Scrum

Introduction to Systems Engineering
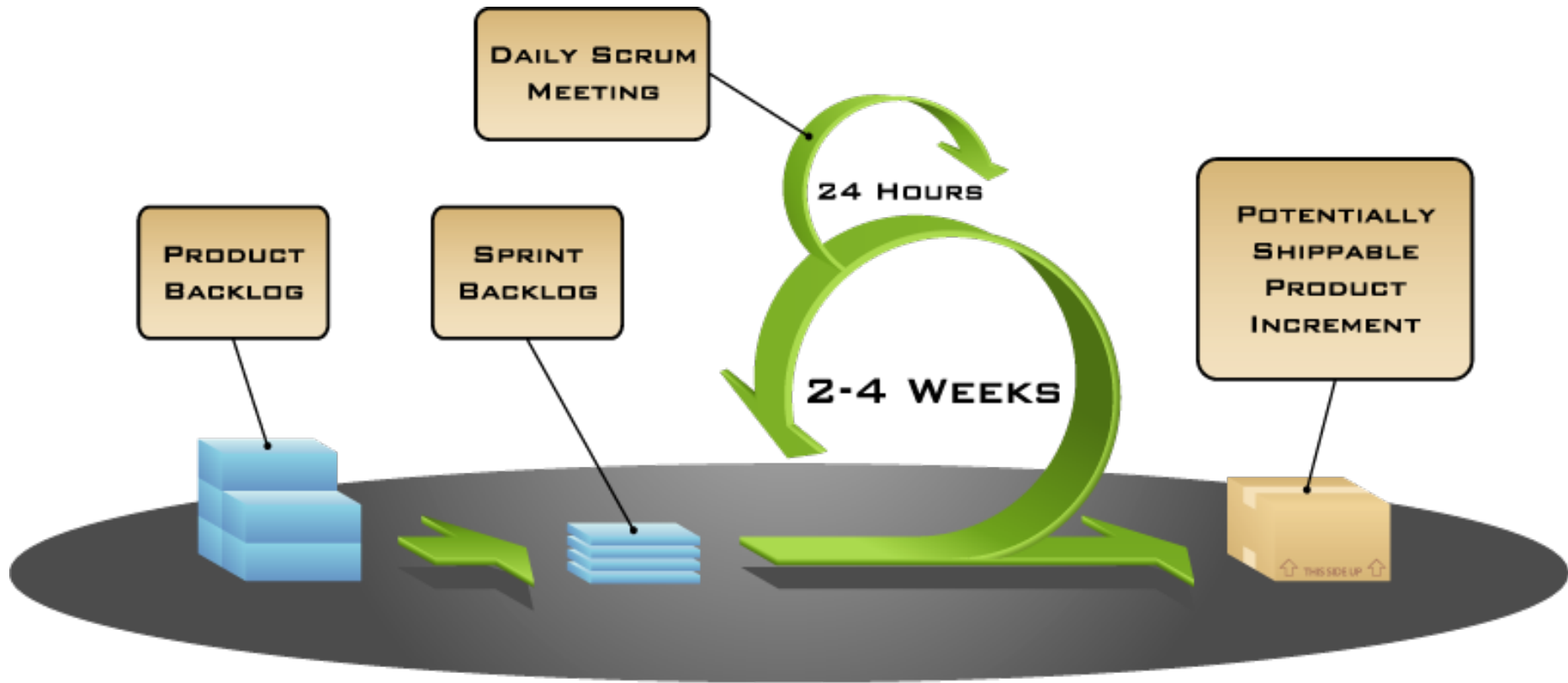## I2ISE

Project Management - Scrum

- Scrum is an iterative, incremental framework for project management

- Involve the team in planning, insulate them from changes during *sprints*

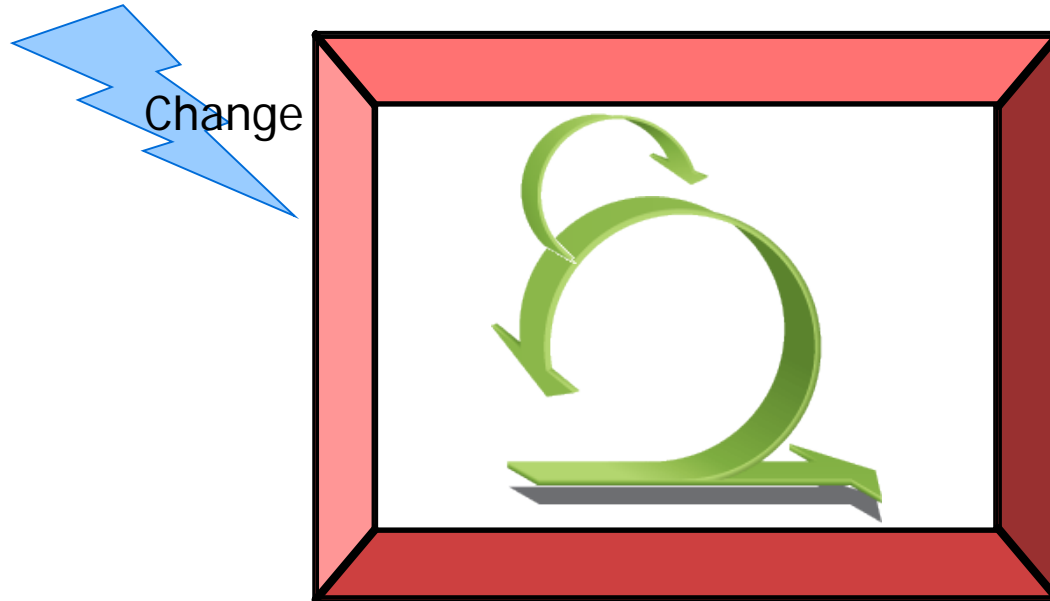- Following slides from www.mountaingoatsoftware.com

Scrum characteristics

- Self-organizing teams

- Product progresses in a series of month-long "sprints"

- Requirements captured in a "product backlog"

- No specific engineering practices prescribed

- Needs an agile environment for delivering projects, don't forget that (not like Dilbert's boss)!

- One of the "agile processes"

Putting it all together

DAILY SCRUM MEETING

24 HOURS

PRODUCT BACKLOG

SPRINT BACKLOG

2-4 WEEKS

POTENTIALLY SHIPPABLE PRODUCT INCREMENT

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No changes during a sprint

Change

- Sprint durations are planned around how long you can commit to keeping change out of the sprint!

Scrum framework

Roles
- Product owner
- ScrumMaster
- Team

Ceremonies
- Sprint planning
- Sprint review
- Sprint retrospective
- Daily scrum meeting

Artifacts
- Product backlog
- Sprint backlog
- Burndown charts

Scrum framework

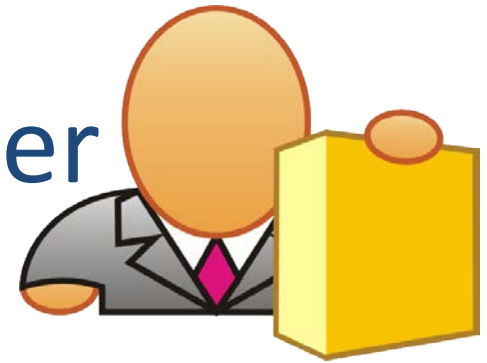## Roles

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Roles - Product owner

- Defines the features of the product
- Decides on release dates and content
- Responsible for the profitability of the product
- Prioritizes features according to market value
- Adjusts features and priority every iteration, as needed
- Accepts or rejects work results

Roles – Scrum Master

- Represents management to the project
- Responsible for enacting Scrum values and practices
- Removes impediments
- Ensures that the team is fully functional and productive
- Enables close cooperation across all roles and functions
- Shields the team from external interferences

Roles - The team

- Typically 5-9 people

- Cross-functional:
  - Programmers, testers, user experience designers, etc.

- Members are (ideally) full-time

- Teams are (ideally) self-organizing

- Membership should (ideally) change only *between* sprints

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Artifacts - product backlog

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This is the product backlog

- The requirements
- A list of all desired work on the project
- Ideally expressed such that each item has value to the users or customers of the product
- Prioritized by the product owner
- Reprioritized at the start of each sprint

Artifacts - a sample product backlog

Backlog item	Estimate
Allow a guest to make a reservation	3
As a guest, I want to cancel a reservation.	5
As a guest, I want to change the dates of a reservation.	3
As a hotel employee, I can run RevPAR reports (revenue-per-available-room)	8
Improve exception handling	8
...	30
...	50

Artifacts - sprint backlog

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This is the sprint backlog

- The requirements for this sprint, related to *sprint goal*

- Individuals sign up for work of their own choosing
  - Work is never *assigned*

- Estimated work remaining is updated daily
  - Drives sprint *burndown chart*

Planning – planning poker

- Another estimation technique: *Planning poker!* You need:
  - A deck of cards per team member
    - hours, days, or ideal days
    - Question mark (*cannot estimate – defer*)
   - Coffee cup (*I need a break!)
  - An egg timer to structure discussion
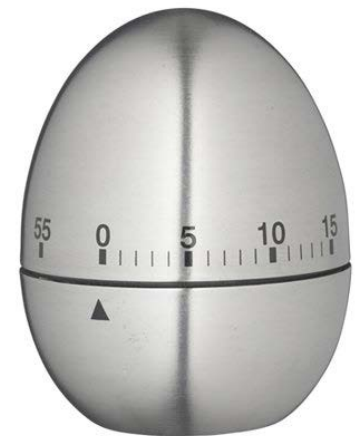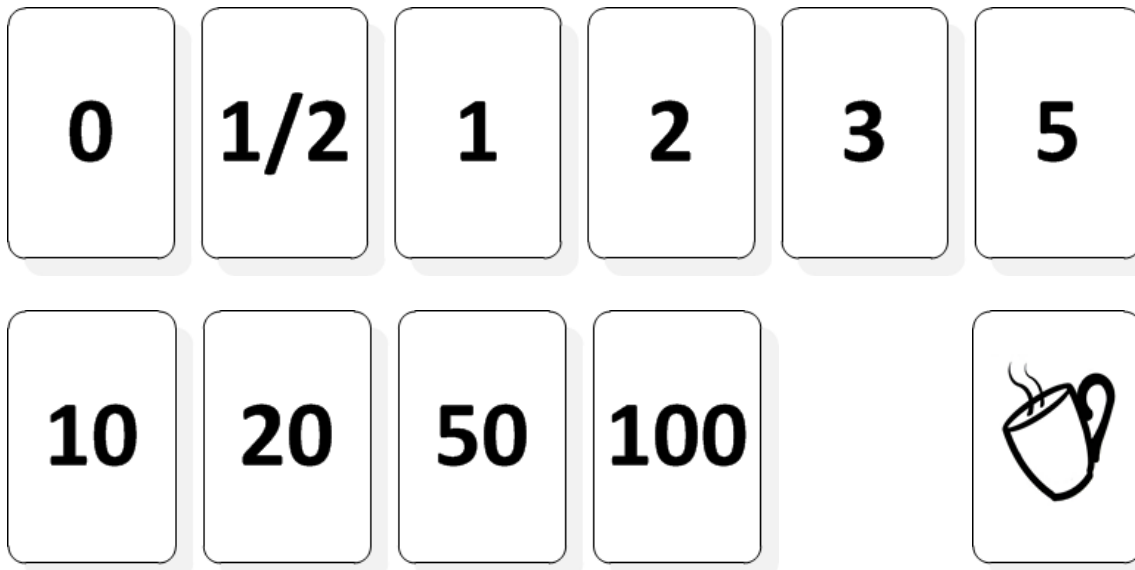
Planning – planning poker

- *Product owner* (e.g. PM) gives short introduction to tasks contents. *Team members* discuss task – no numbers!
- Each *team member* lays a planning card face down representing his/her estimate of the task
- Everybody calls at the same time
- Team members with low/high estimates offered a *soapbox to* explain estimates.
- Discussion continues
- *Moderator* or *Product Owner* may at any time set the egg timer
- Egg timer rings → discussion stops, new estimate
- Estimation process repeated until consensus is "reached"

An example sprint backlog

Tasks	Mon	Tues	Wed	Thur	Fri
Code the user interface	8	4	8		
Code the middle tier	16	12	10	4	
Test the middle tier	8	16	16	11	8
Write online help	12				
Write the foo class	8	8	8	8	8
Add error logging			8	4	

A sprint burndown chart
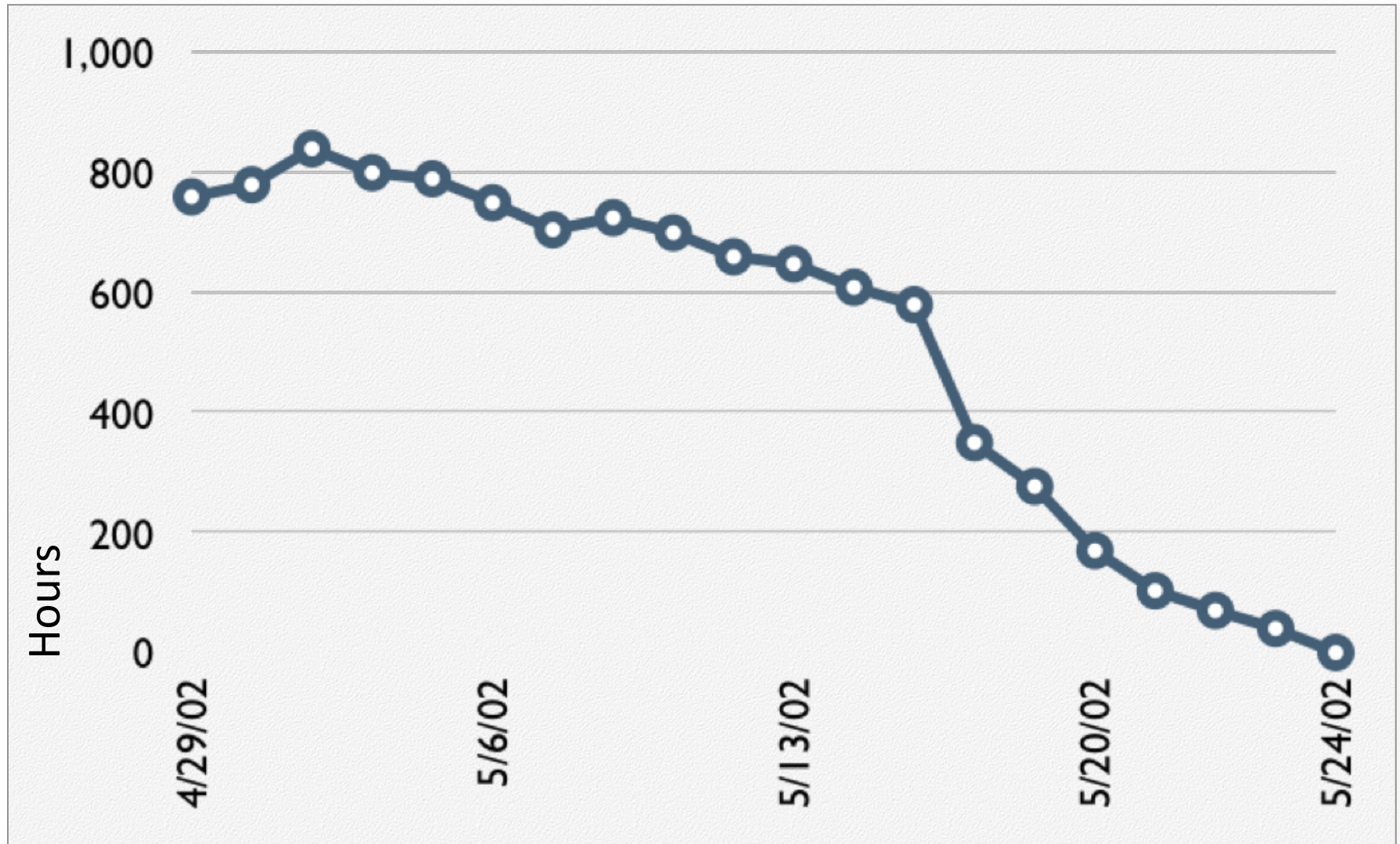
Tasks	Mon	Tues	Wed	Thur	Fri
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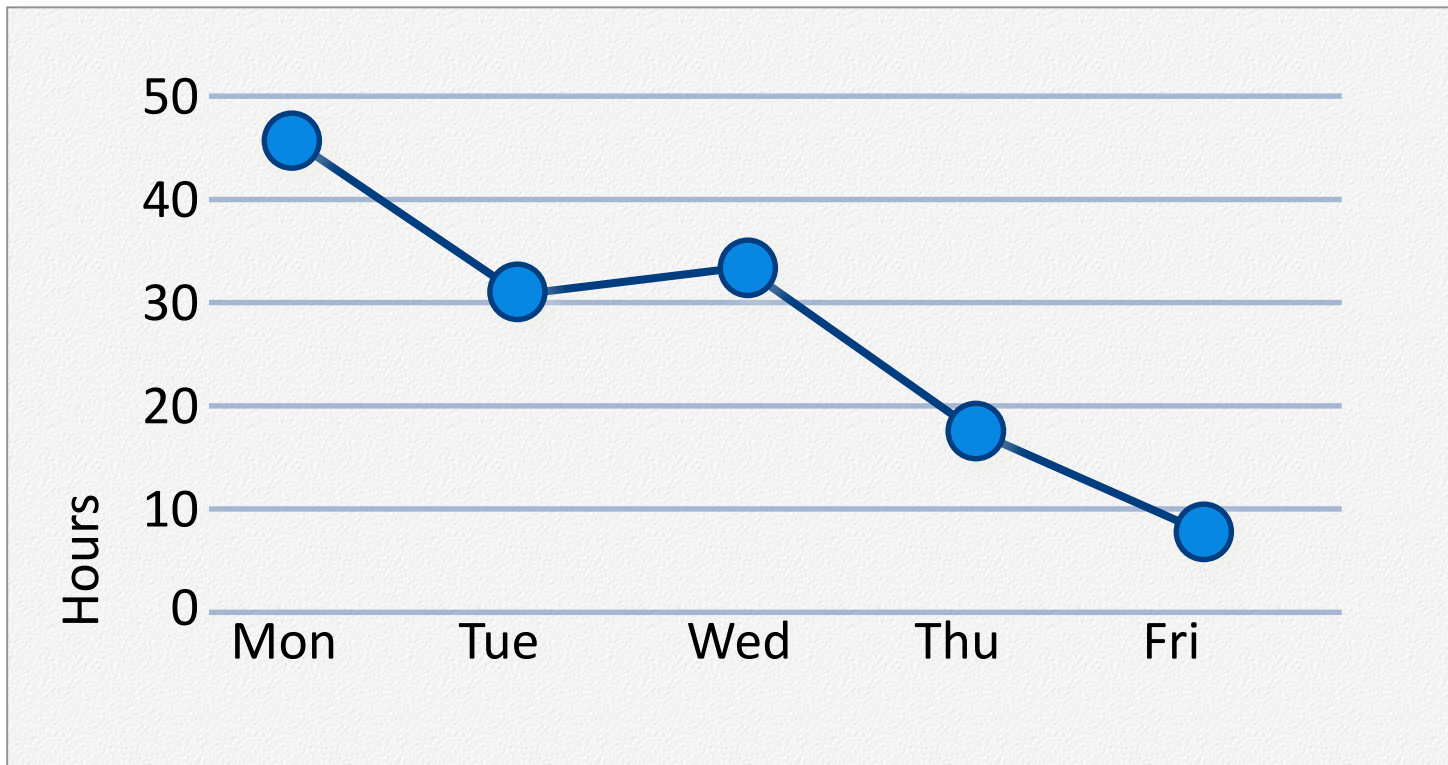
Artifacts – The Scrum Board
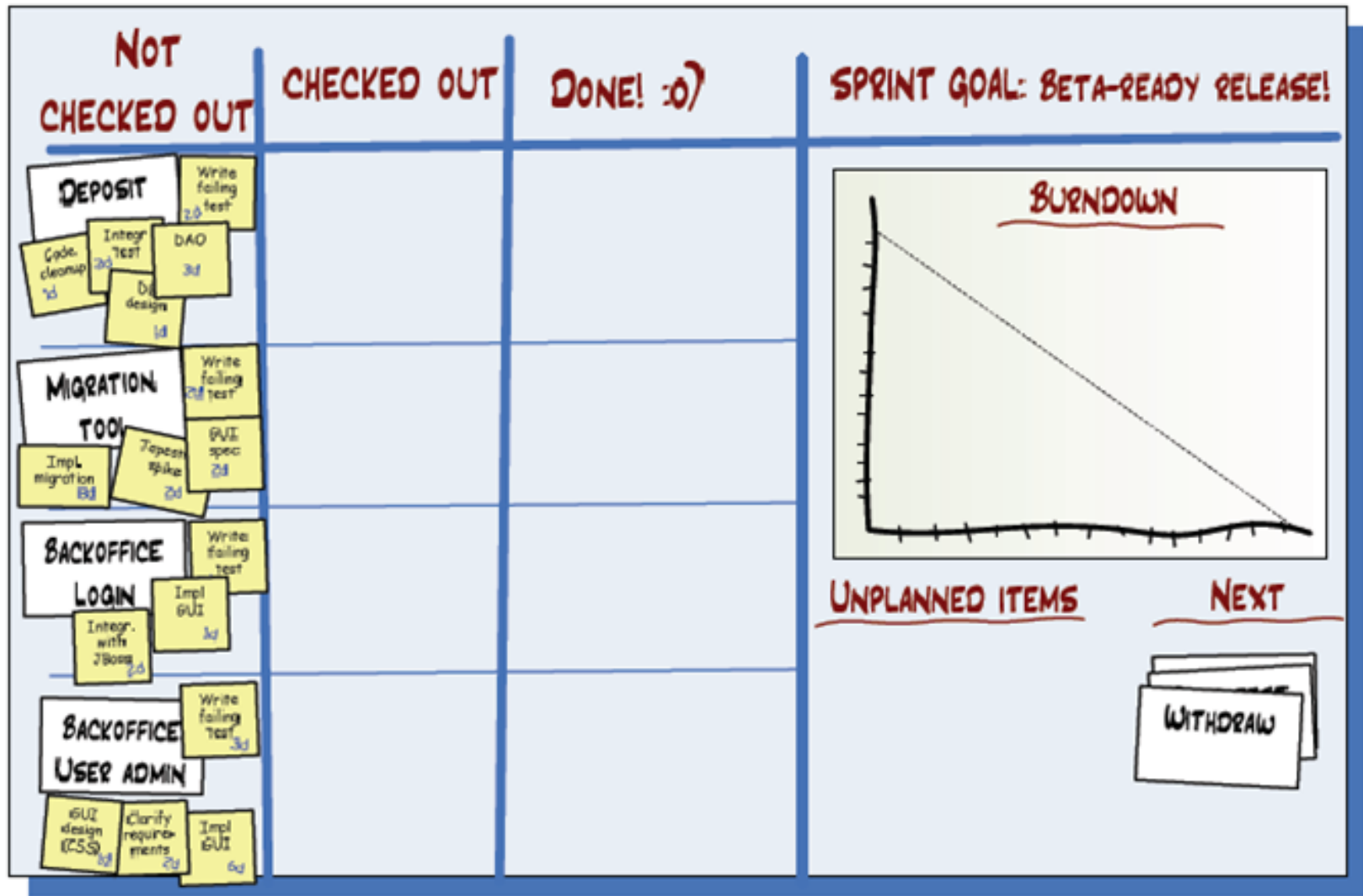
Scrum framework

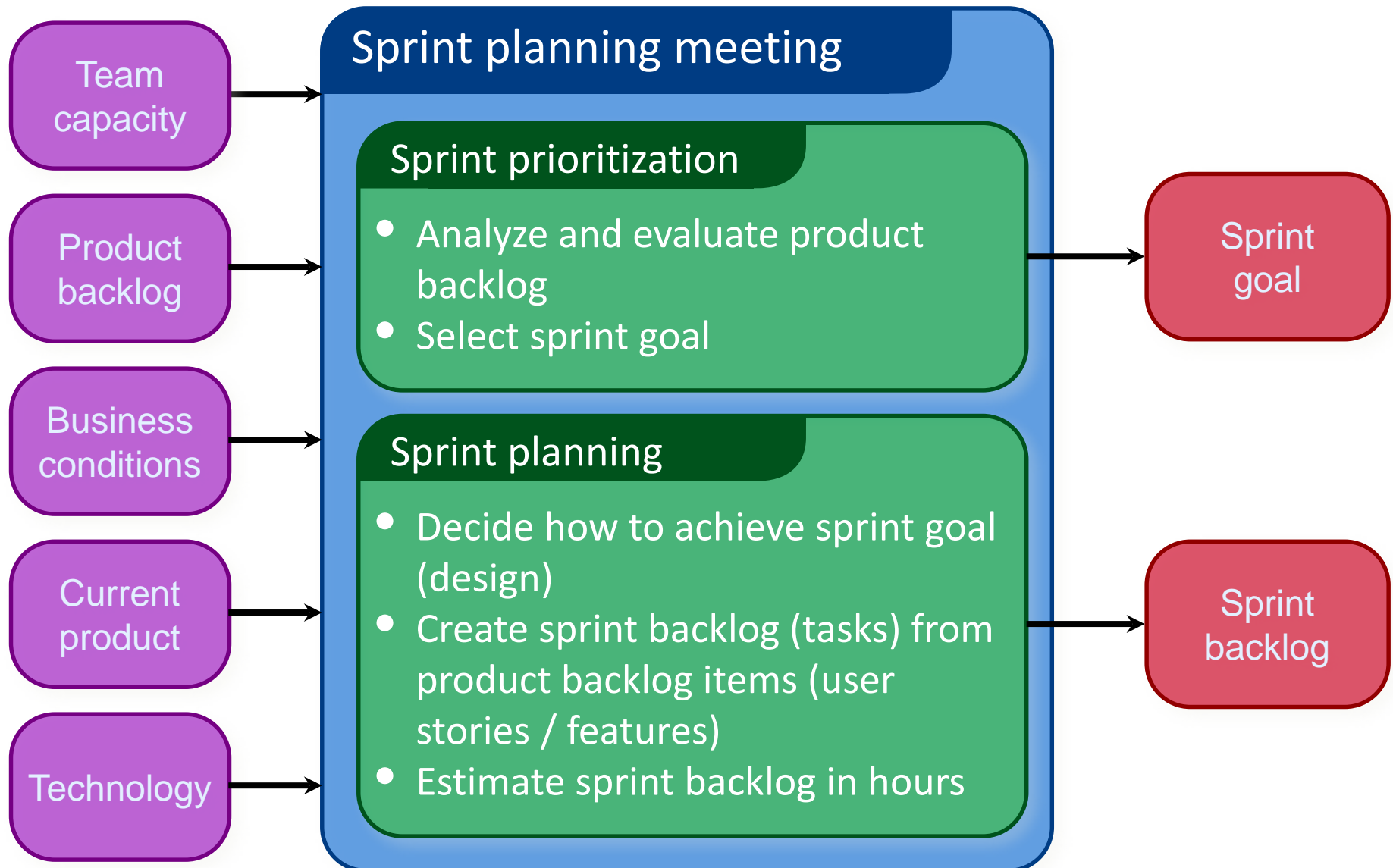**Roles**

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Ceremonies - Sprint planning

Sprint planning meeting

Team capacity

Product backlog

Business conditions

Current product

Technology

Sprint prioritization

- Analyze and evaluate product backlog
- Select sprint goal

Sprint planning

- Decide how to achieve sprint goal (design)
- Create sprint backlog (tasks) from product backlog items (user stories / features)
- Estimate sprint backlog in hours

Sprint goal

Sprint backlog

Sprint planning - The sprint goal

- A short statement of what the work will be focused on during the sprint

Life Sciences

Support features necessary for population genetics studies.

Database Application

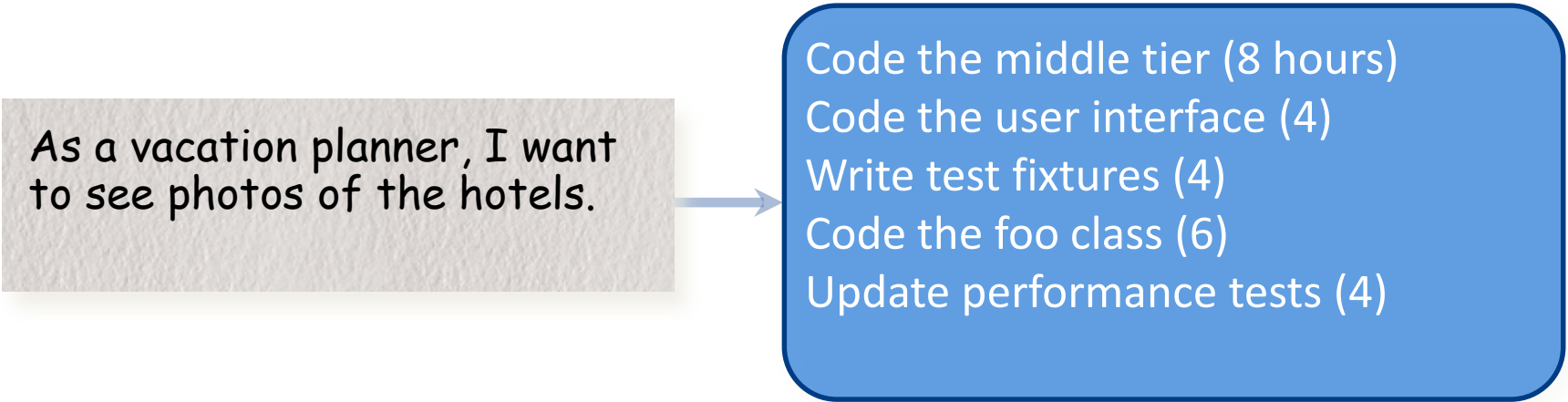Make the application run on SQL Server in addition to Oracle.

Financial services

Support more technical indicators than company ABC with real-time, streaming data.

Ceremonies - Sprint planning

- Team selects items from the product backlog they can commit to completing in the upcoming sprint

- Sprint backlog is created
  - Tasks are identified and each is estimated
  - Collaboratively, not done alone by the ScrumMaster

- High-level design is considered

As a vacation planner, I want to see photos of the hotels.

Code the middle tier (8 hours)
Code the user interface (4)
Write test fixtures (4)
Code the foo class (6)
Update performance tests (4)

Ceremonies - daily scrum

- Parameters
  - Daily
  - 15-minutes
  - Stand-up

- *Not* for problem solving
  - Whole world is invited
  - Only team members, ScrumMaster, product owner, can talk

- Helps avoid other unnecessary meetings

Daily scrum – answer 3 questions

1 What did you do yesterday?

2 What will you do today?

3 Is anything in your way?

- These are *not* status for the ScrumMaster
  - They are commitments in front of peers

Ceremonies - The sprint review

- Team presents what it accomplished during the sprint

- Typically takes the form of a demo of new features or underlying architecture

- Informal
  - 2-hour prep time rule
  - No slides

- Whole team participates

- Invite the world

Ceremonies– Sprint retrospective

- Periodically take a look at what is and is not working

- Typically 15–30 minutes

- Done after every sprint

- Whole team participates
  - Scrum Master
  - Product owner
  - Team
  - Possibly customers and others

Sprint retrospective - Start / Stop / Continue

- Whole team gathers and discusses what they'd like to:

Start doing

Stop doing

Continue doing

This is just one of many ways to do a sprint retrospective.

Scrum Øvelse

Opret en produkt backlog og planlæg et sprint for jeres semesterprojekt

- Opret en product backlog (15 min)
- Planlæg et sprint (15 min)