

Application Systems Development for Business Analytics

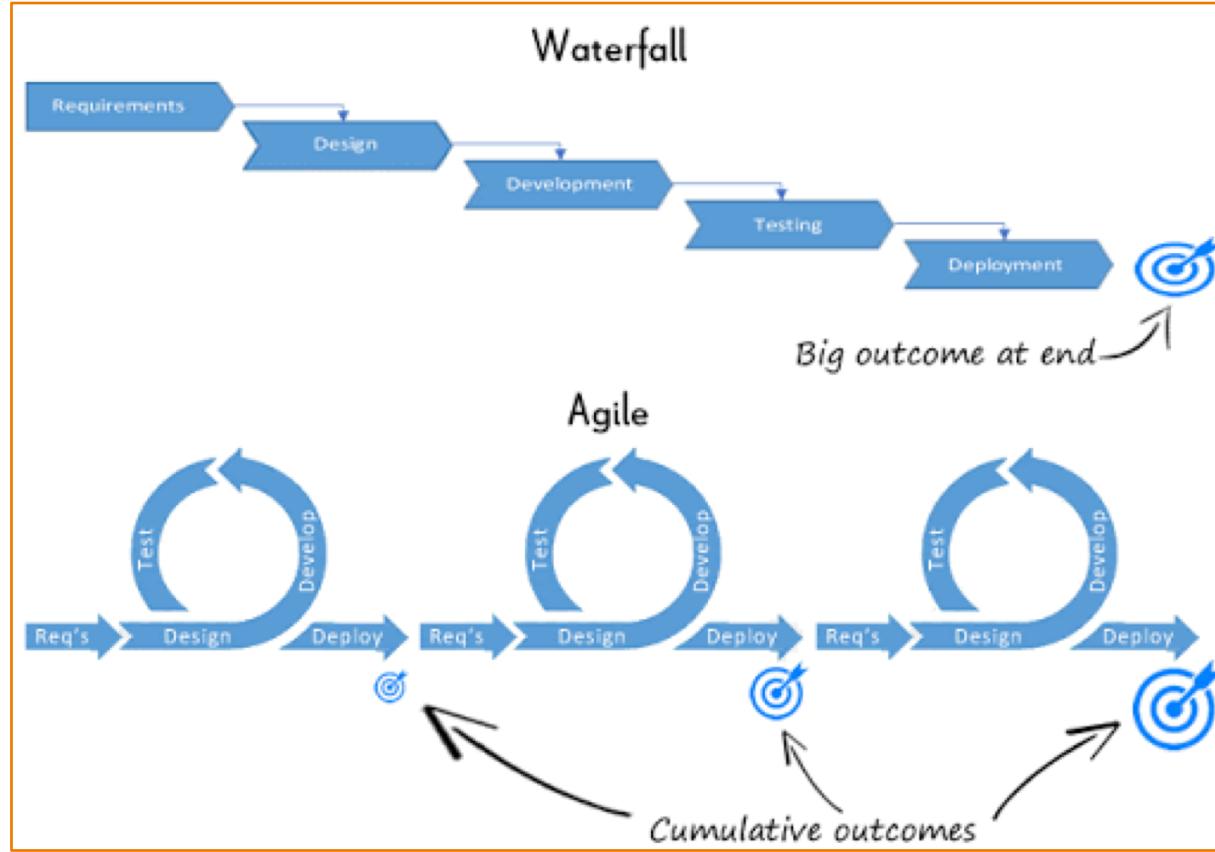
BT3103 - Week 9
2020/2021 Semester 2

Thangamani R

Week 9

- Get familiar with SCRUM
- Introduction to Pandas library

Waterfall Vs Agile



Scrum

- Subset of Agile and one of the most popular frameworks for implementing Agile
- Artifacts:
 - Product Backlog
 - Sprint Backlog
 - Incremental end product



Scrum

- User Stories:
 - Smallest unit of work.
 - End goal not a feature
 - Articulates how a piece of work will deliver a particular value back to the customer.
 - Few sentences in simple language that outline the desired outcome.

Scrum

- User Stories:
 - *As a [persona], I [want to], [so that]*
 - As a <user role/customer, I want to < goal to be accomplished> so that I can <reason of the goal>.
 - As a WhatsApp user, I want a camera icon in the chat write box to capture and send pictures so that I can click and share my pictures simultaneously with all my friends.

Scrum

- User Stories:
 - As a manager, I want to be able to understand my colleagues progress, so I can better report our success and failures.

Scrum

- User Stories:
 - Students can obtain their current seminar schedule.
 - Students can order official transcripts.
 - Students can only enrol in seminars for which they have prerequisites.
 - Transcripts will be available online via a standard browser.

Scrum

- User Stories:

173

As a student I want to purchase
a parking pass so that I can
drive to school

Priority: ~~100~~ Should
Estimate: 4

173. Students can purchase parking passes.

Priority: ~~100~~ 8
Estimate: 4

Scrum

- Acceptance Criteria:
 - Definition of done.
 - Set of accepted conditions or business rules which the functionality or feature should satisfy and meet, in order to be accepted by the Product Owner/Stakeholders.

Scrum

- Acceptance Criteria:



Scrum

● Acceptance Criteria:

User story: *As a user, I want to use a search field to type a city, name, or street, so that I could find matching hotel options.*

Basic search interface acceptance criteria

- The search field is placed on the top bar
- Search starts once the user clicks “Search”
- The field contains a placeholder : “Where are you going?”
- The placeholder disappears once the user starts typing
- Search is performed if a user types in a city, hotel name, street, or all combined
- Search is in English, French, German, and Ukrainian
- The user can't type more than 200 symbols
- The search doesn't support special symbols (characters). If the user has typed a special symbol, show the warning message: “Search input cannot contain special symbols

Scrum

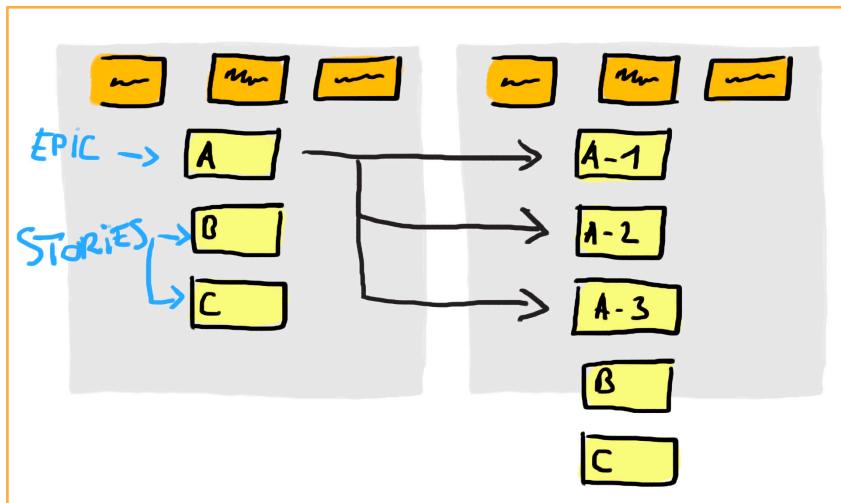
- Acceptance Criteria:
 - Be specific , measurable and not vague
 - Avoid technical details.
 - 3-5 acceptance criteria per user story
 - Write testable acceptance criteria which can be verified while testing.

Scrum

- Epic:
 - Body of work / chunk of work which can be further broken down into smaller chunks / user stories.
 - Delivered over a set of sprints
 - Top tier of the work hierarchy

Scrum

- Epic:



Scrum

- **Product Backlog:**

- Master list of tasks that need to be done
- Maintained by the product owner or product manager.
- Team's To Do list
- Dynamic list of features, enhancements, requirements and fixes

Scrum

- **Product Backlog:**

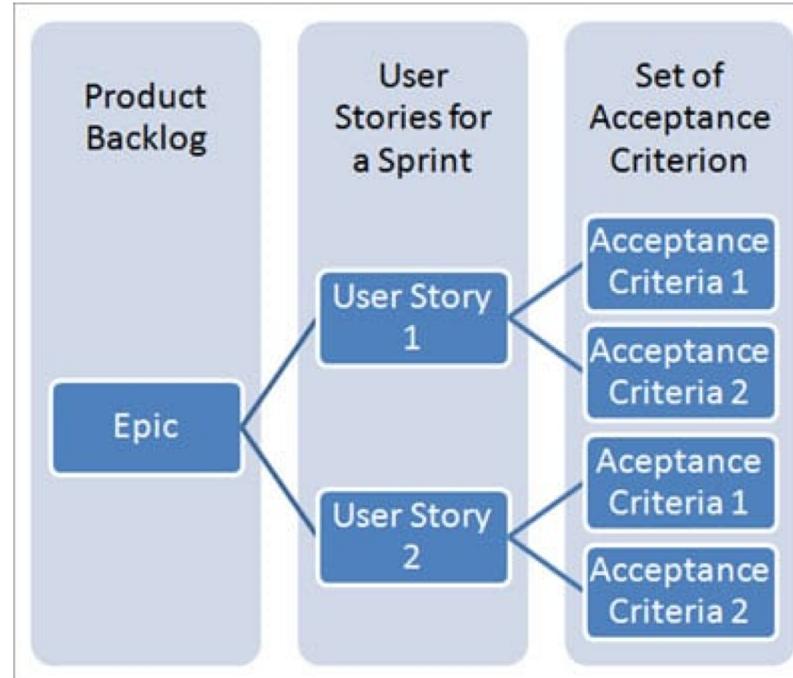
- Input for sprint backlog
- Constantly re-visited, re-prioritized
- Maintained by the product owner
- Items may no longer be relevant , problems may get solved by other means. So periodic review and update is required.

Scrum

- **Sprint Backlog:**

- List of items : user stories, bug fixes selected by the development team for the implementation in the current sprint.
- **Team chooses** which items it will work on for the current sprint from the product backlog.

Scrum



Scrum

- **Incremental end product:**
 - Usable end product from a sprint.
 - Team's definition of done, a milestone, sprint goal being met.

Scrum

- **Sprint:**
 - Typically a two week cycle(anywhere between 2-4 weeks)
 - Scrum team works together to finish a cycle.
 - Team plans its Sprints one at a time.
 - Product owner decides what needs to be produced.
 - Sprint target is shared ,clear and does not change.

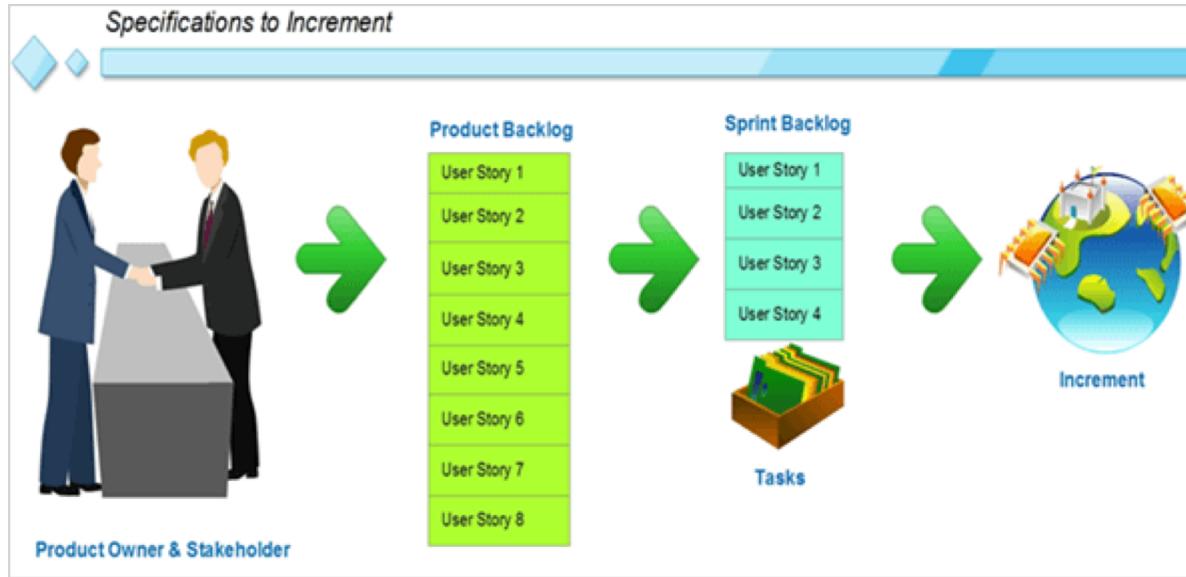
Scrum

- **Sprint:**
 - Teams tries to achieve the target it sets for itself.
 - Each sprint is a timebox - its length never gets extended.
 - Team aims for “done” product in each sprint - tested and defect free.

Scrum

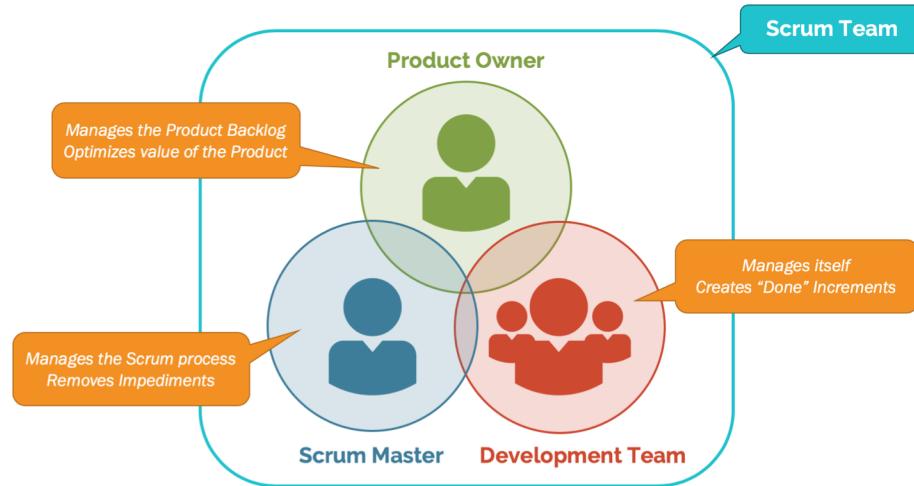
Product Backlog	Master list of requirements. Team's To Do List. Maintained by the product owner.
Sprint Backlog	Items to be delivered in a specified sprint. Selected by the team to be delivered for a specific sprint.
Incremental Product	Delivery of each sprint. Usable end product from sprint.
Sprint	2-4 weeks cycle. Team works together to finish a cycle. Team plans for one sprint at a time.

Scrum



Scrum - Roles & Responsibilities

- Scrum Team
 - Product Owner
 - Scrum Master
 - Development Team



Scrum - Roles & Responsibilities

- Product Owner
 - Drive Product Success
 - Product vision
 - Owns the product backlog
 - Prioritize work
 - Accepts work
 - Determine releases
 - Backlog grooming
 - One Product Owner per team/product

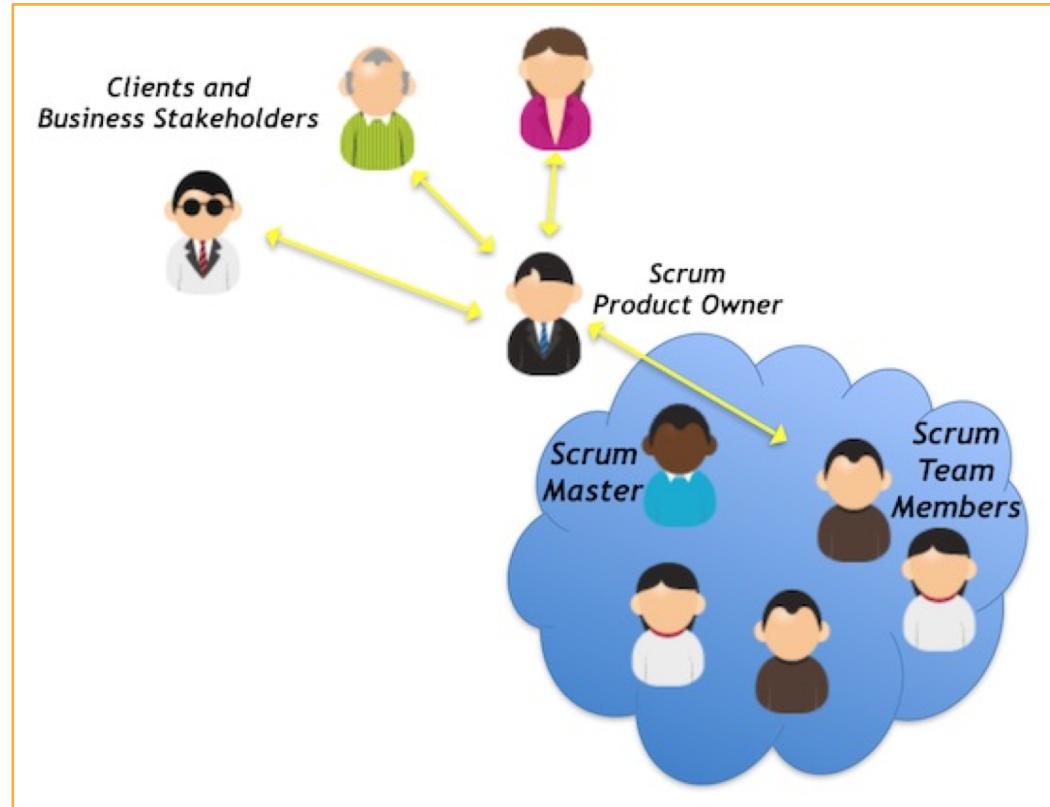
Scrum - Roles & Responsibilities

- Scrum Master
 - Process Champion
 - Obstacle Remover
 - Monitoring and Tracking
 - Reporting and Communication
 - Quality Master
 - Resolves conflicts
 - Resolves Impediments
 - Shields the team
 - One SM per product / team

Scrum - Roles & Responsibilities

- Development Team
 - Self-organizing, dedicated , cross-functional team
 - Makes its own commitments
 - Decides who does the work
 - Decides how to do the work
 - Decides how to meet commitments
 - Takes responsibility for quality and commitment.
 - Preferably co-located.
 - 3-9 people

Scrum



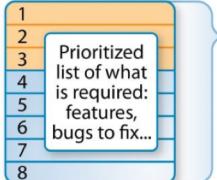
Scrum

The Agile Scrum Framework at a glance

Inputs from
Customers, Team,
Managers, Execs



Product Owner



Product Backlog



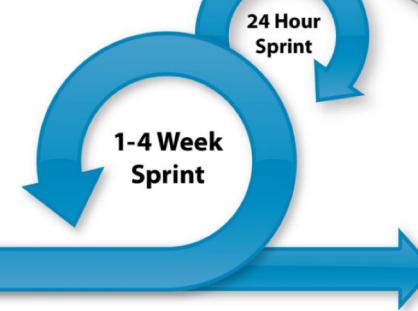
The Team

Scrum Master



Burn Down/Up Chart

1-4 Week Sprint



Task Breakout

Sprint Backlog

Sprint end date and team deliverable do not change



Daily Standup Meeting



Sprint Review



Finished Work



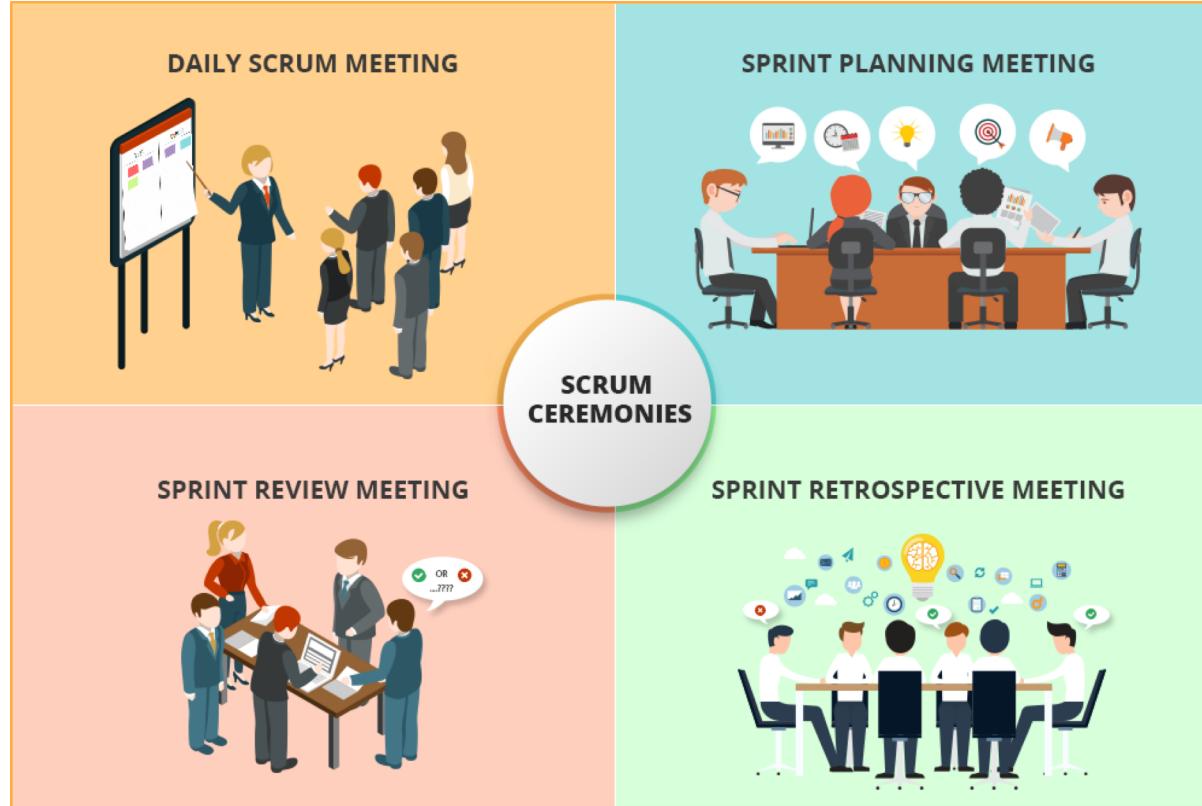
Sprint Retrospective

neon rain®
interactive

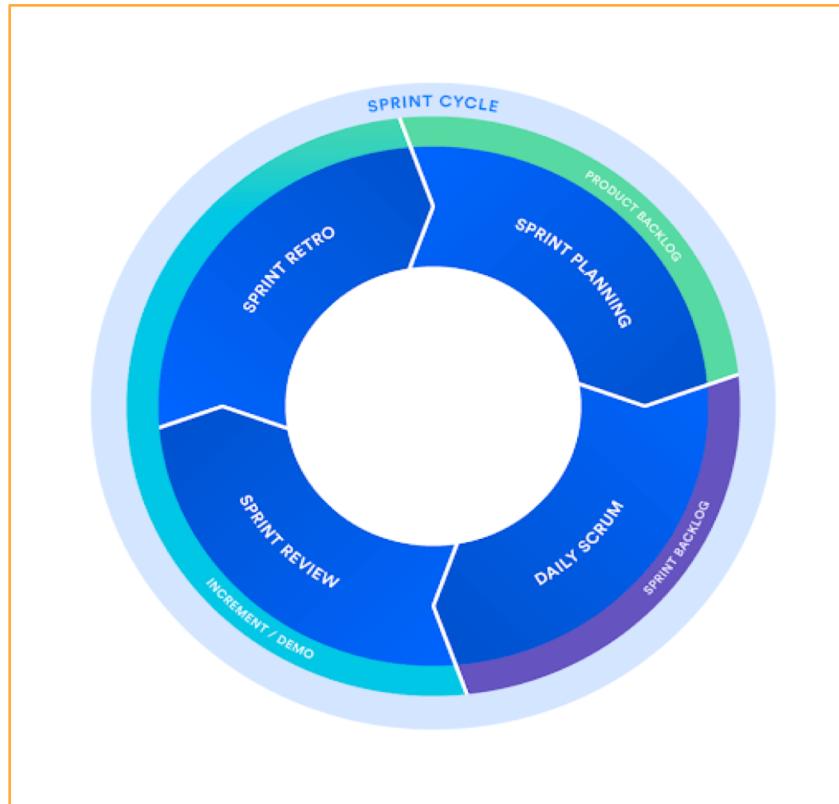
AGILE FOR ALL
Making Agile a Reality™



Scrum Ceremonies



Scrum Ceremonies



Scrum Ceremonies

- Each Scrum ceremony is an in-person affair/gathering organized by the Scrum Master.
- Apart from the core team, stakeholders, delivery managers or even the customer can be present.
- Meetings are time boxed and needs to be completed within the stipulated time frame.
- Objective is for the participants to discuss the work on hand.
- The expectation from every participant is to stay focused, engaged and participative.
- Opportunity to converse, examine and retrieve the feedback of the work done.

Time Boxing

- Key feature attached to the scrum events
- Participants are expected to be respectful of the time allocated to each of the events.
- The events cannot be extended
- But can be shortened if the goals of the meeting are achieved.
- Scrum Master facilitates all the events
- Reminds teams to focus on the objectives of the meeting

Scrum Ceremonies

- Sprint Planning
 - Initial ceremony while starting the sprint
 - Objective is to create sprint goal
 - To commit to the items to be produced in the sprint.
 - Big picture and rolling release planning
 - Review product backlog
 - Select high priority items from product backlog

Scrum Ceremonies

- Sprint Planning
 - Discuss stories to create tasks
 - Estimate tasks
 - Ask: “Can we commit to this?”
 - Repeat until no more can be committed.
 - Once user stories are agreed upon, SM keeps track of the deliverables.
 - Attendees:
 - Scrum Team, Product owner and Scrum Master

Scrum Ceremonies

- Daily Standup
 - Opportunity to discuss the daily progress on the sprint.
 - Platform to discuss if something is stopping to achieve the team goal.
 - 15 mins sync up daily
 - Same time , same place
 - Stand-up, no problem solving

Scrum Ceremonies

- Daily Standup
 - To answer 3 questions
 - What did you do yesterday?
 - What will you do today?
 - Are you blocked?(any issues which are blocking your progress on tasks)
 - Others are invited to observe but not to talk.

Scrum Ceremonies

- Daily Standup
 - SM facilitates the daily standup meeting
 - SM encourage Questions
 - Discourage discussion
 - Foster Attention and Respect

Scrum Ceremonies

- Daily Standup



Scrum Ceremonies

- Daily Standup
 - Attendees:
 - Core team members are mandatory
 - Anyone can attend the daily scrum meeting, but they are not allowed to ask questions.
 - Others are mere observers.

Scrum Ceremonies

- Sprint Review(The Demo)
 - Conducted at the end of the sprint but before the sprint retrospective
 - Everyone's invited
 - Demo actual software
 - Demonstrate the work done and gather feedback
 - User stories which are done based on the Acceptance criteria are only considered for demo.

Scrum Ceremonies

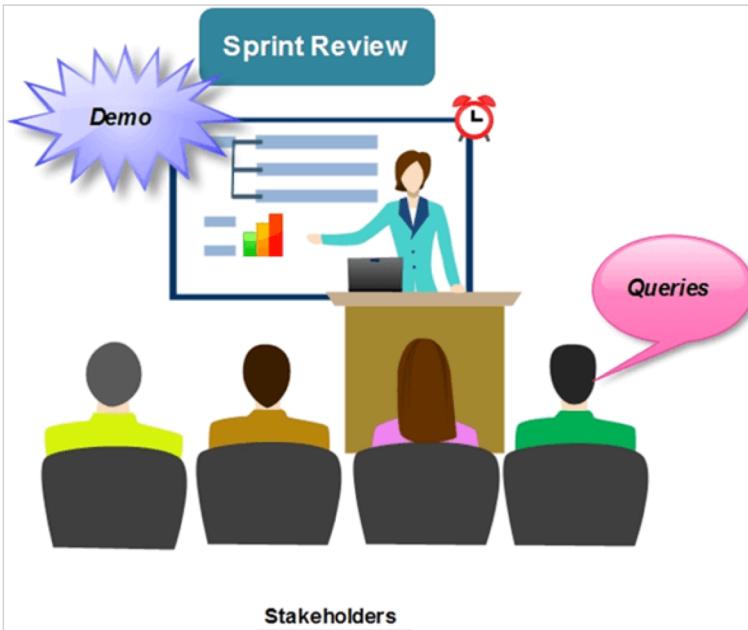
- Sprint Review(The Demo)
 - Minimal preparation time
 - Informal
 - Interactive
 - Product owner plays a key part
 - PO evaluates each user story against acceptance criteria and accepts or rejects a story.

Scrum Ceremonies

- Sprint Review(The Demo)
 - Accepted stories are integrated with the Done Increment .
 - Potentially deliverable product.
 - Rejected or uncompleted stories will be reworked on the next sprint or goes to the product backlog to be prioritized.

Scrum Ceremonies

- Sprint Review(The Demo)



Scrum Ceremonies

- Attendees
 - Team members , SM & PO
 - Stakeholders, Delivery Managers,customers / end users.

Scrum Ceremonies

- Sprint Retrospective
 - Reflect and learn.
 - Regular reflections on how to become more effective.
 - Opportunity for the entire team to reflect
 - Contemplate as to how did the sprint go
 - What needs to be done to improvise the process.
 - Performed at the end of each sprint.

Scrum Ceremonies

- Sprint Retrospective
 - Entire team discusses on the completed sprint.
 - Team is expected to be transparent
 - Share honest opinion and no blame game
 - Improvise and to make things better for the next sprint.
 - Positives and Negatives are discussed.

Scrum Ceremonies

- Sprint Retrospective
 - Team is asked to answer the questions

What went well?

What have you learned?

What didn't go well?

What could be done better?

Scrum Ceremonies

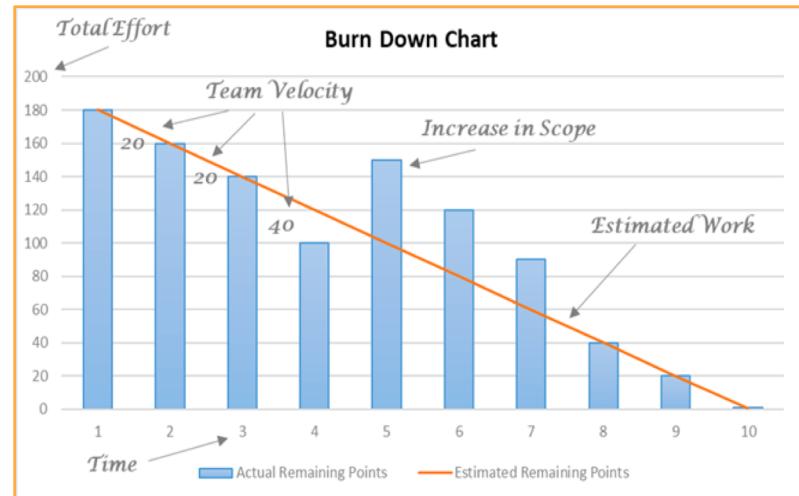
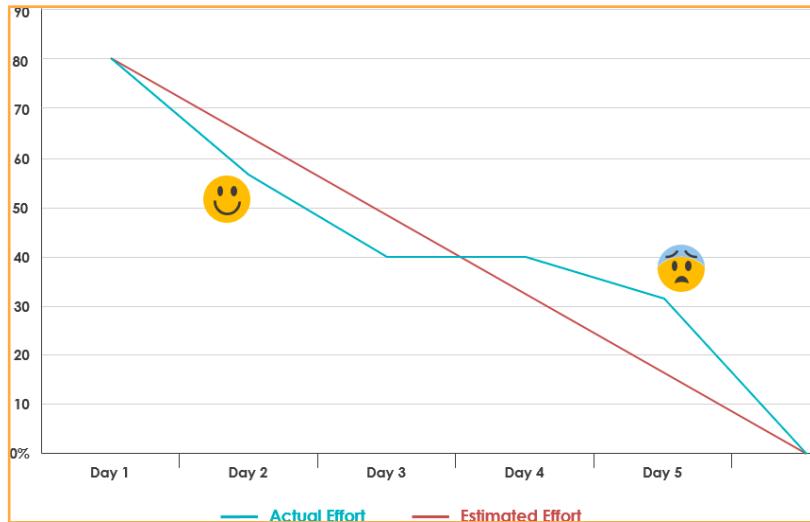
- Sprint Retrospective
 - Opportunity to retrospect and commit toward the improvements.
 - Attendees:
 - Entire scrum team , PO and SM participate
 - SM and PO also participate and provide inputs and retrospective points.
 - SM facilitates.

Scrum Ceremonies

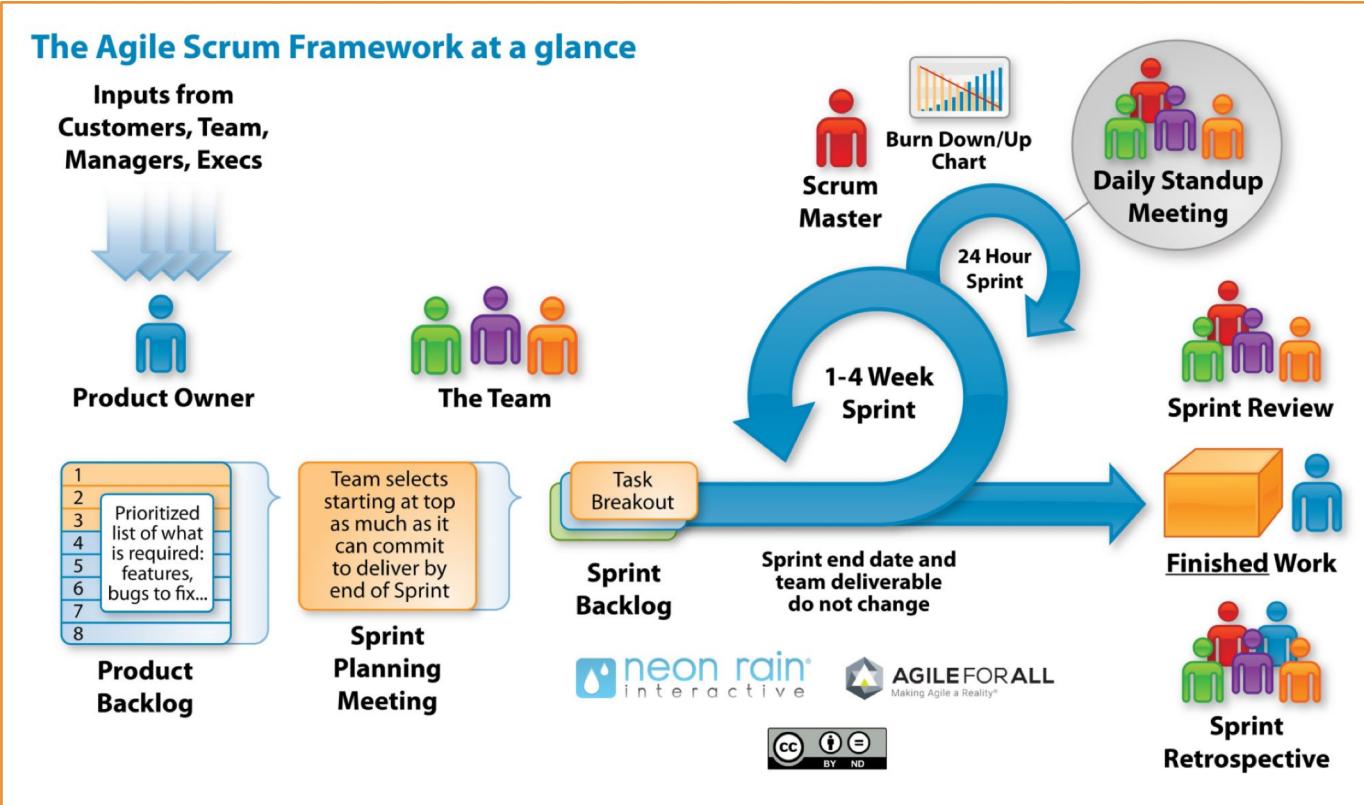
- Sprint Retrospective
 - Non team members are not included
 - Team members open up without hesitation and discuss issues faced during last sprint.

Scrum Ceremonies

- Burn down charts



Scrum



Scrum Storyboard

Stories	Not started	In progress	Done
Story #1			Task A Task B Task C
Story #2	Task A	Task C	Task B
Story #3	Task B Task D		Task A Task C



Provides overview of the project

Course Contents

- Software Development Lifecycle (SDLC)

- Requirements

- Requirements gathering and prototype



HTML & CSS

- Design.

- Development

- UI Development



Vue.js

- Saving and Retrieving data from Database



Firebase

- Version control



GitHub

Course Contents

- Deployment
 - Deploying the web application
 - CI/CD tools
- Agile Methodology(SCRUM)
- Data Visualization
 - Python libraries
 - Dashboards

Firebase

Seaborn &
Matplotlib

Plotly Dash

Python beginners

- Discovery path - [Python for Beginners](#)
- Data Structures : Lists ,Dictionaries
- Numpy - Array manipulations

Pandas Library

- Python Data Analysis Library
- To read data from sources like files , databases etc.
- Data Structures
 - Dataframes
 - Series

Pandas Library - DataFrame

- Two dimensional labeled data structure
- Columns of different data types
- Similar to a spreadsheet or SQL table.
- Most commonly used Pandas object
- Reference : <https://pandas.pydata.org/pandas-docs/stable/reference/api/pandas.DataFrame.html>

Creating DataFrames

- DataFrames are created by loading the datasets from files , SQL databases .
- They are also created from other data structures like Lists and dictionaries.

DataFrame : Methods

Method	Description
df.info()	Print a concise summary of dataframe
df.describe()	Generate descriptive statistics that summarize the central tendency, dispersion and shape of a dataset's distribution, excluding NaN values.
df.head()	Returns the first n rows, 5 rows by default
df.tail()	Returns the last n rows , last 5 rows by default
df.isna()	Detects missing values
df.dropna()	Remove missing values



DataFrame Activities

- Try out the activities posted on Discovery