AGILE SOFTWARE DEVELOPMENT

SCRUM

Lecture 2

Sri Lanka Institute of Information Technology

B. Sc. Special Honors in Information Technology

Year 2 – Semester 2

Agenda

- Introduction to Scrum

- Scrum framework
  - Roles
    - Product owner
    - Scrum Master
    - Team

  - Artifacts
    - Product backlog
    - Sprint backlog
    - Burndown charts

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

Scrum in less than 100 words

- An agile process that allows us to focus on delivering the highest business value in the shortest time.

- Requirements are captured as items in a list of "product backlog"

- Allows us to rapidly and repeatedly inspect an actual working software.

- The business sets the priorities.

- Self-organizing teams choose how best to accomplish their work.

- Every two to four weeks anyone can see a real working software and decide to release it as it is or continue to enhance it for another sprint.

Scrum is used by:

- Microsoft
- Yahoo
- Google
- Electronic Arts
- High Moon Studios
- Lockheed Martin
- Philips
- Siemens
- Nokia
- Capital One

- Nielsen Media
- First American Real Estate
- BMC Software
- Ipswitch
- John Deere
- Lexis Nexis
- Sabre
- Salesforce.com
- Time Warner
- Turner Broadcasting

- BBC
- Intuit
- Oce

Sprints

- Scrum projects make progress in a series of "sprints".

- Usually a sprint ranges from 2 to 4 weeks.

- During a sprint a product is designed, coded and tested.

- The outcome of a sprint is a potentially shippable product.

- Sprints are repeated until the product is fully developed with all the features.

Scrum Framework

Roles

- Product owner
- Scrum master
- Team

Artifacts

- Product backlog
- Sprint backlog
- Burndown charts

Ceremonies

- Sprint planning
- Daily scrum
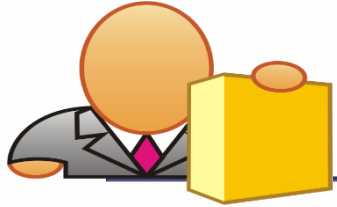- Sprint review
- Sprint retrospective

Scrum Framework

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Product Owner

- Define the features that needs to be included in the product backlog by representing the users and customers of the product.

- Helps to set the direction of the product.

- Prioritize product features according to the market value.

- Adjust the features and their priority in every iteration as needed.

- Accept or reject work results.

Scrum Master

- Ensures that the project is progressing smoothly.

- Ensures that the teams members are equipped with all the tools that they require to get their work done.

- Protects the team and keep them focused on the tasks at hand.

- Set up meetings and ensures that every things goes according to the plan.

- Facilitate release planning

Scrum Team

- Can consist of developers, testers, UI designers and anyone else that help in building the product.

- Usually a scrum team consist of 5 - 10 people.

- Team members can play multiple roles.

- Members should be full-time.
  - May have exceptions (eg: System admin, database administrator etc.)

- Teams are self-organized.

Scrum Framework

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

Product Backlog

- Is created by the product owner by including a list of prioritize features known as **user stories** that could go into the product.

- Usually created during the Sprint Planning Meeting.

- This list evolves and is reprioritized at the start of each sprint.

- Is like a wish list of all the things that product owner would like to have in his/her product.

User Stories

- A way of describing a feature set.

- Written from the perspective of the end user.

- Have the following format:
  - As a (user type)
  - I need (feature)
  - So that (benefit of having the feature)

- The above format allows a product owner to specify the right amount of details for the team to estimate the size of a task.

A Sample Product Backlog

ID	Story	Estimation	Priority
7	As an unauthorized User I want to create a new account	3	1
1	As an unauthorized User I want to login	1	2
10	As an authorized User I want to logout	1	3
9	Create script to purge database	1	4
2	As an authorized User I want to see the list of items so that I can select one	2	5
4	As an authorized User I want to add a new item so that it appears in the list	5	6
3	As an authorized User I want to delete the selected item	2	7
5	As an authorized User I want to edit the selected item	5	8
6	As an authorized User I want to set a reminder for a selected item so that I am reminded when item is due	8	9
8	As an administrator I want to see the list of accounts on login	2	10
Total		**30**	

Another Sample Product Backlog

Order	ID	Item	Type	Status	Estimate
1	121	As an Administrator, I want to link accounts to profiles, so that customers can access new accounts.	Requirement	Not Started	5
2	113	Update requirements traceability matrix	Overhead	Not Started	2
3	403	As a Customer, I want to transfer money between my active accounts, so that I can adjust each account's balance.	Improvement	Not Started	3
4	97	Refactor Login Class	Maintenance	Not Started	8
5	68	As a Site Visitor, I want to find locations, so that I can use bank services.	Requirement	Not Started	8

Sprint Backlog

- Is created by the team members.

- Contains a list of user stories that need to be committed in a given sprint.

- Should be updated every day.

- Should not have more than 300 tasks in the list.

- If a task requires more than 16 hours, it should be broken down.

- Team can add or subtract items from the list. Product owner is not allowed to do any modification to the sprint backlog.

A Sample Sprint Backlog

Project: Shopping Website

Priority	Product Backlog Items	User Story #	User Story	Story Point	Estimate (Hours)
1	Database Creation	9	As an operations engineer, I want to be able store all customer information, so that I can serve to customers.	40	240
2	Login Page	15	As a site member, I want to login the site, so that I can do online shopping.	20	160
3	Category Page	23	As a site member, I want to be able to look for different categories of brands, so that I can choose what I want.	100	400
4	Payment Process	18	As a site member, I will be able to make payment, so that my deliveries can be shipped.	40	240
5	Contact Page	3	As a site member, I want to be able to find contact information of the site, so that in case I need, I can contact.	13	80
6	Banner Area	1	As a marketing personnel, I want to be able to make advertisement, so that I can attract visitors	8	40

Tasks of Database Creation Item

🛒 Project: Shopping Website

Priority	Product Backlog Items	User Story #	Estimate (Hours)
1	Database Creation	9	240
2	Login Page	15	160

Priority	Product Backlog Items	User Story #	Estimate (Hours)
1	**Database Creation**	**9**	**240**
	Design of *CustomerDetails* Table		6
	Design of *PaymentDetails* Table		4
	Creation of *CustomerDetails* Table		8
	Creation of *PaymentDetails* Table		8
	Defining *Primary & Foreign Key* relationships of *CustomerDetails* & *PaymentDetails* Tables		5
	….(Break down continues)…		

Tasks of Login Page Item

Project: Shopping Website

Priority	Product Backlog Items	User Story #	Estimate (Hours)
1	Database Creation	9	240
2	Login Page	15	160

| Priority	Product Backlog Items	User Story #	Estimate (Hours)
2	**Login Page**	15	160
	Development of the *Login Page HTML*		4
	Development of the *UserName Box Component*		2
	Development of the *Password Box Component*		2
	Development of the *Reset Password Link & Process*		6
	Placement of UserName, Password, Reset Password on Login Page & Testing		7
	….(Break down continues)…		

Product Backlog Vs Sprint Backlog

Product Backlog	Sprint Backlog
List all the preferred product features as user stories. Each user story has story points assigned to it.	List of user stories that need to be committed in a sprint. Sprint tasks are decomposed from user stories and team estimates tasks in hours.
Can contain bugs and non-functional items.	Can contain other technical work items such as upgrade to SQL Server 2012 etc. Knowledge gaining/ sharing activities such as researching on new technologies can also be included.
Maintained by the product owner.	Maintained by the scrum team.
Revised weekly.	Revised daily.
Duration – Product owner maintains the same product backlog throughout the project.	Duration – Team creates a new sprint backlog for each sprint.

Burndown Chart

- Is used to monitor the progress of each sprint.

- Provides a day by day measure of the amount of work that remains in a sprint.

- Shows the estimated amount of time to release.

- Ideally should burn down to zero towards the end of the sprint.

- Is one of the main reasons for Scrum's popularity.

- Is one of the best project visibility tools to ensure that the project is progressing smoothly.

A Sample Burndown Chart
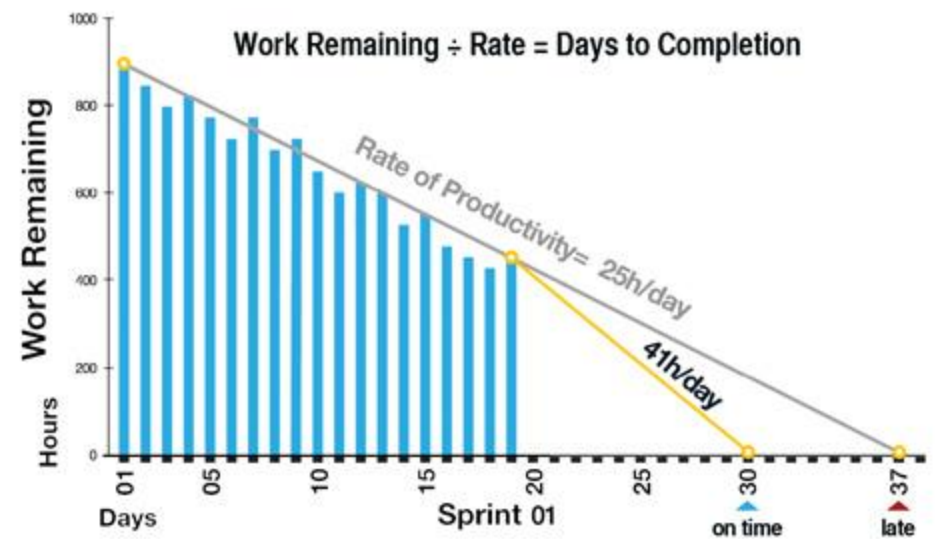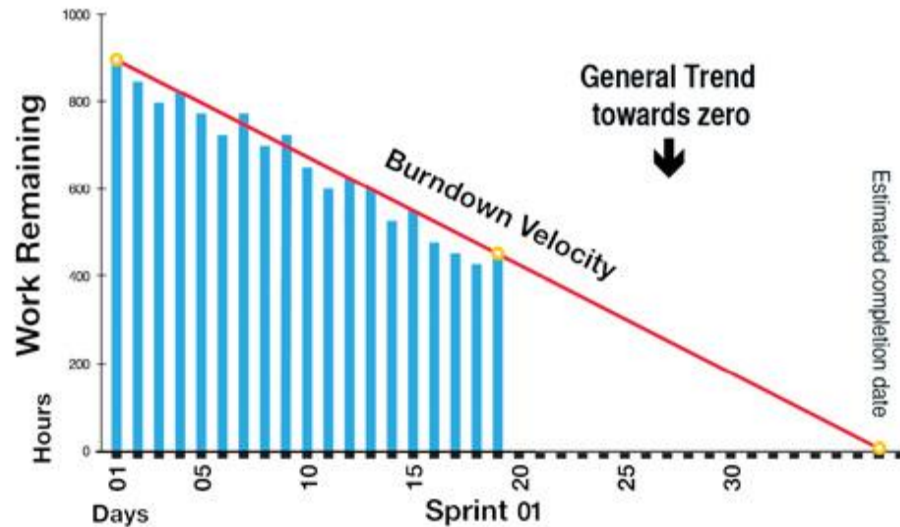
Scrum Framework
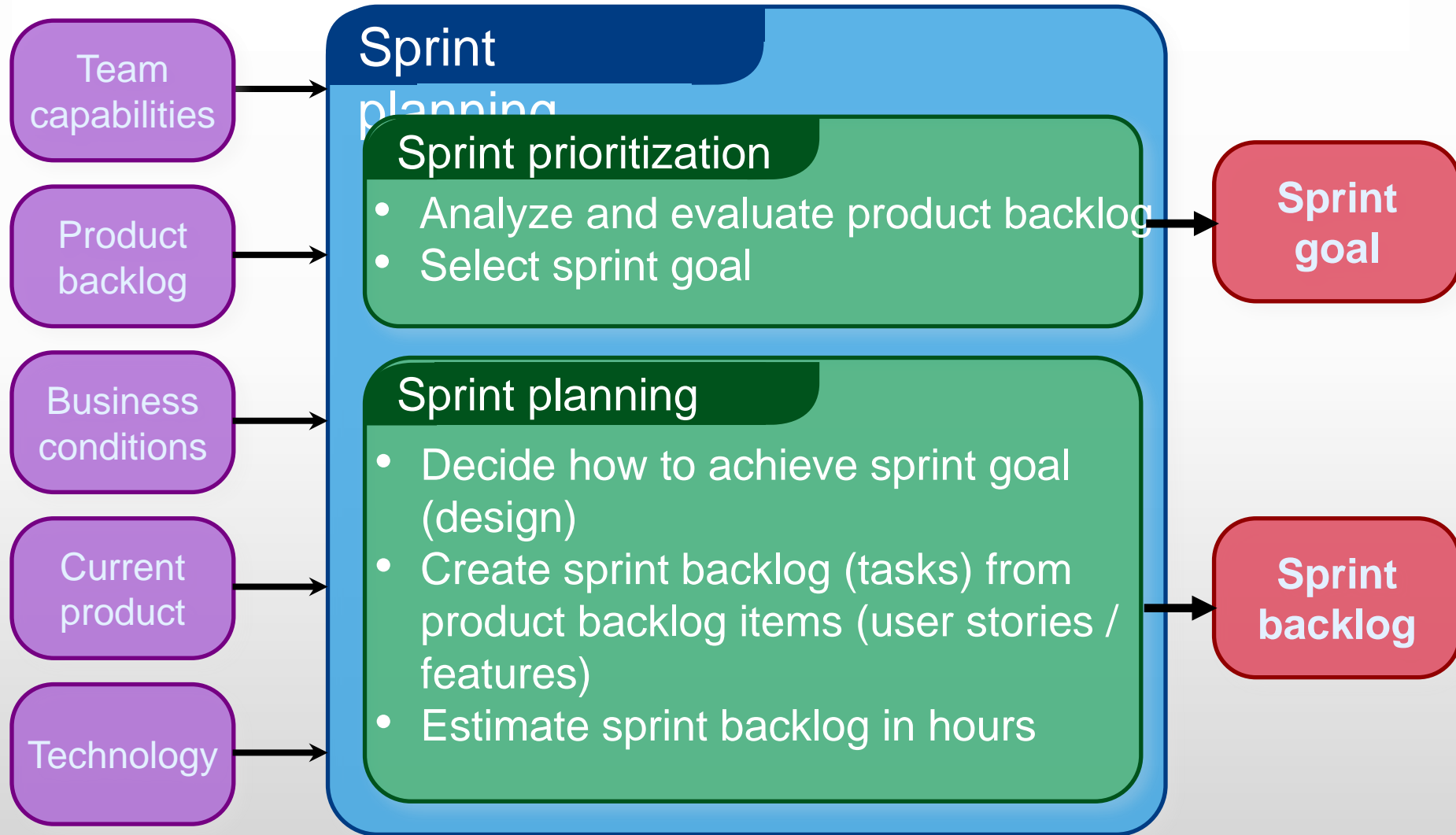
Roles

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- Scrum Master
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Ceremonies

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Sprint Planning

Sprint planning

Team capabilities	→
Product backlog	→
Business conditions	→
Current product	→
Technology	→

Sprint prioritization
- Analyze and evaluate product backlog
- Select sprint goal

→ **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 backlog**

Sprint Planning

- First part:
  - Creates the product backlog
  - Determine the sprint goal.
  - Participants: Product owner, scrum master and scrum team

- Second part:
  - Create sprint backlog
    - Team selects items from the product backlog they can commit in a sprint
    - Tasks are identified and the time for each task is estimated (1-16 hours)
  - Participants: Scrum master and scrum team

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)

Daily Scrum

- A brief stand up meeting held during a sprint.

- Helps the Scrum Master to track the progress of the Team.

- Maximum time duration is 15 minutes.

- During this meeting, the team members discuss about the following:

  1. What has been completed by each team member since the previous meeting.

  2. What will each team member do until the next meeting.

 3. The obstacles that each member encountered.

Daily Scrum

- Is NOT a problem solving session.

- Is NOT a way to collect information about WHO is behind the schedule.

- Is a meeting in which team members make commitments to each other and to the Scrum Master.

Sprint Review

- Team presents what it accomplished during a sprint to the product owner.

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

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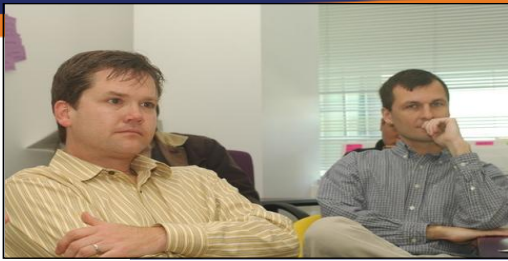
Sprint Retrospective

- The team reflect on what went right and the areas that they can improve going forward.

- Typically 15–30 minutes.

- Done after every sprint.

References

1. Axosoft, "Intro to Scrum in Under 10 Minutes," Feb. 2012, [Online]. Available: https://www.youtube.com/watch?v=XU0llRltyFM.

2. Uzility, "Introduction to Scrum - 7 Minutes," July 2014, [Online]. Available: https://www.youtube.com/watch?v=9TycLR0TqFA.

3. Mountain Goat Software, M. Cohn, "Introduction to Scrum," [Online]. Available: https://www.mountaingoatsoftware.com/presentations/an-introduction-to-scrum.

4. M. C. Layton, "Your Product Backlog and Scrum," [Online]. Available: https://www.dummies.com/careers/project-management/your-product-backlog-and-scrum/.

5. Master of Project Academy , "Scrum Sprint Backlog," June 2016, [Online]. Available: https://masterofproject.com/blog/137055/scrum-sprint-backlog.