STEVENS
INSTITUTE of TECHNOLOGY
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SSW-555: Agile Methods for Software Development

Scaled Agile Framework (SAFe)
Week 10

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Stevens Institute of Technology

Thanks to Prof. James Rowland for his slides

Acknowledgements

Some of the material in these slides is from

"The Big Picture of Enterprise Agility" by Dean Leffingwell, Scaling Software Agility Blog, 2009

http://scalingsoftwareagilityblog.com/wp-content/uploads/2009/11/the-big-picture-of-enteprise-agilitywhitepaper.pdf

Today's topics

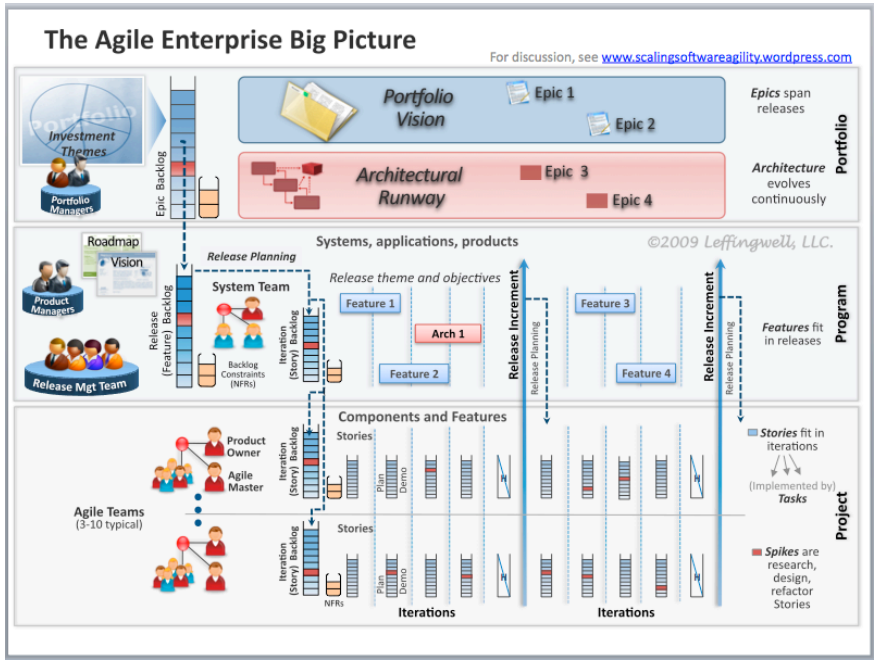
Scaling Agile and Scrum to larger projects

Overview of SAFe

Project Level of SAFe

Program Level of SAFe

Portfolio Level of SAFe

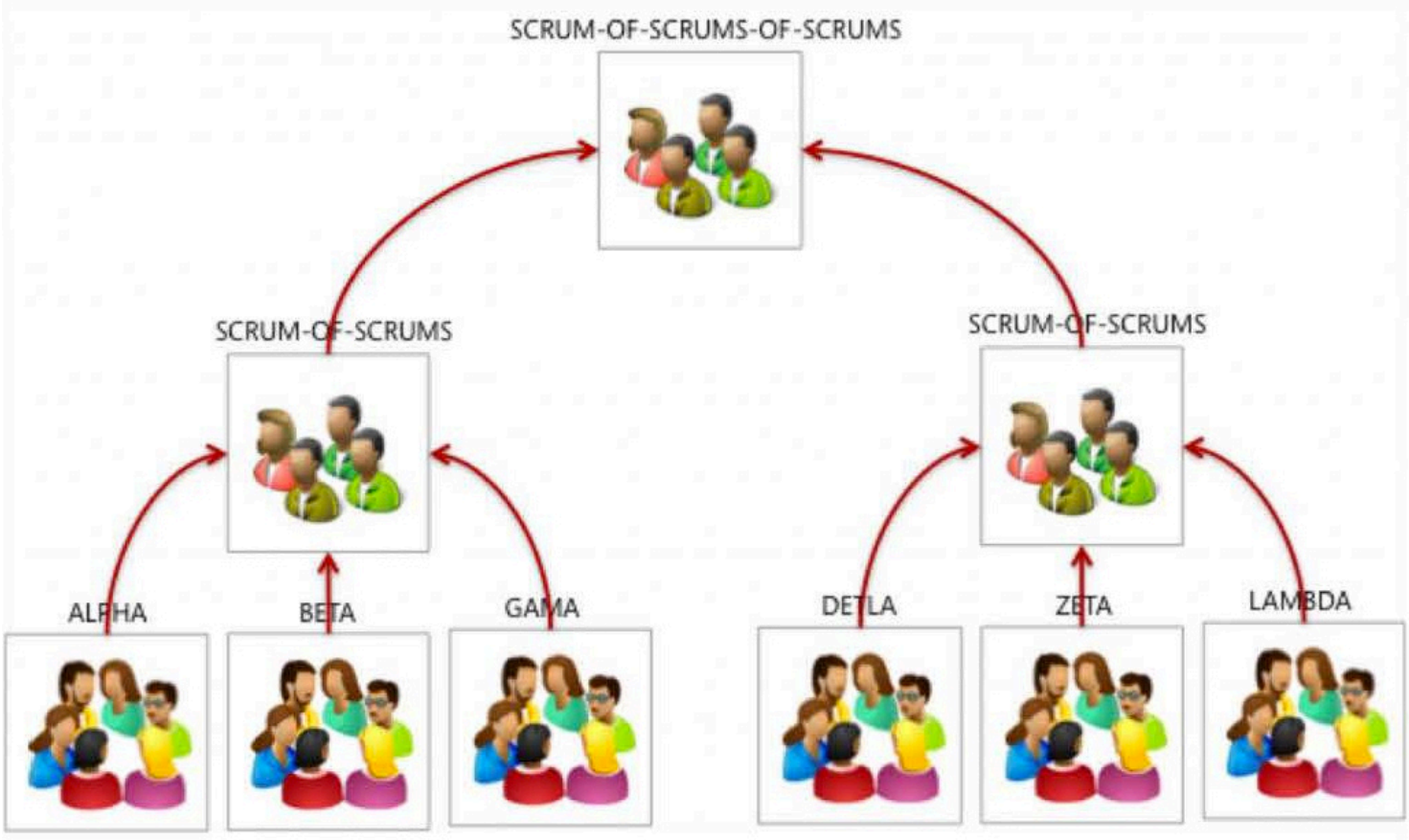


Limitations of Scrum for large projects

- Small teams
  - Self-directed teams – don't wait for instructions from the boss
  - Rely on face-to-face communication
- Only short-term planning
  - No Big Design Up Front (BDUF)
    - FDD recommends JEDI
  - Isolated projects
- Single Product Owner (Customer)
  - Answers developers' questions
  - Sets priorities and release dates

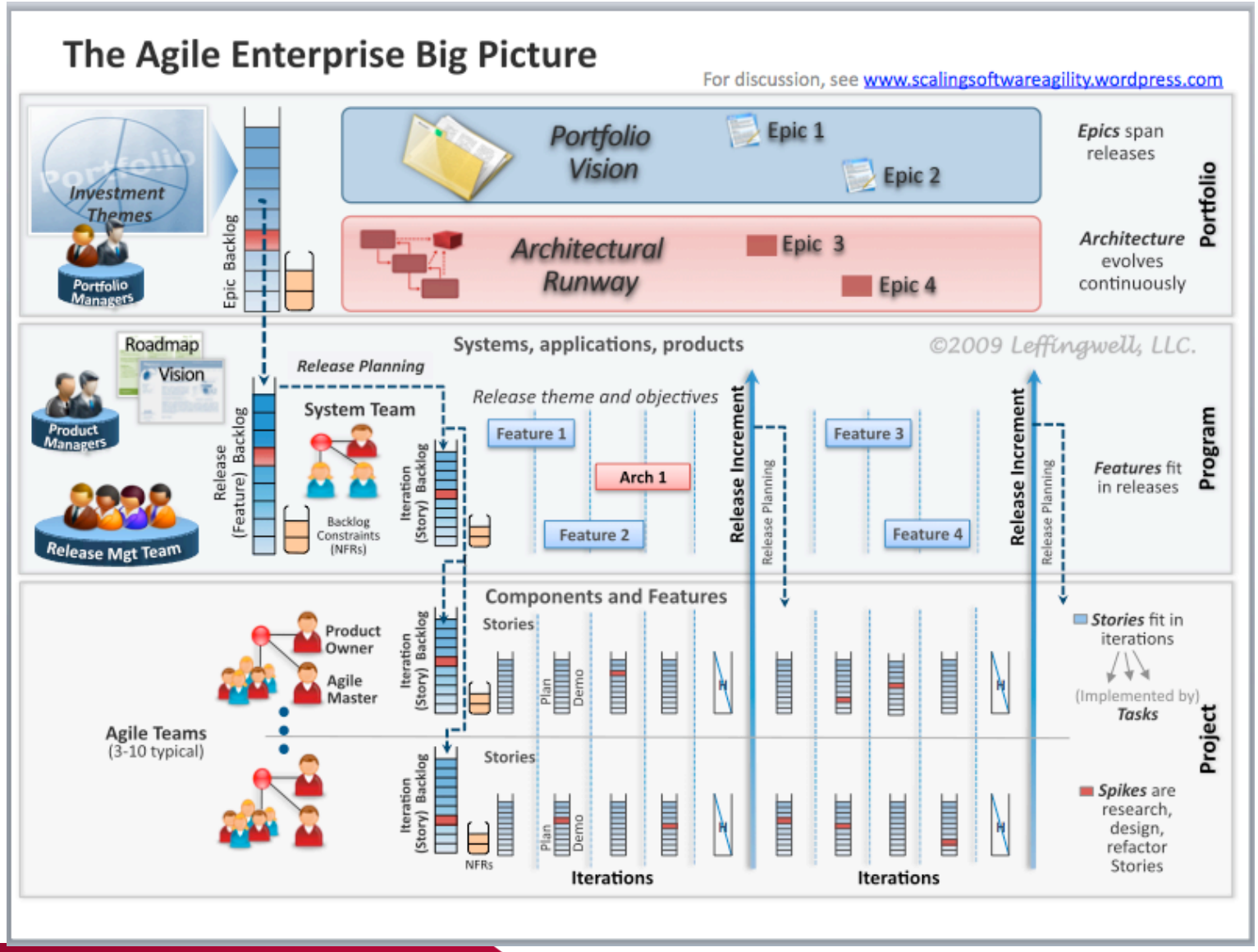
Scrum of Scrums: One solution

Scrum of scrums provides one technique to scale Scrum to larger projects



Source: Scrum of Scrums: Running Agile on Large Projects by Leandro Faria, Scrum Alliance, 5 June 2013
https://www.scrumalliance.org/community/articles/2013/june/scrum-of-scrums-running-agile-on-large-projects

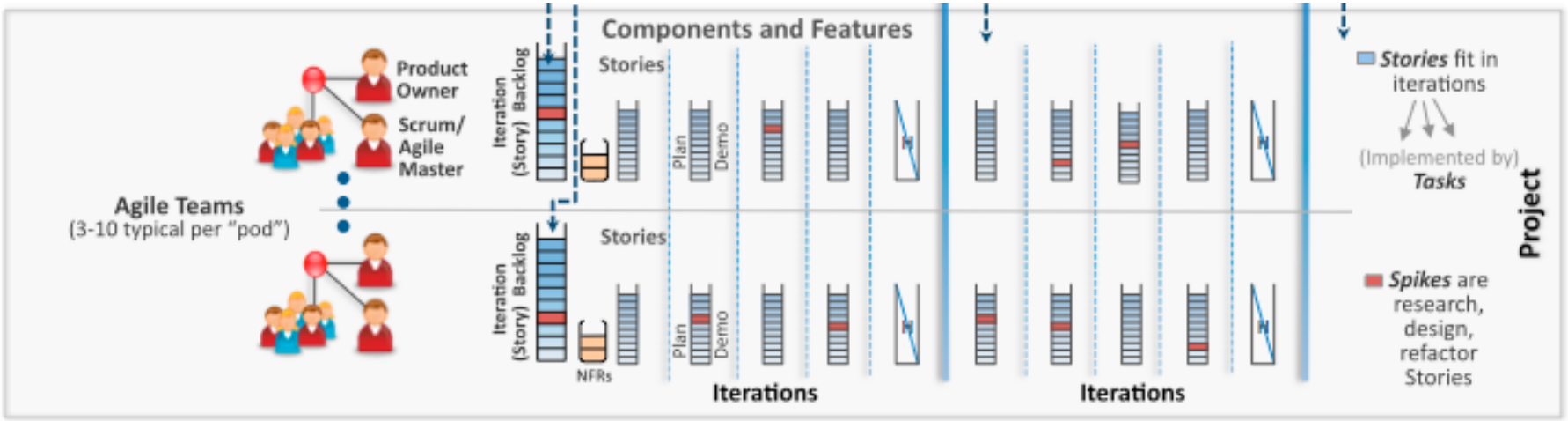
Overview of SAFe



Three levels of organization

Level	Role	Title	Requirements
Portfolio	Long-term planning	Portfolio Manager	Epics
Program	Large system management	Product Manager	Features
Project	Traditional Scrum teams	Product Owner	User Stories

Project Level of SAFe



Agile teams define, implement, and test user stories

- Use Lean, Scrum and/or Kanban
- Deliver components or features

Small enterprises may have a few teams

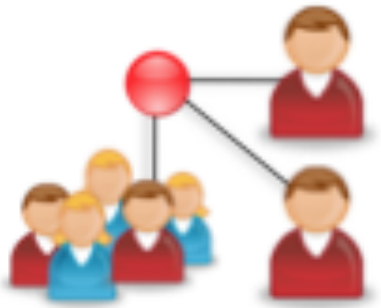
Larger enterprises may have ”pods” of teams

Project Level: Agile Teams

5-9 people

Organized around a single component or feature

- Define – user stories
- Build
- Test
- May do acceptance testing



May be supported by specialists:

- Architects
- Technical writers
- Build support staff
- Internal IT

Project Level: Pods of Agile Teams

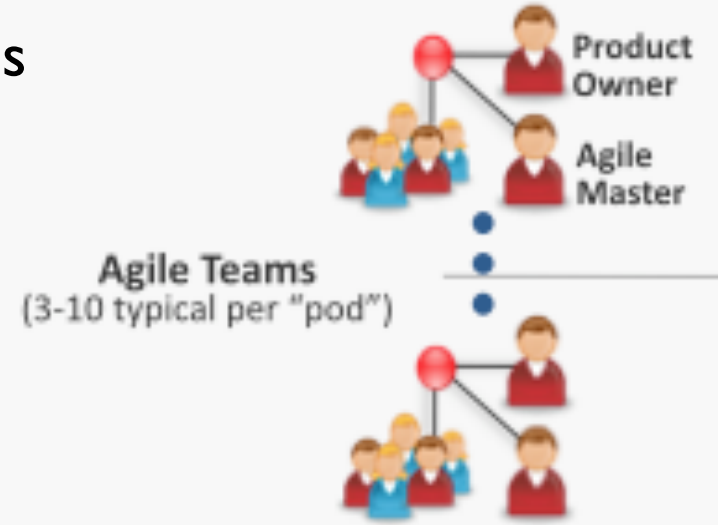
Larger systems may require groups of teams

- Deliver features, systems/subsystems

May have 3-10 teams cooperating with one another

Result is 50-100 people collaborating face-to-face

Each team primarily works alone but the other teams are readily available for collaboration



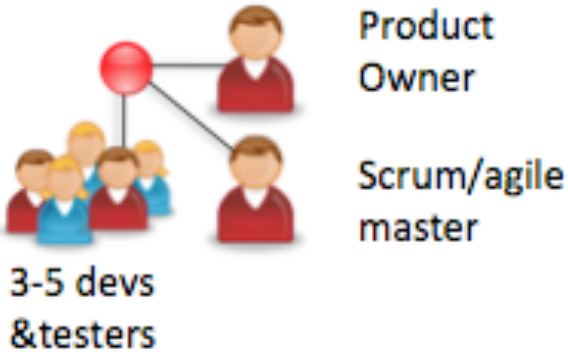
Project Level: Roles on Agile Teams

Product Owner

- Determine and prioritize requirements
- Maintain Product Backlog
- Collocated with the team for daily interaction

Scrum/Agile Master

- Trains and coaches team in use of Scrum
- Acts as "management/leadership proxy"
  - Product management role



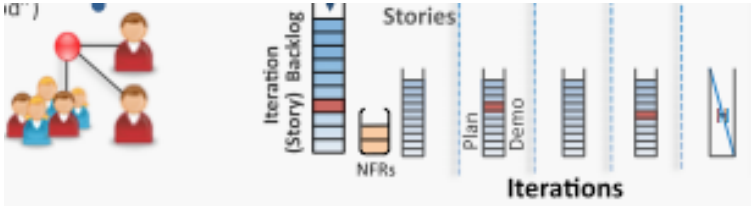
Developer

- Define, build, test and deliver software
- May include "full or part-time architects, tech leads, user experience and documentation experts"

Project Level: Iterations (Sprints)

Standard time-boxed intervals

Iteration length is same for all teams



- Typically 2-4 weeks
- Need to integrate modules across teams
- Features may slip to meet time-boxed intervals
- Must meet quality goals

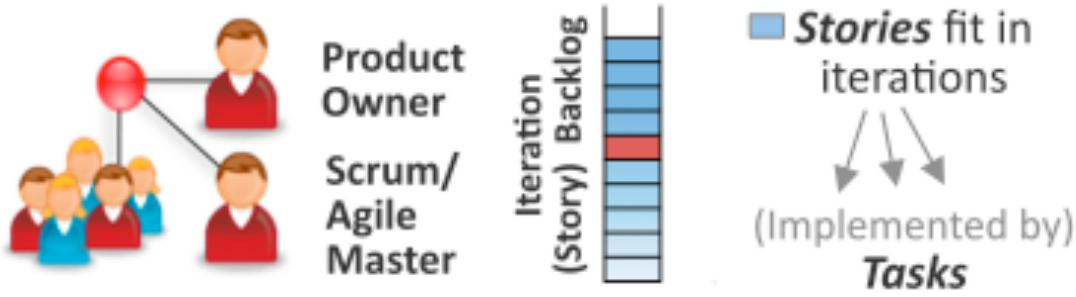
Each release contains:

- 4-5 development iterations/sprints
- 1 "hardening" iteration – resolve integration problems, etc.
- Fully shippable increment every 90 days or so

Project Level:
User stories and tasks in the backlog

Each team has its own Iteration Backlog:

- User stories
- Defects
- Refactoring

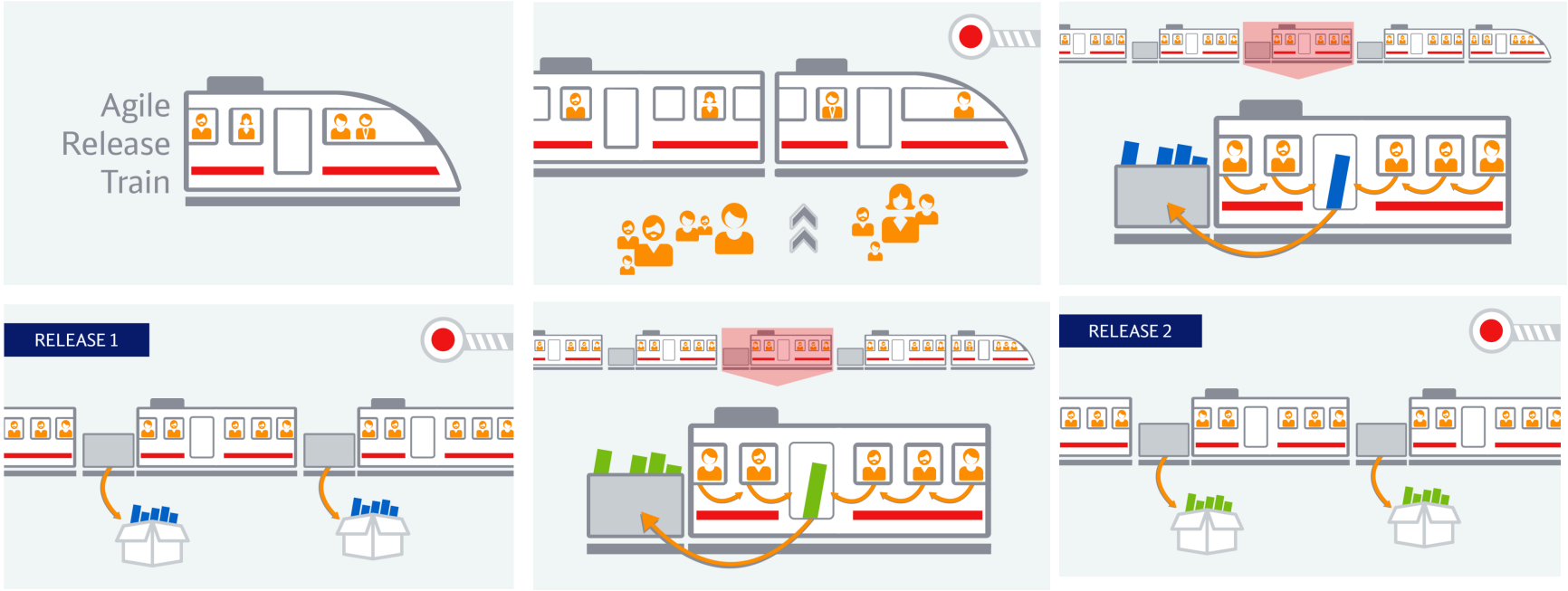


Stories may be decomposed into Tasks for estimation and tracking

Project Level: Agile Release Train

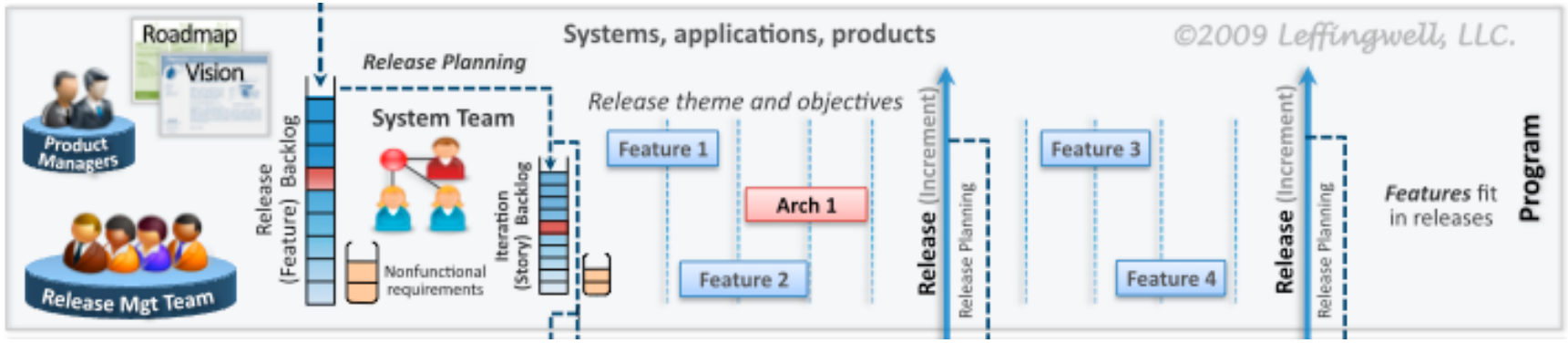
Multiple Agile teams delivering functionality

- Time boxed iterations with quality requirements
- Features in each release may change to meet the schedule
- Deliveries are made every time the train "enters the station"



http://digitalspirit.dbsystel.de/en/how-the-agile-release-train-is-moving-freight-transport-forward/

Program Level of SAFe



Release Management and Product Managers

System team and Release management team

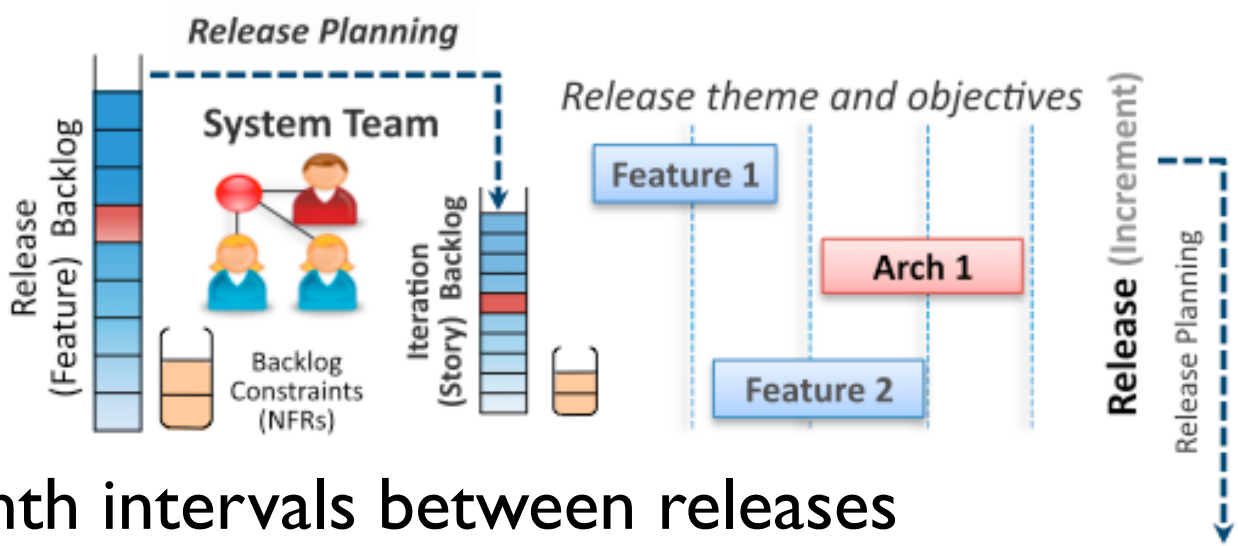
System level testing and release evaluation

Coordinate work of Agile Teams in the Project Level

Understand how the work should evolve over time

Program Level: Releases

Each iteration produces a "potentially shippable increment"



Typically 2-4 month intervals between releases

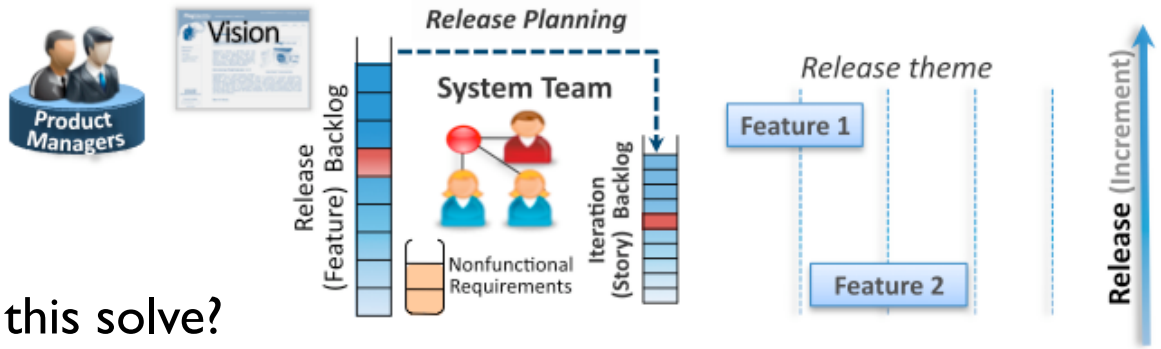
- Recall that the Agile teams are using 2 week sprints

May not want to release every increment to customers:

- Defects, refactoring to remove technical debt
- May interfere with customer's licensing and service agreements
- Potential disruption to customer

Program Level: *Vision* and *features*

Product Managers are responsible for overall Vision



The Vision answers:

- What problem does this solve?
- What features and benefits does it provide?
- For whom does it provide it?
- What performance, reliability, etc. does it deliver?
- What platforms, standards, etc. will it support?
- Technical and marketing issues

Release Backlog consists of prioritized features

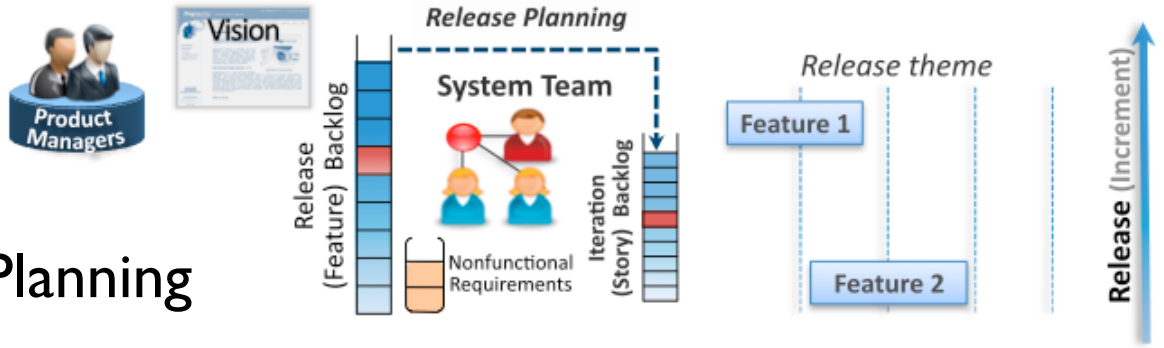
- Features later refined into stories
- Release Backlog contains all desired features that haven't been delivered yet

Specify non-functional requirements: "*ilities"

- Scalability, reliability, compatibility, security, …

Program Level: Release planning

Product Managers are responsible for Release Planning



Analogous to Sprint Planning

Identify time box with typically multiple sprints

Hold Release Planning meeting

Use vision and business objectives to identify prioritized list of features to include in next release

Create a ***Roadmap*** to describe the "plan of intent"

Program Level: The Roadmap

Release planning breaks features into stories

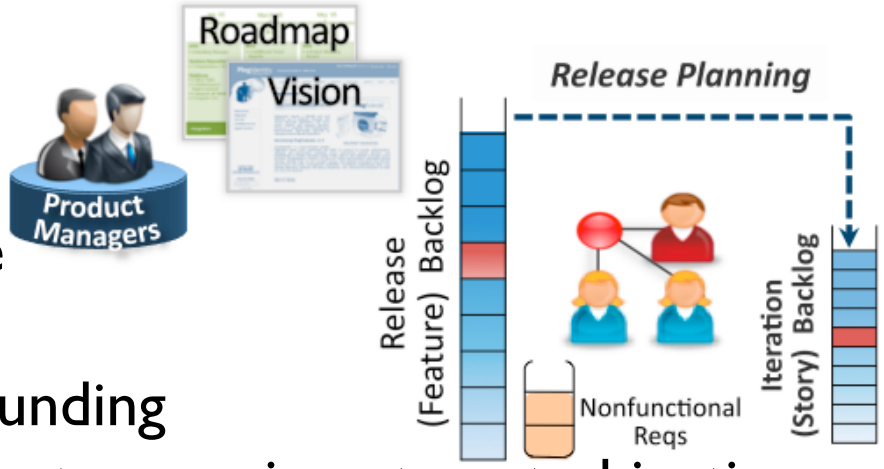
Stories assigned to teams

Interdependencies are identified and addressed

Result is a Roadmap:

- Planned release dates
- Each release includes:
  - Theme
  - Objectives
  - Set of features

Program Level: Product Management



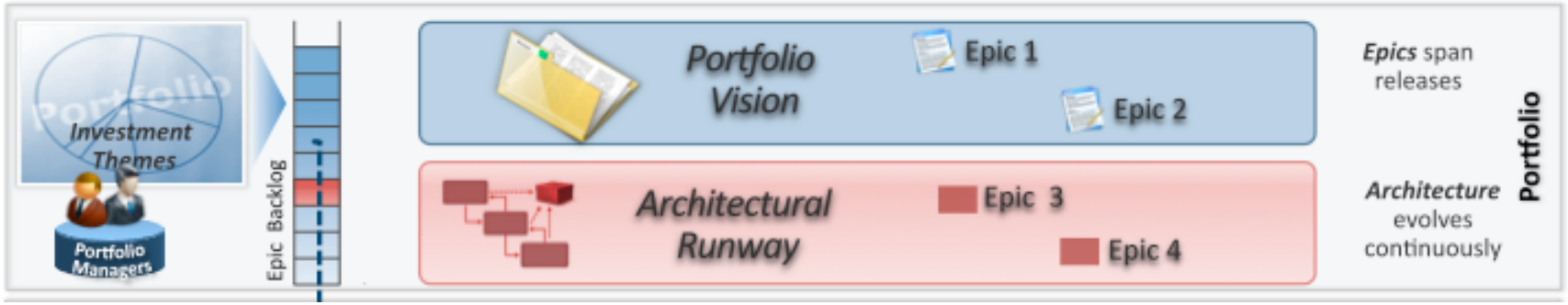
Scrum Product Owners:

- Represent the interests of everyone with a stake in the resulting project
- Achieve initial and ongoing funding
- Create initial requirements, return on investment objectives and release plans

SAFe Product Managers responsibilities are more broad:

- Define the product
- Position the solution in the market

Portfolio Level of SAFe



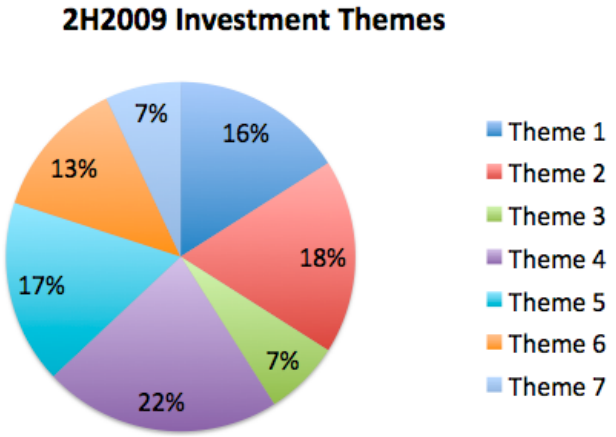
Portfolio Managers responsibilities:

- Manage enterprise investments
- Manage enterprise resources

Investment themes

Epics

Portfolio Level: Investment Themes



Large enterprises make decisions once or twice per year on investment themes:

- Existing offerings (enhancements, support and maintenance)
- New offerings
- Futures – require investment now, but will not contribute toward revenue until later
- Sunset – end support for existing products and services

Themes: how should the enterprise allocate financial and other resources?

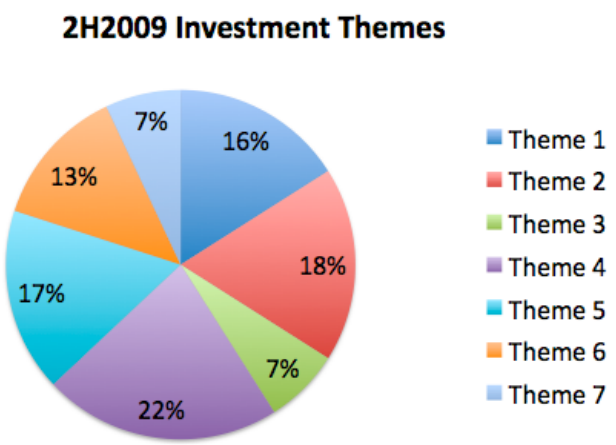
Portfolio Level: Investment Themes

Themes identify key value propositions

- Differentiate the company's products
- Provide competitive advantage

Themes are allocated a percentage of total working time

Themes may span multiple years



Portfolio Level: Epics, Features, Stories, Tasks

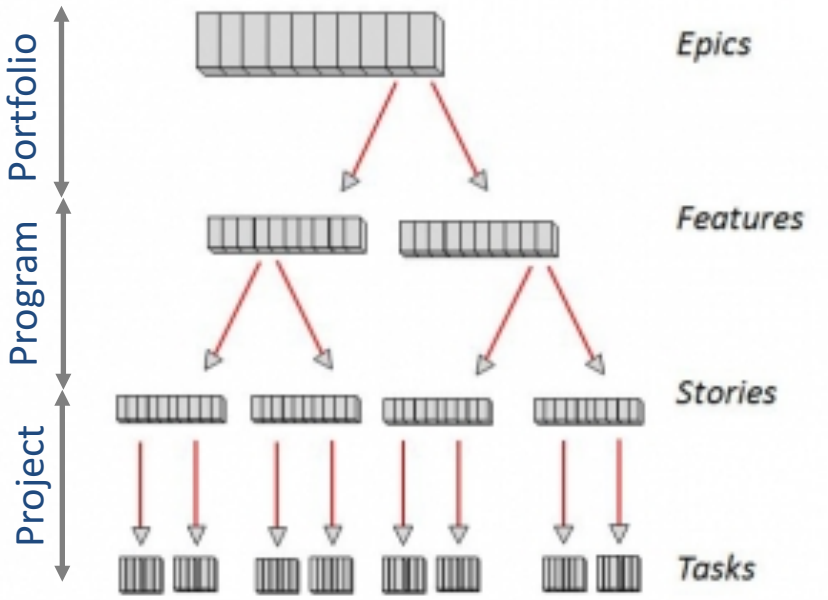
Themes are later defined as Epics in the Portfolio Backlog

- Epics describe strategic intent

Epics are further refined into Features

Features are broken into Stories

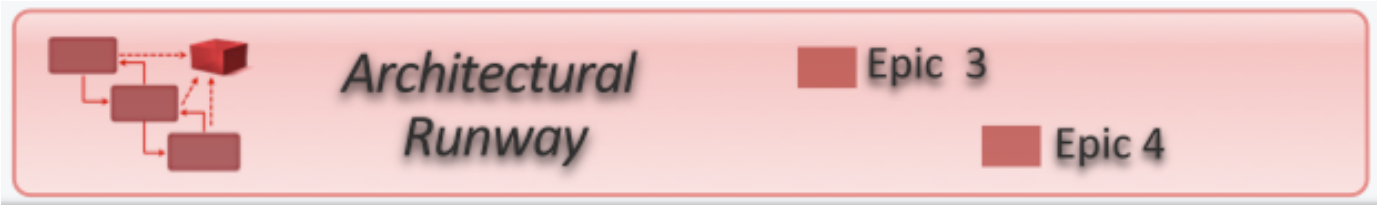
Stories are broken into Tasks



Three levels of backlogs

Level	Backlog	Contents
Portfolio	Portfolio backlog	Backlog of prioritized epics describing strategic intent
Program	Release/product backlog	Backlog of prioritized features
Project	Iteration backlog	Backlog of user stories aligned to business needs

Portfolio Level: Architectural Runway



"A system with architectural runway has existing or planned infrastructure sufficient to allow incorporation for current and near term requirements without excessive refactoring." - Leffingwell

Failure to maintain architectural runway may lead to:

- Missed release dates due to large-scale refactoring
- Slowed velocity
- Inability to create new features

Portfolio Level: Architectural Runway

Architectural Runway spans all three levels

Portfolio

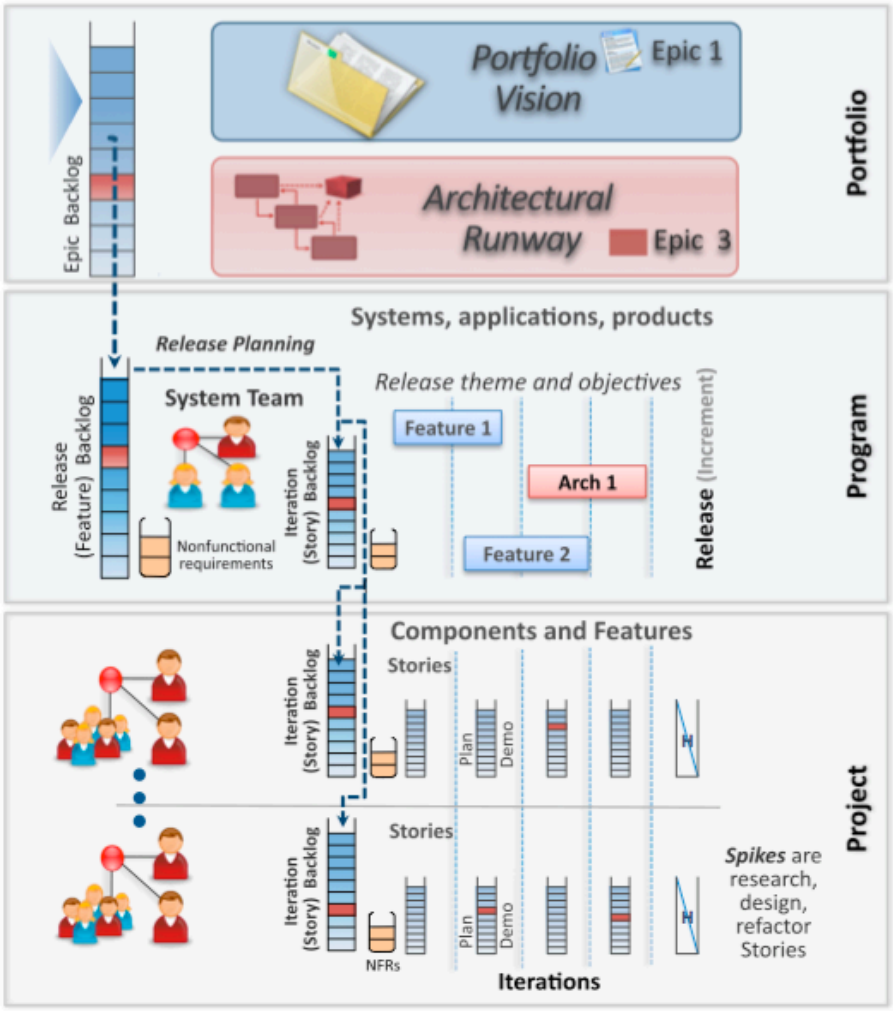
- Infrastructure initiatives
- Architectural epics

Program

- Architectural features for releases

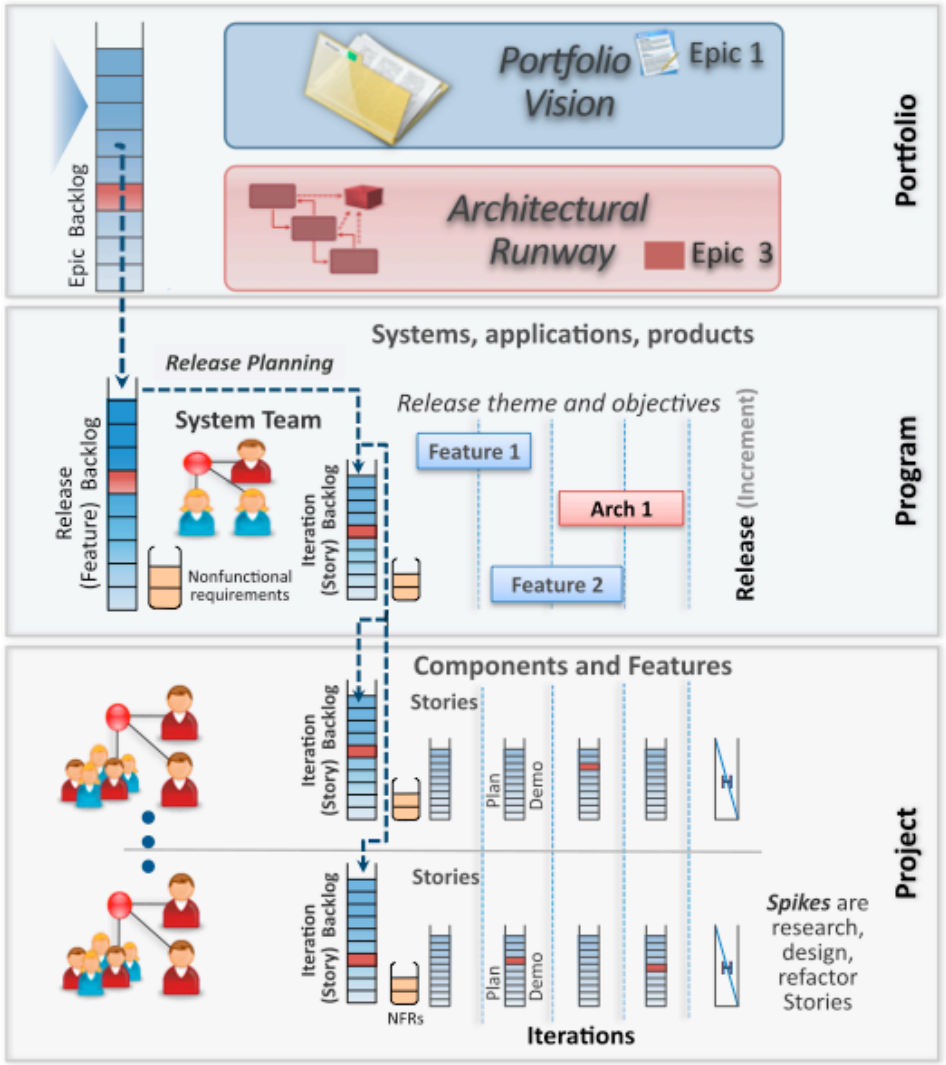
Project

- User stories



Source: The Big Picture of Enterprise Agility (Rev. 2)

SAFe Summary



Resource investment vision

Overall architecture of one or many products

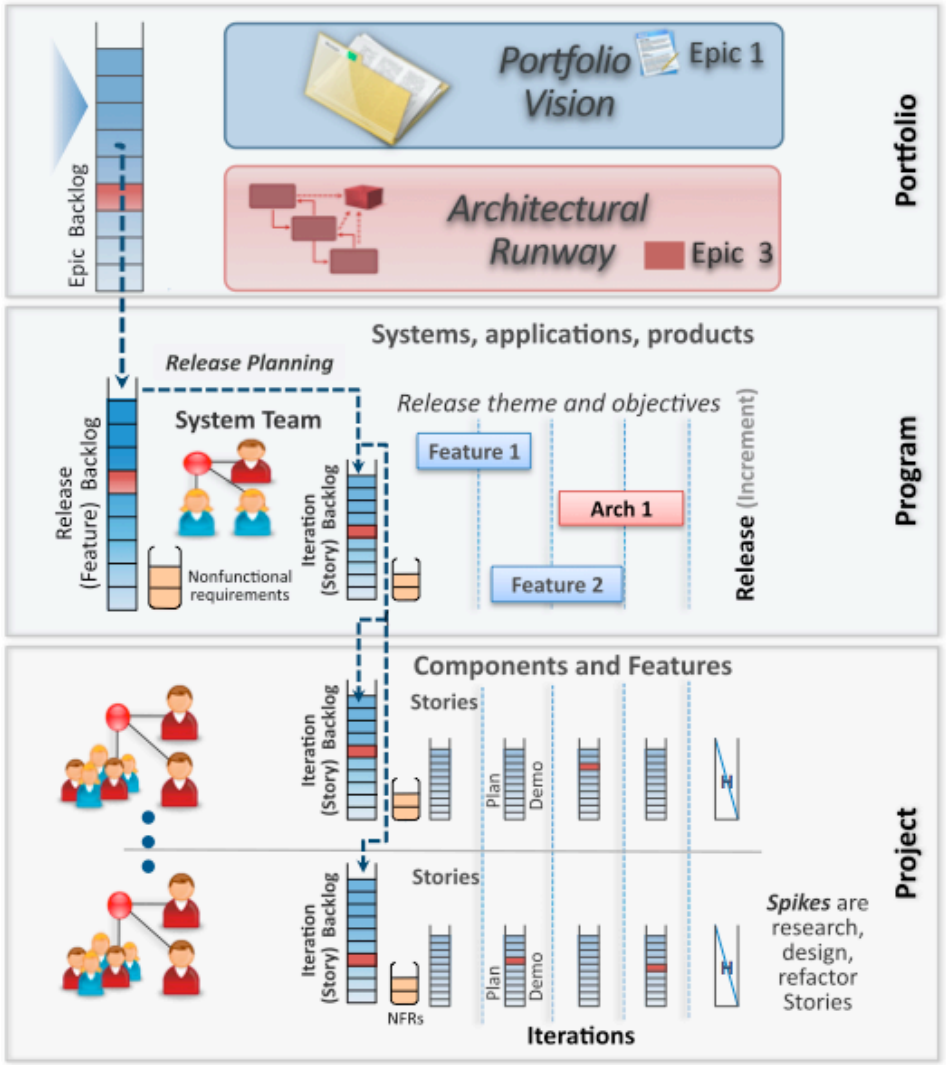
Manage a large organization

Focus on releases to meet customer needs

Traditional Scrum/Kanban teams

Optional pods

SAFe Summary



Executives

Middle managers

Developers, testers

Questions?