Agile Processes

Dirk Riehle, Univ. Erlangen

AMOS B03

Reminder About Common Mistakes

1. Please sign-off your commits and declare your co-authors, if any
2. During sprint review, please show and tell, not just tell
3. Don’t forget your sprint preparation meeting

Agenda

1. Software development
2. Plan-driven development
3. Agile methods
4. Scrum
5. Build process review

1. Software Development

Products vs. Projects

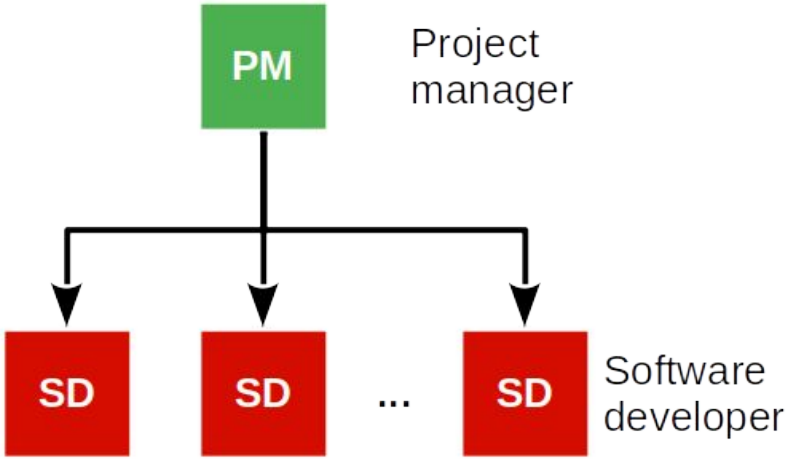
Products have a life-cycle; may live forever

- Products are developed for a market (many customers)

Projects have a defined start and end date

- Projects are developed for one client (one customer)

Traditional Software Project Organization (Consulting Firm)



Job Descriptions in Software Consulting Projects

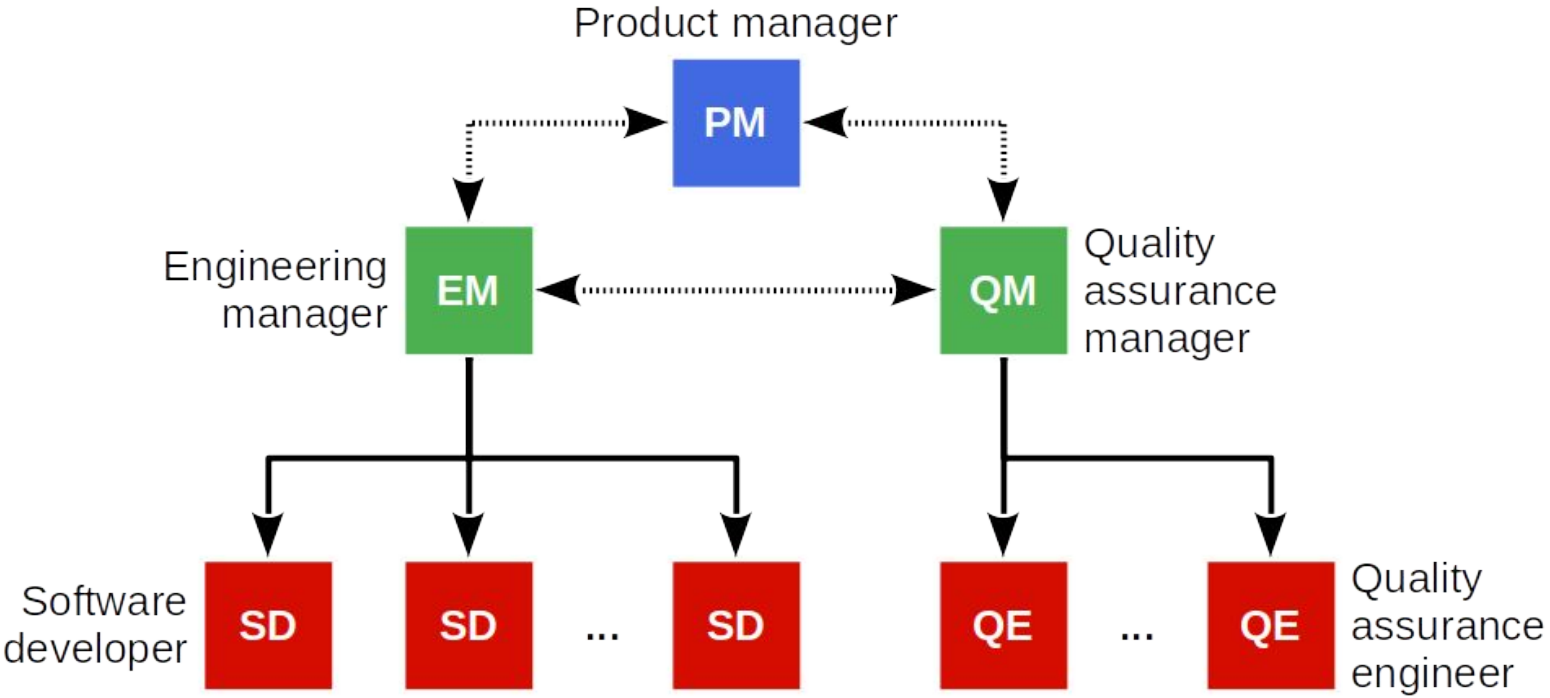
A project manager is responsible for

- Planning, managing, and delivering the project results to clients

A software developer is responsible for

- Implementing the functionality as requested by the project manager

Traditional Software Product Organization (Vendor)



Job Descriptions in Software Product Development

A product manager is responsible for

- What needs doing

An engineering manager is responsible for

- Who gets to do it and when

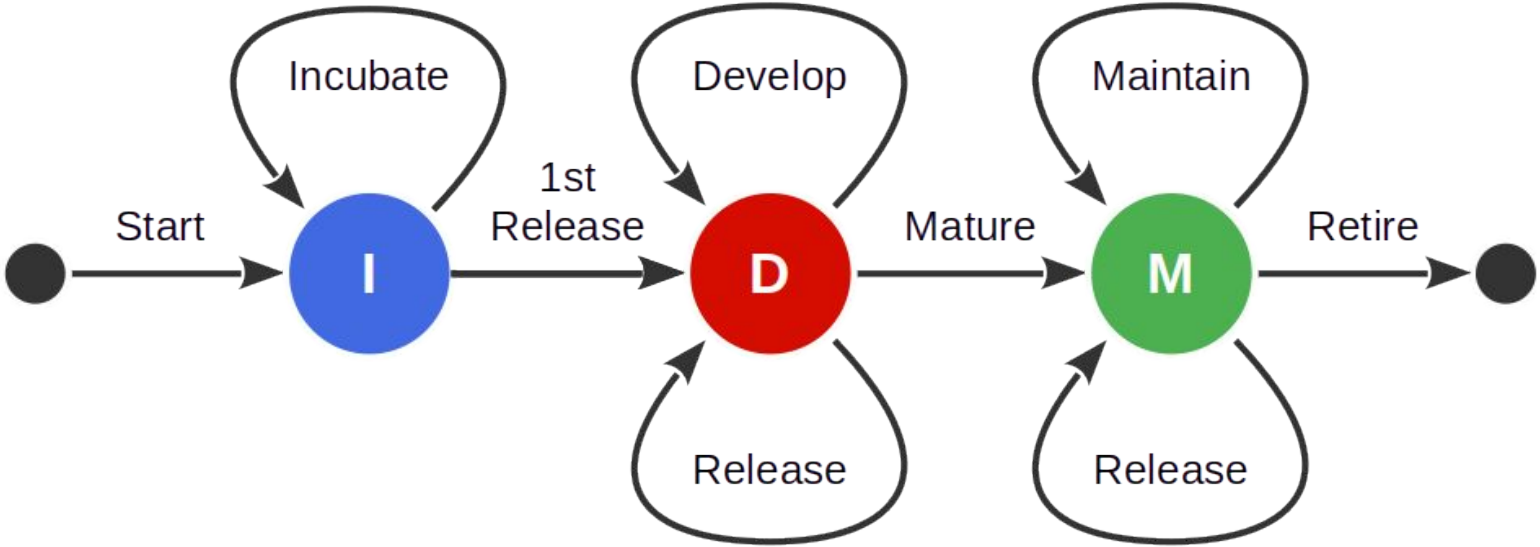
A software developer is responsible for

- How it gets done and how long it will take

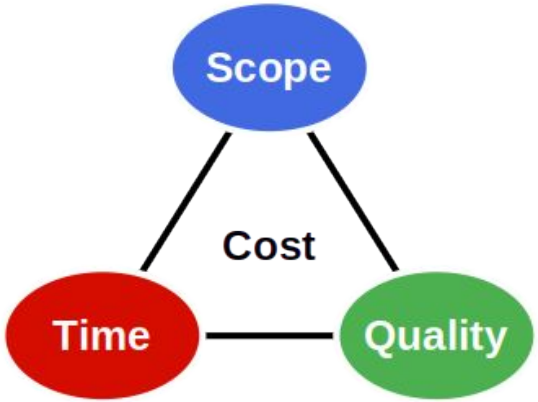
Quality assurance is responsible for

- Ensuring that the product meets the expectations

Basic Software Product Life-Cycle

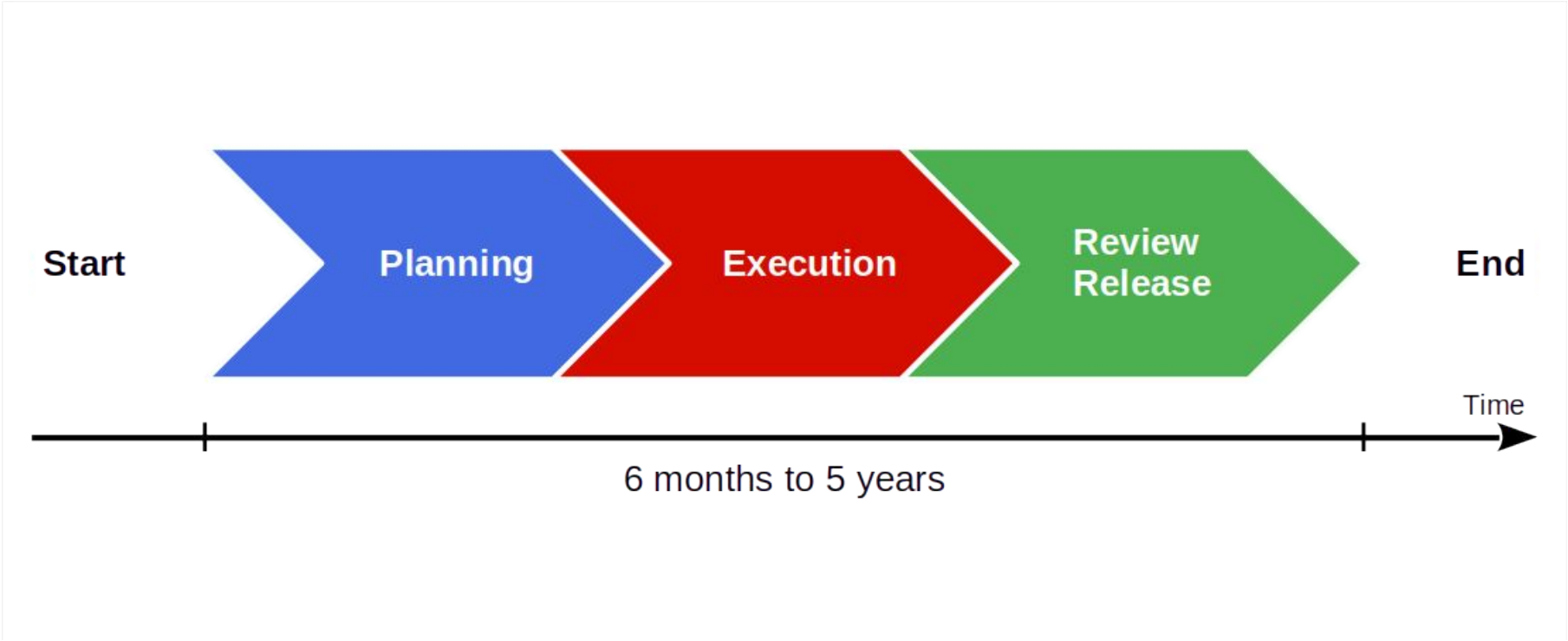


The Magic Triangle (“Pick Two”)



2. Plan-Driven Development

Basic Plan-Driven Development



Video From “The Pentagon Wars” [1]

[1] See https://youtu.be/r0op8e0LuoU

Video Lessons

Stakeholders problems

- Multiple stakeholders with conflicting interests
- Meddling stakeholders intervening into the process

Requirement problems

- Inconsistent requirements (poor quality assurance)
- Changing requirements (wandering focus, long project)
- Feature creep (from troop carrier to tank)

Product problems

- Cost explosion due to lack of focus, rework
- Unclear market and wandering purpose

The Waterfall Model [1]

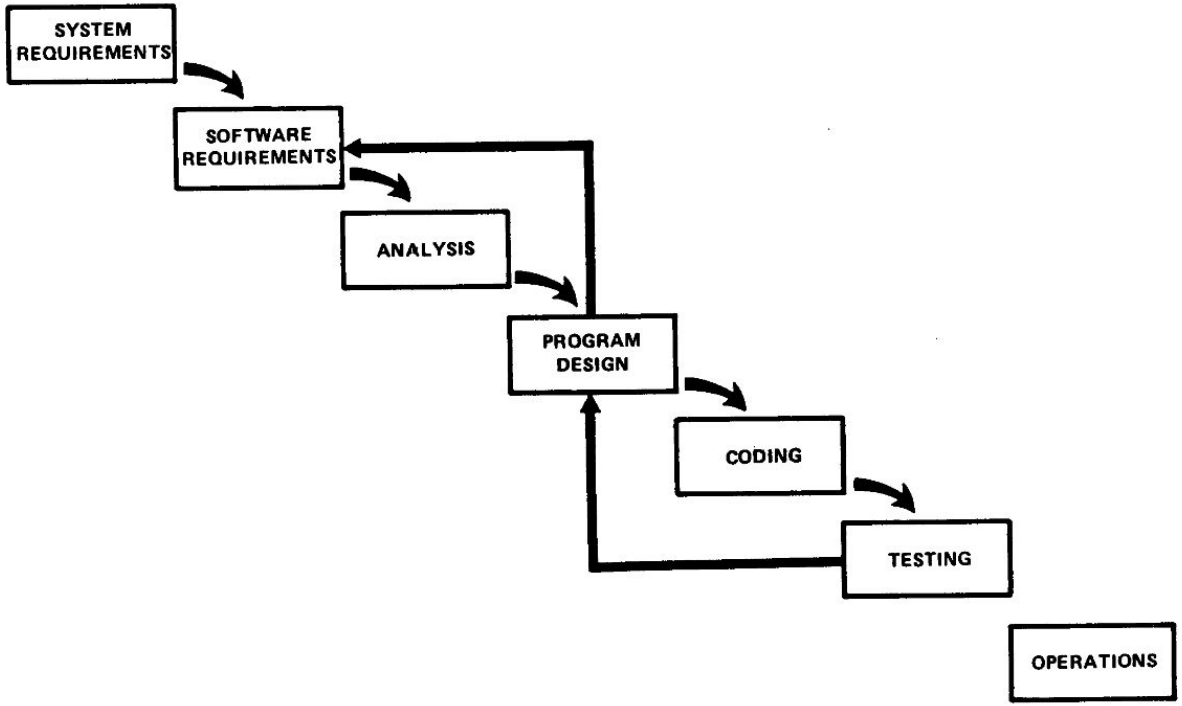


Figure 4. Unfortunately, for the process illustrated, the design iterations are never confined to the successive steps.

[1] Royce, W. W. (1970). Managing the development of large software systems. Proceedings of IEEE WESCON. Los Angeles, 328-388.

Main Lesson From Plan-Driven Development

Phases ≠ Activities

3. Agile Methods

Agile Methods

Agile methods are a category of software development methodologies

- Defined in opposition to plan-driven development
- Driven by consultants as a significant business opportunity

The key idea of agile methods is to have a fast feedback loop

- Steer, don’t plan and blindly execute
- Codified as the agile manifesto

Examples agile methodologies

- Scrum, XP, the Crystal Methods, Feature Driven Development

Principles of the Agile Manifesto [1]

Individuals and interactions

- Over processes and tools

Working software

- Over comprehensive documentation

Customer collaboration

- Over contract negotiation

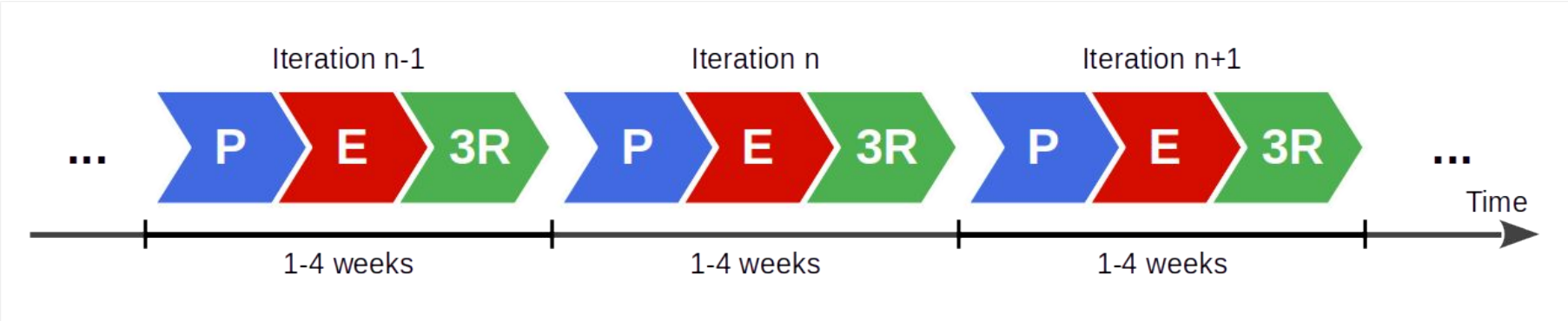
Responding to change

- Over following a plan

[1] See https://agilemanifesto.org

Agile Development Process

- Succession of equal-length iterations (“time-boxes”, “sprints”)
- Intervention points are during planning and review
- User feedback only available during review



P = Planning
E = Execution
3R = Review, release, and retrospective

Benefits of Fast Feedback Loops

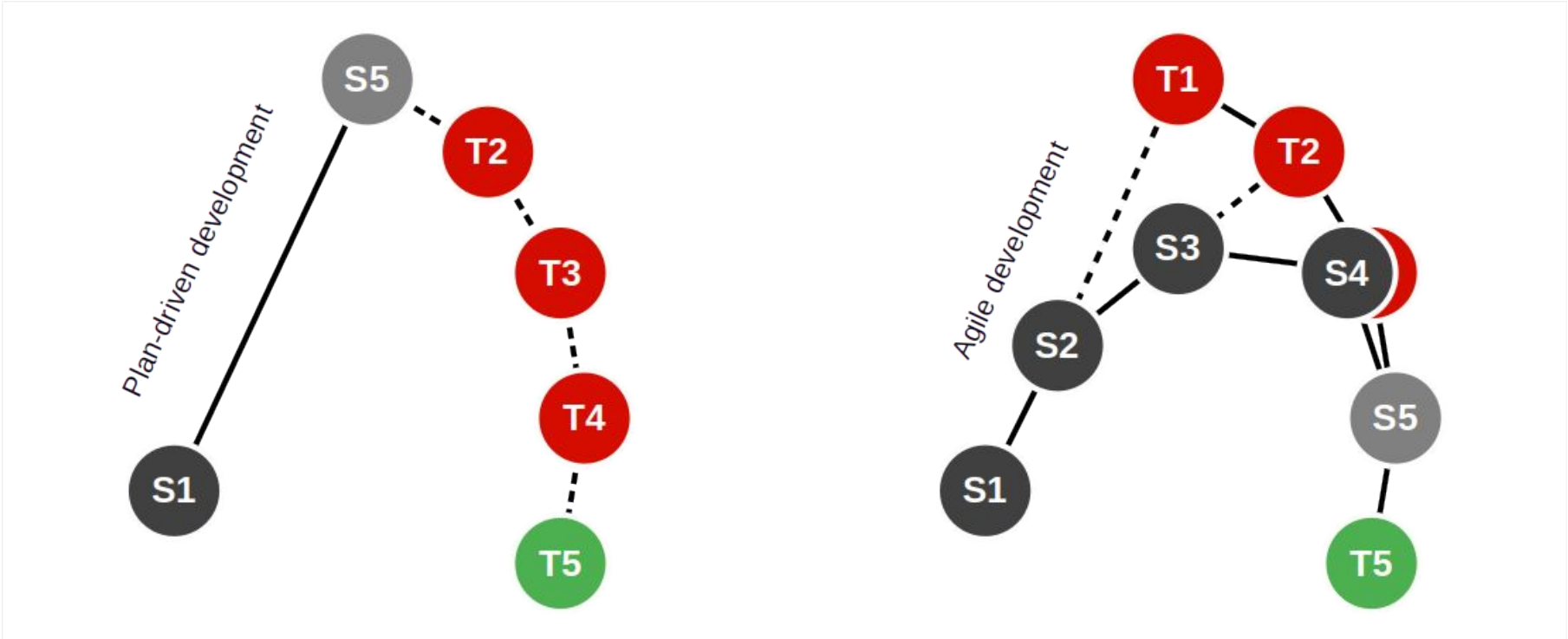
Short iterations

- Short iterations lead to focus on high-value features first
- Established well-worn rhythm is sustainable, avoids burnout
- Partial functionality is better than none

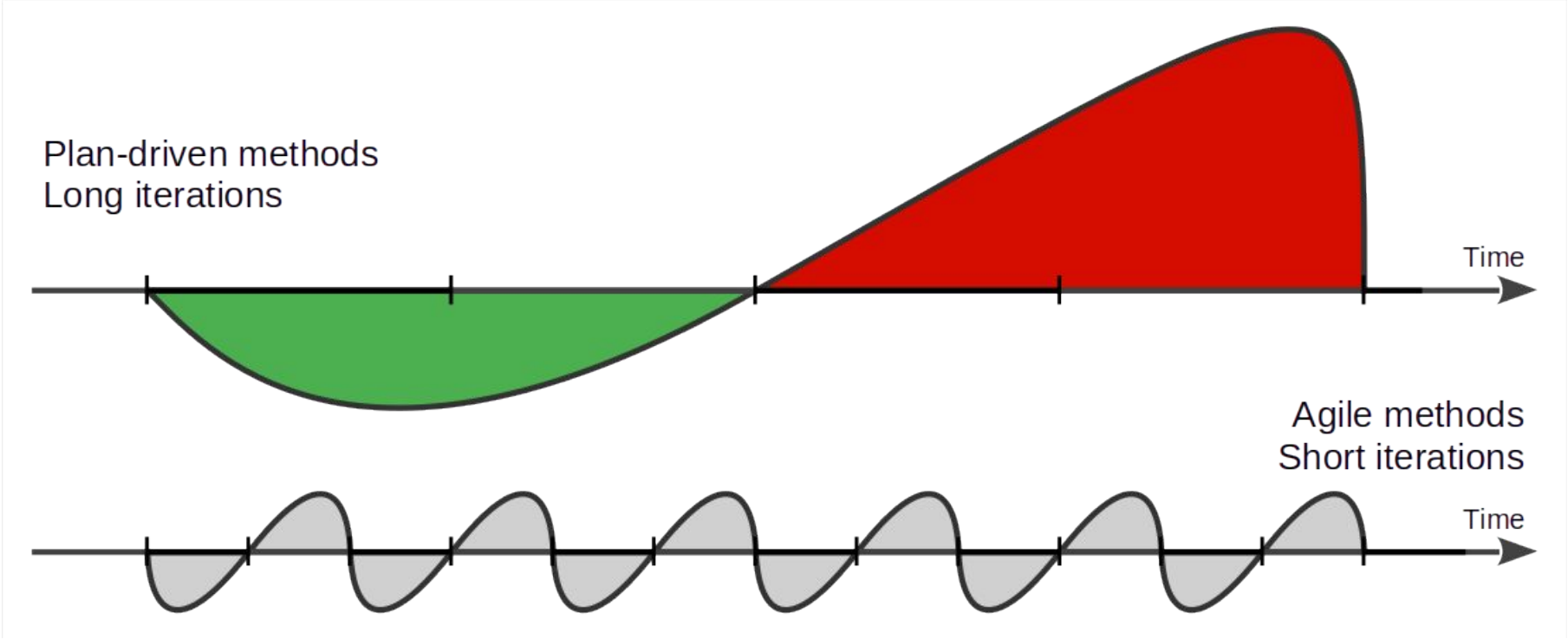
User feedback

- User feedback helps steer project or product to meet user needs
- Feedback loop ensures that problems surface early
- Feedback helps recognize and realize new innovative features

Plan-Driven vs. Agile Processes



Plan-Driven vs. Agile Work Rhythms



Do Agile Methods Lead to Cowboy Coding?

Agile methods are high discipline

4. Scrum

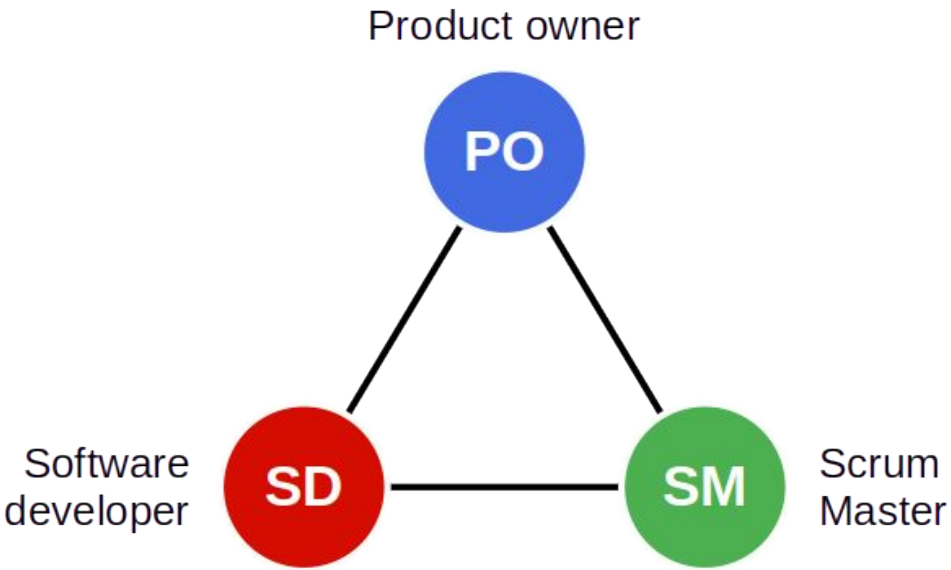
Scrum [1]

Scrum is an agile method (framework) invented around 1993, 1995

- Has a minimal (agile) process model
- Is applicable to any domain, not just software development

[1] Schwaber, K., & Sutherland, J. (2020). The scrum guide. Web-published.

Scrum Roles / Scrum Team [1]



[1] The Scrum team is one Scrum Master, one product owner, software developers

Committed vs. Involved Roles

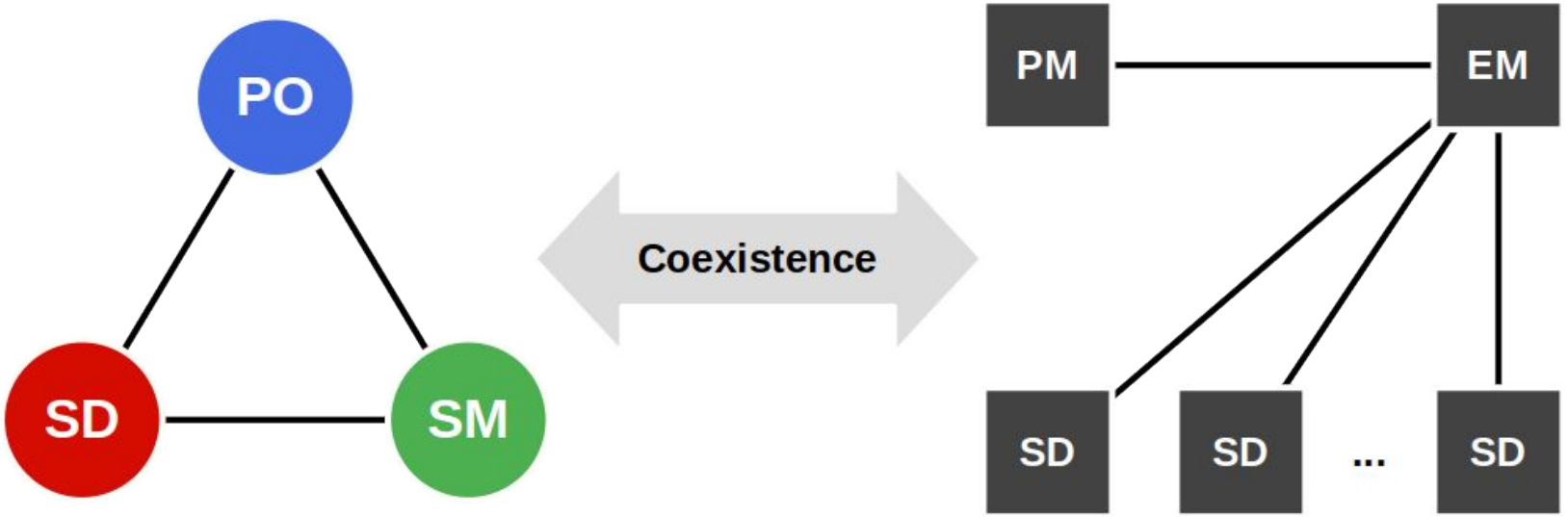
Committed roles

- Product owner
- Software developer(s)
- Scrum Master

Involved roles

- Customer
- Sponsor / funder
- Regulators
- …

Mapping Roles to Posts



Roles / Posts Correspondence

Scrum	Custom projects (consulting firms)	Product development (vendors)
Product owner	Project manager	Product manager Engineering manager
Software developer	Project manager Software developer	Software developer Engineering manager Quality assurer
Scrum Master	Project manager	Engineering manager

Terms (The Scrum Terminology Mess)

Scrum	Custom projects	Product development
Product owner	Business analyst, Requirements engineer	Product manager
Product goal	Project mission [1]	Product vision [1]
Product backlog	Requirements specification	Product requirements document (PRD)

[1] This resolution is specific to AMOS, though the terms are generally known and used

Scrum Scope / Time Horizons

Scrum proper covers

1. Day
2. Sprint (weeks)

Arguably implied by Scrum

3. Releases (months)
4. Project/product (years)

Further evolutions e.g. SAFe cover

5. Product life-cycle (years)
6. Portfolio

Daily Scrum (a.k.a. Daily Standup)

The **daily scrum** is

- A daily status meeting to sync on problems and upcoming work
- To be kept as short as possible

Committed parties are mandatory

- Only committed parties may speak
- Everyone else is optional

Discussions are not allowed, but

- Can be had one-on-one after the meeting
- Scrum Master will follow-up on problems

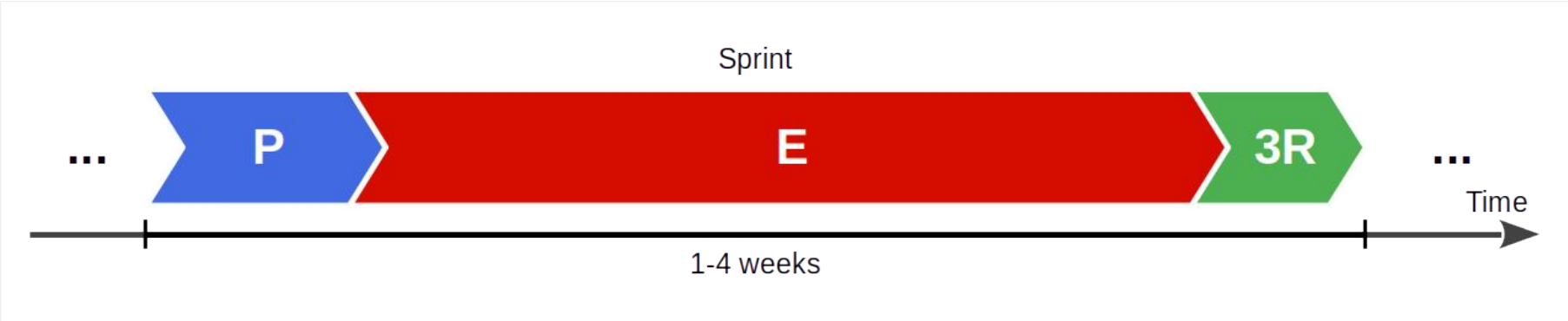
Daily Scrum

Daily Plank

Scrum Sprint

A sprint is Scrum's iteration; it is an equal-length time-box

It is a highly structured process with defined feedback points



Increment of Value

An increment of value is

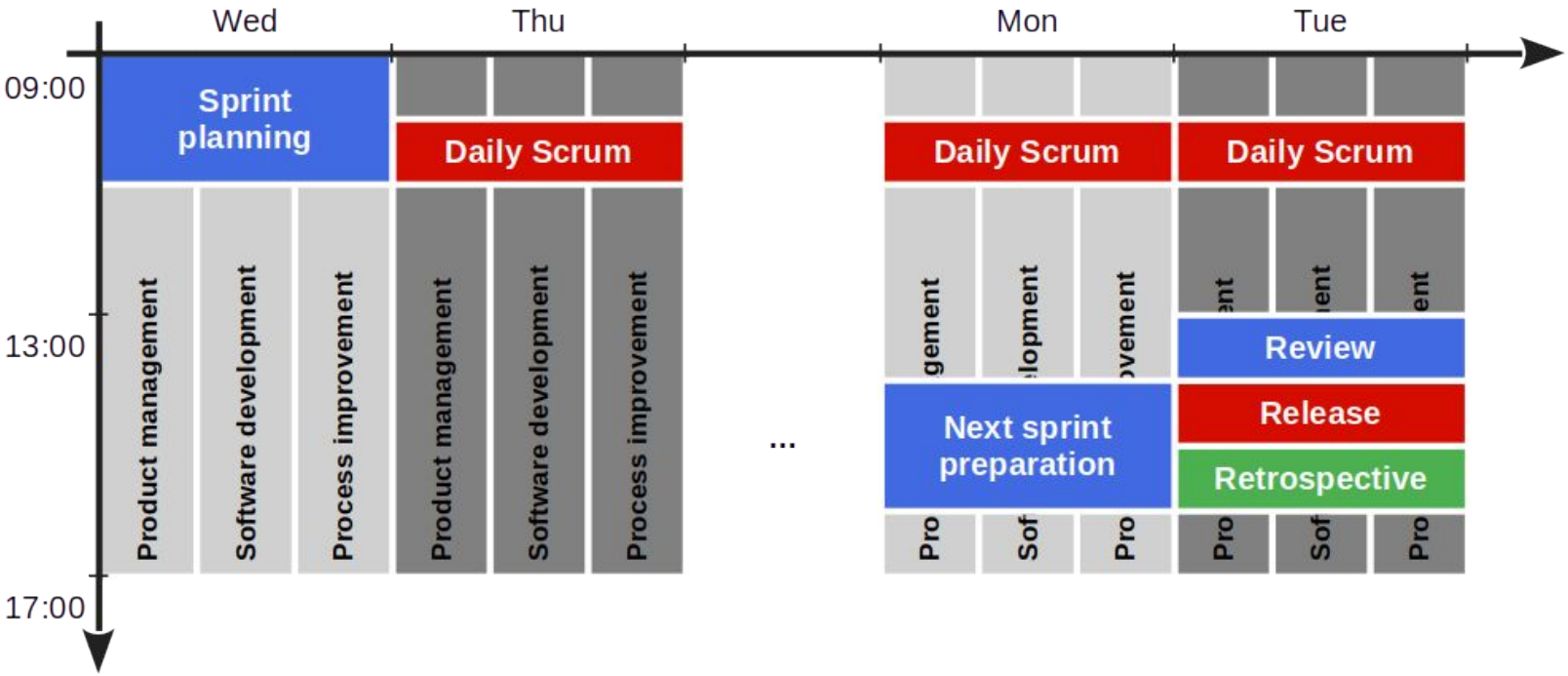
- Some added value to current or new artifacts

Increments of value are mainly provided by

- Sprints (via sprint release)

Basically, anything that has a definition of done

Sprint Structure



Sprint Meetings

1. **Next sprint preparation**
   a. Product owner and senior developer groom the product backlog

2. **Sprint review**
   a. Team reviews this sprint's results, signs off on them
3. **Sprint release**
   a. Team decides on sprint release
4. **Sprint retrospective**
   a. Team reviews process, commits to improvements
5. **Sprint planning**
   a. Team discusses upcoming work, commits to it

The AMOS team meeting

6. **Daily Scrum**
   a. Team members update each other on work progress

Sprint Workstreams

Product management; the product owner

- Builds and grooms the product backlog
- Answers questions to developers

Software development; software developers

- Break down backlog items into tasks, self-organize
- Design and implement sprint backlog items

Process improvement; the Scrum Master

- Observes problems and opportunities
- Facilitates impediments resolution and improvements

5. Build Process Review

Milestone: Build Process Review

We expect you to demo a working build and run process

- One command to trigger and perform a full build
- One command to start the software for demoing purposes
- All of this independently of a particular person’s machine
- We will call arbitrarily on people to show this

Feel free to coordinate with and learn from other teams

Summary

1. Software development
2. Plan-driven development
3. Agile methods
4. Scrum
5. Build process review

Thank you! Any questions?

dirk.riehle@fau.de – https://oss.cs.fau.de

dirk@riehle.org – https://dirkriehle.com – @dirkriehle

Legal Notices

License

- Licensed under the CC BY 4.0 International license

Copyright

- © Copyright 2023 Dirk Riehle, some rights reserved

Megawoosh! [1]

[1] See https://www.youtube.com/watch?v=D7rbiLNf-JI

Video Lessons [1]

[1] See https://youtu.be/_n065KE00J0