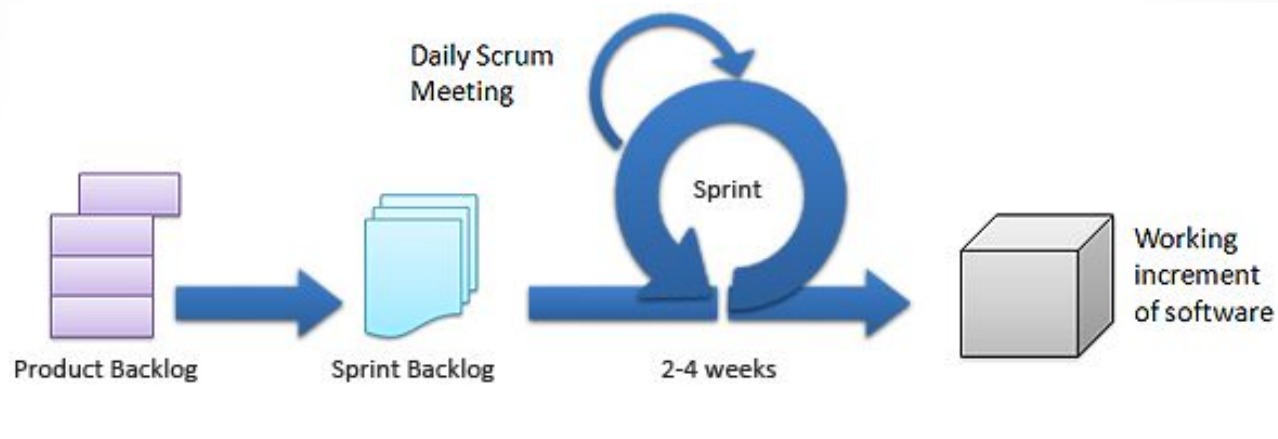# IS-F341 - Software Engineering

Agile Methods & Scrum

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Topics for today

- Planned vs. agile - success/failure
- Agile software development methods and SCRUM framework
- Writing software system requirements as user stories

References:
The Scrum Guide https://www.scrumguides.org/

Software development projects – Success … Failure

MODERN RESOLUTION FOR ALL PROJECTS

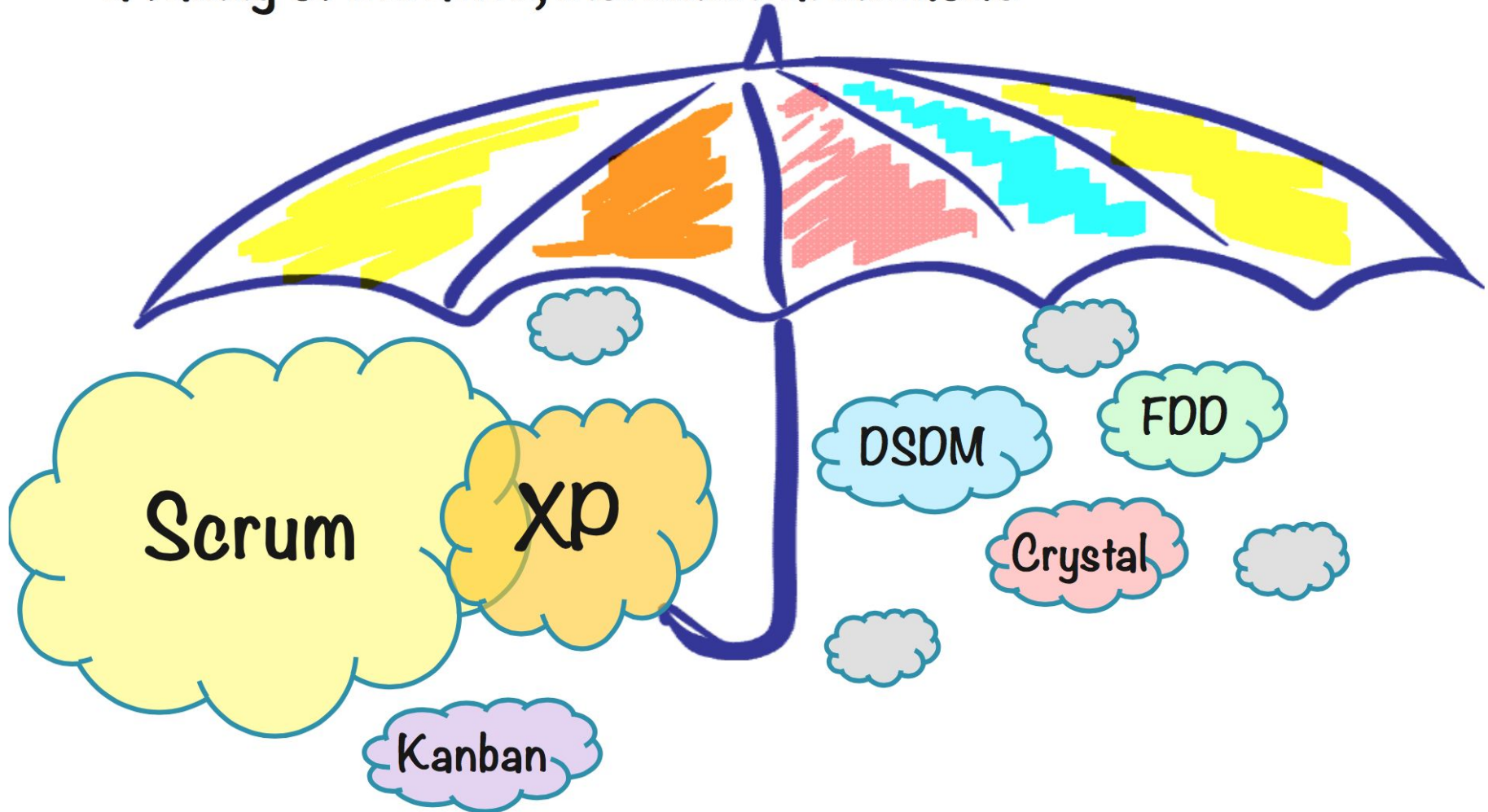|	2011	2012	2013	2014	2015
SUCCESSFUL	29%	27%	31%	28%	29%
CHALLENGED	49%	56%	50%	55%	52%
FAILED	22%	17%	19%	17%	19%

The Modern Resolution (OnTime, OnBudget, with a satisfactory result) of all software projects from FY2011–2015 within the new CHAOS database. Please note that for the rest of this report CHAOS Resolution will refer to the Modern Resolution definition not the Traditional Resolution definition.

https://www.infoq.com/articles/standish-chaos-2015

CHAOS RESOLUTION BY AGILE VERSUS WATERFALL

| SIZE	METHOD	SUCCESSFUL	CHALLENGED	FAILED
All Size Projects	Agile	39%	52%	9%
	Waterfall	11%	60%	29%
Large Size Projects	Agile	18%	59%	23%
	Waterfall	3%	55%	42%
Medium Size Projects	Agile	27%	62%	11%
	Waterfall	7%	68%	25%
Small Size Projects	Agile	58%	38%	4%
	Waterfall	44%	45%	11%

The resolution of all software projects from FY2011–2015 within the new CHAOS database, segmented by the agile process and waterfall method. The total number of software projects is over 10,000.

https://www.infoq.com/articles/standish-chaos-2015

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Agile "umbrella" –
a family of iterative, incremental methods

Scrum

XP

DSDM

FDD

Crystal

Kanban

Agile development and project management with SCRUM
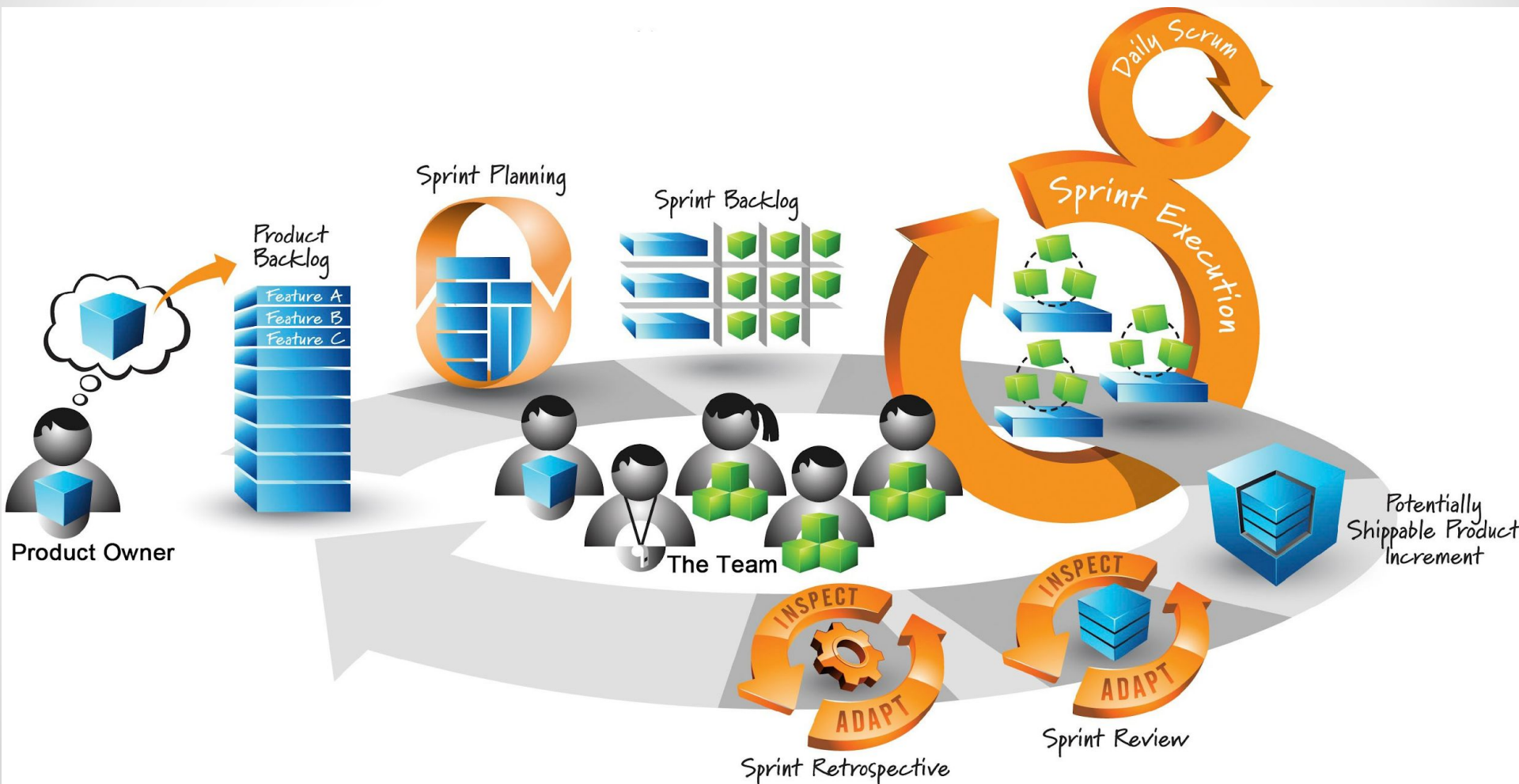
Product Backlog written as User Stories

Template

- As a user/role, I want to be able to functionality/feature so that benefit
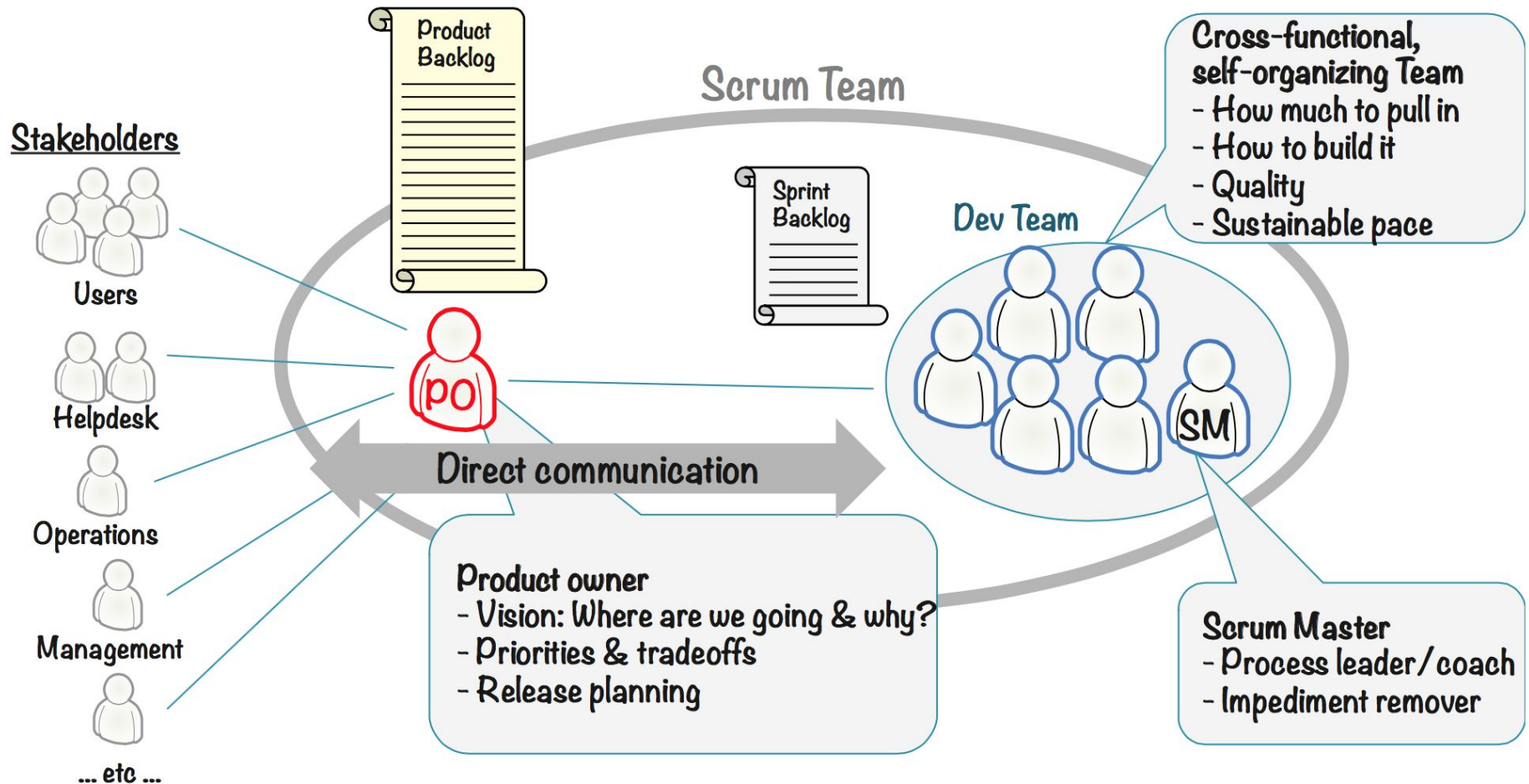
Example user stories in Library System

- As a student, I want to reserve books I want so that I can borrow the books as soon as they are available

- As a faculty, I want to recommend books for my courses so that my students will be able to read those books

Read https://www.mountaingoatsoftware.com/agile/user-stories

User stories for an ATM system

Scrum overview – structure

Product Backlog

Scrum Team

Sprint Backlog

Dev Team

Stakeholders

Users

Helpdesk

Operations

Management

... etc ...

PO

Direct communication

SM

Cross-functional, self-organizing Team
- How much to pull in
- How to build it
- Quality
- Sustainable pace

Product owner
- Vision: Where are we going & why?
- Priorities & tradeoffs
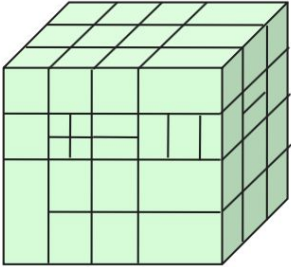- Release planning

Scrum Master
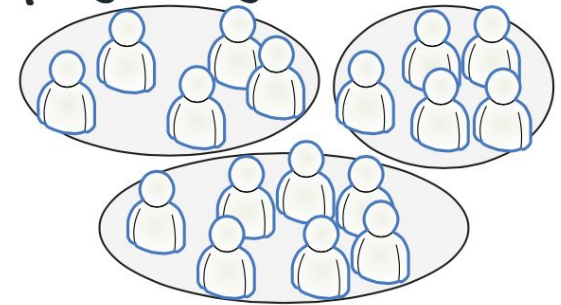- Process leader/coach
- Impediment remover

Scrum in a nutshell
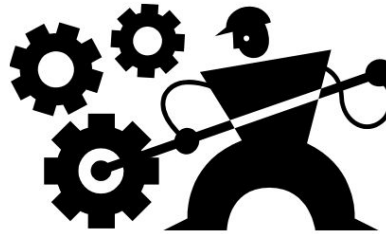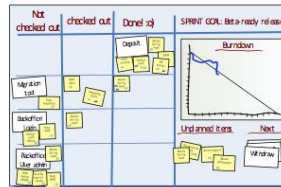
Split your product
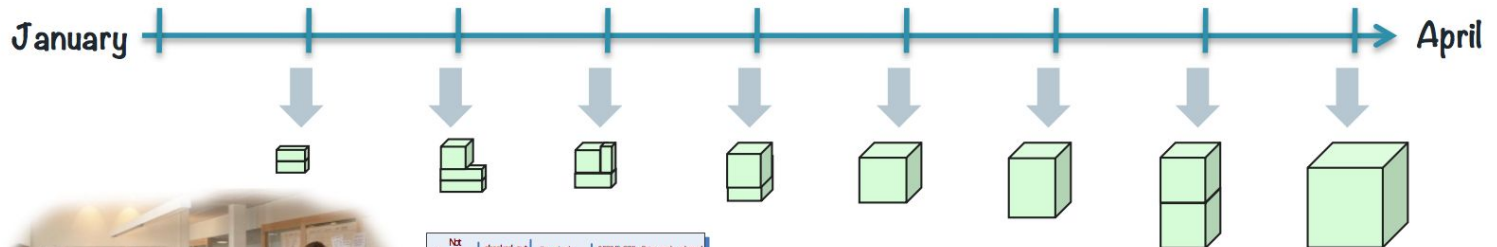

Split your organization

~~Large group~~ spending ~~a long time~~ building a ~~huge thing~~
Small team spending a little time building a small thing
... but integrating regularly to see the whole

Optimize process

Order the backlog

$$$

$

Split time

January ———————————————→ April

Scrum

- ✧ Scrum is an agile method that focuses on managing iterative development rather than specific agile practices.

- ✧ There are three phases in Scrum.
    - ▪ The initial phase is an outline planning phase where you establish the general objectives for the project and design the software architecture.
    - ▪ This is followed by a series of sprint cycles, where each cycle develops an increment of the system.
    - ▪ The project closure phase wraps up the project, completes required documentation such as system help frames and user manuals and assesses the lessons learned from the project.

- ✧

Scrum sprint cycle
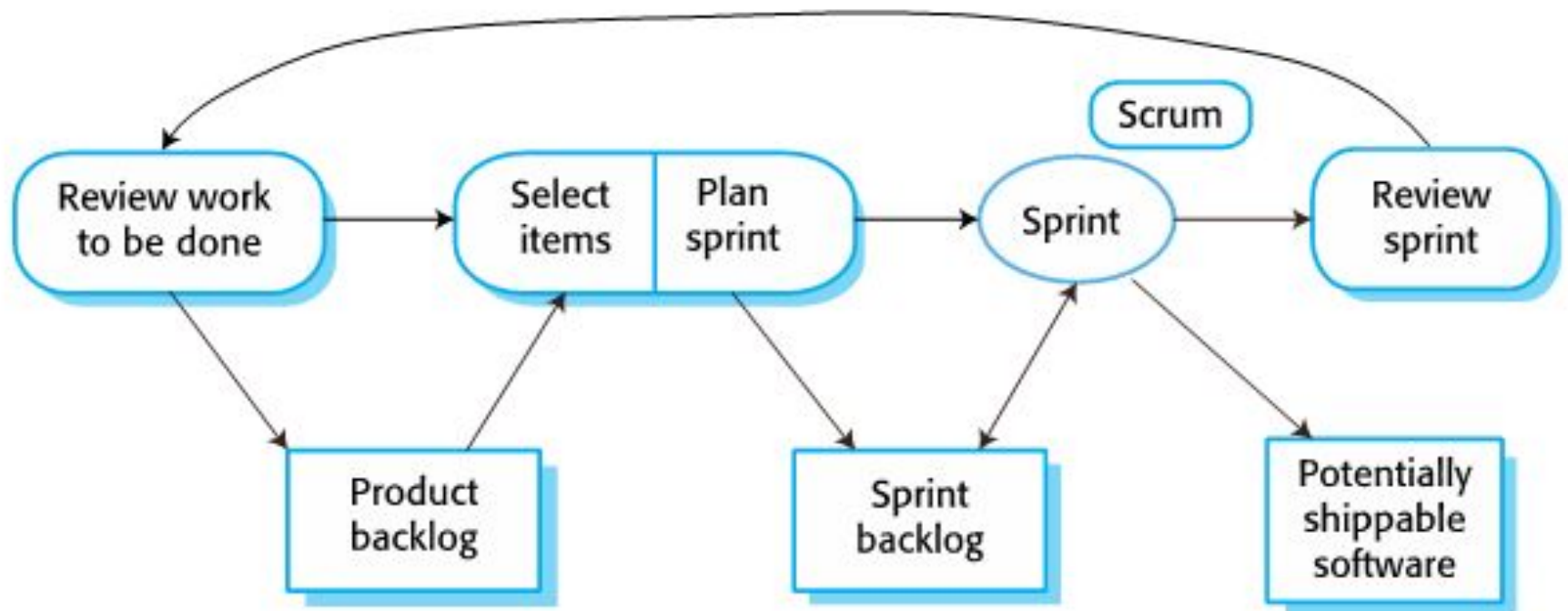
The Scrum sprint cycle

✧ Sprints are fixed length, normally 2–4 weeks.

✧ The starting point for planning is the product backlog, which is the list of work to be done on the project.

✧ The selection phase involves all of the project team who work with the customer to select the features and functionality from the product backlog to be developed during the sprint.

The Sprint cycle

✧ Once these are agreed, the team organize themselves to develop the software.

✧ During this stage the team is isolated from the customer and the organization, with all communications channelled through the so-called 'Scrum master'.

✧ The role of the Scrum master is to protect the development team from external distractions.

✧ At the end of the sprint, the work done is reviewed and presented to stakeholders. The next sprint cycle then begins.

Teamwork in Scrum

✧ The 'Scrum master' is a facilitator who arranges daily meetings, tracks the backlog of work to be done, records decisions, measures progress against the backlog and communicates with customers and management outside of the team.

✧ The whole team attends short daily meetings (Scrums) where all team members share information, describe their progress since the last meeting, problems that have arisen and what is planned for the following day.

  ▪ This means that everyone on the team knows what is going on and, if problems arise, can re-plan short-term work to cope with them.