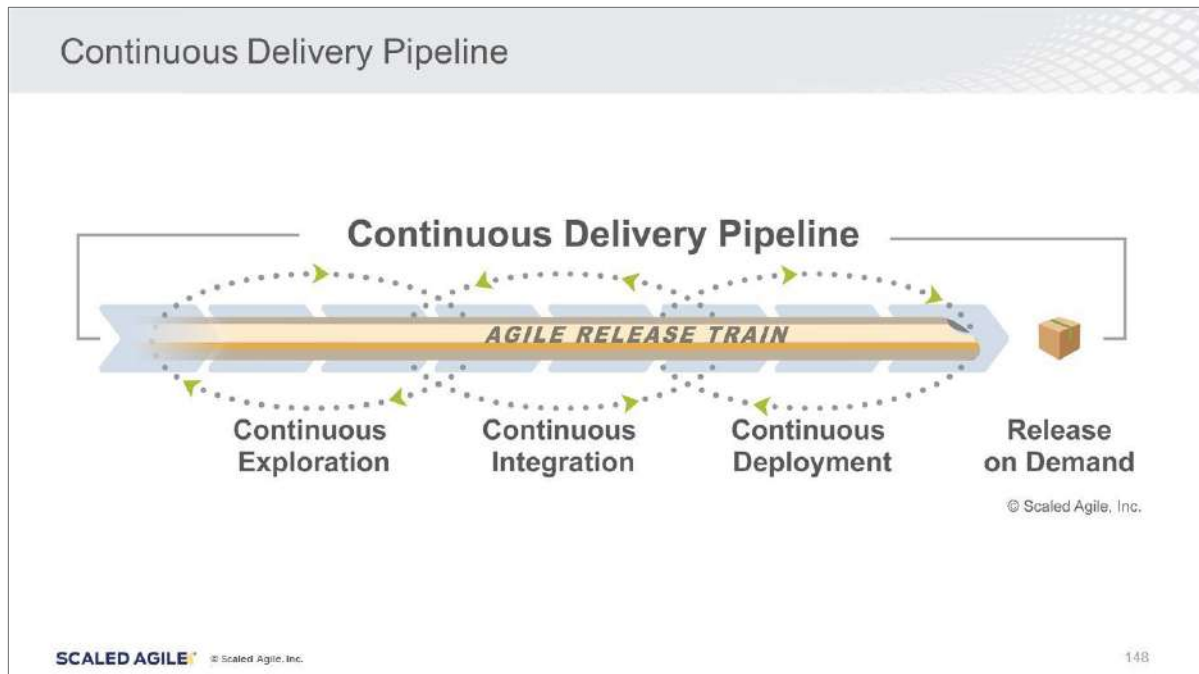


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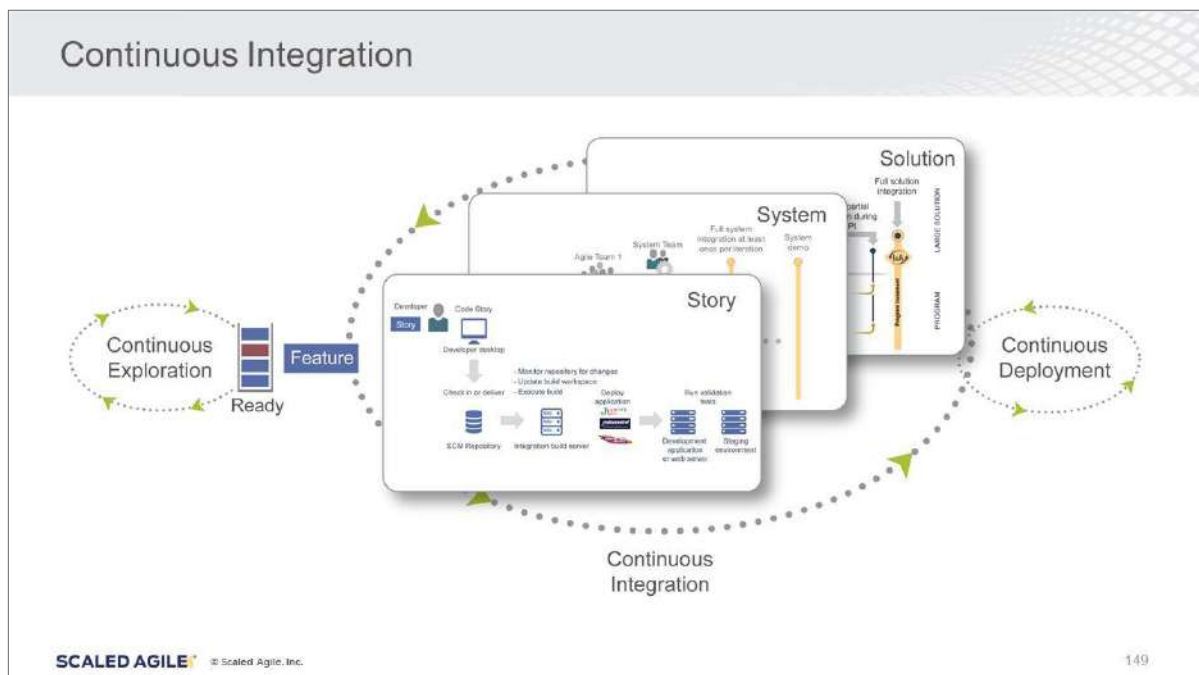
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Notes:

5.5 Examine DevOps culture to achieve Release on Demand



Notes:

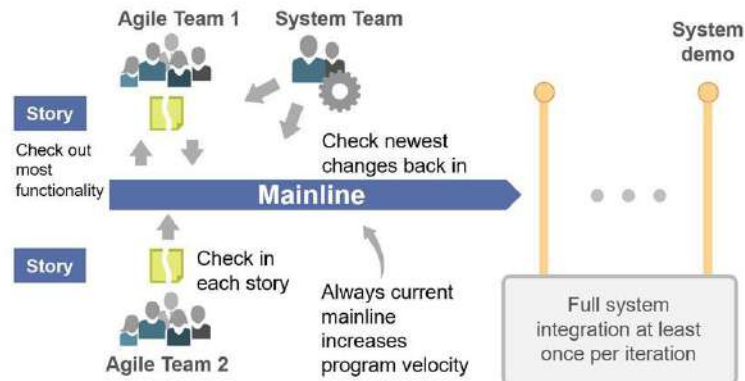


Notes:

Continuous system integration

This is perhaps the most essential technical practice for an ART and the Solution, a quality heartbeat that reduces risk and establishes fast, sustainable development.

- ▶ Avoid physical branching for software
- ▶ Frequently integrate hardware branches
- ▶ Include the cost of integration when estimating and planning work



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Notes:

Integration challenges and trade-offs

The goal is to be able to fully integrate across all teams in each iteration. However, that can be difficult due to solution complexity and heterogeneity, availability of specialty testing personnel, laboratories, equipment, or third-party components.

- ▶ Integrate different aspects at different frequencies
- ▶ Integrate all assets but run deprecated tests
- ▶ Use of emulated environments, stubs, and mocks
- ▶ Find the right trade-off!



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Notes:

A CALMR approach to DevOps

- ▶ **C**ulture - Establish a culture of shared responsibility for development, deployment, and operations.
- ▶ **A**utomation - Automate the Continuous Delivery Pipeline.
- ▶ **L**ean flow - Keep batch sizes small, limit WIP, and provide extreme visibility.
- ▶ **M**easurement - Measure the flow through the pipeline. Implement full-stack telemetry.
- ▶ **R**ecovery - Architect and enable low-risk releases. Establish fast recovery, fast reversion, and fast fix-forward.



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Notes:

DevOps is a culture of shared responsibility

- ▶ A culture of shared responsibility for development and deployment
- ▶ DevOps requires a tolerance for failure and rapid recovery, and rewards risk taking
- ▶ Self-service infrastructure empowers development and operations
- ▶ Sharing discoveries, practices, tools, and learning across silos is encouraged
- ▶ Automate everything mindset



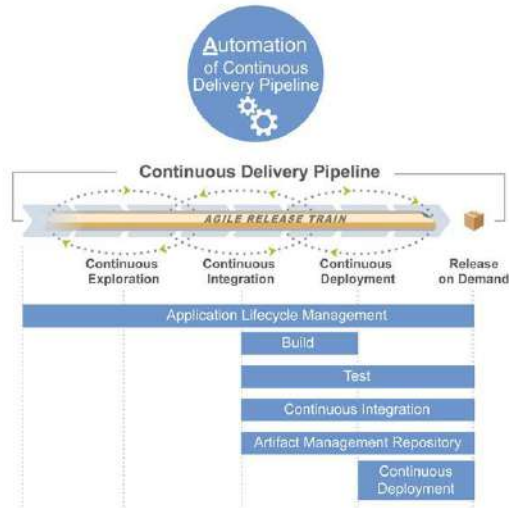
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Notes:

Automate the Continuous Delivery Pipeline

1. Match development environments to production as much as possible
2. Maintain a staging environment that emulates production
3. Deploy a working system to staging every iteration
4. Automate testing of Features and performance tests
5. Automate deployment
 - Everything under version control
 - Automatically build environments
 - Automate the actual deployment process



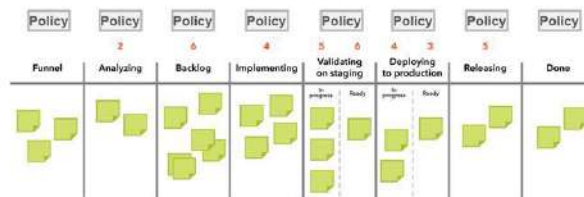
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Notes:

Lean flow accelerates delivery

- Identify bottlenecks and balance the amount of WIP against the available development and operations
- Decrease the batch sizes of the work
- Manage and reduce queue lengths



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Notes:

Measure the flow of value

- ▶ Collect data on business, application, infrastructure, and client layers
- ▶ Collect data about the deployment pipeline itself
- ▶ Store logs in ways that enable analysis
- ▶ Use different telemetry for different stakeholders
- ▶ Broadcast measurements
- ▶ Overlay measurements with events (deploys, releases)
- ▶ Continuously improve telemetry during and after problem solving



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Notes:

Architect for release-ability and recovery

- ▶ Stop-the-line mentality
- ▶ Plan for and rehearse failures
- ▶ Build the environment for both roll back and fix forward
- ▶ Use tools such as:
 - Feature toggles
 - Dark launches
 - Chaos monkey
 - Canary Releases
- ▶ Source: the DevOps Handbook: How to Create World-Class Agility, Reliability, and Security in Technology Organizations IT Revolution Press. Kim, Gene; Humble, Jez; Debois, Patrick; Willis, John




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Notes:

5.5 Examine DevOps culture to achieve Release on Demand



Activity: Building a SAFe DevOps practice poster

Prepare
20 min

Share
10 min

- **Step 1:** Each group will be building a poster that explores one of the SAFe DevOps practices. Every poster should include:
 - The practice (e.g., Lean flow accelerates delivery)
 - A storyline (with at least one picture) that shows what the RTE can do to make the practice happen in the ART
 - A clear statement about what is likely to happen if the practice is not implemented
 - A statement about why this practice is important for the RTE
- **Step 2:** Be ready to form a parade and present the DevOps CALMR approaches in their order!





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Notes:

Scaled definition of done (DoD)


Continuous development of incremental system functionality requires a scaled DoD.

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

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Notes:



Activity: System increment definition of done (DoD)

Duration
7 min

With your group, discuss and write down your answers to these questions in your workbooks:

- ▶ What is the importance of the DoD?
- ▶ Should the DoD be the same for all teams on the ART?
- ▶ What is the role of the RTE in creating and maintaining the different levels of DoD?

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Notes:

What is the importance of the DoD?

Should all levels of DoD be the same for all teams at the ART?

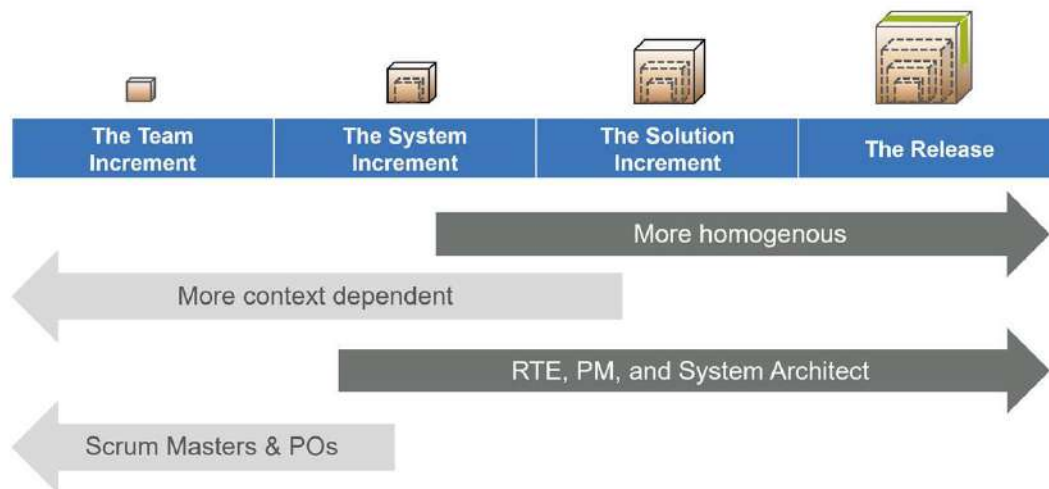
What is the role of the RTE in creating and maintaining the different levels of DoD?

Benefits of a definition of done


- ▶ Aligns expectations among key ART roles, teams, and stakeholders regarding what 'done' actually means
- ▶ Helps to optimize quality
- ▶ Helps maintain predictability
- ▶ Avoids unfinished work that leads to technical debt

Notes:

ART definition of done



Notes:



Activity: The definition of done is not done!

Prepare
3 min

Share
2 min

Development management requires all ART teams to comply with a specific DoD, but one team does not have the ability to perform some of those items (namely, acceptance test automation and deployment to staging).


As a result, nobody on that team cares about the definition of done anymore because it is not achievable.

- **Step 1:** As the RTE, you need to act. What are your next steps?
- **Step 2:** Discuss with your group and be ready to share.

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Notes:



Action Plan: RTE Action Plan

Duration
7 min

- ▶ **Step 1:** Locate the RTE Action Plan section in your workbooks
- ▶ **Step 2:** Add more tools and techniques to the Action Plan by reflecting on the following:
 - How will you implement the Program Kanban in your work context?
 - How will you prepare for the IP Iteration in your work context?
 - How will you work with the Agile teams on the ART to define and maintain levels of DoD?
- ▶ **Step 3:** Share one of your insights with the class



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Notes:

Lesson review

In this lesson you:

- ▶ Identified key team Iteration events
- ▶ Examined the events and tools needed to manage ART flow
- ▶ Explored Metrics used to measure PI execution
- ▶ Explored how to prepare and facilitate IP Iteration activities
- ▶ Examined DevOps culture to achieve Release on Demand

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Notes:

Lesson 5 notes



Click below to type your thoughts.

Lesson 6

Fostering Relentless Improvement

Learning Objectives:

- 6.1 Explore the three components of an Inspect and Adapt event
- 6.2 Identify self-assessment tools to evaluate the ART
- 6.3 Examine systems thinking and value stream mapping concepts
- 6.4 Examine the relentless improvement mindset



SAFe® Course Attending this course gives students access to the SAFe® Release Train Engineer exam and related preparation materials.

6.1 Explore the three components of an Inspect and Adapt event

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Notes:

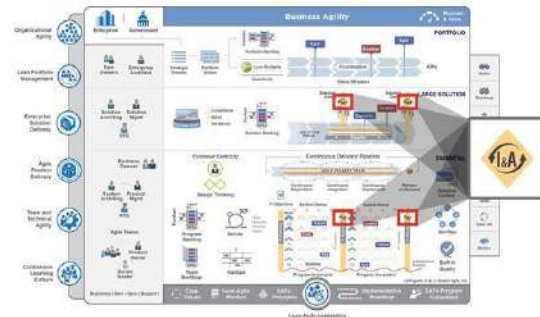
Improving results with the Inspect and Adapt event

Three parts of Inspect and Adapt:

1. The PI System Demo
2. Quantitative measurement
3. Problem-solving workshop

Timebox: 3 – 4 hours per PI

Attendees: Teams and stakeholders



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Notes:

1. PI System Demo

- ▶ Shows the Features developed during the PI
- ▶ Provides a formal approach to demonstrating value accumulated
- ▶ Broad audience



Notes:

2. Quantitative measurements

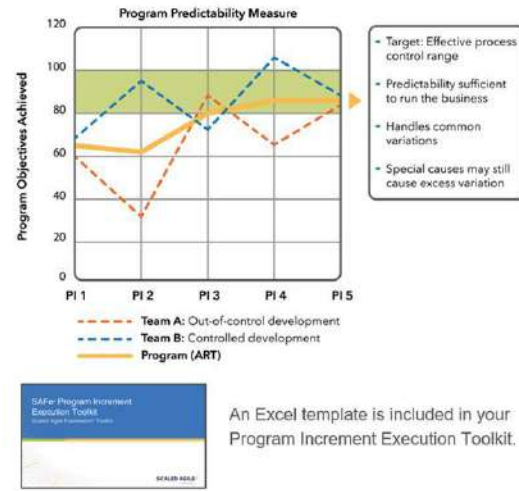
- ▶ As part of the PI System Demo, teams compare planned vs. actual PI Objectives.
- ▶ Teams meet with their Business Owners to self-assess the business value they achieved for each objective
- ▶ Each team's planned vs. actual business value is then rolled up to the program predictability measure

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

Notes:

2. Program predictability measure

The program predictability measure shows whether achievements fall into an acceptable process control band.



Notes:

2. Quantitative measurements

- ▶ As part of the PI System Demo, teams compare planned vs. actual PI Objectives.
- ▶ Teams meet with their Business Owners to self-assess the business value they achieved for each objective
- ▶ Each team's planned vs. actual business value is then rolled up to the program predictability measure

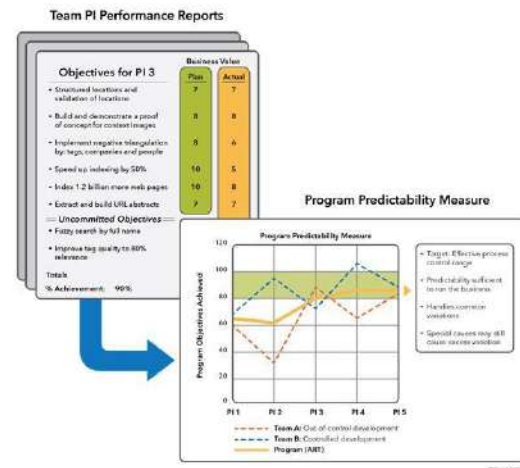
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Uncommitted Objectives		
Fuzzy search by full name	7	0
Improve tag quality to 80% relevance	4	4
Totals:	50	45
% Achievement:	90%	

Notes:

2. Team PI performance report

How did we do?

- ▶ All teams' PI Objectives were assigned a business value from 1 to 10
- ▶ Review and rate your PI achievements:
 - How well did you do against your stated objectives, including (a) timeliness, (b) content, and (c) quality?
 - On a scale of 1 to 10, with 10 being the maximum total business value
- ▶ Average these across all objectives and give yourself a program objectives percent achievement



Notes:

2. Team PI performance report

- ▶ Planned total does not include uncommitted objectives
- ▶ Actual total includes uncommitted objectives
- ▶ % achievement = Actual total/Planned total
- ▶ A team can achieve greater than 100% (as a result of uncommitted objectives achieved)
- ▶ Effort required for uncommitted objectives is included in the load (i.e., not extra work the team does on weekends)
- ▶ Individual team totals are rolled up into the program predictability measure

Objectives for PI 3

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

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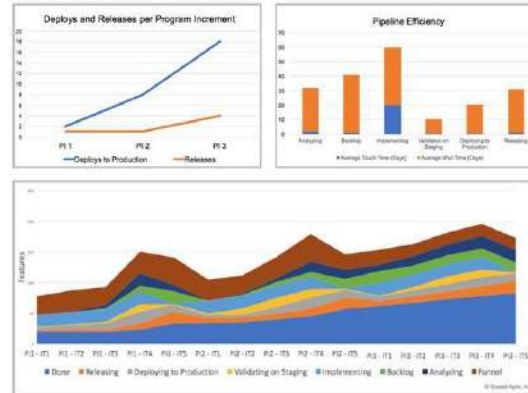
An Excel template is included in your Program Increment Execution Toolkit.

Notes:

2. ART performance Metrics

Go through and discuss any program Metrics that you are using on the ART.

- ▶ Focus on trends in the Metrics rather than static data snapshots
- ▶ Example Metrics:
 - Deployments and releases per Program Increment
 - Continuous Delivery Pipeline efficiency
 - Program CFD chart
 - Average cycle time
 - PI Feature throughput



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Notes:

Activity: Preparing for PI System Demo and quantitative Metrics

Prepare
10 min

Share
2 min

▶ **Step 1:** In your group, discuss and write down the answers to the following questions in your workbook.

- What preparations does the RTE need to do before the I&A for the PI System Demo?
- What preparations does the RTE need to do before the I&A for the quantitative Metrics assessment?
- Who can assist the RTE with these preparations?
- What can the RTE do to ensure that key ART Stakeholders attend the I&A?

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Notes:

6.1 Explore the three components of an Inspect and Adapt event

What preparations does the RTE need to do before the I&A for the PI System Demo?

What preparations does the RTE need to do before the I&A for the quantitative metrics?

Who can assist the RTE with the preparations?

What can the RTE do to ensure that key ART Stakeholders attend the I&A?

3. The retrospective and problem-solving workshop

In the problem-solving workshop, the roles and teams on the train work together to systematically address the larger impediments that are limiting program velocity by using root cause analysis.

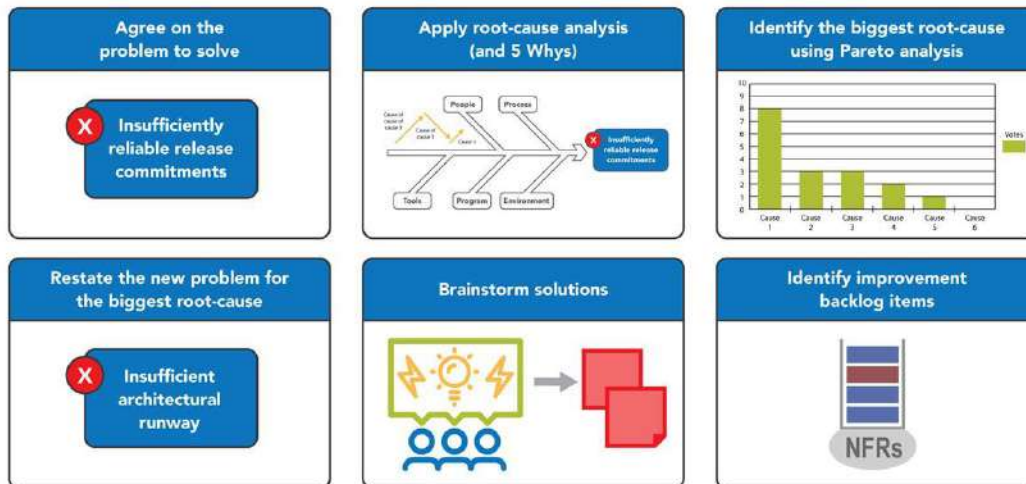


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Notes:

3. The retrospective and problem-solving workshop flow



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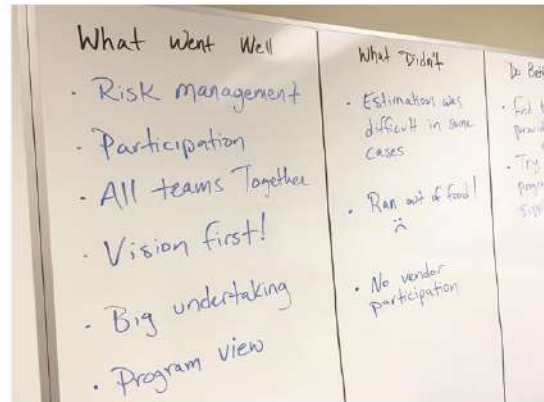
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Notes:

Finding the problem to solve—the PI retrospective

Identify a small number of significant problems that the teams can potentially address.

- ▶ There is no one way to do this. Several Agile retrospective formats can be used.
- ▶ Based on attendance and the nature of the problems identified, help the group decide which to tackle.
- ▶ Key ART stakeholders—including Business Owners, Customers, and management—should join the teams in this retro. Often they, and they alone, can unblock the impediments that exist outside the teams' control.



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Notes:

Agree on the problem to solve

- ▶ Clearly stating the problem is key to problem identification and correction.
- ▶ You must define the undesirable problem or situation so that everyone involved in the countermeasures understands.
- ▶ A clearly-defined problem focuses your investigation efforts and saves time. Honest effort at careful definition will avoid the quick, thoughtless approach that is so common in problem-solving.

Note: A problem that is not well-defined may result in failure to reach the proper countermeasure.

A problem well-defined is a problem half-solved.

— Charles Kettering

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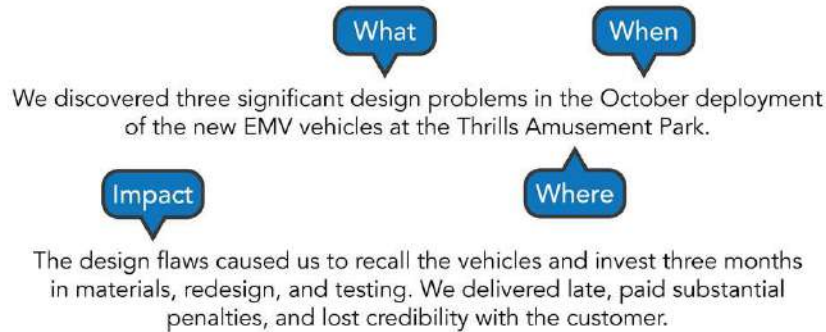
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Notes:

6.1 Explore the three components of an Inspect and Adapt event

Anatomy of a well-defined problem

Think about the What, When, Where, Frequency, and any gaps.



Concept contributed by Beth Miller

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Notes:

Anatomy of a well-defined problem: Impact

Understanding the impact helps create the urgency needed to address the problem.


Problem:	The design flaws caused us to recall the vehicles and invest three months in materials, redesign, and testing.
Impact:	We delivered late, paid substantial penalties, and lost credibility with the customer.

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Notes:

6.1 Explore the three components of an Inspect and Adapt event



Activity: Agree on the problem to solve

Prepare
7 min

Share
2 min

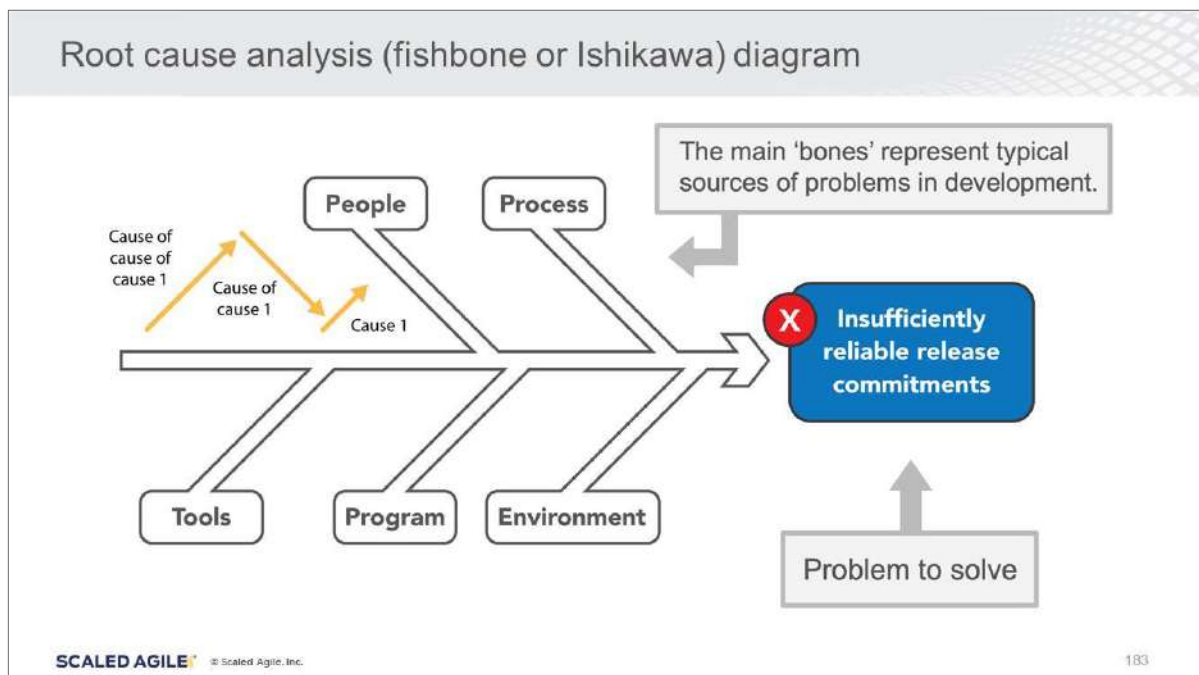
- ▶ **Step 1:** At your table, choose one person's real context and find problems that could occur during a PI
- ▶ **Step 2:** Pick one problem to work on at your table
- ▶ **Step 3:** Define the problem statement by using the What, When, Where, Frequency method and by defining the impact
- ▶ **Step 4:** Write it on a sticky note and put it on a flip chart

Note: Don't worry about a well-formed problem or impact statement here. There isn't sufficient time in this Activity.

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Notes:



Notes:

6.1 Explore the three components of an Inspect and Adapt event

Finding the root cause: The 5 Whys

- ▶ The 5 Whys is a proven problem-solving technique used to explore the cause-and-effect relationships underlying a particular problem
- ▶ The key is to avoid assumptions and logic traps
- ▶ Instead, trace the chain of causality in direct increments from the effect to a root cause

The problem: My car will not start.

Why?	The battery is dead
Why?	The alternator is not functioning
Why?	The alternator belt has broken
Why?	The alternator belt was well beyond its useful service life
Why?	I have not been maintaining my car according to the recommended service schedule (the root cause).

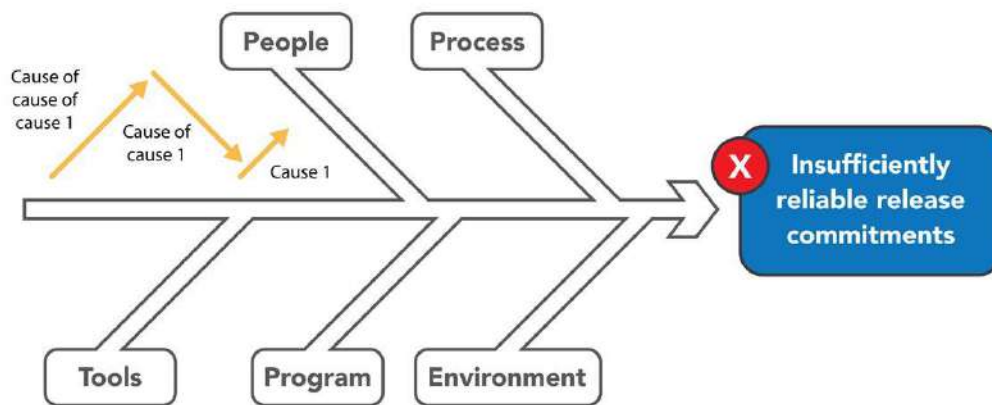
By repeating 'why' five times, the nature of the problem, as well as its solution, becomes clear.
—Taiichi Ohno

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Notes:

Use the 5 Whys to identify root causes




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Notes:

6.1 Explore the three components of an Inspect and Adapt event

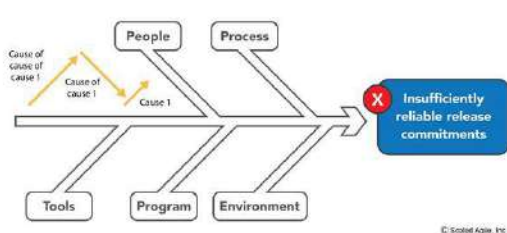


Activity: Root cause analysis

Duration

15 min

- ▶ **Step 1:** Create a fishbone diagram for your problem statement on a flip chart
- ▶ **Step 2:** First, brainstorm potential causes of the problem and place them on the different bones in the chart
- ▶ **Step 3:** For each identified cause, use the 5 Whys technique to identify a potential root cause



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Notes:

Vote on root causes

- ▶ Once all the possible causes of causes have been identified, team members then cumulatively vote on the item they think is the biggest factor causing the end problem.
- ▶ Do this by placing stars on the causes you think are most problematic
- ▶ Every group member gets five stars that can be spread among one or more items as they see fit
- ▶ The team then creates a Pareto chart that illustrates their consensus on the largest root causes



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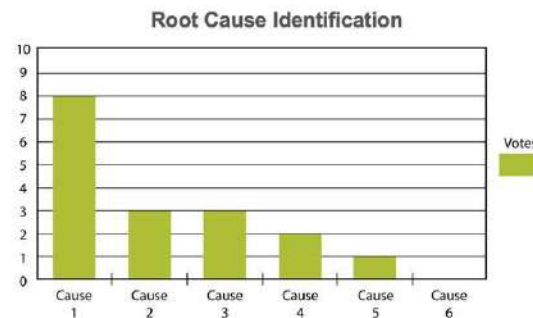
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Notes:

6.1 Explore the three components of an Inspect and Adapt event

Pareto Analysis: Identify the biggest root cause


- ▶ Pareto Analysis, also known as the 80/20 rule, is a statistical decision technique used to narrow down the number of actions that produce the most significant overall effect
- ▶ It uses the principle that 20% of root causes can cause 80% of the problems
- ▶ It is useful where many possible sources and actions are competing




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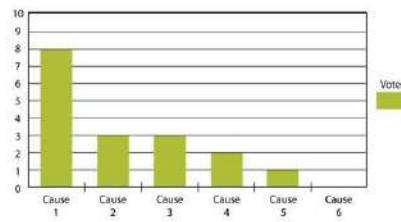
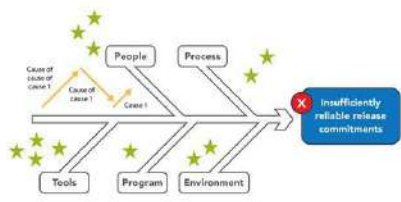
Notes:



Activity: Pareto Analysis

Duration 

- ▶ **Step 1:** Vote on the root causes in your fishbone diagram on the flip chart. Each person gets five votes. You can add all five votes to one cause in the fishbone diagram that you think is the biggest one, or spread them out across different causes
- ▶ **Step 2:** Create a Pareto chart displaying the most important causes based on the result.




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Notes:

6.1 Explore the three components of an Inspect and Adapt event



Activity: Restate the new problem

Prepare
5 min

Share
2 min

- ▶ **Step 1:** Identify the biggest problem on your Pareto chart and re-state it taking the root-cause into account
- ▶ **Step 2:** Think about the What, When, Where, Frequency, and any gaps
- ▶ **Step 3:** Define the impact of the problem, write it on a sticky note, and put it on a new flip chart


We did not have the ability to measure or test the full electrical load on vehicles in real operating conditions.

Impact: We had to upgrade the deployed power distribution system beyond what was specified. The result was a major cost and schedule overrun.

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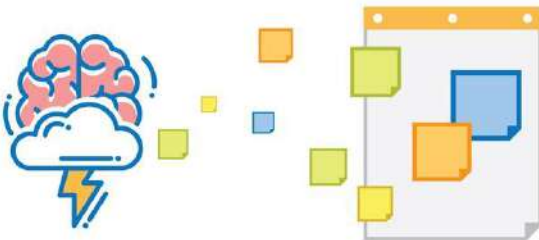
Notes:



Activity: Brainstorm potential solution ideas

Duration
5 min

- ▶ Brainstorm potential solutions on the new flip chart
- ▶ All ideas are welcome; no criticisms or comments
- ▶ Don't worry about sorting or filtering yet; just write them down




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Notes:

6.1 Explore the three components of an Inspect and Adapt event




Activity: Identify improvement backlog items


Prepare
8 min

Share
4 min


- ▶ **Step 1:** Use cumulative voting to agree on the top three most viable solutions
- ▶ **Step 2:** Define one to three clear, actionable improvement items that could be added to the Program Backlog for the upcoming PI

Brainstorm ideas


→

Cumulative voting


→

Program Backlog


Note: Feel free to combine, modify, and adapt ideas

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Notes:

Do not 'Inspect and Forget'

If the outcome of the problem-solving workshop is not actionable and not addressed, stakeholders and the teams on the train will stop inspecting and adapting.

- ▶ Make sure you come out of the workshop with a few important actions that you can start addressing
- ▶ These actions should be added to the Program Backlog and prioritized accordingly
- ▶ The RTE becomes the key stakeholder for these backlog items



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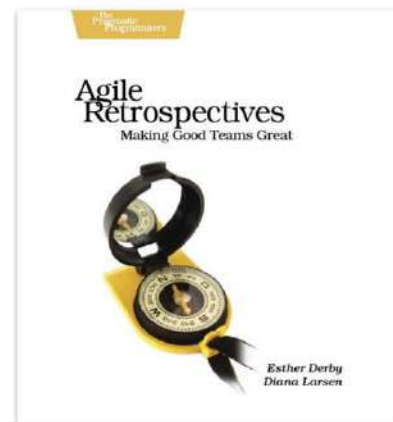
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Notes:

Evolving the workshop

Over time, the RTE should carefully evolve how the retrospective and problem-solving workshop is facilitated to surface new perspectives and to keep it energized.

- ▶ Use established retrospective patterns to create variety and energy
- ▶ If you evolve/change the problem-solving workshop, make sure you use the root-cause analysis tools to find the most important cause
 - Ishikawa diagrams
 - The 5 Whys
 - Pareto Analysis



Source: Agile Retrospectives, Esther Derby/Diana Larson

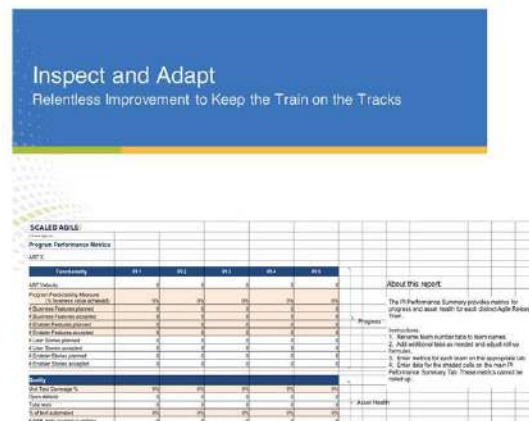
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Notes:

ART I&A tools in the PI Execution Toolkit

- ▶ Inspect and Adapt Template (PowerPoint)
- ▶ PI Performance Reports (Excel)



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Notes:

6.2 Identify self-assessment tools to evaluate the ART

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Notes:

ART and Team Self-Assessments

The Self-Assessments are located on the Scaled Agile framework site in the competency articles.

**Team and
Technical
Agility**



**Agile
Product
Delivery**



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Notes:

6.2 Identify self-assessment tools to evaluate the ART


Assessment tools in the Program Increment Execution Toolkit


- ▶ Agile Product Delivery Self-assessment
- ▶ Team and Technical Agility Self-assessment
- ▶ SAgE DevOps Health Radar

Team and Technical Agility



Agile Product Delivery






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Notes:




Activity: Self-assessment tools

Duration
10 min

In pairs from your table group, access the self-assessments at:
v5.scaledagileframework.com/metrics

- ▶ Review the self-assessment questions
- ▶ Highlight some assessment areas you may want to improve or change
- ▶ Discuss how often you would coach periodic health checks for the team and the ART



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Notes:

Using self-assessments

- ▶ Performing regular self-assessments like the Agile Product Delivery Self-assessment and the Team and Technical Agility Self-assessment will help quantify the overall Lean-Agile journey of the ART using the collective intelligence on the train.
- ▶ Get help from the Scrum Masters and the teams to perform regular self-assessments
- ▶ Run regular self-assessments with the key ART roles

**Team and
Technical
Agility**



**Agile
Product
Delivery**



Notes:

6.3 Examine systems thinking and value stream mapping concepts

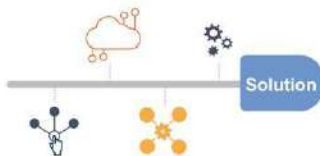
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Notes:

Systems thinking and the RTE

1. The Solution itself is a system.



2. The ART building the system is a system, too.



3. Optimize the full Value Stream.



- ▶ Optimizing a component does not necessarily optimize the system
- ▶ For the system to behave well as a system, a higher-level understanding of behavior and architecture is required
- ▶ The value of a system passes through its interconnections
- ▶ A system can evolve no faster than its slowest integration point

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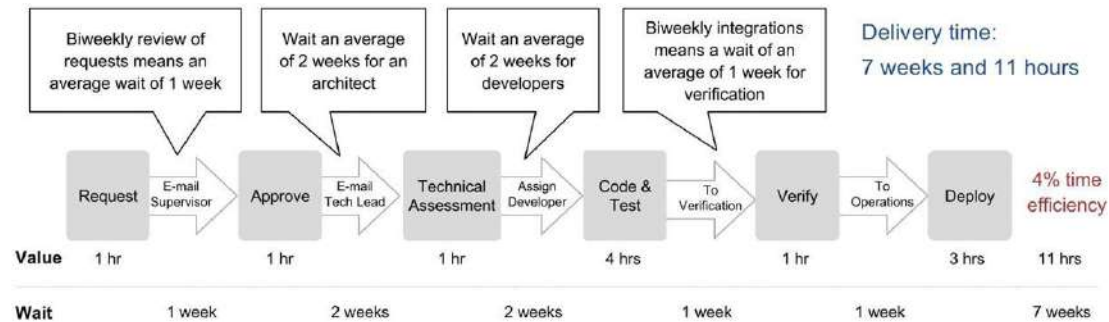
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Notes:

6.3 Examine systems thinking and value stream mapping concepts

The RTE optimizes the full Value Stream

- ▶ Most problems with your process will surface as delays
- ▶ Most of the time spent getting to market is a result of these delays
- ▶ Reducing delays is the fastest way to reduce time-to-market

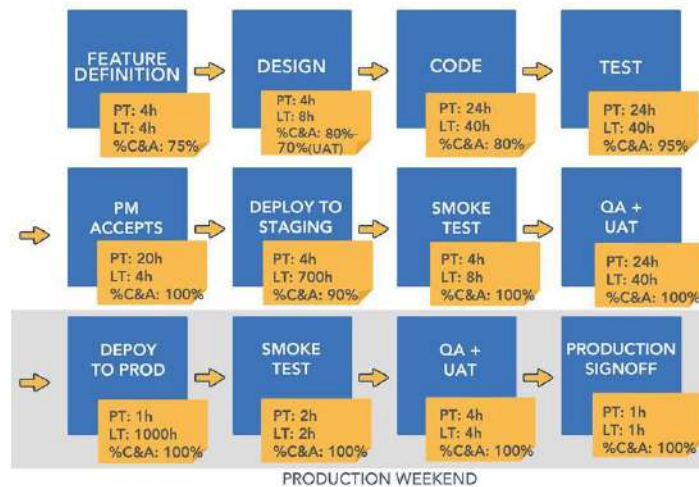


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Notes:

Value stream mapping: Measure the steps



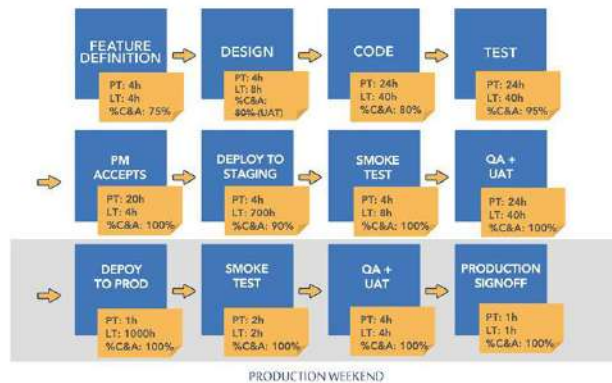
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Notes:

6.3 Examine systems thinking and value stream mapping concepts

Value stream map: Calculate the total Metrics



TOTAL PT = 98 hours
TOTAL LT = 1887 hours
ACTIVITY RATIO = 5%
ROLLED %C&A = 36%

ACTIVITY RATIO = PT/LT

ROLLED %C&A = %C&A 1 * %C&A 2 * %C&A n * 100

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Notes:

6.3 Examine systems thinking and value stream mapping concepts



Activity: Development value stream mapping—current state

Prepare
10 min

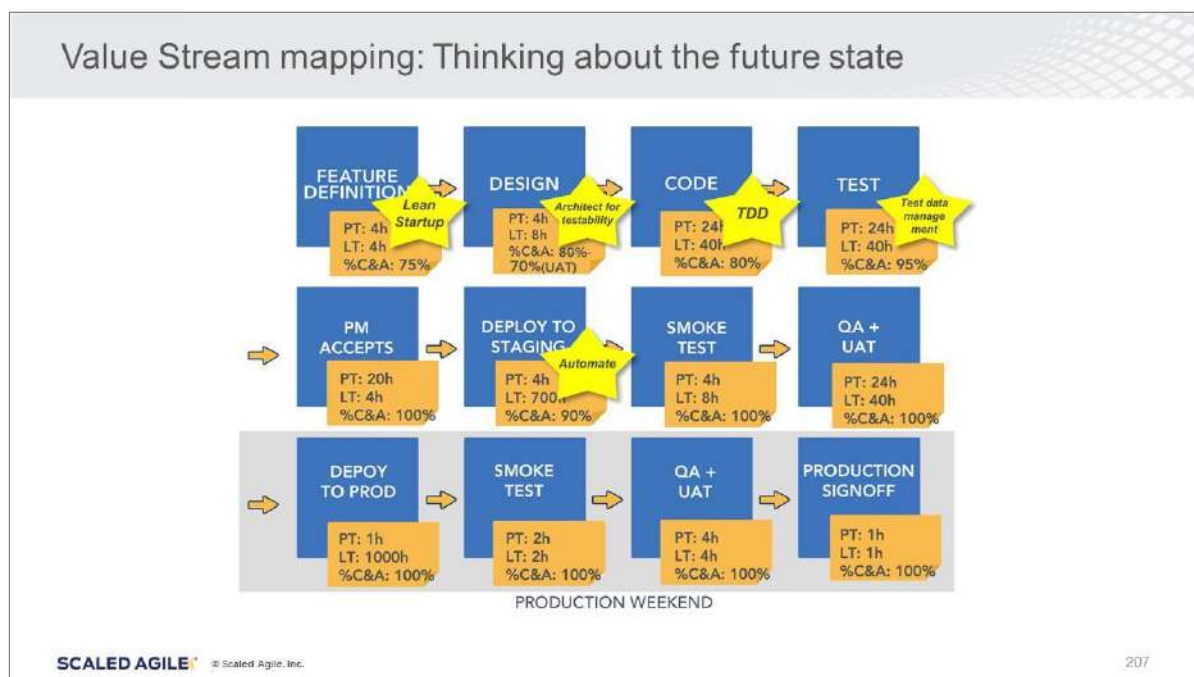
Share
5 min

- **Step 1:** At your table, use a flip chart to map a current development process from one person's real context using the SAFe Continuous Delivery Pipeline
- **Step 2:** Identify the delays between the steps
- **Step 3:** Prepare to share your results

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Notes:



Notes:



Activity: Development value stream mapping—future state

Prepare
8 min

Share
4 min

- ▶ **Step 1:** At your table, use the same work context as in the previous activity
- ▶ **Step 2:** Map the desired future state development process using the principles, practices, and tools found in SAFe
- ▶ **Step 3:** Be ready to describe how you identified them and what you would do to remove them

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Notes:

The RTE moves from bottleneck to bottleneck

- ▶ The value stream mapping of your Continuous Delivery Pipeline is an Enabler that helps the RTE identify and remove bottlenecks
- ▶ Every system has only one or a few bottlenecks that significantly constrain performance
- ▶ Once you have identified and removed the current bottleneck, there will be another one

I say an hour lost at a bottleneck is an hour out of the entire system. I say an hour saved at a non-bottleneck is worthless. Bottlenecks govern both throughput and inventory.

—Eliyahu M. Goldratt, *The Goal*



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Notes:

6.4 Examine the relentless improvement mindset

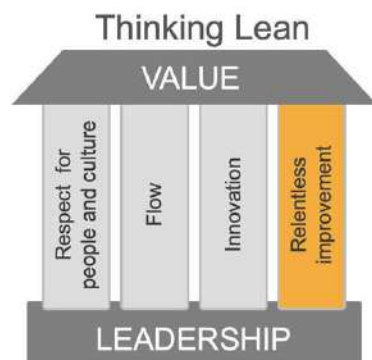
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Notes:

Thinking Lean and embracing Agility

Over time, the ART is guided to become a learning organization through continuous reflection and relentless improvement.



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Embracing Agility

The Values of the Agile Manifesto

We are uncovering better ways of developing software by doing it and helping others do it.

Through this work we have come to value:

Individuals and interactions over processes and tools

Working software over comprehensive documentation

Customer collaboration over contract negotiation

Responding to change over following a plan

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

manifesto.agile.org

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Notes:

Coaching ART relentless improvement

Coaching the members of the ART to embrace learning and relentless improvement is a key task for the RTE.

Relentless improvement

A constant sense of danger

Optimize the whole

A problem-solving culture

Reflect at key milestones

Fact-based improvement

Note:

A problem that is not well-defined may result in failure to reach the proper countermeasure.

Kaizen is about changing the way things are. If you assume that things are all right the way they are, you can't do Kaizen... so change something!

— Taiichi Ohno

Notes:



Activity: The ART relentless improvement mindset



- **Step 1:** In your group, discuss the question:
 - What can the RTE do to help members of the ART embrace a relentless improvement mindset?
- **Step 2:** Discuss and document in your workbooks at least one suggestion for each of the bullets on the right
- **Step 3:** Discuss and document what challenges the RTE might encounter when trying to develop this mindset in the ART

Relentless improvement

A constant sense of danger

Optimize the whole

A problem-solving culture

Reflect at key milestones

Fact-based improvement

Notes:

6.4 Examine the relentless improvement mindset

A constant sense of danger:

Optimize the whole:

Consider facts carefully, then act quickly:


6.4 Examine the relentless improvement mindset

Apply lean tools to identify and address root causes:

Reflect at key milestones; identify and address shortcomings:

What can the RTE do to help members of the ART embrace a Relentless Improvement mindset?

6.4 Examine the relentless improvement mindset



Activity: The relentless improvement mindset—teach back

Duration
7 min

► **Step 1:** As a table, use your notes from the previous activity and take turns teaching each other about:


- Actions the RTE can take to help the ART embrace relentless improvement
- Challenges the RTE might encounter trying to develop the mindset

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Notes:


6.4 Examine the relentless improvement mindset



RTE Action Plan

Duration
5 min

- ▶ **Step 1:** Locate the RTE Action Plan section in your workbooks
- ▶ **Step 2:** Add more tools and techniques to the Action Plan by reflecting on the following:
 - How will you prepare for the I&A event?
 - How will you prepare to for the problem-solving workshop?
 - Identify areas to improve upon from an initial look at the self-assessment tools
- ▶ **Step 3:** Share one of your insights with the class



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Notes:

Lesson review

In this lesson you:

- ▶ Explored the three components of an Inspect and Adapt workshop
- ▶ Identified self-assessment tools used to evaluate the ART
- ▶ Examined systems thinking and Value Stream process mapping concepts
- ▶ Examined the relentless improvement mindset

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Notes:

Lesson 6 notes



Click below to type your thoughts.

Lesson 7

Serving the ART

Learning Objectives:

- 7.1 Explore the characteristics of a servant leader
- 7.2 Identify facilitation techniques that evolve group dynamics
- 7.3 Examine coaching techniques
- 7.4 Explore group facilitation techniques
- 7.5 Identify the steps to create an ART with a one-team culture



SAFe® Course Attending this course gives students access to the SAFe® Release Train Engineer exam and related preparation materials.

7.1 Explore the characteristics of a servant leader

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Notes:

Servant leadership

A servant leader knows that her/his own growth comes from facilitating the growth of others who deliver the results.

Good leaders must first become good servants.

— Robert Greenleaf,
father of servant leadership

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Notes:

7.1 Explore the characteristics of a servant leader

The RTE is a servant leader

The RTE focuses on optimizing the flow of value through growing and maturing the teams and roles on the ART.


- ▶ This is a challenging, large, and complex task
- ▶ The RTE will need coaching support from an on-site SPC



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Notes:



Activity: The servant leader characteristics

Prepare

10 min

Share

10 min

- ▶ **Step 1:** Read the *Eight Behaviors of Servant Leaders* in your workbook.
- ▶ **Step 2:** Select one characteristic that is challenging to you. Pair up with another person to brainstorm and write down specific activities in your workbook that you can do to obtain coaching improveand upon that characteristic.
- ▶ **Step 3:** After 10 minutes, stand up, switch partners and share the activities that you have documented in your workbook with someone else in the room.

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Notes:

The 8 behaviors of servant leaders

- | | |
|---|---|
| 1. Listens and supports teams in problem identification and decision-making | 5. Persuades rather than use authority |
| 2. Creates an environment of mutual influence | 6. Thinking beyond day-to-day activities;
Applies systems thinking |
| 3. Understands and empathizes with others | 7. Supports the teams' commitments |
| 4. Encourages and supports the personal development of each individual and the development of teams | 8. Is open and appreciates openness in others |

Most challenging characteristic:

Specific activities I can do to obtain coaching and improve upon that characteristic:

7.1 Explore the characteristics of a servant leader

RTE as servant leader

Behavior	In the context of the SAFe
Listens and supports team members in decision identification	<ul style="list-style-type: none">• As a good facilitator, encourages everyone to express their opinions• Is attentive to hesitant behavior and body language during daily stand-up meetings, PI Planning, I&A, etc.• Helps the teams identify positive and negative changes during I&A
Creates an environment of mutual influence	<ul style="list-style-type: none">• Facilitates PI Planning and shared team events for all ART team members and stakeholders• Openly asks for opinions and input, and carefully considers the response
Understands and empathizes with others	<ul style="list-style-type: none">• Shares in celebrating every successful System Demo and Solution Demo; feels bad about impediments, failures, etc.
Encourages and supports the personal development of each individual	<ul style="list-style-type: none">• Encourages team learning• Fosters collaborative practices: teamwork, Continuous Integration, collective code ownership, short design sessions, specification workshops, etc.• Encourages rotation in technical areas of concern: functionality, components/layers, role aspects, etc.• As much as possible, facilitates team decision-making rather than making decisions for the teams

Notes:

RTE as a servant leader (cont.)

Behavior	In the context of SAFe
Persuades rather than uses authority	<ul style="list-style-type: none">• Asks questions that encourage the team to look at decisions from new perspectives• Articulates facts; helps the teams see things they may have overlooked; helps them rethink
Thinks beyond day-to-day activities; applies systems thinking	<ul style="list-style-type: none">• Sets long-term operating goals for the team, such as Lean-Agile practices to master, new skills to acquire, etc.• Examines what is missing in order to make the environment better for everyone; prioritizes improvement activities and makes them happen
Supports the teams' commitments	<ul style="list-style-type: none">• Facilitates ad-hoc meetings, if needed• Helps the teams find access to external sources of information: subject matter experts, shared resources (Architects, UX designers, tech writers), etc.• Helps clarify and articulate rationale behind priorities, Milestones, and commitments• Helps teams prepare for System Demo• Helps the teams find techniques to be more collaborative
Is open and appreciates openness	<ul style="list-style-type: none">• Shows appreciation for team members who raise serious issues• Encourages and facilitates open communication among team members• Encourages healthy conflict during team meetings• Gives open, honest opinions

Notes:

7.2 Identify facilitation techniques that evolve group dynamics

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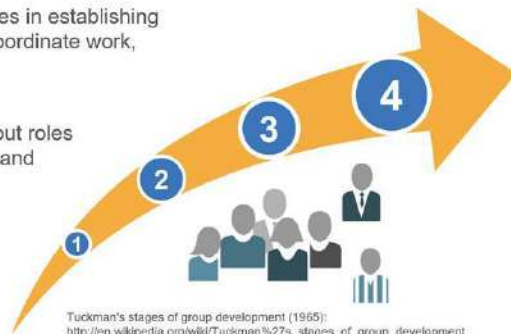
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Notes:

Stages of high-performing teams

In order to address challenges and deliver results, every team grows in four stages.

- 1 **Forming**
Who's on our team? What are we working on? How do we do it?
- 2 **Storming**
The team resolves initial conflicts and difficulties in establishing a shared understanding; makes attempts to coordinate work, roles, and processes.
- 3 **Norming**
The team establishes internal agreements about roles and responsibilities; it becomes a community, and individuals adapt to it.
- 4 **Performing**
The processes, roles, and responsibilities become just a tool for the team in their new main game—**getting the job done!**



Tuckman's stages of group development (1965):
http://en.wikipedia.org/wiki/Tuckman%27s_stages_of_group_development

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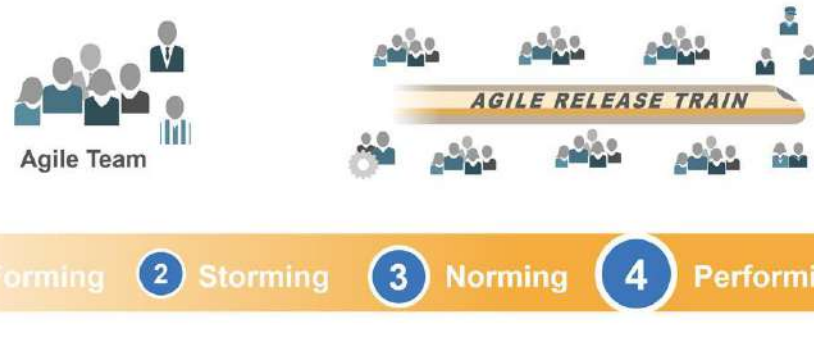
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Notes:

7.2 Identify facilitation techniques that evolve group dynamics

The growth of a team of teams


The growth of all the individual teams in the ART progresses through the Tuckman stages and so does the whole team of teams that is the ART itself.



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Notes:

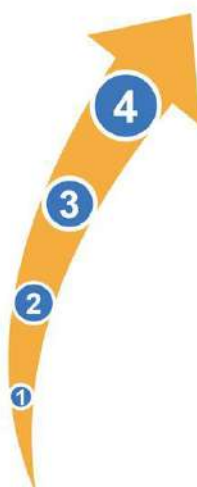


Activity: The RTE and ART group dynamics

Prepare 10 min

Share 5 min

- **Step 1:** At your table, draw the Tuckman group dynamics stages on a flip chart. Use the previous two slides as a guide.
- **Step 3:** At each Tuckman stage, list the following:
 - What you can observe in the ART that would tell you that the ART as a whole is at this stage
 - What RTE behavior or activities can, at this specific stage, help the ART grow as a team of teams and progress to the next stage
- **Step 4:** Be prepared to share your flip chart

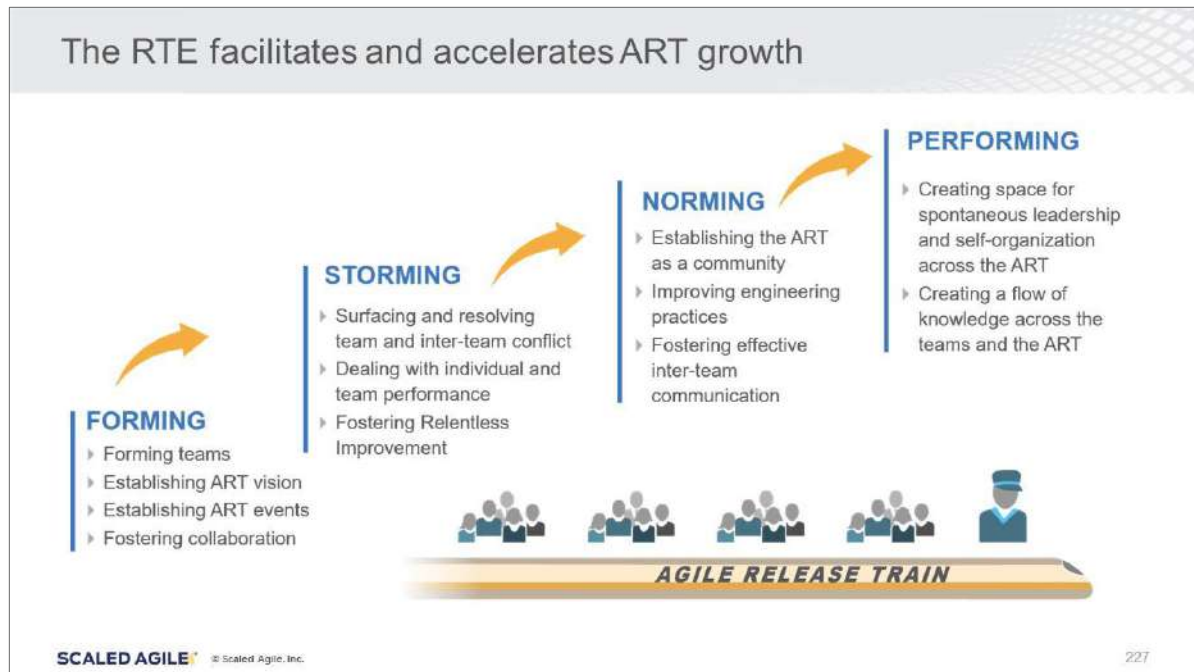


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Notes:

7.2 Identify facilitation techniques that evolve group dynamics



Notes:

7.3 Examine coaching techniques

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Notes:

Coaching sometimes requires a shift from old behaviors to new ones


Move away from...	Move toward...
Coordinating individual contributions	Coaching the whole team to collaborate
Acting as a subject matter expert	Being a facilitator
Driving toward specific outcomes	Being invested in the team's overall performance
Knowing the answer	Letting the team find their own way
Directing	Guiding
Talking about deadlines and technical options	Focusing on business value delivery
Driving 'the right' (your) decisions	Doing the right thing for the business right now
Fixing problems rather than helping others fix them	Facilitating team problem-solving

Lyssa Adkins, *Coaching Agile Teams*

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Notes:



Video: The Power of Empathy

Duration
4 min



<https://vimeo.com/81492863>

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Notes:



Video Link: <https://vimeo.com/81492863>

Why are questions powerful?

- ▶ They are thought-provoking
- ▶ They generate curiosity in the listener
- ▶ They channel focus
- ▶ They generate energy and forward movement
- ▶ They stimulate reflective conversation
- ▶ They surface underlying assumptions
- ▶ They invite creativity and new possibilities
- ▶ They inspire more questions
- ▶ They help reach for deep meaning



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Notes:

Powerful questions you can ask


Powerful questions like these can help connect ideas and generate deeper insights.

- | | |
|---|---|
| ▶ What new connections are you making? | ▶ What is it we're not seeing? |
| ▶ What had real meaning for you from what you've heard? | ▶ What do we need more clarity about? |
| ▶ What surprised you? | ▶ What has been your major learning, insight, or discovery so far? |
| ▶ What challenged you? | ▶ What is the next level of thinking we need to do? |
| ▶ What's missing from this picture so far? | ▶ What hasn't been said that would help us reach a deeper level of understanding and clarity? |
| | ▶ What would you do if success were guaranteed? |

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Notes:



Activity: Powerful questioning

Duration
15 min

- ▶ **Step 1:** Find a partner at another table.
- ▶ **Step 2:** Determine who has 'Old Shoes' and who has 'New Shoes'. New Shoes play the role of the team member. Old Shoes will play the role of the coach.
- ▶ **Step 3:** New Shoes shares an issue they are facing.
- ▶ **Step 4:** Old Shoes can only respond in one of two ways:
 - Reflective listening: "I hear you saying..."
 - Asking a powerful question: There is a list of some powerful questions in your workbook.
- ▶ **Step 5:** Switch roles after seven minutes.

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Notes:

Examples of powerful questions

- What new connections are you making?
- What had real meaning for you from what you've heard?
- What surprised you?
- What challenged you?
- What's missing from this picture so far?
- What is it we're not seeing?
- What do we need more clarity about?
- What has been your major learning, insight, or discovery so far?
- What is the next level of thinking we need to do?
- What hasn't been said that would help us reach a deeper level of understanding and clarity?
- What would you do if success were guaranteed?

Some truth statements about teams

- ▶ Teams are far more productive than the same number of individuals
- ▶ Face-to-face communication is extremely efficient
- ▶ Teams work best when not interrupted
- ▶ Products are more robust when a team has all the cross-functional skills necessary
- ▶ When teams themselves make a commitment, they will probably figure out how to meet it
- ▶ Changes in team composition can impact productivity
- ▶ Peer pressure is a strong motivator



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Notes:

The five dysfunctions of a team

Teamwork is the ultimate competitive advantage.

However, many teams are dysfunctional.

Absence of trust is the key problem that leads to the other four dysfunctions.




Source: *Five Dysfunctions of a Team*, Patrick Lencioni

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Notes:



Activity: The ART can't run without trust

Duration
10 min

- ▶ **Step 1:** At your table, discuss which specific SAFe activities you think can help establish trust among the members of the ART and the ART stakeholders.
- ▶ **Step 2:** Circle the activities on the Big Picture in your workbook and comment why these would help create trust
- ▶ **Step 3:** Choose one of the SAFe activities you circled and discuss how the RTE can act to further increase the amount of trust built in that activity
- ▶ **Step 4:** Note the answer in your workbook

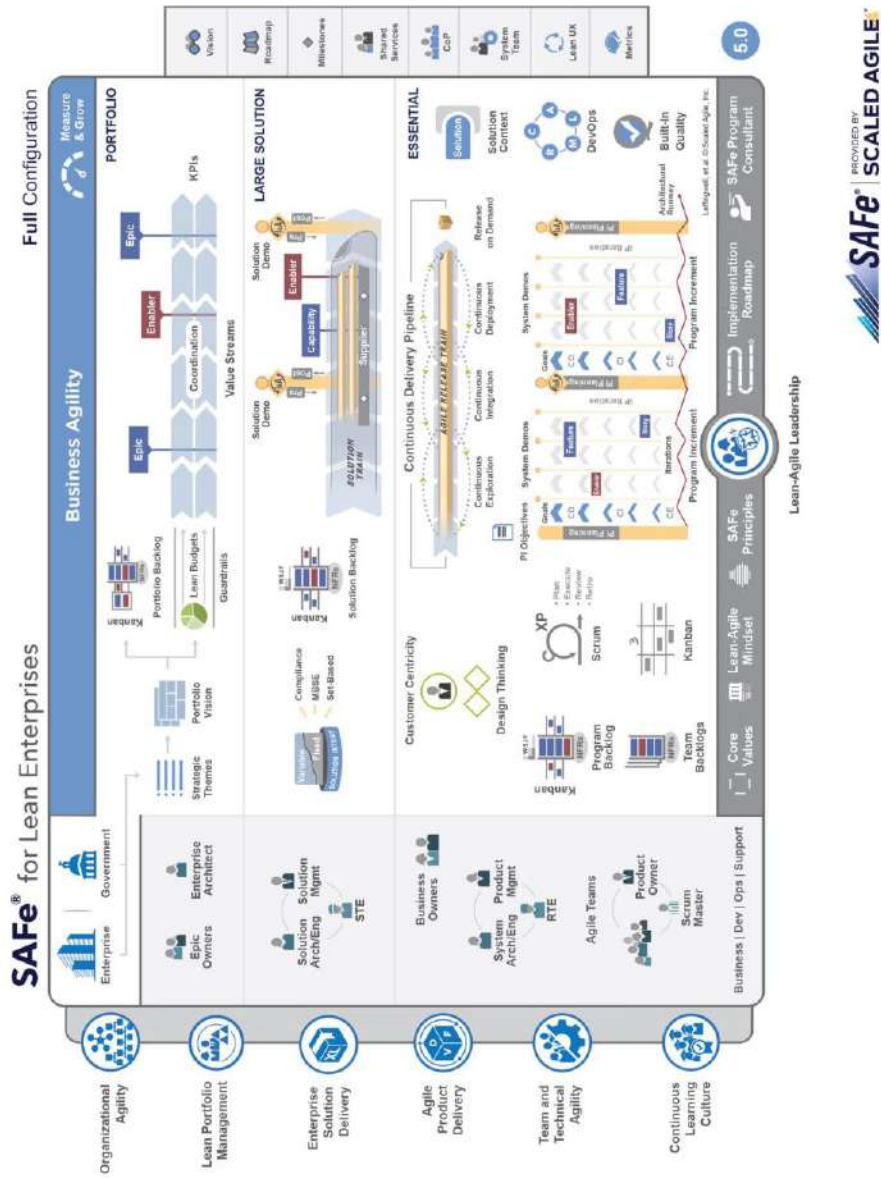


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Notes:

7.3 Examine coaching techniques



7.3 Examine coaching techniques

Choose one of the SAFe activities you circled, and discuss at your table how the RTE can act to further increase the amount of trust built in the activity. Note your answer here:

The RTE can mitigate the five dysfunctions using SAFe

Inattention to Results	Results are empirically reviewed at every System Demo and PI Planning event. The ART Inspect and Adapt drives Relentless Improvement.
Avoidance of Accountability	Stakeholders, peer pressure, and transparent review of results create accountability.
Lack of Commitment	Teams make shared commitments to each other and to the ART stakeholders.
Fear of Conflict	The RTE creates a safe environment for conflict, encouraging discussion of disagreements. Shared commitment avoids conflict that occurs when objectives are not aligned.
Absence of Trust	The ART is a safe environment. The teams share commitments and goals, display hyper-transparency, and engage in shared problem solving.

Notes:

7.4 Explore group facilitation techniques

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Notes:

Facilitating large groups

Many times during a PI, the RTE will be the facilitator for meetings and events with many people attending.


- ▶ Inspect and Adapt
- ▶ Management review and problem-solving
- ▶ PI Planning event
- ▶ Program Backlog refinement
- ▶ ART sync
- ▶ Scrum of scrums



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Notes:



Activity: Demonstrate a facilitation technique

Prepare
10 min

Share
10 min

- ▶ **Step 1:** As a group, select one of the events in the Big Picture where you have been (or might be) facilitating a large group of people
- ▶ **Step 2:** Discuss different techniques you have used (or would consider using) to facilitate that event in an efficient manner
- ▶ **Step 3:** Choose one to present/discuss
- ▶ **Step 4:** Document the technique in your workbook and be ready to present it to the room

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Notes:

7.4 Explore group facilitation techniques

Discuss different techniques you have used (or would consider using) to facilitate that event in an efficient manner. Document the techniques here:

Large group facilitation preparation and techniques

- ▶ Start by allowing the social networks to form. You want the brains to get in a place of safety, and they do this through forming their own social networks. This creates an environment of safety.
- ▶ Provide clear instructions in writing. No more than three steps at a time. Handouts are extremely helpful.
- ▶ Design, test, and leverage your audio visuals.

Notes:

Large group facilitation preparation and techniques (cont'd)

- ▶ Optimize the room layout for maximum participation. Round tables and pods are best. Leverage the wall space.
- ▶ Timebox everything and use your timebox tools! Music, bells, squirt guns, hands up, whatever it takes.
- ▶ Call upon your Scrum Masters and SPCs to help. You'll need all the coaching power you can get!
- ▶ Fun creates energy. Make it fun!

Notes:



Activity: Build your group facilitation toolbox

Prepare
6 min

Share
6 min

- **Step 1:** Using the Thought Organizer pages in your workbook and the tips from the previous slides (on the previous page in your workbook), build some specific tools that you can use for your group facilitation environment.
- **Step 2:** After six minutes, visit another pair of students. Share and compare tools.



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Notes:

7.5 Identify the steps to create an ART with a one-team culture

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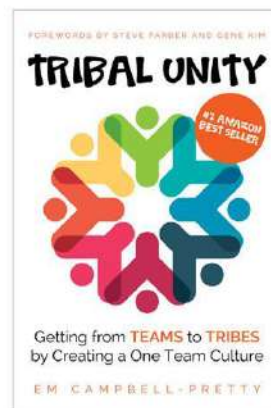
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Notes:

The ART as a tribe

A tribe is a group of people connected to one another, connected to a leader, and connected to an idea.

— Seth Godin



Source: Tribal Unity: Getting From Teams to Tribes by Creating a One Team Culture Em Campbell-Pretty

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Notes:

Tribal unity: Steps to creating a one-team culture

1. Create great team...
 - SAFe Agile Teams are five to eleven people
 - Formed via self-selection
 - That use Agile practices!
2. Connect the teams and create a tribe...
 - With a shared identity
 - And shared experiences
 - That celebrates as a tribe!



Source: Tribal Unity: Getting From Teams to Tribes by Creating a One Team Culture. Em Campbell-Pretty

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Notes:

Tribal unity: Steps to creating a one-team culture (cont.)

3. Connect the tribe to its leader...
 - By connecting at the Gemba
 - Creating an Agile Team of Agile leaders
 - That are vulnerable in front of the tribe!
4. Connect the tribe to an idea...
 - By having a vision
 - Communicating the vision
 - And learning together!



Source: Tribal Unity: Getting From Teams to Tribes by Creating a One Team Culture. Em Campbell-Pretty

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Notes:

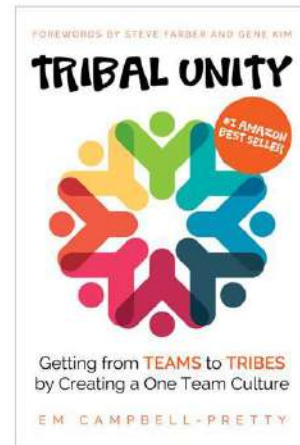
Tribal Unity: Steps to creating a One-Team Culture (cont.)

5. Sustaining tribal unity

- Quantify culture with eNPS
- Record and share tribal legends
- Set up successors for success

6. Engaging management in tribal unity


- Tap into your empathy
- Shine a light on a bright spot
- Invite them into Gemba!




Source: Tribal Unity: Getting From Teams to Tribes by Creating a One Team Culture
Em Campbell-Pretty


Notes:

7.5 Identify the steps to create an ART with a one-team culture



What does tribal unity look like?





<https://youtu.be/ZX8g1-RNzek>

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Notes:



Video Link: <https://youtu.be/ZX8g1-RNzek>

7.5 Identify the steps to create an ART with a one-team culture



Activities: Being vulnerable in front of the tribe

Prepare
10 min

Share
10 min


- **Step 1:** As an RTE, consider how you are creating a one-team culture
 - How are you connecting the teams to each other?
 - How are you creating connections between yourself and the teams?
 - How are you connecting them to the Vision or idea?
- **Step 2:** At your table, select one of these connections and prepare a two-minute skit around how you will build a one-team culture for your ART when you return to the office next week.

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Notes:


7.5 Identify the steps to create an ART with a one-team culture



RTE Action Plan

Duration
5 min

- ▶ **Step 1:** Locate the RTE Action Plan section in your workbooks
- ▶ **Step 2:** Begin adding tools to the Action Plan by brainstorming the following:
 - What behaviors will you shift away from and move into as you develop your RTE coaching and facilitation skills?
 - What facilitation techniques do you need to develop as you grow into being an RTE?
- ▶ **Step 3:** Share one of your insights with the class



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Notes:

Lesson review

In this lesson you:

- ▶ Explored the characteristics of a servant leader
- ▶ Identified facilitation techniques that evolve group dynamics
- ▶ Examined coaching techniques
- ▶ Explored group facilitation techniques
- ▶ Identified the steps to create an ART with a one-team culture

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Notes:

Lesson 7 notes



Click below to type your thoughts.

Lesson 8

Continuing Your Learning Journey

Learning Objectives:

- 8.1 Create a personal RTE action plan
- 8.2 Create an ART Improvement Roadmap
- 8.3 Commit to the plans




SAFe® Course Attending this course gives students access to the SAFe® Release Train Engineer exam and related preparation materials.

8.1 Create a personal RTE action plan

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Notes:



Activity: Find your personal challenges

Duration
7 min

- ▶ **Step 1:** Individually, review the Action Plan you wrote after each lesson in your workbook, and select three things that challenge you.
- ▶ **Step 2:** Write these items in your personal challenges list

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Notes:

8.1 Create a personal RTE action plan


My personal challenges list:

Challenge #1

Challenge #2

Challenge #3

8.1 Create a personal RTE action plan



Activity: Define personal actions

Prepare
7 min

Share
3 min

- ▶ **Step 1:** In pairs, take turns discussing your three personal challenges
- ▶ **Step 2:** With your teammate, identify one clearly defined action for each of your challenges that you can implement in your work context
- ▶ **Step 3:** Document your plans in your personal RTE actions list
- ▶ **Step 4:** Be prepared to share

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Notes:

8.1 Create a personal RTE action plan

My personal RTE actions list:

8.2 Create an ART Improvement Roadmap

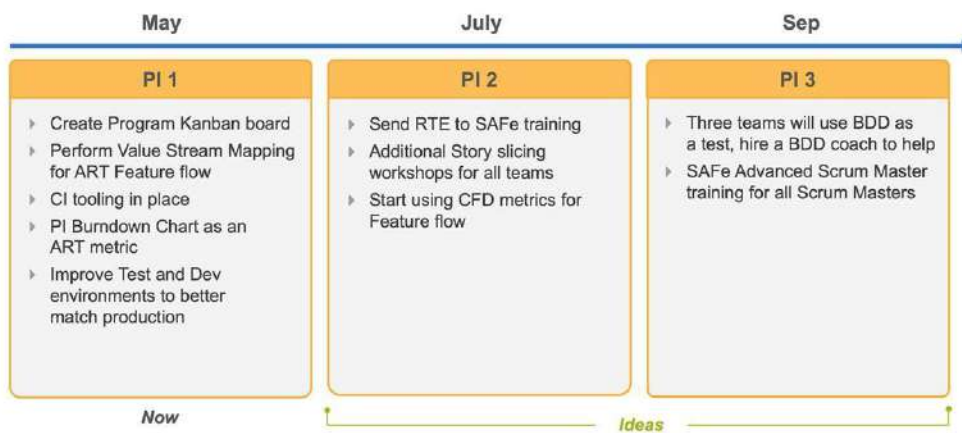
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Notes:

Improvement Roadmap

An ART Improvement Roadmap guides ART evolution over time.




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Notes:

8.2 Create an ART Improvement Roadmap



Activity: Find ART improvement opportunities

Duration

6 min

- ▶ **Step 1:** Identify three action items in your organization where you believe you can immediately improve your ART context
- ▶ **Step 2:** Select areas where you see the most opportunity for improvement
- ▶ **Step 3:** Write these items in your ART improvement list in your workbook

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Notes:

8.2 Create an ART Improvement Roadmap


My ART improvement opportunities list:

ART improvement opportunity #1


ART improvement opportunity #2

ART improvement opportunity #3

8.2 Create an ART Improvement Roadmap



Activity: Define your ART improvement roadmap

Duration

6 min

- ▶ **Step 1:** In pairs, alternate discussing your three ART improvement opportunities
- ▶ **Step 2:** With your teammate, brainstorm and define two sequential actions for each item in your ART improvement list that you can implement in your work context
- ▶ **Step 3:** Document your improvement actions in your ART improvement roadmap list in your workbook

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Notes:

ART Action Roadmap list:

My two actions for ART improvement opportunity #1:

My two actions for ART improvement opportunity #2:


My two actions for ART improvement opportunity #3:

8.3 Commit to the plans


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Notes:



Activity: Commit to the plans

Duration


- ▶ **Step 1:** Organize into new pairs. Take turns reviewing the personal and the ART Improvement Roadmap lists you created.
- ▶ **Step 2:** Commit to each other that you will do your best to act on the items in the list.
- ▶ **Step 3:** Schedule a date in two to eight weeks for a follow-up check-in to meet and talk about your progress against your plans. Agree to keep each other accountable.

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Notes:

Check-in details for you and your partner. Be sure to include contact information.

Emphasize lifelong learning

Lean-Agile Leaders are lifelong learners who help teams build better systems through understanding and exhibiting the values, principles, and practices of Lean, systems thinking, and Agile development.

— Dean Leffingwell



Notes:

RTE reading list

SAFe Distilled, Richard Knaster, Dean Leffingwell

Tribal Unity, Em Campbell-Pretty

The Lean Machine, Dantar Oosterwald

The Goal, Eliyahu Goldratt

Principles of Product Development Flow, Don Reinertsen

Switch, Chip Heath and Dan Heath

The Five Dysfunctions of a Team, Patrick Lencioni

Agile Software Requirements, Dean Leffingwell

Agile Retrospectives, Esther Derby and Diana Larsen


Death by Meeting, Patrick Lencioni

Lean Product and Process Development, Allen Ward and Durward Sobek II

That's Not How We Do It Here!, John Kotter and Holger Rathgeber

Value Stream Mapping, Karen Martin


Notes:



RTE Action Plan

Duration
5 min

- ▶ **Step 1:** Locate the RTE Action Plan section in your workbooks
- ▶ **Step 2:** Begin adding tools to the Action Plan:
 - Organize your next actions that you will implement in your work context.
 - Identify at least one title in the reading list to read that will support your action.
- ▶ **Step 3:** Share one of your insights with the class



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Notes:

Lesson review

In this lesson you:

- ▶ Created a personal RTE action plan
- ▶ Created an ART Improvement Roadmap
- ▶ Committed to the plans

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Notes:

Lesson 8 notes



Click below to type your thoughts.

Lesson 9

Becoming a Certified SAFe Release Train Engineer

Learning Objectives:

9.1 Becoming a Certified SAFe Professional



SAFe® Course Attending this course gives students access to the SAFe® Release Train Engineer exam and related preparation materials.

Make the most of your learning



Access the SAFe Community Platform

Manage your member profile, continue your learning with toolkits and videos, and access communities of practice and the member directory



Prepare Yourself

Extend your SAFe knowledge and prepare for certification with your learning plan, course workbook, study materials, and practice test before your exam



Become a Certified SAFe Professional

Demonstrate your validated knowledge, skills, and mindset to participate in SAFe methods




Showcase Your SAFe Credentials

Use your digital badge to view global insights, track market labor data, and see where your skills are in demand

Notes:

9.1 Becoming a Certified SAFe Professional



Video: Become a Certified SAFe Professional


Duration
3 min

Continue to build on the foundation of SAFe learning you began in class by studying and taking the certification exam.

Earning this certification demonstrates and establishes your new knowledge.

Certification details at:

<https://www.scaledagile.com/certification/about-safe-certification/>



<https://vimeo.com/307578726>

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Notes:



Video link: <https://vimeo.com/307578726>



About SAFe certification: <https://www.scaledagile.com/certifications/about-safe-certification/>




Video: Welcome to the SAFe Community Platform

Duration
5 min

Want to learn more about the next steps on your SAFe Journey?

Access the SAFe Community Platform and discover all the SAFe resources available for your use!




<https://vimeo.com/201877314>

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Notes:



Video link: <https://vimeo.com/201877314>

Certification Exam Sample Questions

These sample questions provide examples of the format and type of questions to expect on the exam (these are not the actual exam questions). Performance on the sample questions is NOT an indicator of the performance on the exam, and it should NOT be considered an assessment tool. A web-enabled version of the sample questions are now available in a flashcard style format (internet required). Use the link below to access the sample question bank and begin preparing for certification.

To get started:

1. Click the link below
2. A browser window will open with the sample questions site
3. Click "Start"
4. Use the left-side menu to scroll and select your course
5. Click "Start" to access the sample questions



Sample questions: <http://bit.ly/3aqpP4O>

Lesson 9 notes



Click below to type your thoughts.

Appendix 1

Action Plan

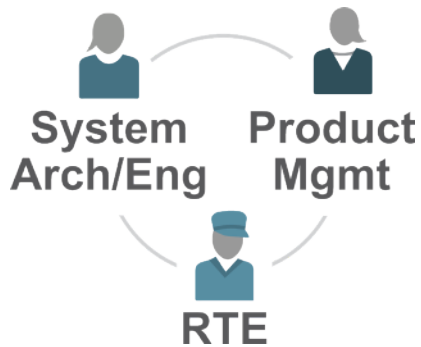


SAFe® Release Train Engineers Action Plan

Lesson 1:

Exploring the RTE Role and Responsibilities

[Click to return to the workbook](#)



What is your current role? How does the RTE role connect to your role within your organization?

What do you imagine the RTE doing during the PI? Map out what a PI would look like for you as an RTE.

Lesson 2:

Applying SAFe Principles

[Click to return to the workbook](#)

- #1 Take an economic view
- #2 Apply systems thinking
- #3 Assume variability; preserve options
- #4 Build incrementally with fast, integrated learning cycles
- #5 Base milestones on objective evaluation of working systems
- #6 Visualize and limit WIP, reduce batch sizes, and manage queue lengths
- #7 Apply cadence, synchronize with cross-domain planning
- #8 Unlock the intrinsic motivation of knowledge workers
- #9 Decentralize decision-making
- #10 Organize around value

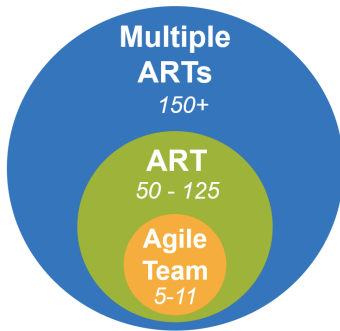
Why is it important to align on the principles?

How will you apply to the principles to your role of RTE in your organization?



Lesson 3: Organizing the ART

[Click to return to the workbook](#)



How will you bridge connections between the three roles on the train?

How will you support the Agile teams on the train and mitigate challenges?

Identify your System team and their responsibilities.

Lesson 4: Planning a Program Increment

[Click to return to the workbook](#)

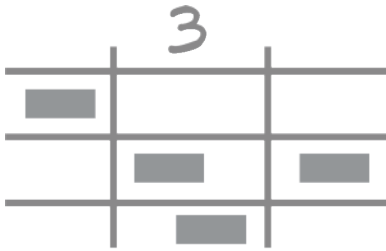
8:00 - 9:00	Business Context	State of the business and upcoming objectives
9:00 - 10:30	Product/Solution Vision	Vision and prioritized Features
10:30 - 11:30	Architecture Vision and development practices	Architecture, common frameworks, etc. Agile tooling, engineering practices, etc.
11:30 - 1:00	Planning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

Reflect on the PI planning and facilitation process from the perspective of the RTE and how you will run a successful PI Planning event.



Lesson 5: Executing a Program Increment

[Click to return to the workbook](#)



Kanban

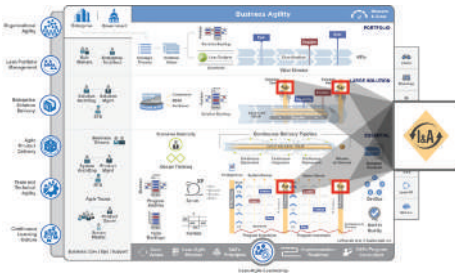
How will you implement the Program Kanban in your work context?

How will you prepare for the IP Iteration in your work context?

How will you work with the Agile teams on the ART to define and maintain levels of DoD?

Lesson 6: Fostering Relentless Improvement

[Click to return to the workbook](#)



How will you prepare for the I&A event?

How will you prepare to for the problem-solving workshop?

Identify areas to improve upon from an initial look at the self-assessment tools.



SAFe® Release Train Engineers Action Plan

Lesson 7: Serving the ART

[Click to return to the workbook](#)



What behaviors will you shift away from and move into as you develop your RTE coaching and facilitation skills?

What facilitation techniques do you need to develop as you grow into being an RTE?

Lesson 8: Continuing Your Learning Journey

[Click to return to the workbook](#)



RTE

Organize your next actions that you will implement in your work context.

Identify a title in the reading list to read that will support your action.

Appendix 2

Glossary

Glossary

**SAFe Glossary:**

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