

# Lesson 5

## Executing the PI

- 1. Introducing the Scaled Agile Framework
- 2. Building an Agile Team
- 3. Planning the Iteration
- 4. Executing the Iteration
- 5. Executing the PI

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

### Learning objectives

- 5.1 Plan together
- 5.2 Integrate and demonstrate together
- 5.3 Learn together

## 5.1 Plan together

### PI Planning

Cadence-based PI Planning meetings are the pacemaker of the Agile Enterprise.

- ▶ Two days every 8 – 12 weeks (10 weeks typical)
- ▶ Everyone attends in person if at all possible
- ▶ Product Management owns Feature priorities
- ▶ Development teams own story-planning and high-level estimates
- ▶ Architects/Engineering and UX work as intermediaries for governance, interfaces, and dependencies

# The goal of PI Planning

## Alignment to a common mission!

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

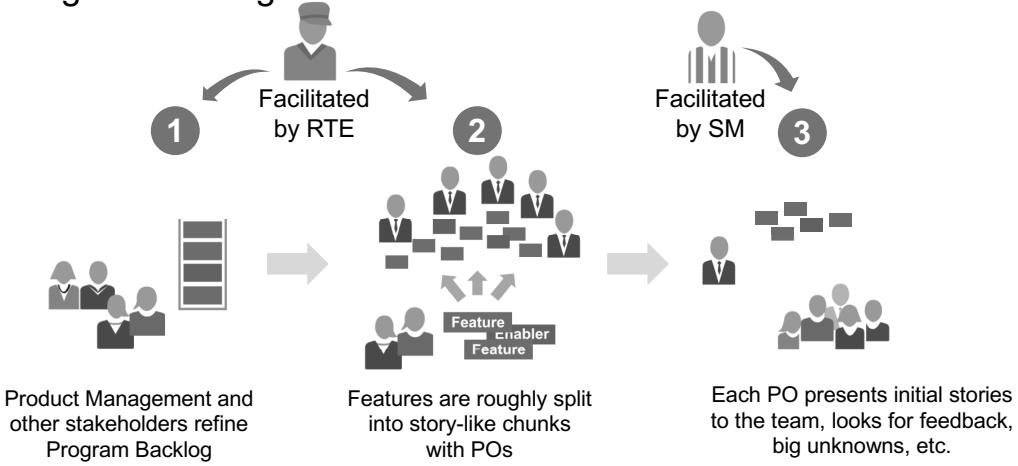


## Day 1 agenda

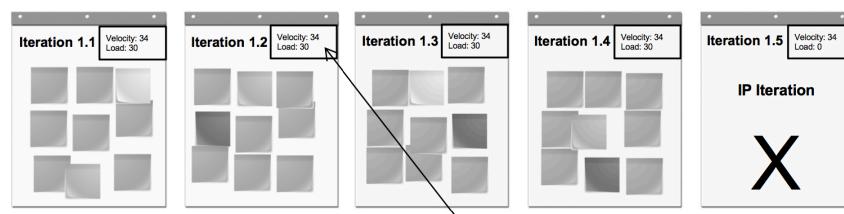
|             |                                             |  |                                                                                                                                                                |
|-------------|---------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 & development practices |  | <ul style="list-style-type: none"><li>Architecture, common frameworks, etc.</li><li>Agile tooling, engineering practices, etc.</li></ul>                       |
| 11:30-1:00  | Planning context and lunch                  |  | Facilitator explains planning process                                                                                                                          |
| 1:00-4:00   | Team breakouts                              |  | <ul style="list-style-type: none"><li>Teams develop draft plans and identify risks and impediments</li><li>Architects and Product Managers circulate</li></ul> |
| 4:00-5:00   | Draft plan review                           |  | Teams present draft plans, risks, and impediments                                                                                                              |
| 5:00-6:00   | Management review & problem solving         |  | Adjustments made based on challenges, risks, and impediments                                                                                                   |

## New PI content should not be a surprise

Upfront presentation of content to the teams solves a lot of problems later, during PI Planning.



## Team breakout #1



For velocity, use historic information or  $8 \times$  (number of developers + testers).

Be sure to adjust for holidays and vacation time.

Color coding gives visibility into investments

|        |                           |        |                        |          |                                    |
|--------|---------------------------|--------|------------------------|----------|------------------------------------|
| Green  | = User stories            | Yellow | = Exploration Enablers | Red/Pink | = Risks and dependencies           |
| Orange | = Infrastructure/Enablers | Purple | = Maintenance          | Red/Pink | = Addressed risks and dependencies |

## Align to a mission with PI Objectives

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

They often map directly to the features in the backlog ... But not always.

For example:

- ▶ Aggregation of a set of Features, stated in more concise terms
- ▶ A Milestone like a trade show
- ▶ An Enabler Feature needed to support the implementation
- ▶ A major refactoring

| <u>Objectives for PI 1</u>                                         | <u>Business Value</u> |
|--------------------------------------------------------------------|-----------------------|
| › Structured location and validation of locations                  |                       |
| › Build and demonstrate a proof of concept for context images      |                       |
| › Implement negative triangulation by: tags, companies, and people |                       |
| › Speed up indexing by 50%                                         |                       |
| › Index 1.2 B more web pages                                       |                       |
| › Extract and build URL abstracts                                  |                       |
| == STRETCH ==                                                      |                       |
| › Fuzzy search by full name                                        |                       |
| › Improve tag quality to 80% relevance                             |                       |

## Stretch objectives

Stretch objectives provide a reliability guard band.

Stretch objectives *do* count in velocity/capacity:

- ▶ They are planned, not extra things teams do “just in case you have time”
- ▶ But, they *are not included* in the commitment, thereby making the commitment more reliable
- ▶ If a team has low confidence in meeting a PI Objective, encourage them to move it to stretch
- ▶ If an item has many unknowns, consider moving it to stretch, and put in early spikes

## SMART Team PI Objectives

Teams should write their PI Objectives in the “SMART” format.



- ▶ **Specific** States the intended outcome as simply, concisely, and explicitly as possible (Hint: Try starting with an action verb)
- ▶ **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.
- ▶ **Achievable** Achieving the objective should be within the team’s control and influence
- ▶ **Realistic** Recognize factors that cannot be controlled. (Hint: Avoid making “happy path” assumptions)
- ▶ **Time-bound** The time period for achievement must be within the PI, and therefore all objectives must be scoped appropriately

## Team deliverables detail

### Iterations

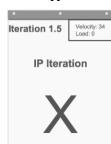


Story...

Story dependency

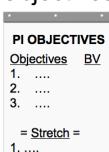
- ▶ If a Story has a dependency, put a red sticky on it describing the dependency. Put a check mark through it once the dependency has been addressed.
- ▶ If a risk is broader in nature, put it on the risk sheet
- ▶ If needed, allocate a percentage of capacity for unplanned activities like maintenance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

### IP



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

### Objectives



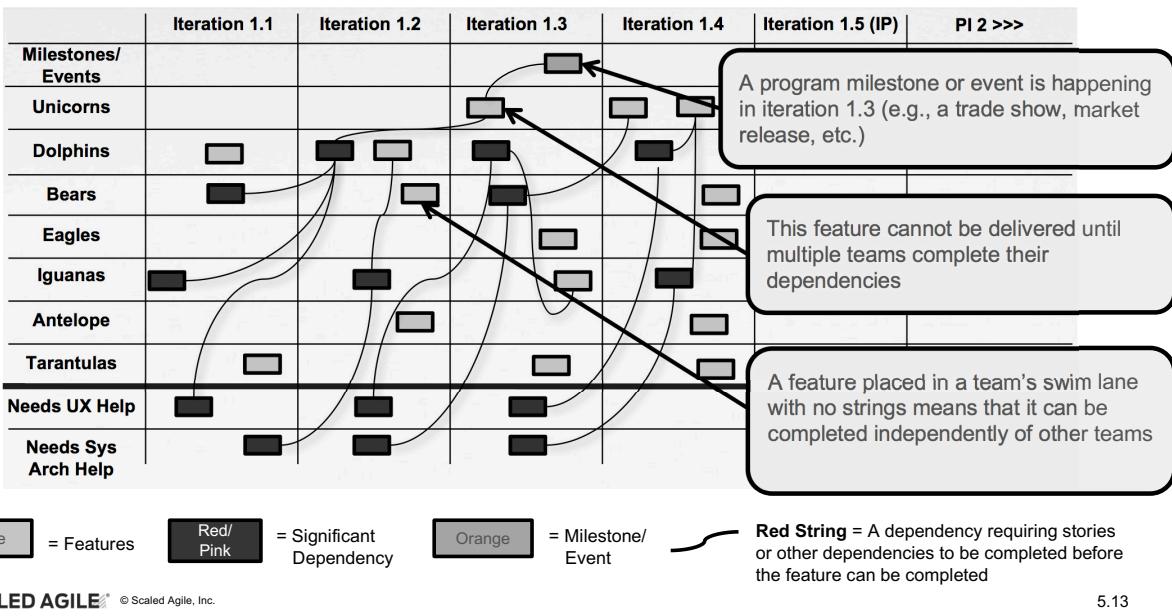
- ▶ PI Objectives should be written as “SMART” objectives
- ▶ Objectives are assigned business value during the second team breakout
- ▶ Stories supporting stretch objectives are included in the load calculation

### Risks



- ▶ Program risks are those that need to be escalated to the program level. 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.

## Program board - Feature delivery, dependencies and Milestones



## Exercise: Identify dependencies

In your team, review the Stories you created from your Features and identify dependencies with other teams.

- If you are sitting with your whole ART:
  - Identify which teams you are likely to be regularly dependent on
  - Identify which teams you think will regularly be dependent on you
- Create a list of dependencies for your Stories or Features and be ready to present the teams you depend on and that depend on you



## Management review and problem-solving

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

Common questions during the manager's review:

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



Used with permission of Hybris Software

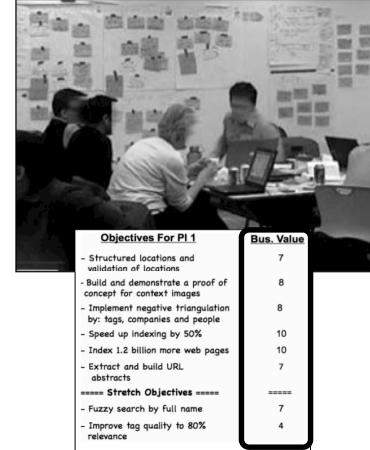
## Day 2 agenda

|                  |                                         |  |                                                                                                                                                                                               |
|------------------|-----------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8:00-9:00        | Planning adjustments                    |  | Planning adjustments made based on previous day's management meeting                                                                                                                          |
| 9:00-11:00       | Team breakouts                          |  | <ul style="list-style-type: none"><li>▶ Teams develop final plans and refine risks and impediments</li><li>▶ Business Owners circulate and assign business value to team objectives</li></ul> |
| 11:00-1:00       | Final plan review & lunch               |  | Teams present final plans, risks, and impediments                                                                                                                                             |
| 1:00-2:00        | Program risks                           |  |                                                                                                                                                                                               |
| 2:00-2:15        | PI confidence vote                      |  |                                                                                                                                                                                               |
| 2:15-???         | Plan rework if necessary                |  | If necessary, planning continues until commitment is achieved                                                                                                                                 |
| After commitment | Planning retrospective & moving forward |  | <ul style="list-style-type: none"><li>▶ Retrospective</li><li>▶ Moving Forward</li><li>▶ Final Instructions</li></ul>                                                                         |

## Team breakout #2

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

- ▶ In the second team breakout, Business Owners circulate and assign business value to PI Objectives from low (1) to high (10)
- ▶ Teams finalize the Program Increment plan
- ▶ Teams also consolidate program risks, impediments, and dependencies
- ▶ Stretch objectives provide the capacity and guard band needed to increase cadence-based delivery reliability



## Addressing program risks

After all plans had 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, PI may not yield the planned results.
- ▶ Mitigated – Team has plan to adjust as necessary



## Confidence vote: Team and Program Levels

After dependencies are resolved and risks are addressed, a confidence vote is taken at the Team and Program Levels.

“Fist of five” confidence vote

- ▶ Range of 1-5
- ▶ 1 = No confidence
- ▶ 5 = Very high confidence



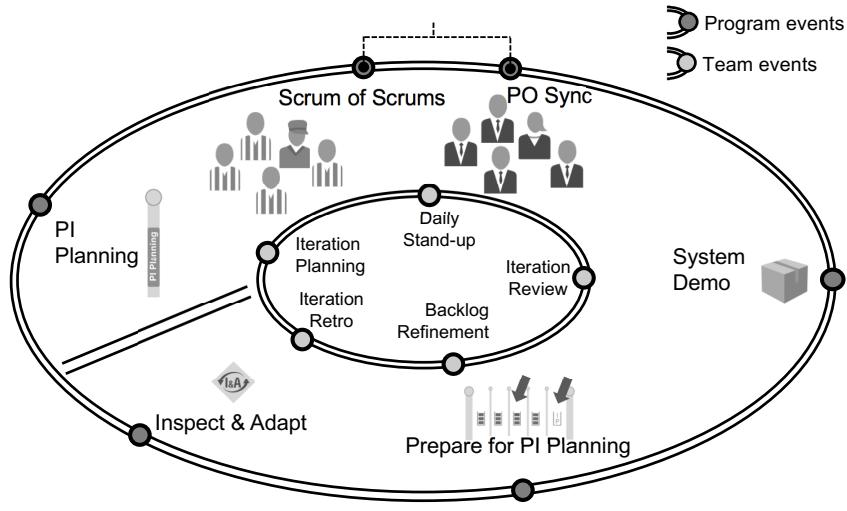
A commitment with two parts:

1. Teams agree to do everything in their power to meet the agreed-to objectives
2. In the event that fact patterns dictate that it is simply not achievable, teams agree to escalate *immediately* so that corrective action can be taken

## 5.2 Integrate and demonstrate together

## Program execution

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



## ART Sync

Programs coordinate dependencies through sync meetings.



### Scrum of Scrums

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

### ART Sync



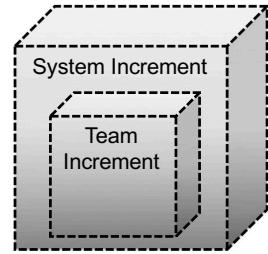
### PO Sync

- ▶ 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
- ▶ Timeboxed, and followed by a “meet after”

## New system increment every two weeks

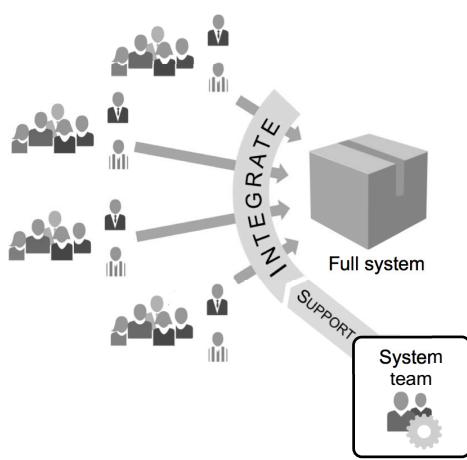
Every two weeks, teams evaluate the status of the new, integrated system increment.

- ▶ 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



## System Demo every two weeks

Demonstrate the full System increment to stakeholders every Iteration.



- ▶ An integrated System demo
- ▶ Happens after the iteration review (may lag by as much as one Iteration, maximum)
- ▶ Demo from the staging environment, or the nearest proxy



## Exercise: System Demo challenges

- ▶ What are the challenges to having a new system increment every two weeks?
- ▶ Think about various aspects: environment, culture, tools and people
- ▶ In your group, prepare a list of 3 to 5 items that would make it hard to implement a System Demo of the integrated system every two weeks
- ▶ Be ready to present to the class



## 5.3 Learn together

## Innovation and Planning Iteration

Facilitate reliability, Program Increment readiness, planning, and innovation

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



*Provide sufficient capacity margin to enable cadence.*

—Don Reinertsen, *Principles of Product Development Flow*

## IP Iteration calendar

| Sunday                                                  | Monday                                  | Tuesday                                     | Wednesday                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Thursday | Friday | Saturday |  |                            |                                |                                    |                           |                                                         |                                      |                                          |                         |                          |                              |                             |                                     |                                               |                  |  |                                         |
|---------------------------------------------------------|-----------------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------|----------|--|----------------------------|--------------------------------|------------------------------------|---------------------------|---------------------------------------------------------|--------------------------------------|------------------------------------------|-------------------------|--------------------------|------------------------------|-----------------------------|-------------------------------------|-----------------------------------------------|------------------|--|-----------------------------------------|
| 31                                                      | 1                                       | 2                                           | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 4        | 5      | 6        |  |                            |                                |                                    |                           |                                                         |                                      |                                          |                         |                          |                              |                             |                                     |                                               |                  |  |                                         |
|                                                         |                                         | Validation (if shipping)                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |        |          |  |                            |                                |                                    |                           |                                                         |                                      |                                          |                         |                          |                              |                             |                                     |                                               |                  |  |                                         |
|                                                         |                                         | Innovation / hackathon / spikes for next PI |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |        |          |  |                            |                                |                                    |                           |                                                         |                                      |                                          |                         |                          |                              |                             |                                     |                                               |                  |  |                                         |
|                                                         |                                         | PI Planning readiness                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |        |          |  |                            |                                |                                    |                           |                                                         |                                      |                                          |                         |                          |                              |                             |                                     |                                               |                  |  |                                         |
| 7                                                       | 8                                       | 9                                           | <b>PI Planning</b> <table border="1"> <tr><td>8:00-9:00 Business Context</td><td>8:00-9:00 Planning Adjustments</td></tr> <tr><td>9:00-10:30 Product/Solution Vision</td><td>9:00-11:00 Team Breakouts</td></tr> <tr><td>10:30-11:30 Architecture Vision &amp; Development Practices</td><td>11:00-1:00 Final Plan Review &amp; Lunch</td></tr> <tr><td>11:30-1:00 Planning Requirements &amp; Lunch</td><td>1:00-2:00 Program Risks</td></tr> <tr><td>1:00-4:00 Team Breakouts</td><td>2:15-2:45 PI Confidence Vote</td></tr> <tr><td>4:00-5:00 Draft Plan Review</td><td>2:45-7:00 Plan Review, if Necessary</td></tr> <tr><td>5:00-6:00 Management Review &amp; Problem Solving</td><td>After Commitment</td></tr> <tr><td></td><td>Planning Retrospective &amp; Moving Forward</td></tr> </table> |          |        |          |  | 8:00-9:00 Business Context | 8:00-9:00 Planning Adjustments | 9:00-10:30 Product/Solution Vision | 9:00-11:00 Team Breakouts | 10:30-11:30 Architecture Vision & Development Practices | 11:00-1:00 Final Plan Review & Lunch | 11:30-1:00 Planning Requirements & Lunch | 1:00-2:00 Program Risks | 1:00-4:00 Team Breakouts | 2:15-2:45 PI Confidence Vote | 4:00-5:00 Draft Plan Review | 2:45-7:00 Plan Review, if Necessary | 5:00-6:00 Management Review & Problem Solving | After Commitment |  | Planning Retrospective & Moving Forward |
| 8:00-9:00 Business Context                              | 8:00-9:00 Planning Adjustments          |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |        |          |  |                            |                                |                                    |                           |                                                         |                                      |                                          |                         |                          |                              |                             |                                     |                                               |                  |  |                                         |
| 9:00-10:30 Product/Solution Vision                      | 9:00-11:00 Team Breakouts               |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |        |          |  |                            |                                |                                    |                           |                                                         |                                      |                                          |                         |                          |                              |                             |                                     |                                               |                  |  |                                         |
| 10:30-11:30 Architecture Vision & Development Practices | 11:00-1:00 Final Plan Review & Lunch    |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |        |          |  |                            |                                |                                    |                           |                                                         |                                      |                                          |                         |                          |                              |                             |                                     |                                               |                  |  |                                         |
| 11:30-1:00 Planning Requirements & Lunch                | 1:00-2:00 Program Risks                 |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |        |          |  |                            |                                |                                    |                           |                                                         |                                      |                                          |                         |                          |                              |                             |                                     |                                               |                  |  |                                         |
| 1:00-4:00 Team Breakouts                                | 2:15-2:45 PI Confidence Vote            |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |        |          |  |                            |                                |                                    |                           |                                                         |                                      |                                          |                         |                          |                              |                             |                                     |                                               |                  |  |                                         |
| 4:00-5:00 Draft Plan Review                             | 2:45-7:00 Plan Review, if Necessary     |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |        |          |  |                            |                                |                                    |                           |                                                         |                                      |                                          |                         |                          |                              |                             |                                     |                                               |                  |  |                                         |
| 5:00-6:00 Management Review & Problem Solving           | After Commitment                        |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |        |          |  |                            |                                |                                    |                           |                                                         |                                      |                                          |                         |                          |                              |                             |                                     |                                               |                  |  |                                         |
|                                                         | Planning Retrospective & Moving Forward |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |        |          |  |                            |                                |                                    |                           |                                                         |                                      |                                          |                         |                          |                              |                             |                                     |                                               |                  |  |                                         |
|                                                         |                                         | Inspect and Adapt workshop                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |        |          |  |                            |                                |                                    |                           |                                                         |                                      |                                          |                         |                          |                              |                             |                                     |                                               |                  |  |                                         |

## Inspect and Adapt

Three parts:

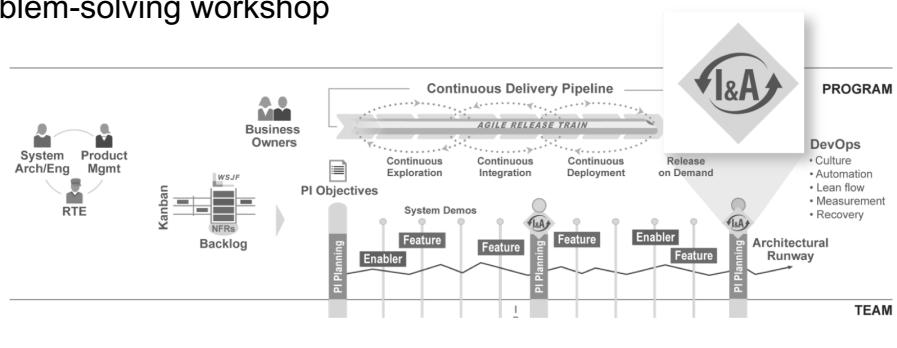
1. The PI System Demo
2. Quantitative measurement
3. The problem-solving workshop

► Attendees: Teams and stakeholders

► Timebox: 3 – 4 hours per PI

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5.29



## PI System Demo

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

- Often led by Product Management, POs, and the System Team
- Attended by Business Owners, program stakeholders, Product Management, RTE, Scrum Masters, and teams

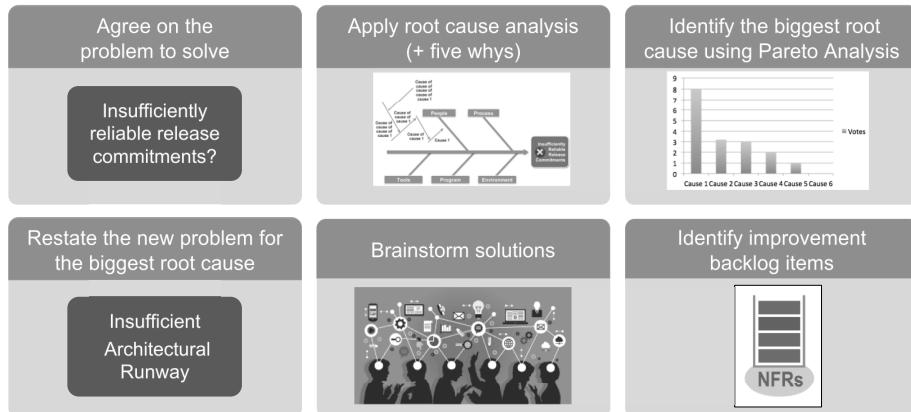


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## The problem-solving workshop

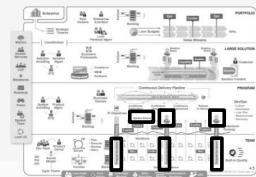
Teams conduct a short retrospective, then systematically address the larger impediments that are limiting velocity.



## Lesson summary

In this lesson, you:

- ▶ Learned how to plan and execute a Program Increment as a train
- ▶ Identified potential dependencies between teams
- ▶ Discussed the importance and challenges of the system demo
- ▶ Explored how to improve as a team of teams in the Inspect and Adapt workshop



Suggested Scaled Agile Framework reading:

- “Program Increment” article
- “System Demo” article
- “Inspect and Adapt” article