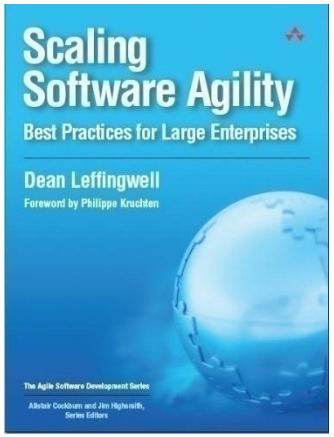
Harnessing Innovation

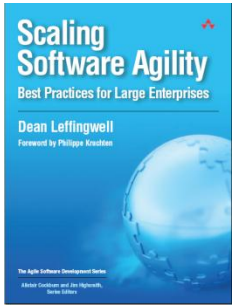
Lightweight Governance Models for High Performing Agile Teams

May 22, 2008

Dean Leffingwell



Approaching Challenge at Scale



"We place the highest value on actual implementation and taking action.

There are many things one doesn't understand; therefore, we ask them, why don't you just go ahead and take action?

You realize how little you know, and you face your own failures and redo it again, and at the second trial you realize another mistake . . . So you can redo it once again.

So by constant improvement one can rise to the higher level of practice and knowledge.

This guidance reminds us that there is no problem too large to be solved if we are only willing to take the first step."

Fuijo Sho, President, Toyota

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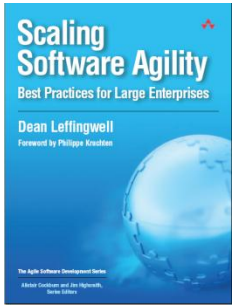

READY,
AIM
AND ....

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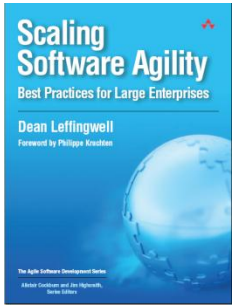

READY

Are we getting the productivity, quality and morale that we all deserve?

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Seven Agile Team Practices That Scale

The Define/Build/Test Component Team

Mastering the Iteration

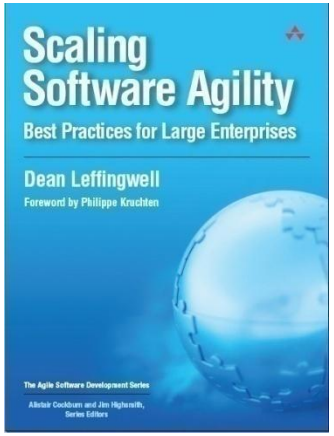
Two-level Planning and Tracking

Smaller, More frequent releases

Concurrent Testing

Continuous Integration

Regular Reflection and Adaptation



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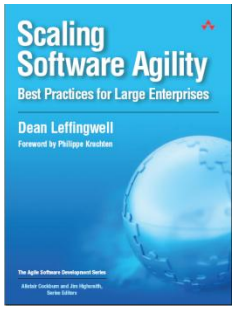
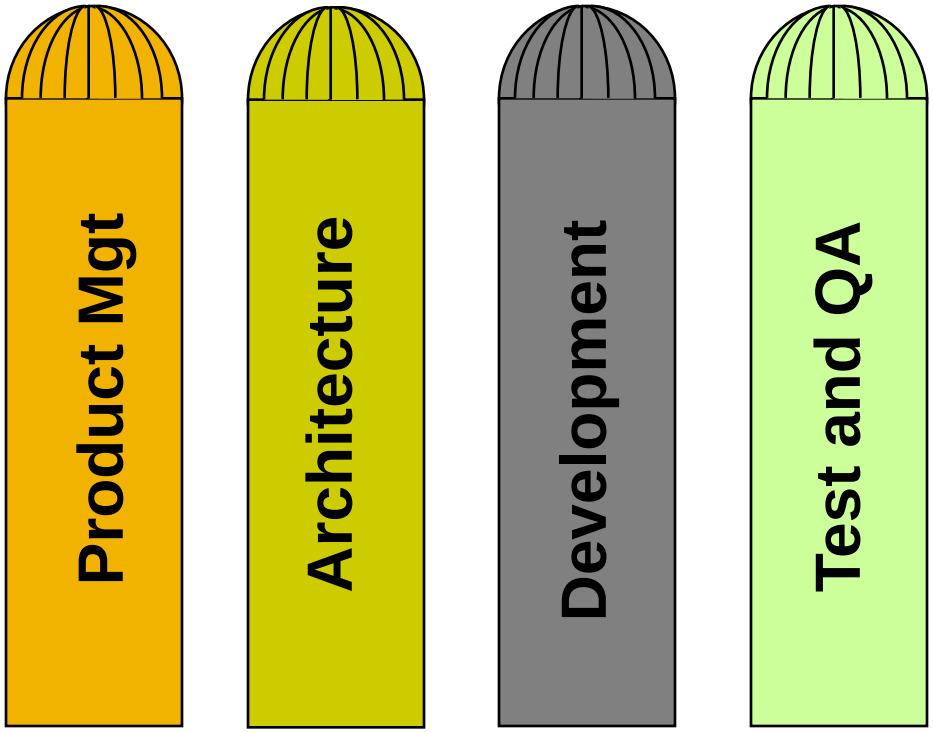
1. Define/Build/Test Component Team



Before Agile: Typical Functional Silos



- Optimized for vertical communication
- Friction across the silos
- Location via function
- Political boundaries between functions

Management Challenge: Connect the Silos

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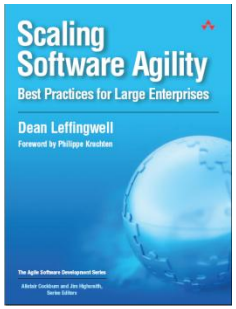
Conway's Law



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

- Mel Conway (1968)

(rigid organizations that are not willing to re-organize to generate an optimal design, can end up producing a sub-standard design that merely reflects the pre-existing organization.)

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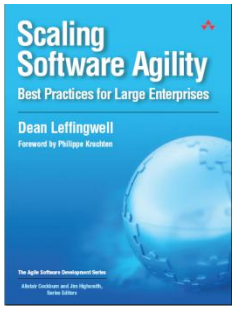
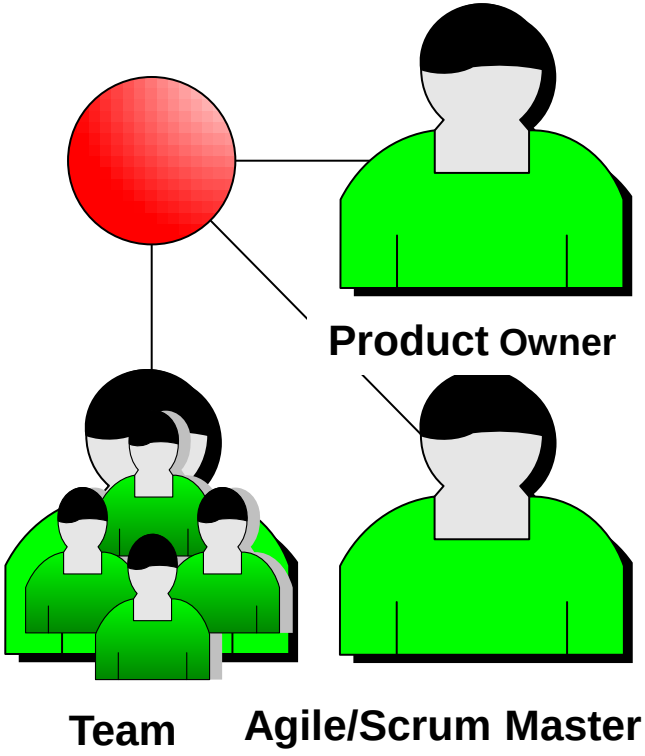
Define/Build/Test Team





Product Owner

- Assure team is pursuing a common vision
- Establish priorities to track business value
- Act as 'the customer' for developer questions
- Work with product management to plan releases
- Accept user stories and iteration

Scrum Master

- Run team meetings, enforce scrum
- Remove impediments
- Attend integration scrum meetings
- Protect the team from outside influence

Team

- Create user stories from product backlog
- Commit to iteration plan
- Define/Build/Test/Deliver stories (fully accepted)

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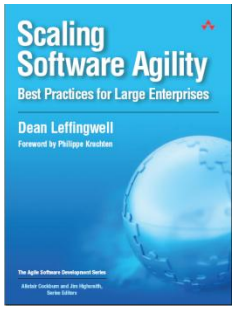
2. Mastering the Iteration



The iteration is the heartbeat of agility.

Each iteration is a "potentially shippable increment" of software.

Master that, and most other things agile tend to fall naturally into place.

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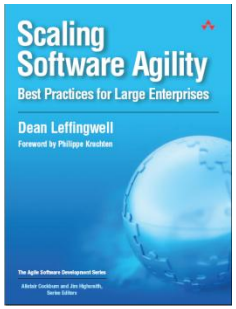
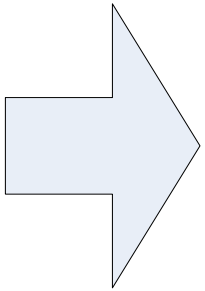
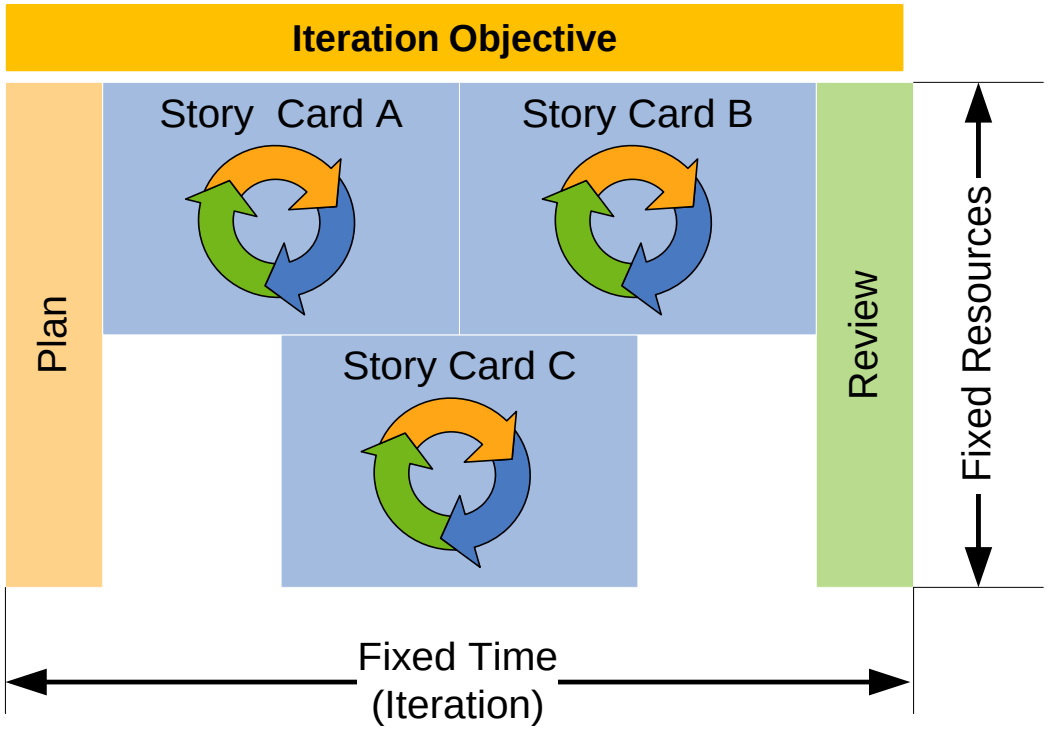
Iteration Pattern



Iteration backlog

Story Card A
Story Card B
Story Card C
Story Card D
Story Card E
Story Card F
Story Card ...





Define

Develop

Accept

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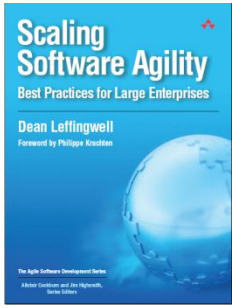
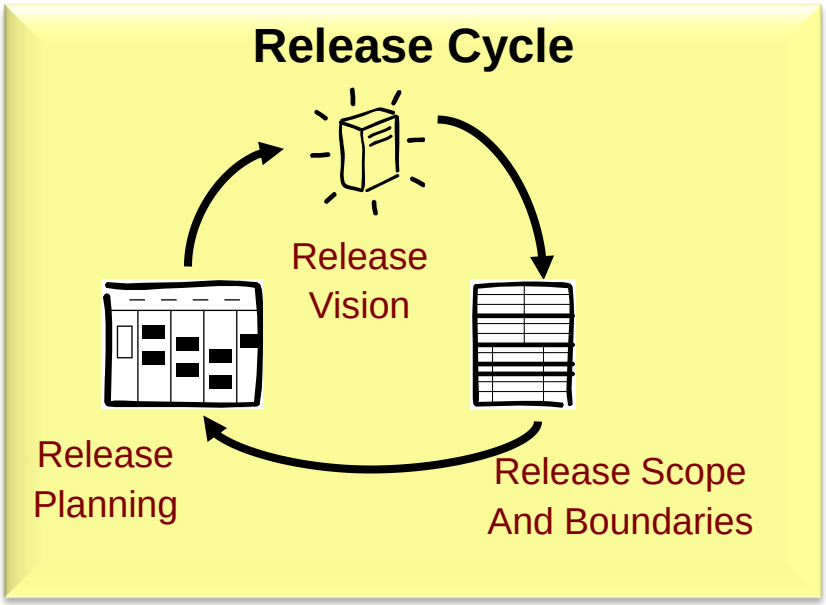
3. Two-Level Planning and Tracking



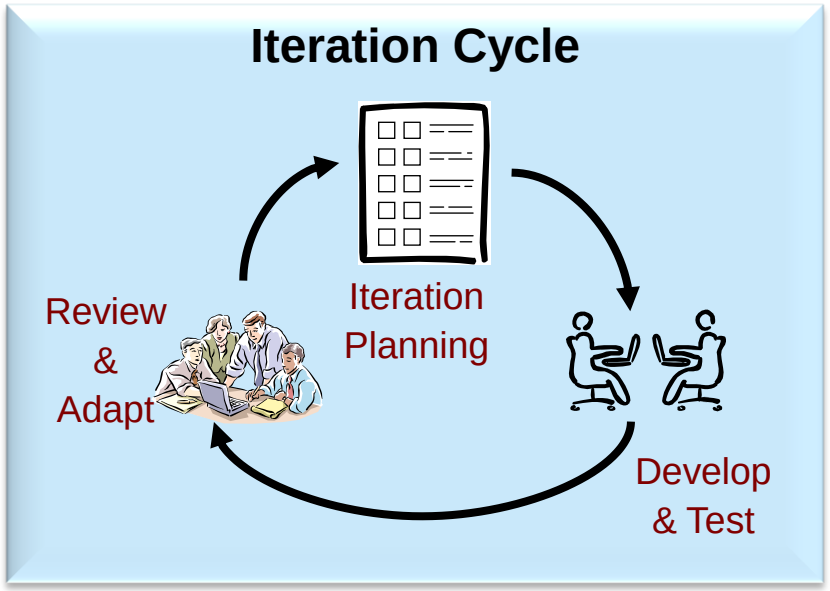


Drives

Plan iterations at the ***component*** level
- 2-4 iteration visibility
- Currency: user stories

Plan Releases at the *System* Level
- Three to six months horizon
- Prioritized feature sets define content

Feedback - Adjust



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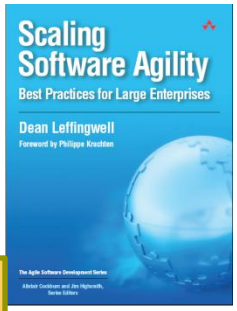
Release Pattern



Release theme and objectives

Prioritized Release (feature) Backlog

- Feature 1
- Feature 2
- Feature 3
- Feature 4

Feature 1

Feature 2

Feature 3

Stories

P l a n

R e v i e w

Release timebox

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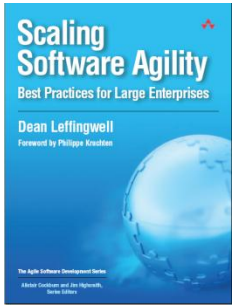
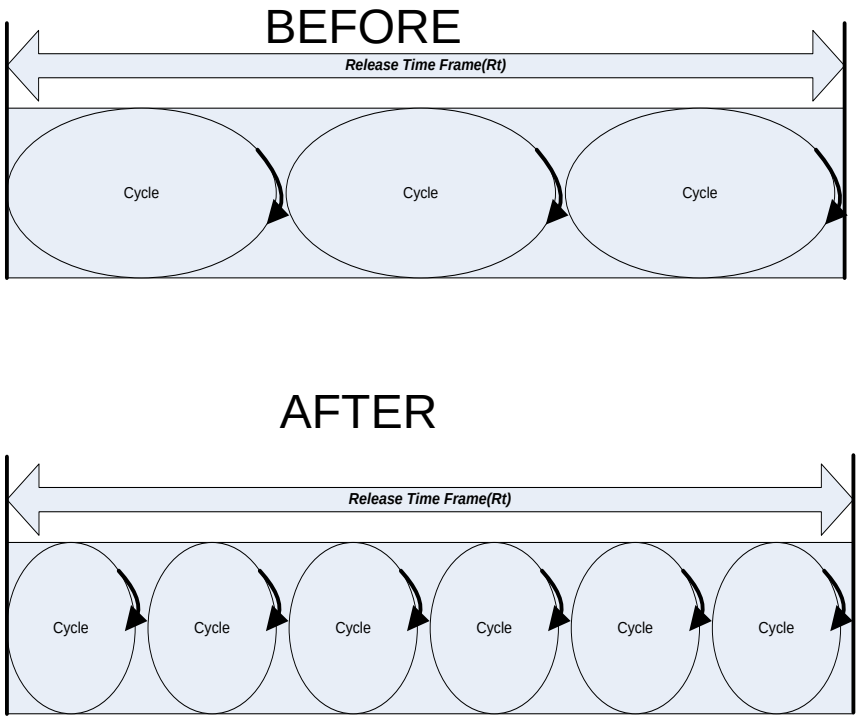
4. Smaller, More Frequent Releases



- Shorter release dates
  - 60-120 days
- Releases defined by
  - Date, theme, planned feature set, quality
- Scope is the variable
  - Release date and quality are fixed



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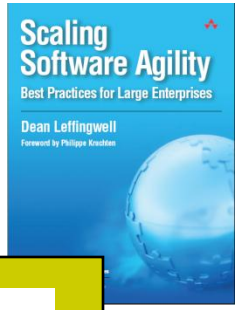
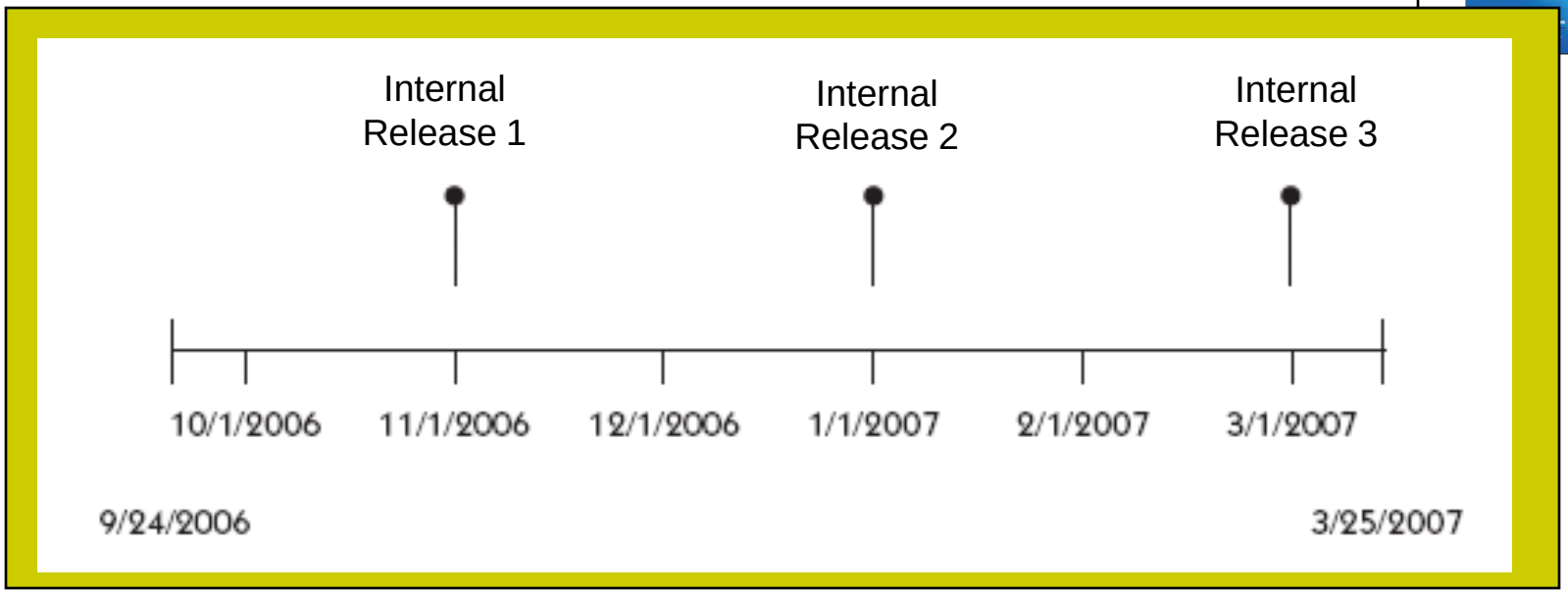
Fix the Dates - Float the Features





- **Teams learn that dates MATTER**
- **Product owners learn that priorities MATTER**
- **Agile teams MEET their commitments**

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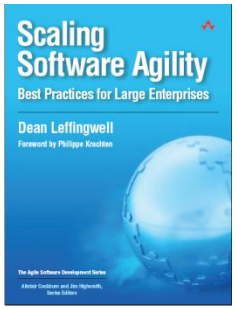
5. Concurrent Testing



Philosophy of Agile Testing

- All code is tested code. Teams get no credit for delivering functionality that has been coded, but not tested.
- Tests are written before, or concurrently with, the code itself.
- Testing is a team effort. Testers and developers all write tests.
- Test automation is the rule, not the exception.

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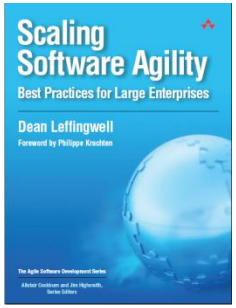
Concurrent



- Unit Testing
  - Developer written
- Acceptance Testing
  - Customer, product owner, tester written
- Component Testing
  - Integrated BVT (build verification tests) at component/module level
- System, Performance and Reliability Testing
  - Systems tester and developer Written
  - QA Involvement

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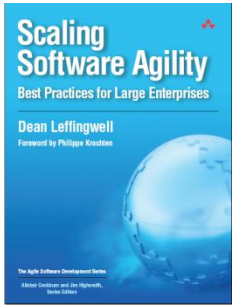
On Test Automation



Automate Now.

- **You have no choice**
- **Manual tests bottleneck velocity**
- **You can't ship what you can't test**

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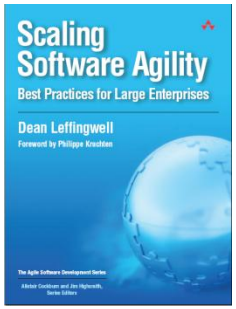
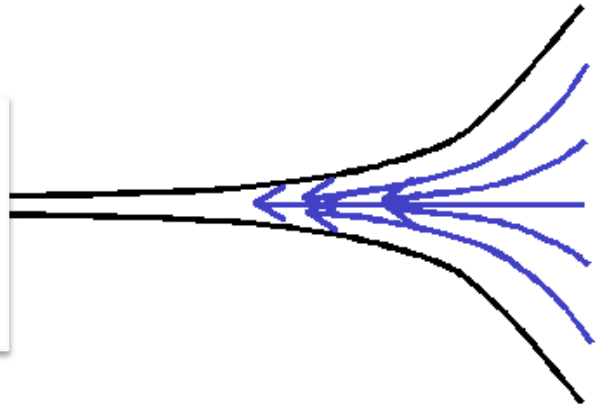
6. Continuous Integration



- Continuous integration is neither new nor invented by agile
- It has been applied as a best practice for at least a decade
- However, continuous integration is mandatory with agile

the teams ability to build continuously is a critical bottleneck to delivered velocity



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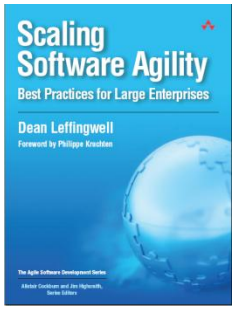
Continuous Integration Success



- Team can build at least once a day
  - Effort is inversely proportional to time between builds!
  - A broken build “stops” production and is addressed immediately
- Successful builds
  - Checks in all the latest source code
  - Recompile every file from scratch
  - Successfully execute all unit tests
  - Link and deploy for execution
  - Successfully execute automated Build Verification Test

Martin Fowler

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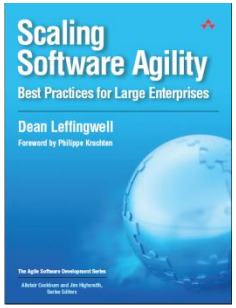

AIM

It is managements responsibility to steer the ship.

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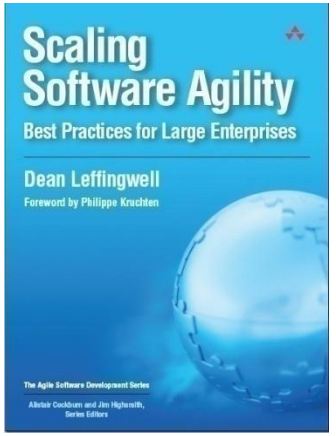
AIM

Vision and Lean Requirements

Intentional Architecture

Collaborative, synchronized, multi-level Release Planning



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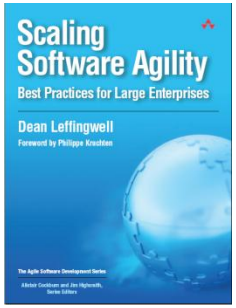
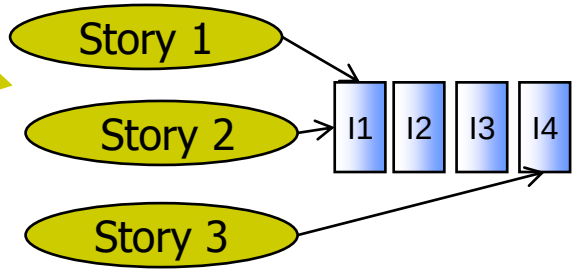
Lean Requirements at Scale



Vision+

Just-in-Time Elaboration



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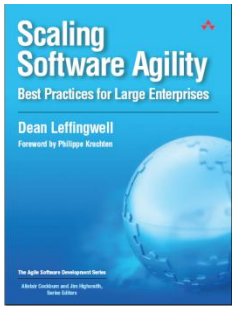
Vision –
Management ‘s Responsibility



- Where are we headed?
- What problem does it solve?
- What **features** and benefits does it provide?
- For whom does it provide it
- What performance does it deliver?
- What platforms, standards, applications, etc will it support?

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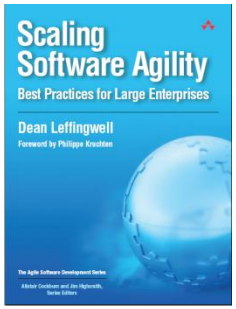
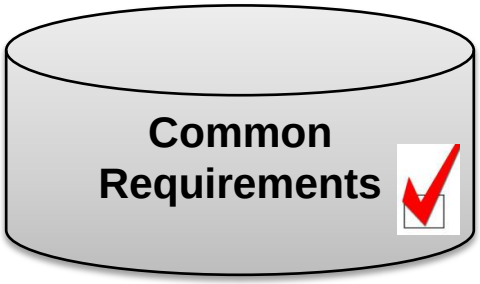
Vision+ Records Common Requirements



- Some requirements *must* be known by all teams
  - Performance, reliability and security requirements
  - Industry/Regulatory/Customer standards and imposed specifications
  - Internationalization, accessibility
  - Corporate standards: copyright, logo, graphics, legal



These must ALL be documented online and be continuously available to all affected component teams.

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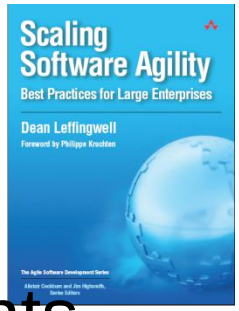
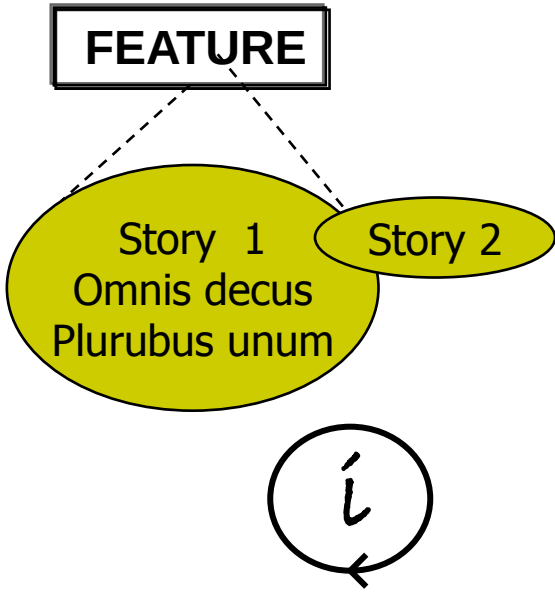
Just-In-Time Elaboration – Component Team's Responsibility



- Agile investment in documenting requirements is minimal prior to implementation
  - Features are high level, abstract
  - Communicate only concept
  - Little "work in process"
- At iteration boundaries, elaboration is required
  - Refine the team's understanding
  - Support design, implementation and testing
  - Define acceptance criteria
- User Stories are the currency



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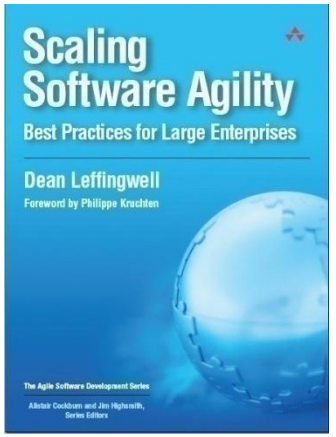
Vision and Lean Requirements

Intentional Architecture

Collaborative, multi-level Release Planning



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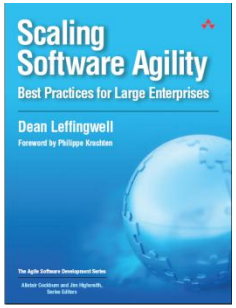
Intentional Architecture



Continuous refactoring of large-scale, system-level architectures is problematic:

- Substantive rework for large numbers of teams
  - Some of whom would otherwise NOT have to refactor their component or module
- Potential Impact on deployed systems/ users
  - Best possible BVT (Build Verification Tests) are imperfect
- Common architectural constructs ease usability, extensibility, performance and maintenance

For systems of scale, some "*intentional architecture*" is necessary

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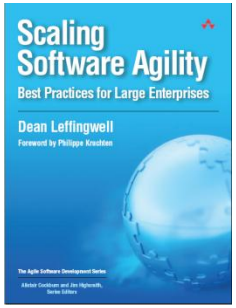
Principles of Agile Architecture



Principle # 1 The teams that code the system design the system.

Principle # 2 Build the simplest architecture that can possibly work.

Principle # 3 When in doubt, code it out.

Principle # 4 They build it, they test it.

Principle # 5 The bigger the system, the longer the runway.

Principle # 6 System architecture is a role collaboration.

Principle # 7 There is no monopoly on innovation

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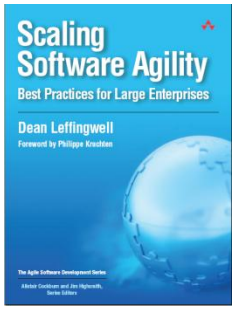
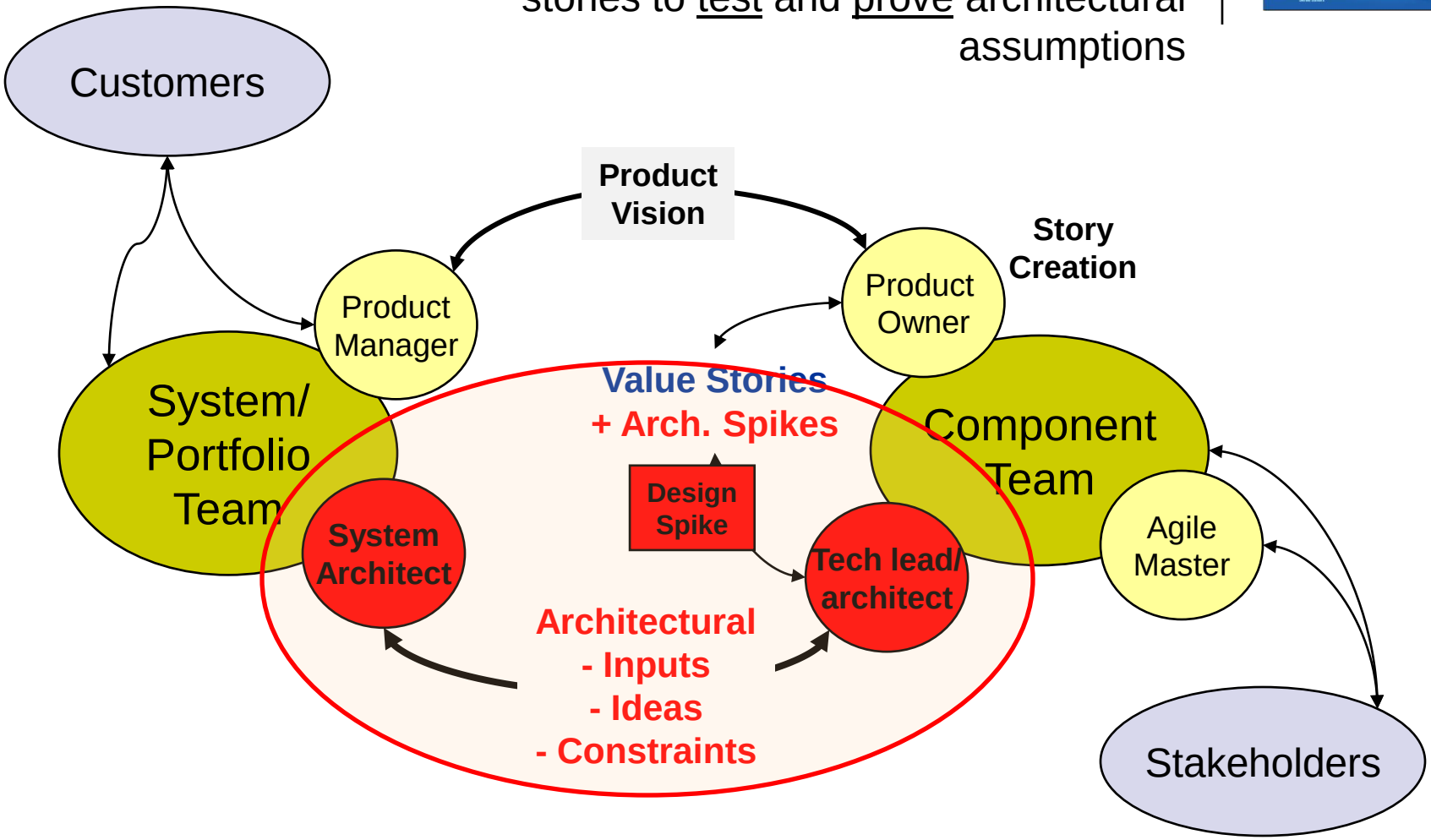
System Architecture is a role collaboration



Architects and tech leads collaborate on stories to test and prove architectural assumptions



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Intentional Architecture

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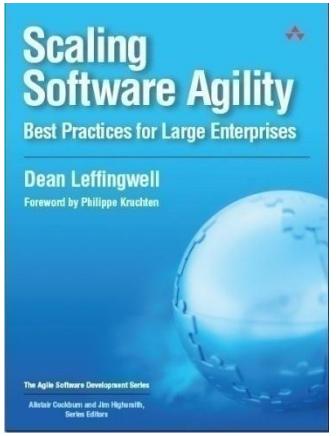

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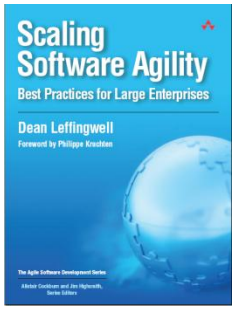
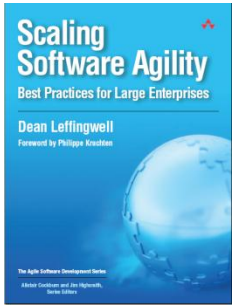


You Might Need Better Release Planning if…..

Posted on February 8, 2008 by ssaleffing | Edit

- **IF** your agile team is just getting into the flow in a nascent agile enterprise, and if your teams have been head down so long meeting near term iteration objectives that they are starting to ask about the bigger picture - **then there is something wrong with your release planning process (inadequate team vision)**
- **IF** your company organizes special projects to emphasize new initiatives and project managers spend time meeting about them - **then there is something wrong with your release planning process (new epics not factored into release commitments)**
- **IF** late discovery of interdependencies amongst teams prevent increased velocities of system- level deliveries - **then there is something wrong with your release planning process (interdependencies not considered in release commitments)**
- **IF** your team invests too little time in longer term architectural initiatives and big refactors - **then there is something wrong with your release planning process (architectural runway given insufficient consideration in release commitments)**

Multi-level Release Planning



- Agile maturity requires planning cycles longer than a sprint
- Planning requires managing complex interdependencies amongst teams

Only the teams themselves can plan and manage this complexity

Only the teams can commit to the schedule

- Collaborative, multi-level Release Planning is the seminal event
- Requires some rules, some practice and an “agile release train” delivery model

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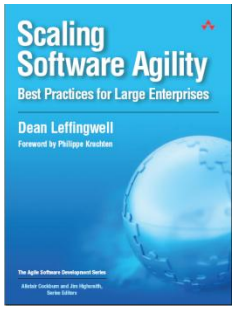
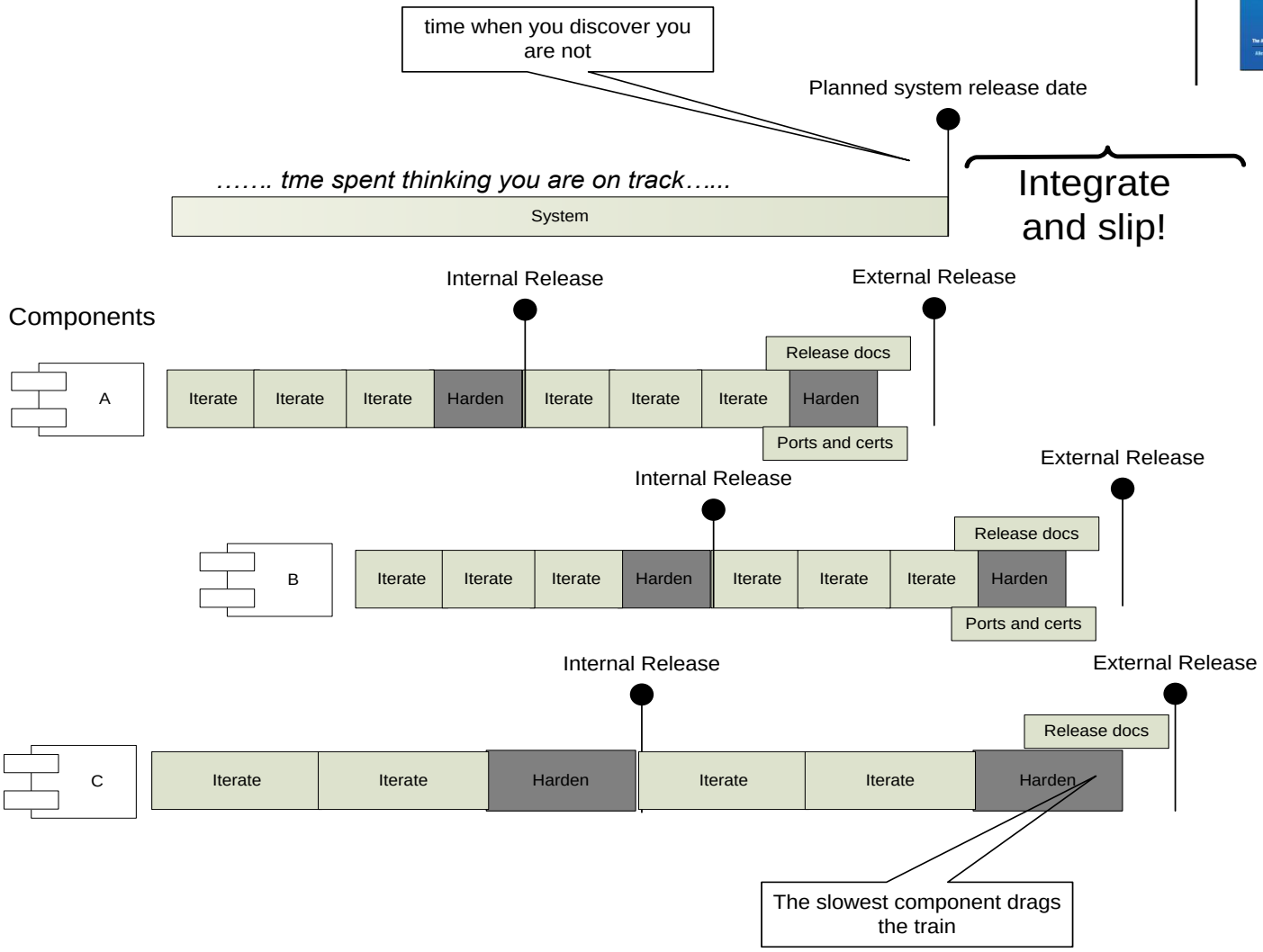
Component Agile is not System Agile





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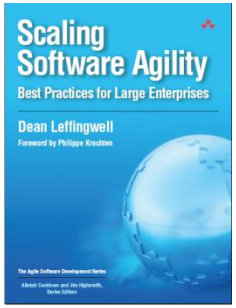
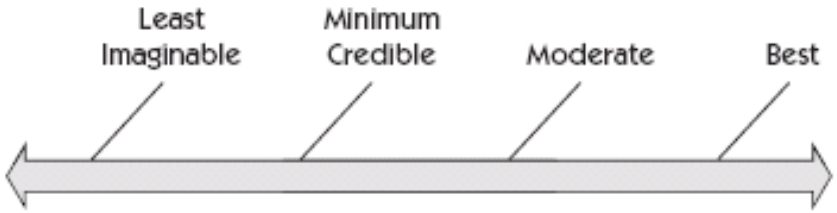
Rules of the Agile Release Train



- Iteration lengths and release dates are fixed
- Intermediate system integration milestones are established
- Constraining these means that component functionality must flex
- Shared infrastructure components must track ahead
- Component providers evolve to a flexible model:
  - Design spectrum for new functionality
  - Backup plan to ship the old version if necessary



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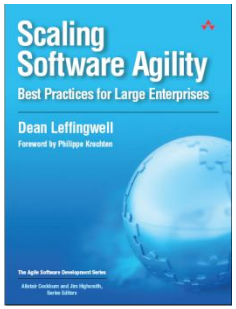
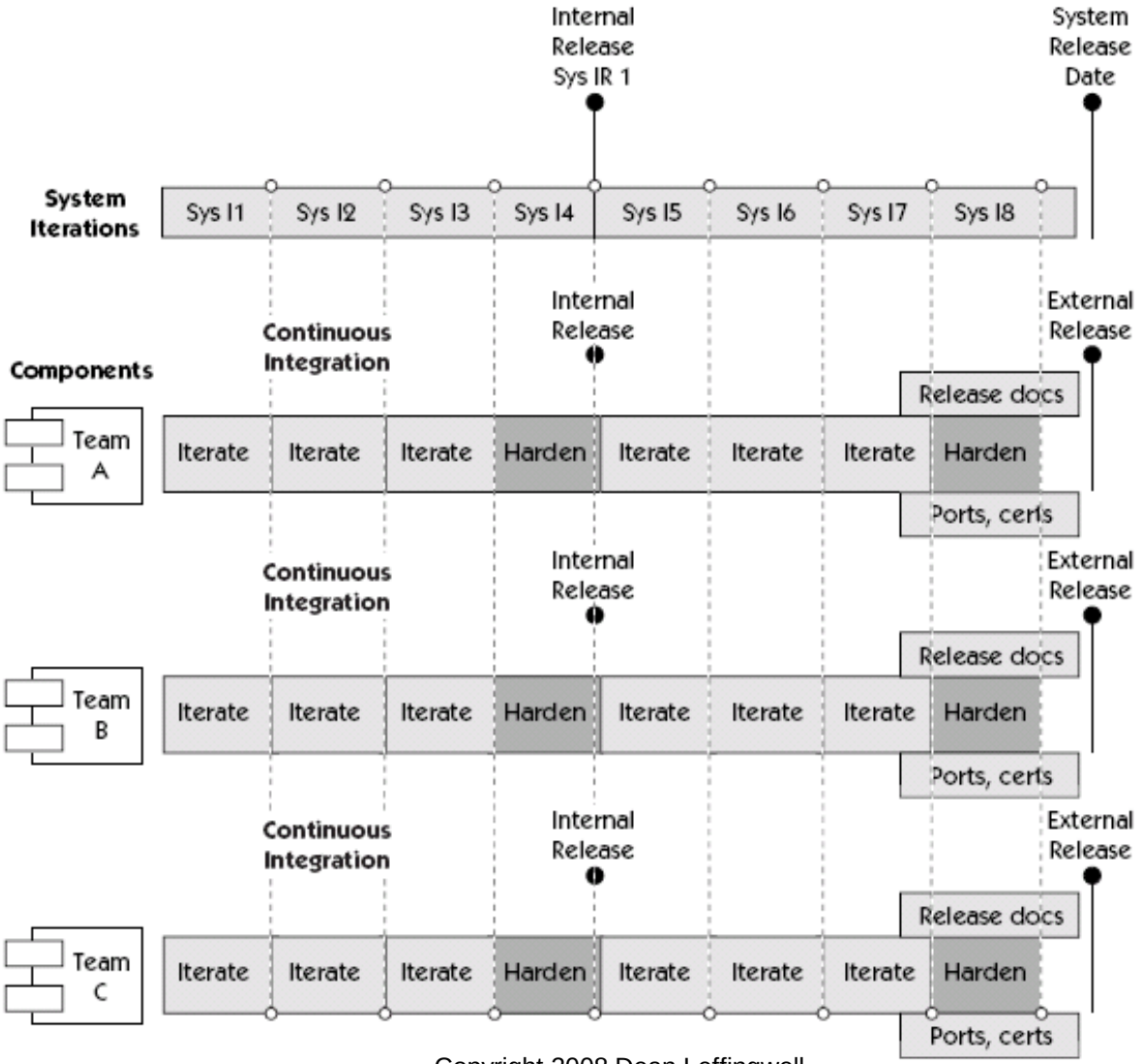
Synchronized Agile Release Train





S H I P !

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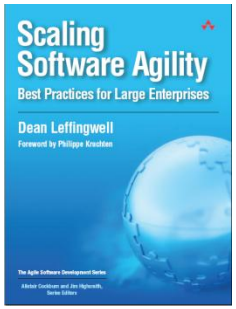
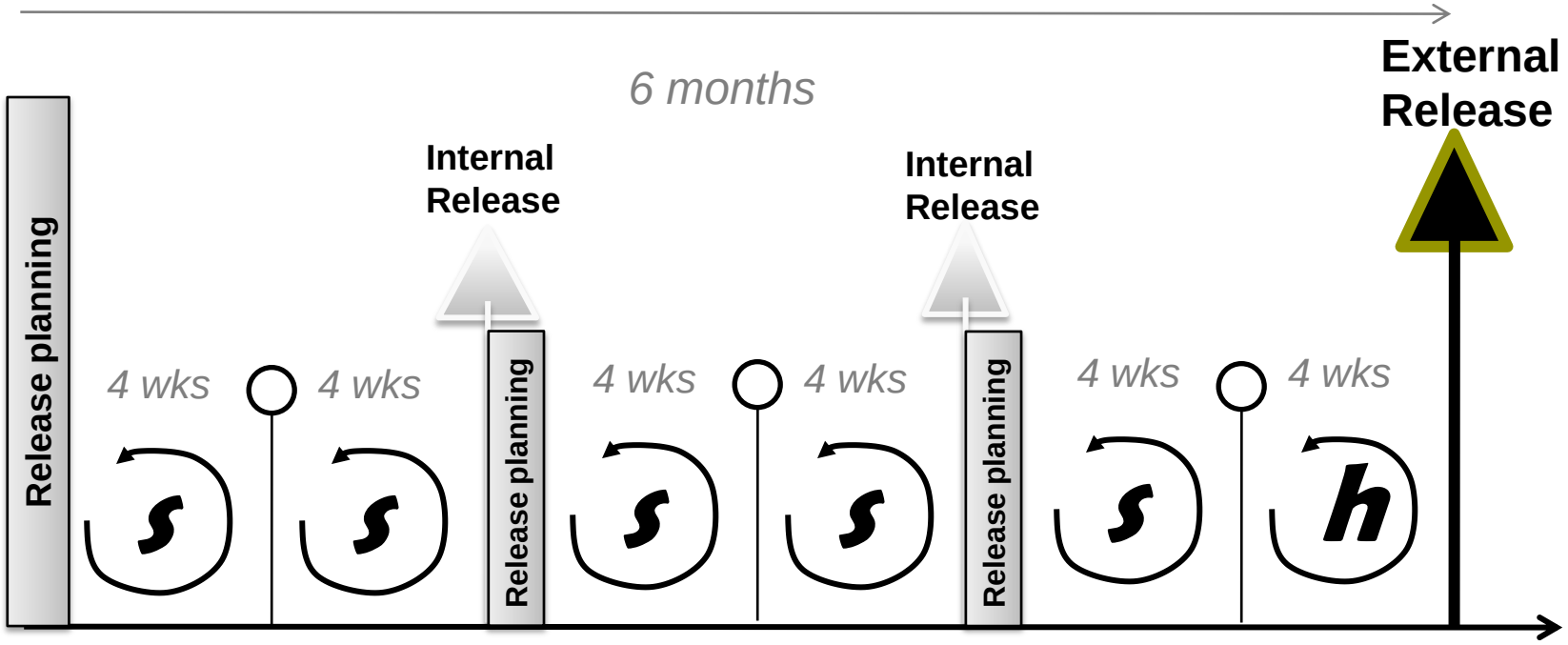
Example Release Planning Cadence

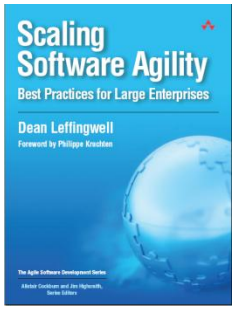


Six Sprints in a six month time box



Legend:
s – development sprint
h – hardening sprint
Internal release – two-sprint, potentially shippable increment

The Seminal Event
Release Planning – Day 1



9-10 **Business Context**

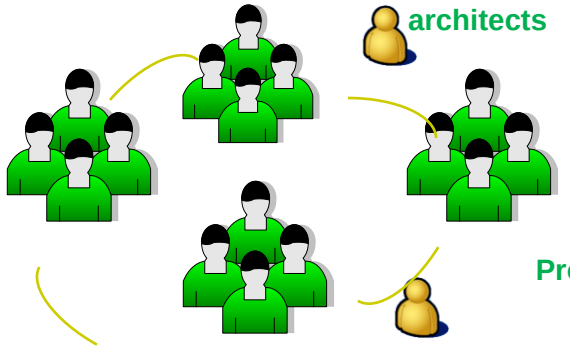
- State of the business
- Objectives for upcoming periods

10-11 **Product Vision**

PMs

- Objectives for release
- Prioritized feature set

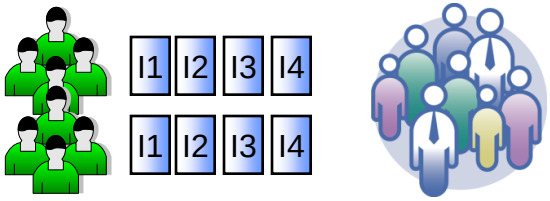
11-12 / 12-1 / 1-2 **Team Breakouts**



- Teams plan stories for iterations
- Work out dependencies
- Architects and PMs, POs circulate

Product managers/Product Owners

2-3 / 3-4 **Draft Release Plan Review**



- Each team presents plans to group
- Issues/impediments noted

4-6 **Problem Solving/ Scope Management**

Eng mgrs

?

- Issues/impediments assigned
- Release commitment vote?

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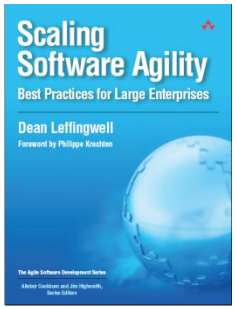
The Seminal Event
Release Planning Day 2



9-10 **Revise Objectives?**

Eng mgrs/PMs

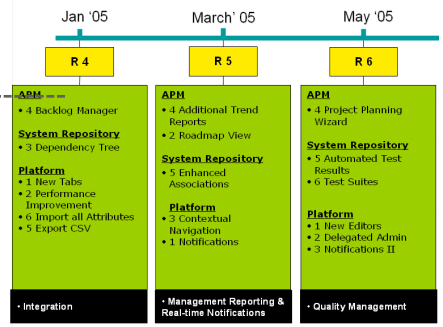
- Objectives for release
- Prioritized feature set

10-11 / 11-12 **Plan/Re-plan as necessary**

Dev teams

Product Managers

- What did we learn?
- Multi-release



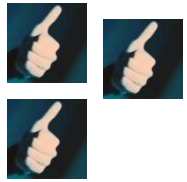
12-1 / 1-2 **Final Plan Review**

I1 I2 I3 I4

I1 I2 I3 I4

2-3 **Commitment**

Eng mgrs



- All Issues/impediments assigned
- Release commitment vote

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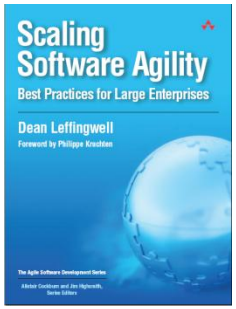
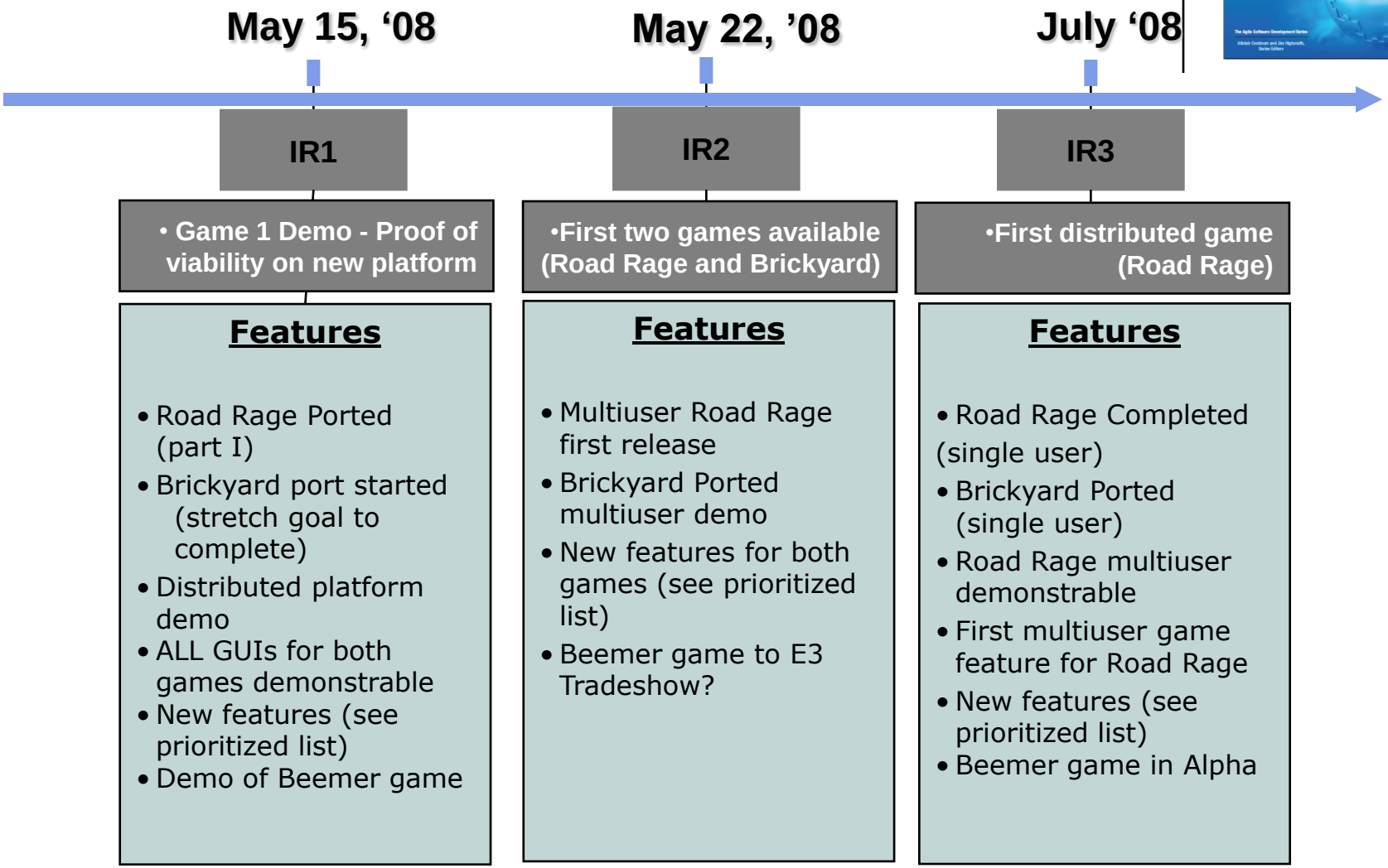
Roadmap Output :
System Team's Responsibility





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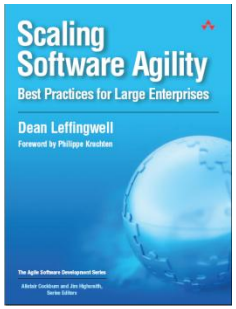

AND

Wait, don't fire!

In the agile enterprise, managements need for results must be greater than the need to control

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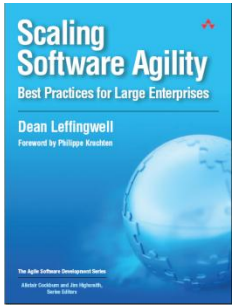
Wait, Don’t Fire!



“Although project teams are largely on their own, they are not uncontrolled. Management establishes enough checkpoints to prevent instability, ambiguity, and tension from turning into chaos.

At the same time, management avoids the type of rigid control that impairs creativity and spontaneity. Instead, the emphasis is on “self-control”, “control through peer pressure” and “control by love”.

–Toyota’s Takeuchi and Nonaka
The New New Product development Game
Harvard Business Review, 1986
(excerpts from the roots of Scrum)

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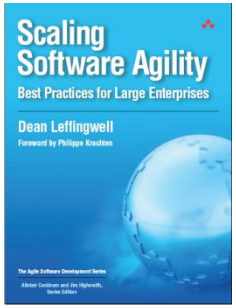
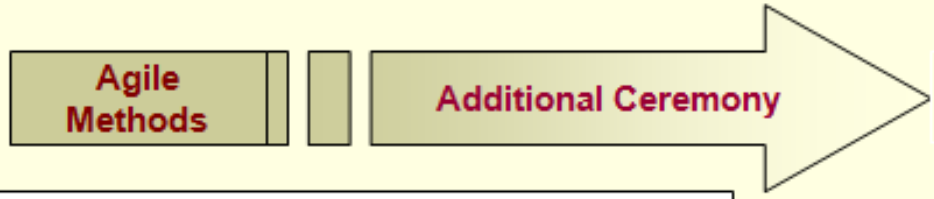
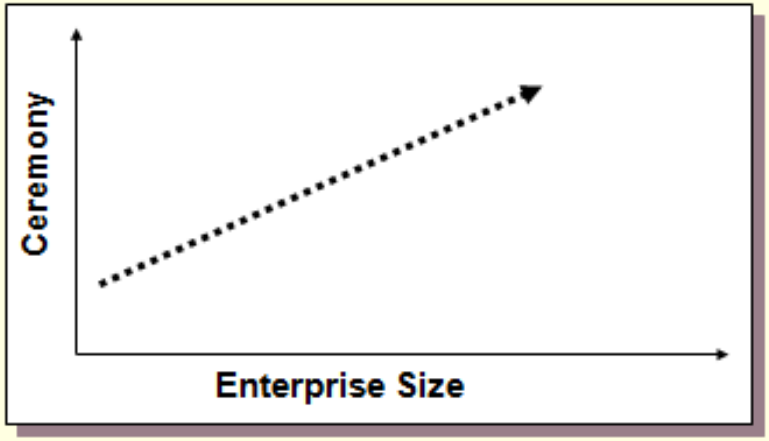
What your teams may be seeing



"Enterprising" Agile Methods?

Too often agile methods are "enterprise" enabled by adding additional prescription and ceremony – thus losing their agility





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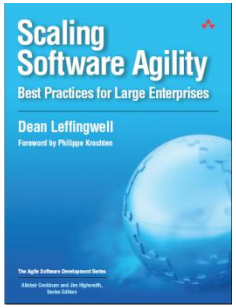
Agile Guidelines



- But it *is* appropriate to create agile guidelines as governance documents
  - What agile means in this company
  - Our expectations for agile behavior
  - Define unambiguously agile mandates
    - Examples: unit testing, retrospectives, daily standup

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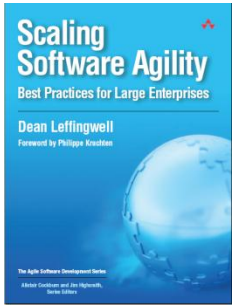
But



- As lightweight as possible
  - 3-5 pages
  - Serve as templates for additional site-based or project specific guidelines
    - put in place by the local teams themselves
- Recommend, but don't over-prescribe
  - Especially around controversial practices
    - Pair programming, TDD, tooling, requirements management

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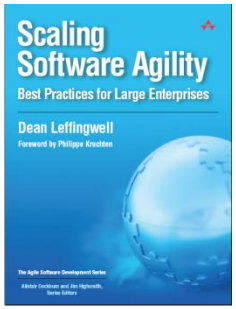
Have patience:
and watch for these anti-patterns…



- Company likes the potential benefits of agile, but applies the same controls, interrupts and fixed schedule commitments as before
- Insufficient refactoring of testing organizations and inadequate test automation
- Lack of team proficiency in agile technical practices
  - iterations and sprints treated as demo milestones, rather than shippable increments
- Insufficient depth/competency in the critical product owner role
- Inadequate coordination of vision and delivery strategies
  - due to lack of coordinated, multi-level release planning

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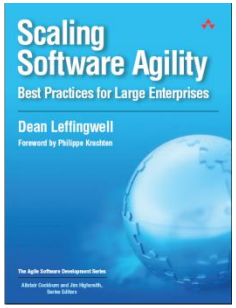

- *Scaling Software Agility: Best Practices for Large Enterprises*, Addison-Wesley 2007
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