UNIVERSITY INSTITUTE OF COMPUTING

Agile Methodology

(24CAT-656)

Unit-2- Syllabus

Unit-2	Agile	Lecture Hours:10
Agile Project Management	Project Management introduction, Agile Scrum, Project management methodology, Selection of right project management methodology, Continuous integration and continuous delivery (CI/CD) in agile development.	
Scrum	Scrum framework, Scrum Roles, Agile Kanban, Agile Vs. Scrum. Product Backlog, Scrum Practices, Process flow of Scrum Methodologies,\	
Agile Design	Agile Daily Stand-up, Sprint Review meeting vs Daily Stand-up meeting in Agile, Definition of Done, Agile Design, Retrospective in Agile development.	

CONTENT OF THE SYLLABUS

• TEXT BOOKS

T1 David J. Anderson and Eli Schragenheim, Agile Management for Software Engineering: Applying the Theory of Constraints for Business Results, Prentice Hall, 2003.

T2 Hazza and Dubinsky, Agile Software Engineering, Series: Undergraduate Topics in Computer Science, Springer, 2009.

T3 Agile Software Development Ecosystems by Jim Highsmith, Addison-Wesley 2002, ISBN 0201760436.

• REFERENCES

R1 Craig Larman, Agile and Iterative Development: A Managers Guide, Addison-Wesley, 2004.

R2 Kevin C. Desouza, Agile Information Systems: Conceptualization, Construction, and Management, Butterworth-Heinemann, 2007.

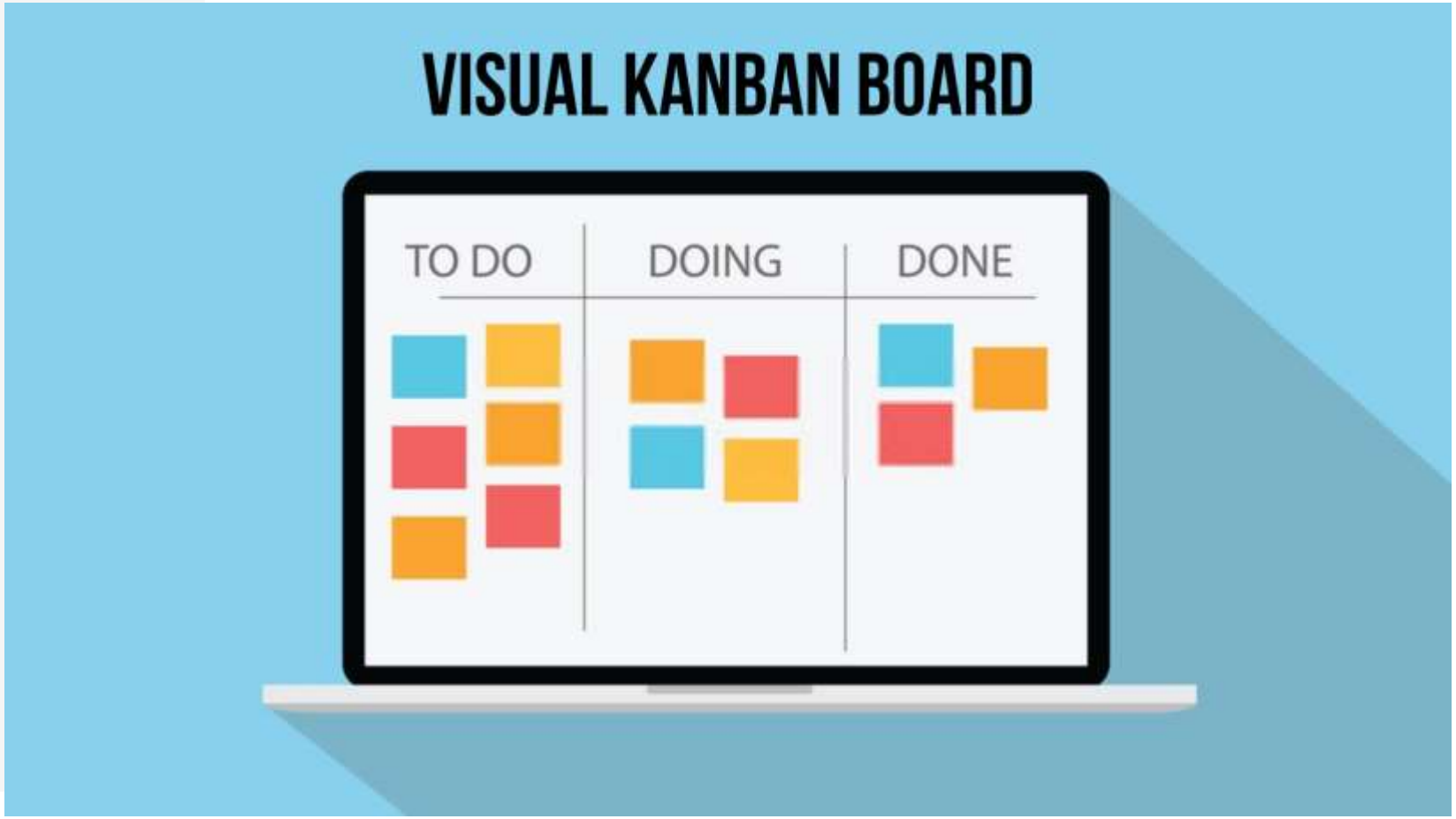
Agile Kanban

- Agile Kanban is Agile Software Development with Kanban approach. In Agile Kanban, the Kanban board is used to visualize the workflow. The Kanban board is normally put up on a wall in the project room. The status and progress of the story development tasks is tracked visually on the Kanban board with flowing Kanban cards.

Kanban Board

- Kanban board is used to depict the flow of tasks across the value stream. The Kanban board −
- Provides easy access to everyone involved in the project.
- Facilitates communication as and when necessary.
- Progress of the tasks are visually displayed.
- Bottlenecks are visible as soon as they occur.

Kanban Board



Advantages of Kanban board

- The major advantages of using a Kanban board are −
- **Empowerment of Team** − This means −
  - Team is allowed to take decisions as and when required.
  - Team collaboratively resolves the bottlenecks.
  - Team has access to the relevant information.
  - Team continually communicates with customer.

Advantages of Kanban board

- **Continuous Delivery** – This means –
  - Focus on work completion.
  - Limited requirements at any point of time.
  - Focus on delivering value to the customer.
  - Emphasis on whole project.

WIP Limit

- The label in the Doing column also contains a number, which represents the maximum number of tasks that can be in that column at any point of time. i.e., the number associated with the **Doing** column is the WIP (Work-In-Progress) Limit.

Pull Approach and Self-directing

- Pull approach is used as and when a task is completed in the Doing column. Another card is pulled from the To Do column.
- In Agile Development, the team is responsible for planning, tracking, reporting and communicating in the project. Team is allowed to make decisions and is accountable for the completion of the development and product quality. This is aligned to the characteristic of empowerment of the team in Kanban.

Continuous Flow

- In Agile development, there is no gate approach and the work flows across the different functions without wait-time. This contributes in minimizing the cycle time characteristic of Kanban.

Visual Metrics

- In Agile Kanban, the metrics are tracked visually using −
- Kanban Board
- Burndown Chart
- **Uses of Kanban board**
- Kanban Board is used to −
- Measure the cycle times, that can be used to optimize average cycle time.
- Track WIP limit to eliminate waste.
- Track resource utilization to eliminate waste.

Visual Metrics

Visual Metrics

- **Uses of Burndown chart**
- Burndown chart is used to capture −
- The current status of the tasks and stories.
- The rate of progress of completing the remaining tasks.

Agile Vs Scrum

Agile	Scrum
Agile is a development methodology based on iterative and incremental approach.	Scrum is one of the implementations of agile methodology. In which incremental builds are delivered to the customer in every two to three weeks' time.
Agile software development has been widely seen as highly suited to environments which have small but expert project development team	Scrum is ideally used in the project where the requirement is rapidly changing.

Agile Vs Scrum

In the Agile process, the leadership plays a vital role.	Scrum fosters a self-organizing, cross-functional team.
Compared to Scrum it is a more rigid method. So there is not much room for frequent changes.	The biggest advantage of Scrum is its flexibility as it quickly reacts to changes.
Agile involves collaborations and face-to-face interactions between the members of various cross-functional teams.	In Scrum, collaboration is achieved in daily stand up meeting with a fixed role assigned to scrum master, product owner, and team members.

Agile Vs Scrum

Agile can require lots of up-front development process and organizational change.	Not too many changes needed while implementing scrum process.
The agile method needs frequent delivery to the end user for their feedback.	In the scrum, after each sprint, a build is delivered to the client for their feedback.
In this method, each step of development like requirements, analysis, design, are continually monitored during the lifecycle.	A demonstration of the functionality is provided at the end of every sprint. So that regular feedback can be taken before next sprint.

Agile Vs Scrum

Project head takes cares of all the tasks in the agile method.	There is no team leader, so the entire team addresses the issues or problems.
The Agile method encourages feedback during the process from the end user. In this way, the end product will be more useful.	Daily sprint meeting is conducted to review and feedback to decide future progress of the project.
Deliver and update the software on a regular basis.	When the team is done with the current sprint activities, the next sprint can be planned.

Agile Vs Scrum

Design and execution should be kept simple.	Design and execution can be innovative and experimental.
In the Agile method, the priority is always to satisfy the customer by providing continuous delivery of valuable software.	Empirical Process Control is a core philosophy of Scrum based process.
Working software is the most elementary measure of progress.	Working software is not an elementary measure.

Product backlog

- A product backlog is a list of items to be done. Items are ranked with feature descriptions. In an ideal scenario, items should be broken down into user stories.
- Why Product Backlog is Important?
- It is prepared so that estimates can be given to each and every feature.
- It helps in planning the roadmap for the product.
- It helps in re-ranking the features so that more value can be added to the product.
- It helps in determining what to prioritize first. Team ranks the item and then builds value.

Characteristics of Product Backlog

- Each product should have one product backlog which can have a set of large to very large features.
- Multiple teams can work on a single product backlog.
- Ranking of features is done based on business value, technical value, risk management or strategic fitness.
- Highest ranking items are decomposed into smaller stories during release planning so that they can be completed in future iterations.

THANK YOU