Project Management
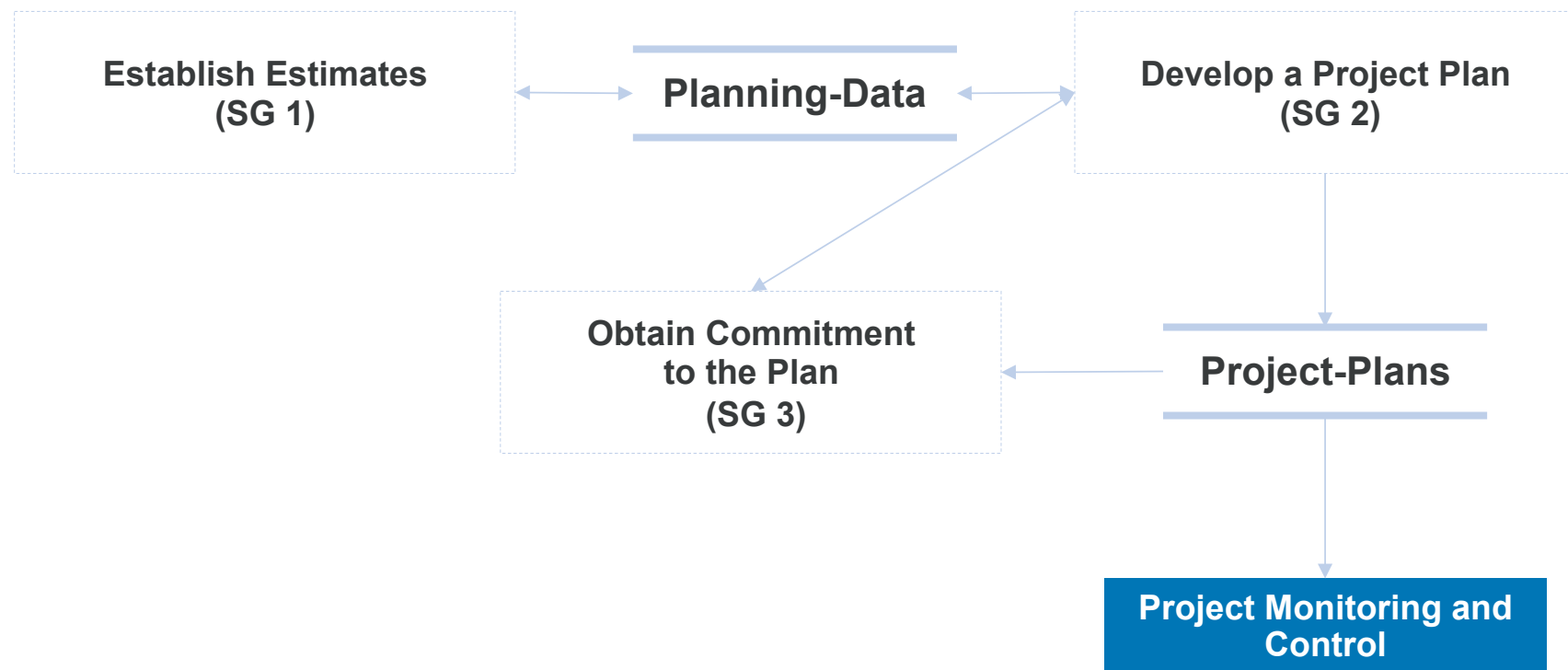
Project Planning
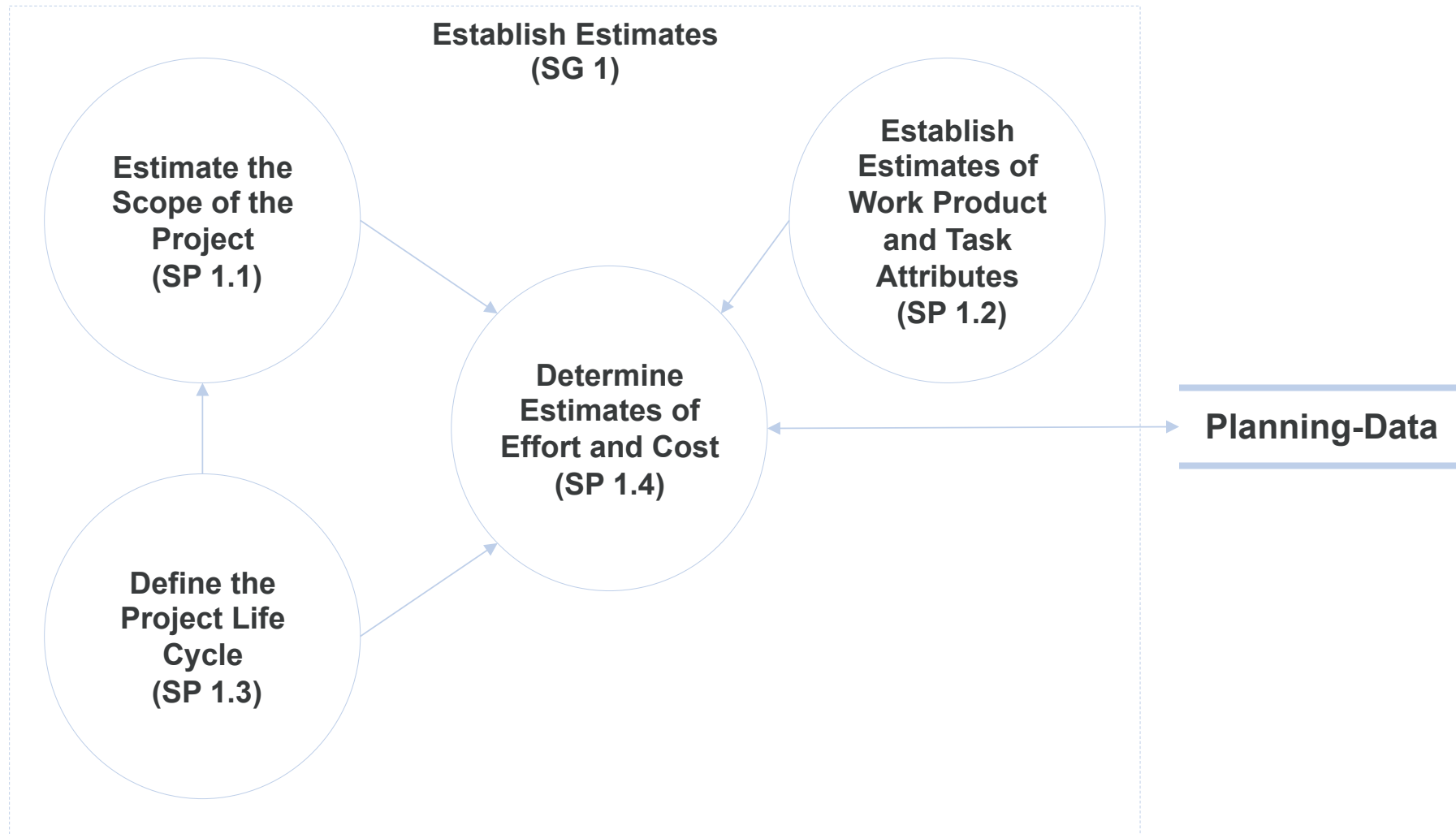
Project Planning in CMMI

Establish and maintain plans that define project activities

Establish Estimates (SG 1) ←→ **Planning-Data** ←→ Develop a Project Plan (SG 2)

Obtain Commitment to the Plan (SG 3) ← **Project-Plans**

Project Monitoring and Control

Estimates of project planning parameters are established and maintained

Establish Estimates (SG 1)

- Estimate the Scope of the Project (SP 1.1)
- Establish Estimates of Work Product and Task Attributes (SP 1.2)
- Define the Project Life Cycle (SP 1.3)
- Determine Estimates of Effort and Cost (SP 1.4)

Planning-Data

A project plan is established and maintained as the basis for managing the project

Planning-Data

Develop a Project Plan (SG 2)

Establish the Budget and Schedule (SP 2.1)

Identify the Project Risks (SP 2.2)

Plan for Data Management (SP 2.3)

Plan for Project Resources (SP 2.4)

Plan Stakeholder Involvement (SP 2.6)

Establish the Project Plan (SP 2.7)

Plan for Needed Knowledge and Skills (SP 2.5)

Project Monitoring and Control

Project-Plans

Commitments to the project plan are established and maintained.

Obtain Commitment to the Project Plan (SG 3)

Review Plans that Affect the Project (SP 3.1)

Reconcile Work and Resource Levels (SP 3.2)

Project-Plans

Obtain Plan Commitment (SP 3.3)

Project Planning is the basis for managing the project

Why do we do it?

- Understand project's activities
- Provide the basis
  for coordinating
  the project's activities

Advice and Guidance

- Plan with results
- First estimate, then plan the schedule
- Maintain plans – only an up to date plan is a plan
- Plans evolve
- Obtain commitment including team members.

Classic scheduling

Scheduling means to arrange the work of the work breakdown structure such that time, budget and resource constraints are fulfilled.
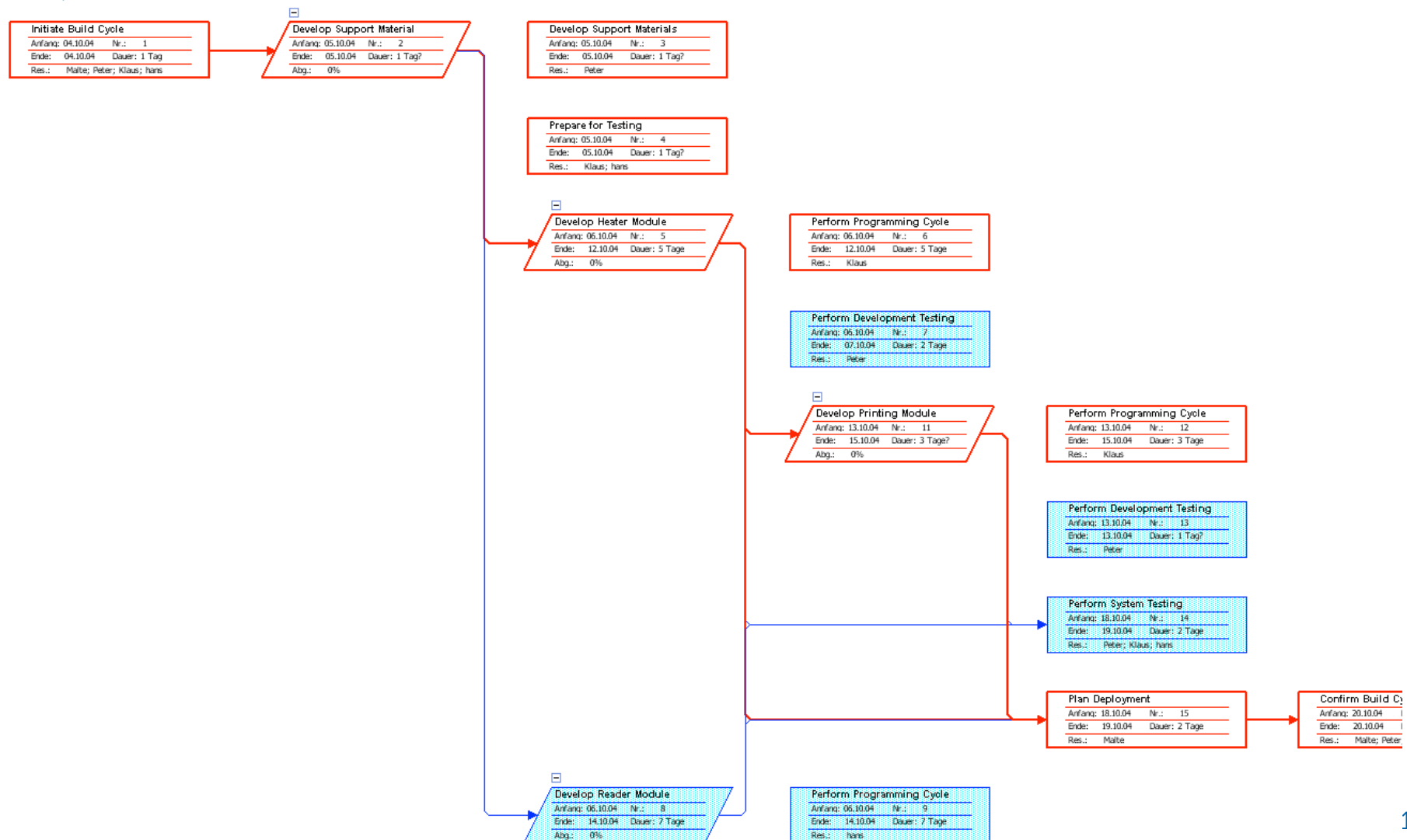
Classic scheduling is typically done using a precedence diagramming method, e.g:

- a GANTT chart or
- a project network diagram.

A GANTT Chart is a horizontal bar chart developed by Henry L. Gantt

# A project network diagram shows the activities as boxes and the dependencies between them.

Initiate Build Cycle
Anfang: 04.10.04 Nr.: 1
Ende: 04.10.04 Dauer: 1 Tag
Res.: Malte; Peter; Klaus; hans

Develop Support Material
Anfang: 05.10.04 Nr.: 2
Ende: 05.10.04 Dauer: 1 Tag?
Abg.: 0%

Develop Support Materials
Anfang: 05.10.04 Nr.: 3
Ende: 05.10.04 Dauer: 1 Tag?
Res.: Peter

Prepare for Testing
Anfang: 05.10.04 Nr.: 4
Ende: 05.10.04 Dauer: 1 Tag?
Res.: Klaus; hans

Develop Heater Module
Anfang: 06.10.04 Nr.: 5
Ende: 12.10.04 Dauer: 5 Tage
Abg.: 0%

Perform Programming Cycle
Anfang: 06.10.04 Nr.: 6
Ende: 12.10.04 Dauer: 5 Tage
Res.: Klaus

Perform Development Testing
Anfang: 06.10.04 Nr.: 7
Ende: 07.10.04 Dauer: 2 Tage
Res.: Peter

Develop Printing Module
Anfang: 13.10.04 Nr.: 11
Ende: 15.10.04 Dauer: 3 Tage?
Abg.: 0%

Perform Programming Cycle
Anfang: 13.10.04 Nr.: 12
Ende: 15.10.04 Dauer: 3 Tage
Res.: Klaus

Perform Development Testing
Anfang: 13.10.04 Nr.: 13
Ende: 13.10.04 Dauer: 1 Tag?
Res.: Peter

Perform System Testing
Anfang: 18.10.04 Nr.: 14
Ende: 19.10.04 Dauer: 2 Tage
Res.: Peter; Klaus; hans

Plan Deployment
Anfang: 18.10.04 Nr.: 15
Ende: 19.10.04 Dauer: 2 Tage
Res.: Malte

Confirm Build Cy
Anfang: 20.10.04
Ende: 20.10.04
Res.: Malte; Peter

Develop Reader Module
Anfang: 06.10.04 Nr.: 8
Ende: 14.10.04 Dauer: 7 Tage
Abg.: 0%

Perform Programming Cycle
Anfang: 06.10.04 Nr.: 9
Ende: 14.10.04 Dauer: 7 Tage
Res.: hans

1

Both diagrams provides a graphical view of the project, predict the time required to complete the project, and show which activities are critical to maintaining the schedule

- ES - earliest start time: the earliest time at which the activity can start given that its precedent activities must be completed first.

- EF - earliest finish time, equal to the earliest start time for the activity plus the time required to complete the activity.

- LF - latest finish time: the latest time at which the activity can be completed without delaying the project.

- LS - latest start time, equal to the latest finish time minus the time required to complete the activity.

Task Name	
Duration	
(ES) Earliest Start	Earliest Finish (EF)
(LS) Latest Start	Latest Finsih (LF)

Calculating the critical path by determining the earliest start and finish dates and the latest start and finish date.

- To calculate the earliest start and finish date, start from the first task. For each task, add the duration to the earliest start (ES) to get the earliest finish (EF). For all successors, the largest input EF becomes the ES.

- To calculate the latest start and finish date, start from the last task. For each task, subtract the duration from the latest finish (LF) to get the latest start (LS). For all predecessors, the smallest LS becomes the LF.
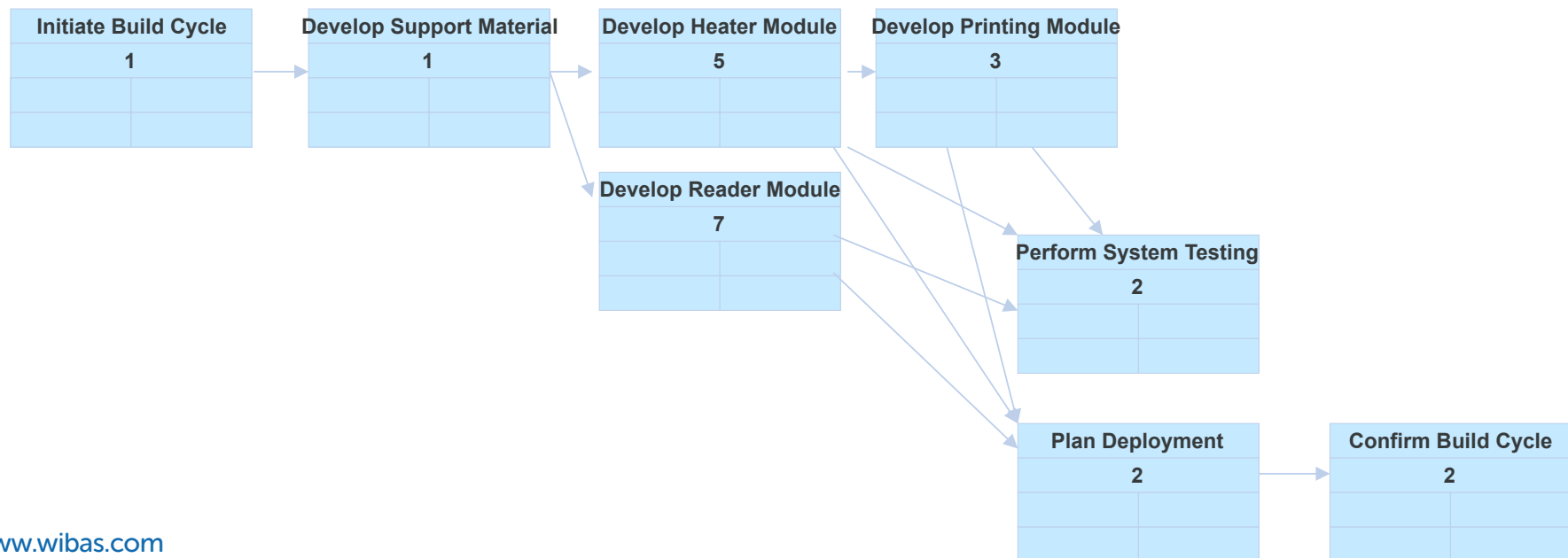
Project Planning in Scrum

CMMI SG 1 Estimates of project planning parameters are established and maintained – in Scrum

CMMI	Scrum
PP.SP 1.1 Estimate the Scope of the Project – High Level Work Breakdown Structure	The Product Owner maintains the Product Backlog continuously.
PP.SP 1.2 Establish Estimates of Work Product and Task Attributes	The Team estimates Story Points (relative effort) for every user story in Product Backlog Refinement.
PP.SP 1.3 Define Project Lifecycle	In Scrum the phases are a regular sequence of Sprints.
PP.SP 1.4 Determine Estimates of Effort and Cost	The Product owner calculates effort needed based on the velocity of the team. The Scrum framework does not explicitly address calculation of costs.

CMMI SG 2 A project plan is established and maintained as the basis for managing the project – in Scrum

CMMI	Scrum
PP.SP 2.1 Establish and maintain the project's budget and schedule.	The Team establishes a short-term schedule in the Sprint Backlog, which contains the Selected Product Backlog and the Tasks, during Sprint Planning II. The Product Owner establishes and maintains a long-term schedule in the Release Plan. The Team maintains the Sprint Backlog daily during the Sprint. The Scrum framework does not explicitly address a budget.
PP.SP 2.2 Identify Project Risks	The Scrum framework does not explicitly address risks. A possible solution within the framework could be: Team and Product Owner identify chances and risks in the Sprint Retrospective. Additionally, the understanding of impediments could be extended by addressing risks.
PP.SP 2.3 Plan for Data Management	The Scrum framework does not explicitly address data management. A possible solution within the framework could be: Product Owner and Team agree on the data and configuration management requirements in the Definition of Done.
PP.SP 2.4 Plan for Project Resources	Scrum adjusts the requirements to the resources.
PP.SP 2.5 Plan for Needed Knowledge and Skills	In Scrum, resources with their skills, and the time, are given and the amount of work is adapted to that. Interdisciplinary teams are used so that team members can learn from each other while they do the work.
PP.SP 2.6 Plan Stakeholder Involvement	During any meeting (except: Sprint Retrospective) anyone (chickens) can participate and listen, but not talk. The Team decides on stakeholder involvement tasks during Sprint Planning II.
PP.SP 2.7 Establish the Project Plan	Team and Product Owner keep Sprint Backlog and Product Backlog synchronized through the Selected Product Backlog. Any task in the Sprint Backlog belongs to an item of the Selected Product Backlog, which has been taken from the Product Backlog during Sprint Planning I. No other planning documents are maintained.

CMMI SG 3 Commitments to the project plan are established and maintained – in Scrum

CMMI	Scrum
PP.SP 3.1 Review Plans That Affect the Project	In case of one single team, Product Owner and Team maintain all requirements in one single Product Backlog and one single Sprint Backlog.
PP.SP 3.2 Reconcile Work and Resource Levels	The Team balances work and resources by only committing to those items of the Product Backlog, which it can deliver during the next Sprint. The Scrum framework does not explicitly address resources other than people.
PP.SP 3.3 Obtain Plan Commitment	The Team commits to deliver the User Stories of the Selected Product Backlog in Sprint Planning I. The Product Owner commits to no change of the Selected Product Backlog during the Sprint.

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Revision History

Rev. #	Status	Date	Description	Responsible
1.1	Finished	03.10.2004	Initial version	Malte Foegen
1.2	Finished	21.06.2006	Revision History added, SEI Partner logo included, current template	Malte Foegen
1.3	Finished	23.12.2007	Layout updates, added Scrum slides	Malte Foegen
1.4	Finished	19.01.2008	Added sprint exercise and deleted other exercises	Malte Foegen
1.5	Finished	23.01.2009	Added Sprint Review Slide	Malte Foegen
1.6	Finished	18.01.2010	Updated layout	Malte Foegen
1.7	Finished	21.01.2011	Extracted Scrum slides	Malte Foegen
1.8	Finished	03.02.2012	New exercises	Malte Foegen
1.0	Finished	12.01.2013	Updated exercises and layout	Malte Foegen
1.1	Finished	10.01.2014	Updated exercises	Malte Foegen
1.2	Finished	21.01.2015	Updated slides, added Scrum - CMMI	Malte Foegen