Agile Processes

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AMOS B03

Agenda

1. Software development
2. Plan-driven development
3. Agile methods
4. Scrum

1. Software Development

Products vs. Projects

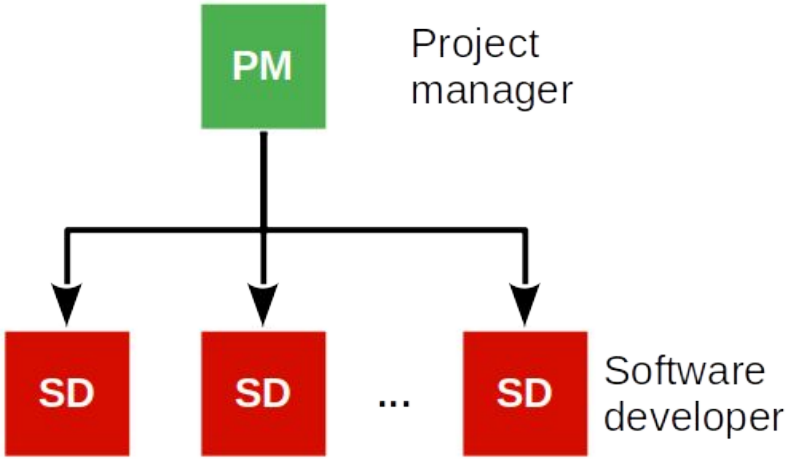
Products have a life-cycle; may live forever

- 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 Pojects

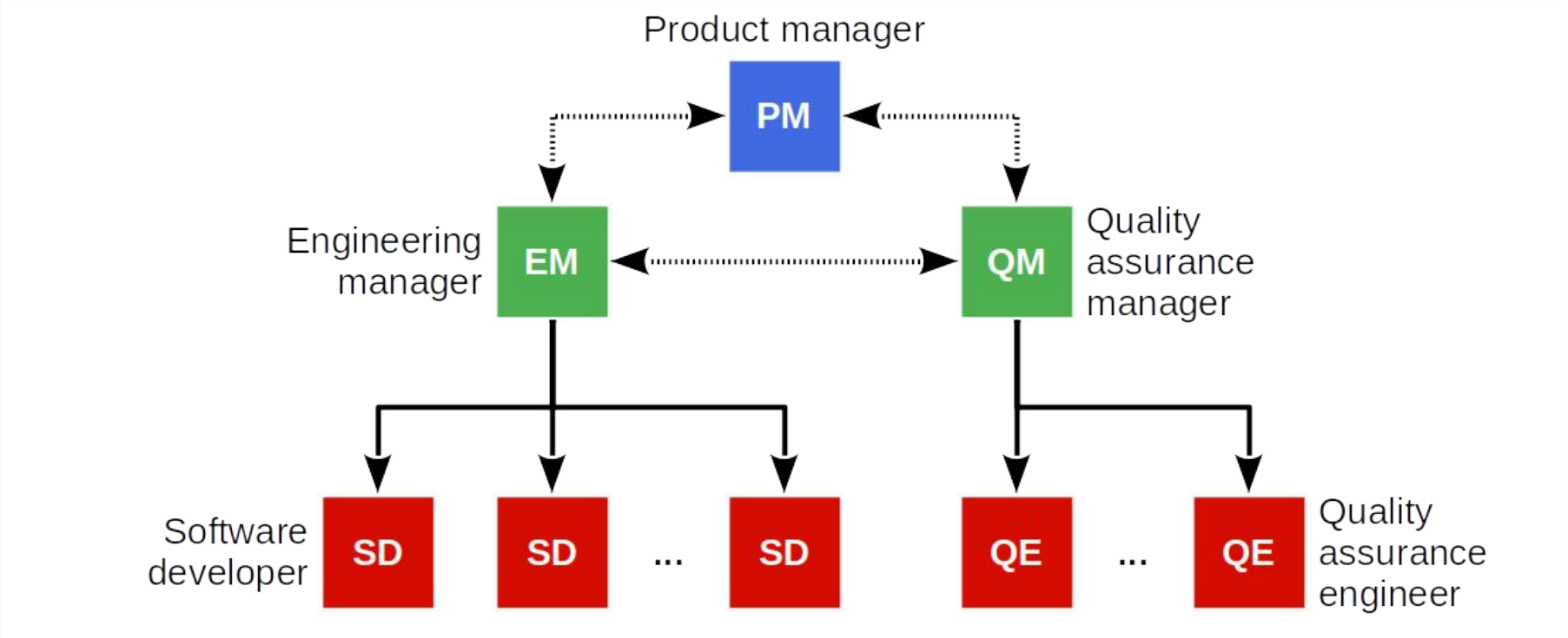
A project manager is responsible for

- 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

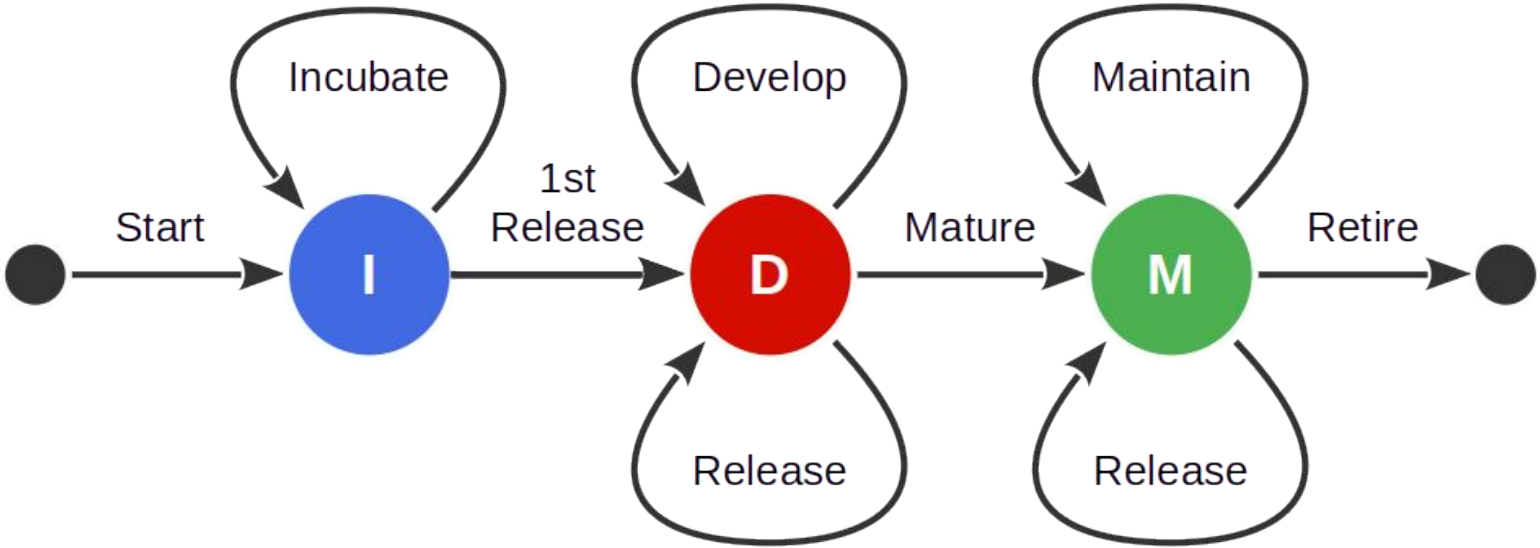
A software developer is responsible for

- How it gets done and how long it will take

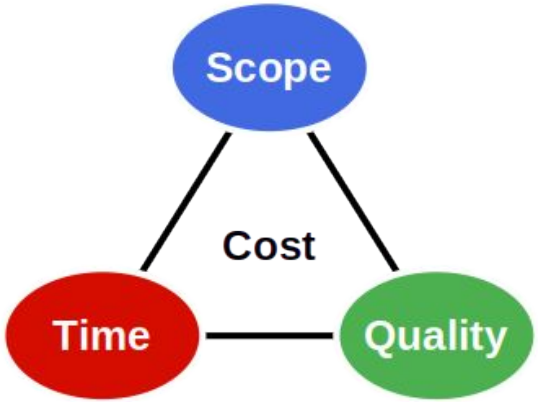
Quality assurance is responsible for

- Ensuring that the product meets the expectations

Basic Software Product Life-Cycle

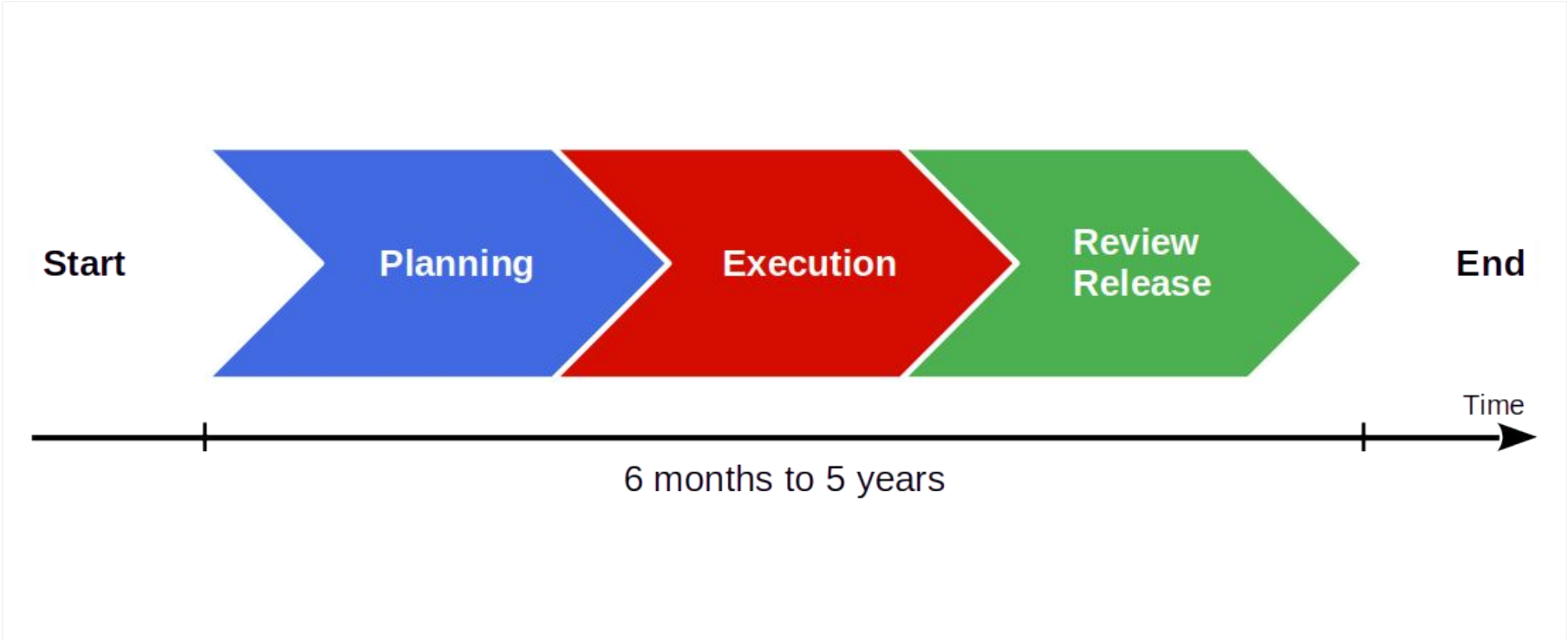


The Magic Triangle (“Pick Two”)



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]

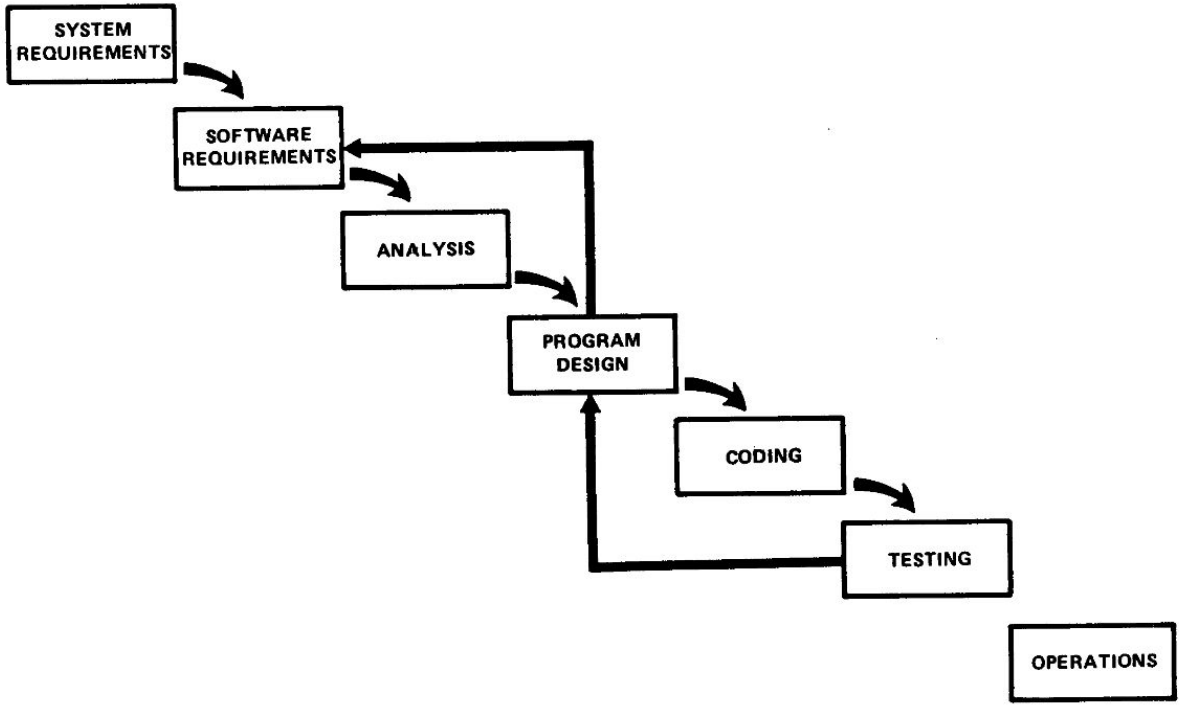


Figure 4. Unfortunately, for the process illustrated, the design iterations are never confined to the successive steps.

[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

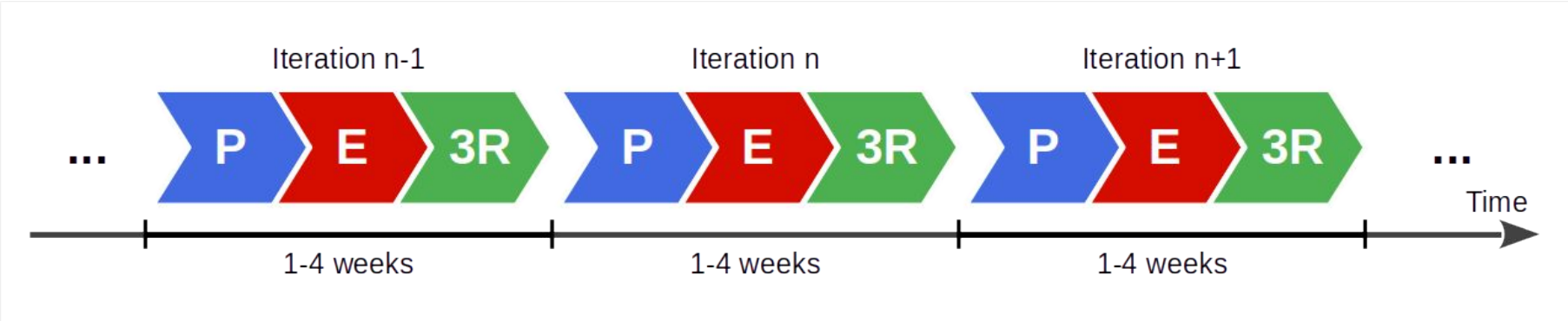
Responding to change

- 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

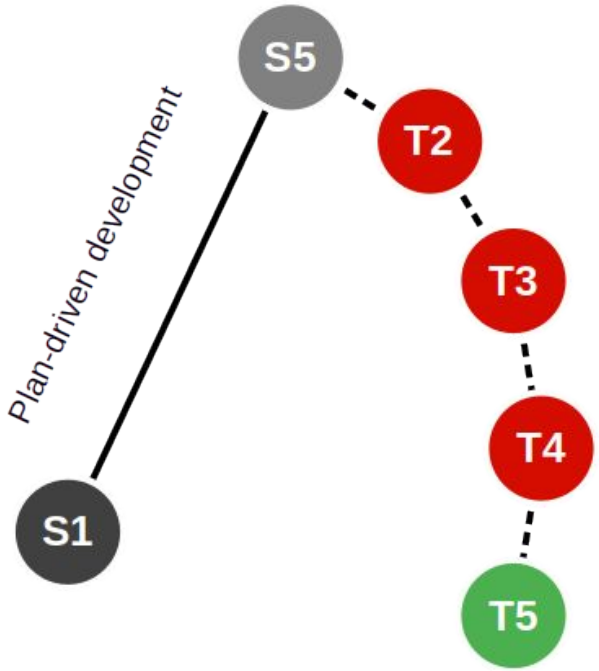
Short iterations

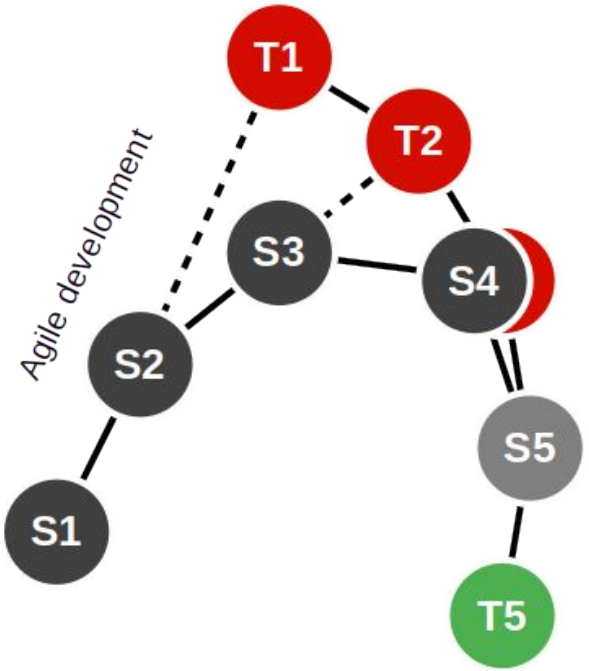
- Short iterations lead to focus on high-value features first
- Established well-worn rhythm is sustainable, avoids burnout
- Partial functionality is better than none

User feedback

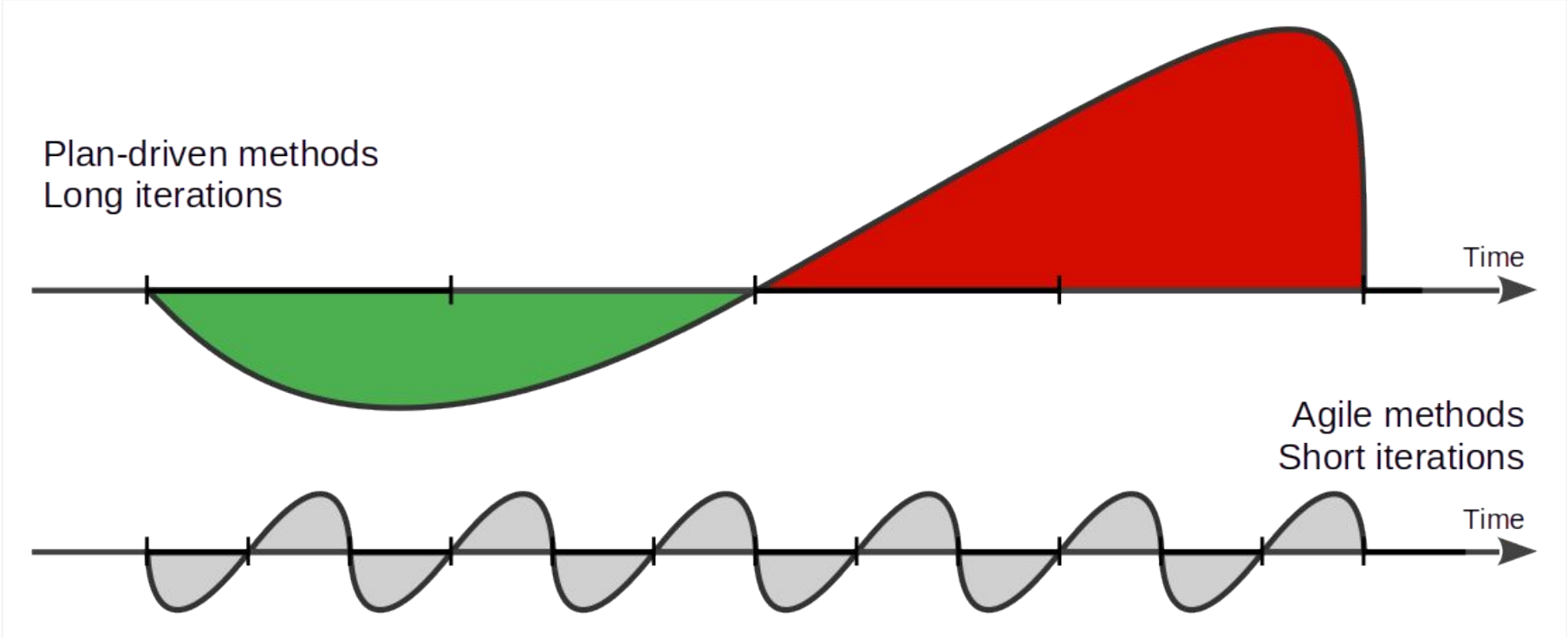
- User feedback helps team steer product to meeting needs right
- Feedback loop ensures that problems surface early
- Feedback helps recognize and realize new innovative features

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

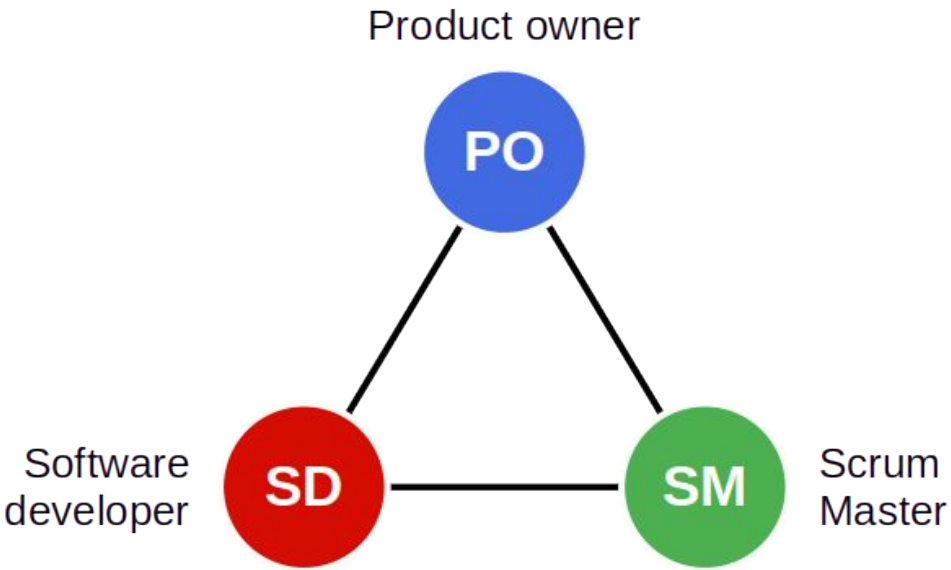
Scrum [1]

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

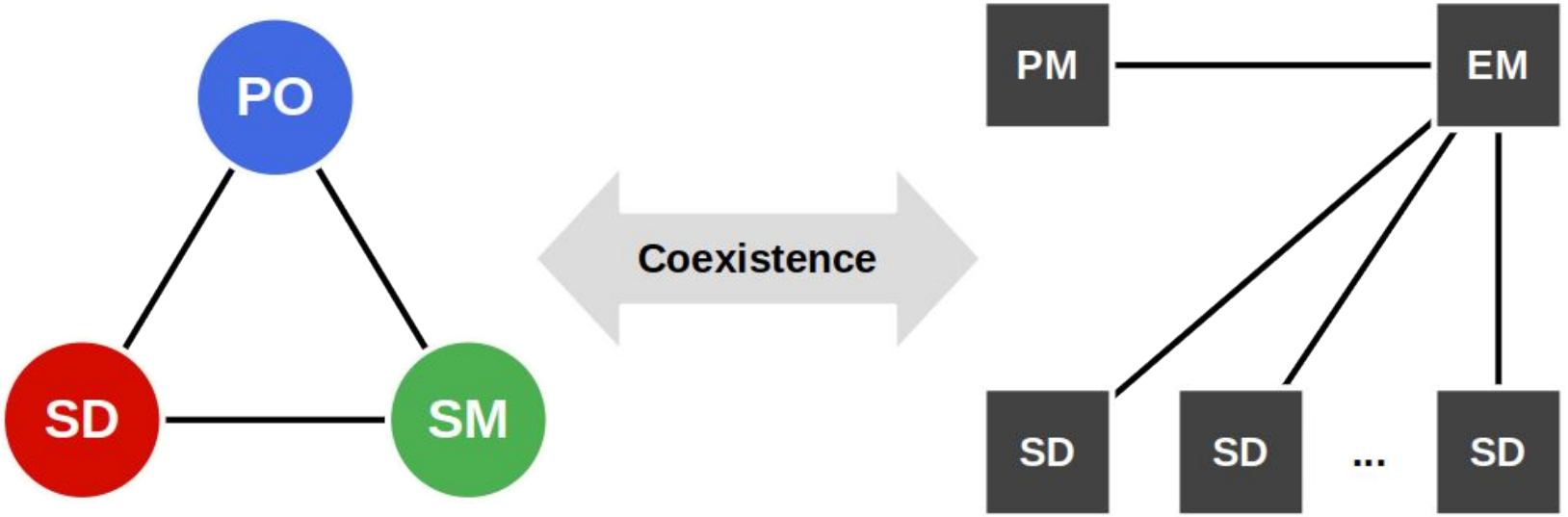
Committed roles

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

Involved roles

- Customer
- Sponsor / funder
- Regulators
- …

Mapping Roles to Posts



Roles / Posts Correspondence

Custom projects	Scrum	Products for a market
Project manager →	**Product owner** ←	Product manager Engineering manager
Project manager Software developer →	**Software developer** ←	Software developer Engineering manager Quality assurer
Project manager →	**Scrum Master** ←	Engineering manager

Terms (The Scrum Terminology Mess)

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

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

Scrum Scope / Time Horizons

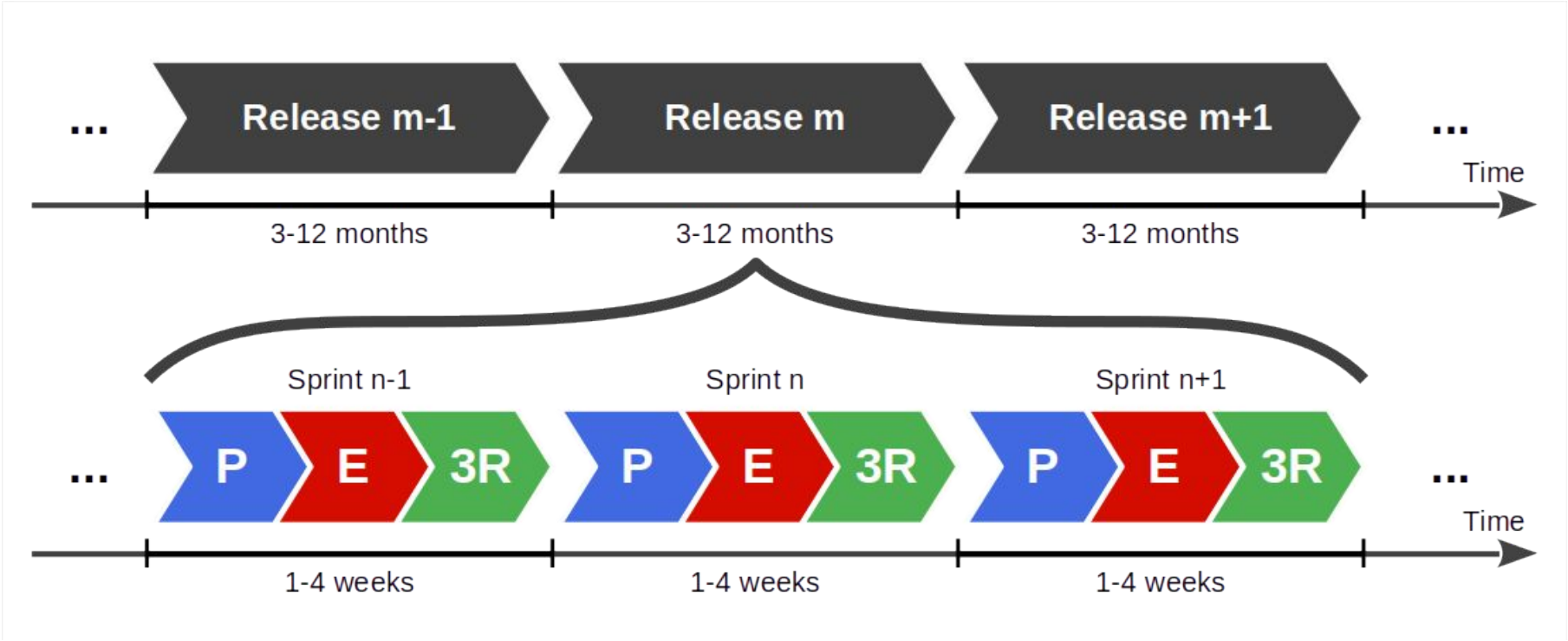
Scrum proper covers

1. Day
2. Sprint (weeks)
3. Releases (months)
4. Project/product (years)

Further evolutions e.g. SAFe cover

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

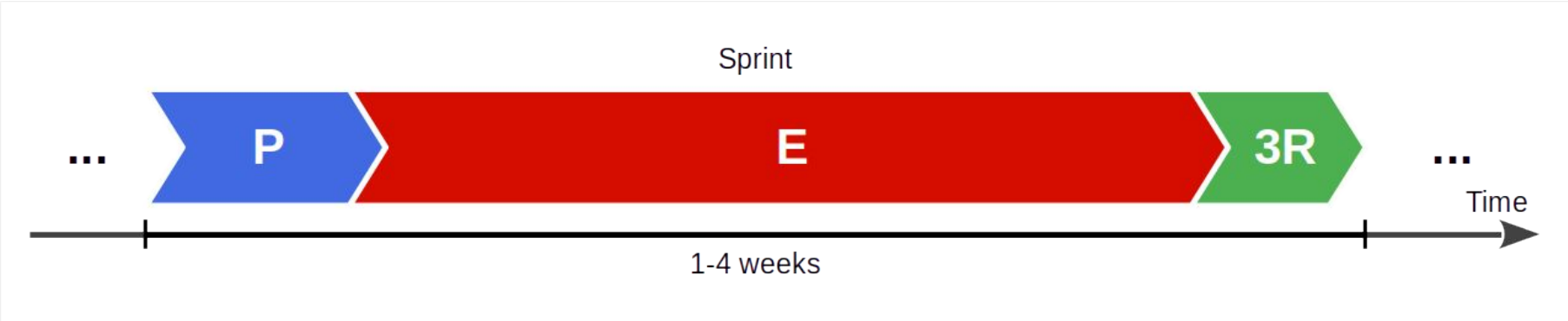
Scrum Process



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

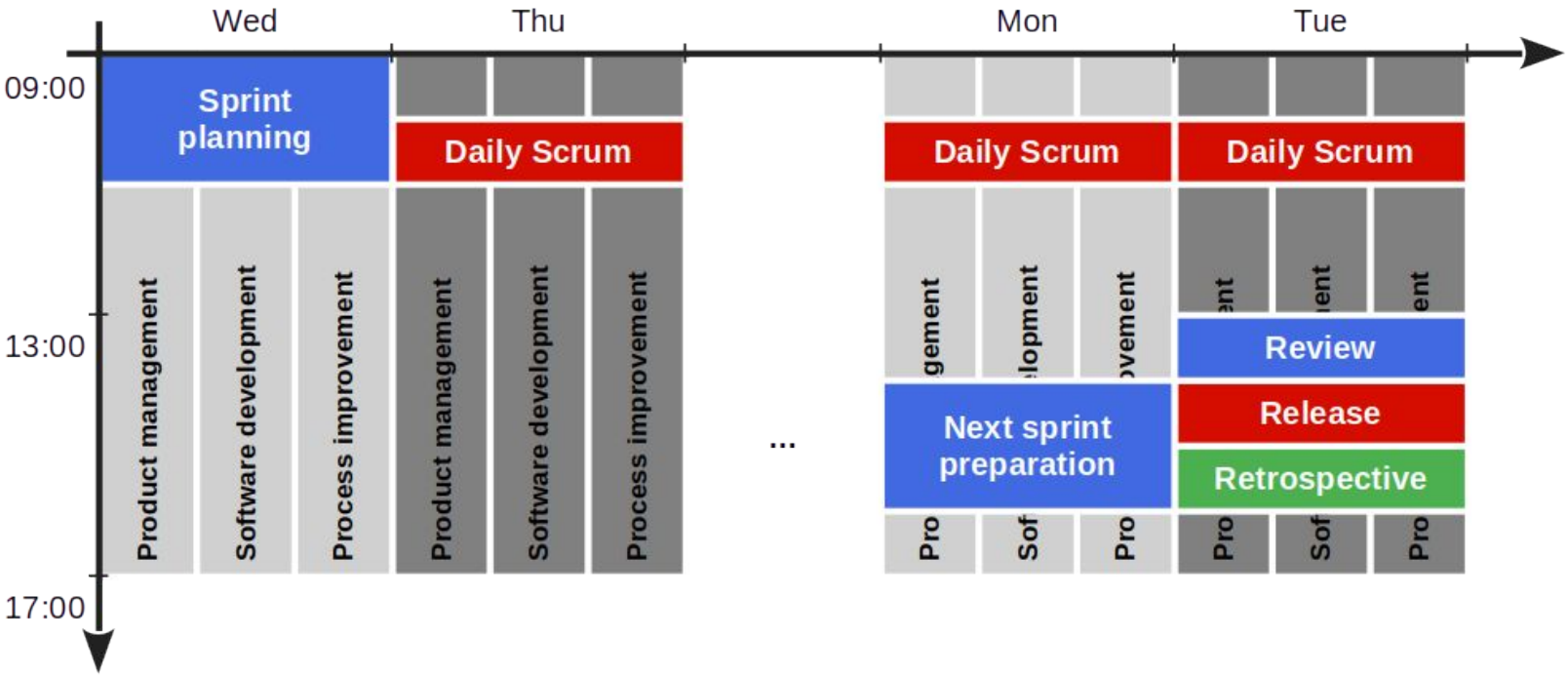
- Some added value to current or new artifacts

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

Summary

1. Software development
2. Plan-driven development
3. Agile methods
4. Scrum

Thank you! Any questions?

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Megawoosh! [1]

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

Video Lessons [1]

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