



Agile Software Processes

Assignment – Group BH



BITS Pilani



Title :

- Agile Practices in Action: Planning, Execution, and Metrics for a Mobile E-commerce App

Group BH :

- REMYA. P. (2024TM93211)
- SREERAAM K . (2024TM93198)
- MADHURI PIDATALA(2024TM93134)
- SHEFALI SRIVASTAVA(2024TM93221)
- HARMALKAR RAHUL RAJAN SAYALI(2024TM93073)

Introduction



Objective:

- To simulate a project lifecycle using Agile methodologies, focusing on the development of a mobile e-commerce application.

Key Areas Covered:

- **Product Vision and Roadmap:** Define the product's long-term goals and outline major milestones over a 6-month period, including three key releases.
- **User Stories and Backlog:** Develop user-centric requirements using the INVEST criteria and create an initial product backlog with prioritized features and effort estimates.
- **Sprint Planning:** Plan a two-week sprint by selecting user stories, defining tasks, and estimating effort, while aligning with team capacity and product goals.
- **Sprint Execution and Review:** Simulate daily Scrum meetings, track progress with a burndown chart, and conduct a sprint review to assess completed work and gather feedback.
- **Metrics, Flow, and Communication:** Analyze team performance metrics such as velocity, defect rate, and task flow management while proposing strategies for continuous improvement and effective communication.

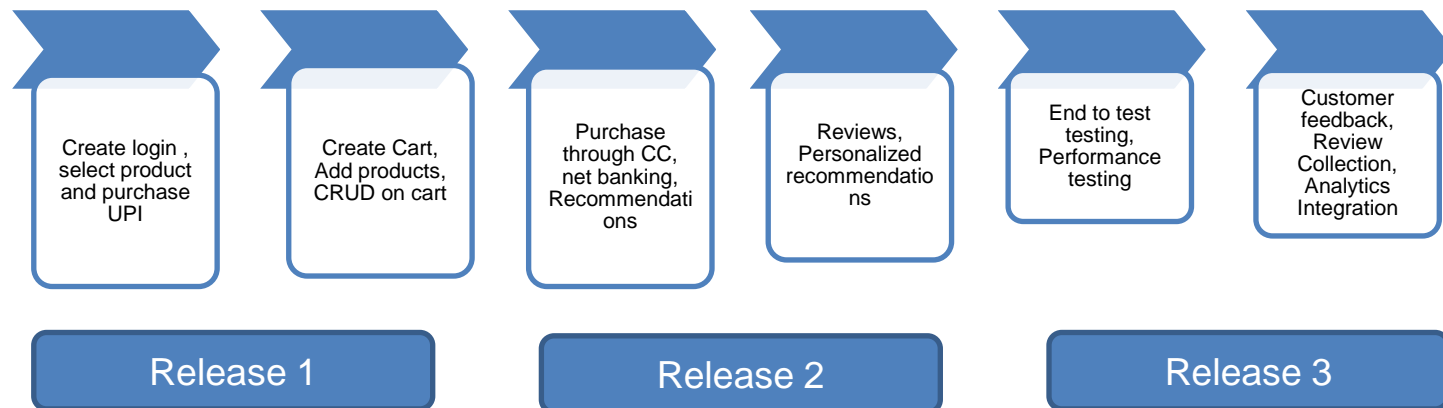
Product Vision & RoadMap



Vision:

To create a Mobile app which serves to selects the products from a retail outlet

Road Map:



Team



The team comprises of Four Devs, one tester & one Scrum Master

Dev 1	Remya
Dev 2	Sreeram
Dev 3	Rahul
Tester	Shefali
Scrum Master	Madhuri

User Stories



Select a Product

✦ Ask Brain to [create a summary](#) · [generate subtasks](#) · [find similar tasks](#) · or [ask about this task](#)

🕒 Status	VERIFICATION <input type="checkbox"/>	👤 Assignees	MP
📅 Dates	Jul 15 – Jul 15	🚩 Priority	High
🕒 Time Estimate	Empty	🎯 Sprint Points	3
🕒 Track Time	▶ Add time	🏷️ Tags	Empty
🔗 Relationships	Empty		

User Story:

As a customer

When I see the list of products, I should be able to select the products

So that I can purchase them

Acceptance Criteria

Given the customer is logged in successfully in the app

When the customer can browse through the products

Then the customer should be able to select the products

User Stories



Secure Payments - UPI

✦ Ask Brain to [create a summary](#) · [generate subtasks](#) · [find similar tasks](#) · or [ask about this task](#)

🕒 Status	IN PROGRESS ▶ <input checked="" type="checkbox"/>	👤 Assignees	MP
📅 Dates	Jul 23 – Jul 23 (1d)	🚩 Priority	🚩 Urgent
🕒 Time Estimate	Empty	🕒 Sprint Points	5
🕒 Track Time	▶ Add time	🏷️ Tags	Empty
🔗 Relationships	Empty		

User Story:

As a Customer

When I click on Buy now

I should be able to proceed with Payment with options for UPI

Acceptance Criteria

Given the customer has selected the products in the list

When the customer clicks on Buy now

Then customer should take user to Payments with UPI only

User Stories



Products to be listed

Status	COMPLETE	Assignees	MP
Dates	Jul 15 – Jul 15	Priority	Urgent
Time Estimate	Empty	Sprint Points	8
Track Time	Add time	Tags	Empty
Relationships	Empty		

User Story

As a customer

I want the list of products to be displayed

So that I can browse through the list and select the product for purchase

Acceptance Criteria

Given the customer completes the registration

When the customer logs in successfully

Then the list of products should be displayed to the user

Given the customer logs in successfully

When the customer sees the display of the products

Then the customer should be able to browse through the list

User Stories



Buy Now

Ask Brain to [create a summary](#) • [generate subtasks](#) • [find similar tasks](#) • or [ask about this task](#)

Status	TO DO ▸ <input type="checkbox"/>	Assignees	MP
Dates	Jul 19 – Jul 19	Priority	Urgent
Time Estimate	Empty	Sprint Points	5
Track Time	<input checked="" type="radio"/> Add time	Tags	Empty
Relationships	Empty		

User Story:

As a customer

When I select a product in the list

I should be able to buy those products

Acceptance Criteria

Given the user is browsing the product list

When the customer selects the product

Then the "Buy Now" option should be enabled

Given the user is browsing the product list

When the customer has not selected the product

Then the "Buy Now" option should not be enabled

User Stories



Products to be listed

🔮 Ask Brain to [create a summary](#) · [generate subtasks](#) · [find similar tasks](#) · or ask about this task

🕒 Status	COMPLETE ▶	👤 Assignees	MP
📅 Dates	Jul 15 – Jul 15	🚩 Priority	🚩 Urgent
🕒 Time Estimate	Empty	📊 Sprint Points	8
🕒 Track Time	⚙ Add time	🏷 Tags	Empty
🔗 Relationships	Empty		

User Story

As a customer

I want the list of products to be displayed

So that I can browse through the list and select the product for purchase

Acceptance Criteria

Given the customer completes the registration

When the customer logs in successfully

Then the list of products should be displayed to the user

Given the customer logs in successfully

When the customer sees the display of the products

Then the customer should be able to browse through the list

Sprint 1



TO DO3

Buy Now

In E Commerce

MP

Urgent

5

Display Details of the user profile;

In Sprint 1 (11/11 - 11/24)

-

Normal

2

Bug in login

In Sprint 1 (11/11 - 11/24)

-

Urgent

-

+ Add Task

IN PROGRESS2

Secure Payments - UPI

In E Commerce

MP

Urgent

5

Create a cart to save items

In E Commerce

MP

High

5

+ Add Task

VERIFICATION1

Select a Product

In E Commerce

MP

High

3

+ Add Task

COMPLETE2

Products to be listed

In E Commerce

MP

Urgent

8

Create Login to the app

In Sprint 1 (11/11 - 11/24)

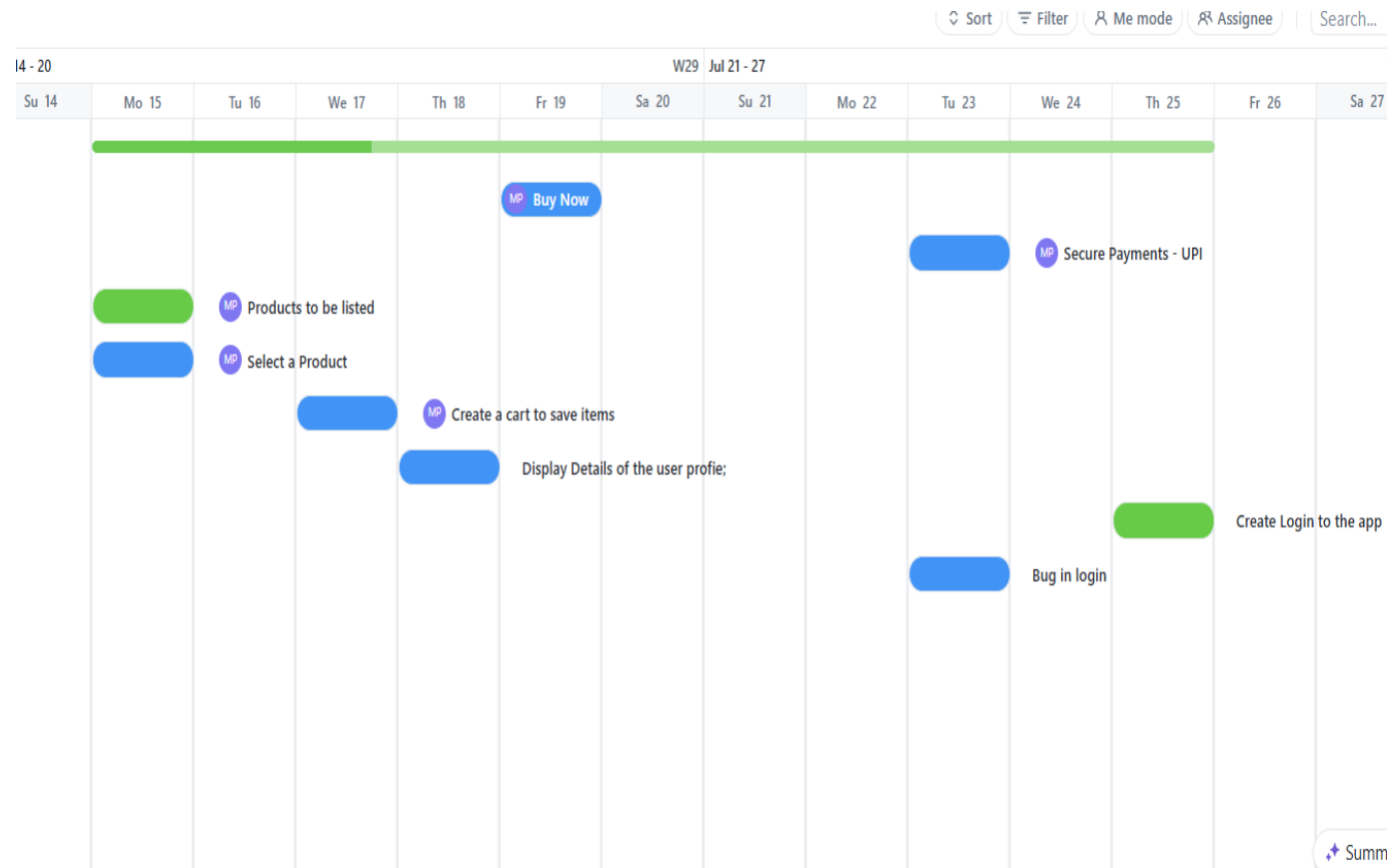
-

Urgent

2

+ Add Task

Sprint Planning



The tasks in the sprint 1 have been planned as per the planned time lines according to team capacity

Sprint Goals



Sprint Goals:

1. User profile creation
2. List of the products and selection of products
3. Purchase of the selected products

Sprint Settings

Edit options for Sprint 1 (11/11 - 11/24)

Sprint name

Sprint 1 (11/11 - 11/24)

Must include {INDEX} – a sequential number for each Sprint starting with 1

Sprint duration

☒ Default duration (2 weeks)

☐ Custom duration

Start date

Monday

End date

11/24/24

Sprint Goal

1. User profile creation

2. List of the products and selection of products

3. Purchase of the selected products

[Learn more about Sprints](#)

CancelSave changes

Daily Scrum



Format of Daily Scrum:

Each member should talk about

What did you do yesterday? What are you planning to do today? Any Obstacles?

Day 1	Day 2	Day 3
<p><u>Remya</u> : I started on Login screen yesterday, completed 2 components. Will complete the 3 component tomorrow</p> <p><u>Sreeram</u> : I started on Product list. I add the products in database</p> <p><u>Rahul</u> : I started on Payments UPI. I integrated with the existing API. I will run the simulation tomorrow</p> <p><u>Shefali</u> : I had a trouble yesterday while testing integrating the UI with API for login. I raised a bug. I will complete the test cases for other tasks</p>	<p><u>Remya</u>: I have completed the 3rd component. Will unit test and push to verification today</p> <p><u>Sreeram</u> : Data tables are ready, I will push the data to API today</p> <p><u>Rahul</u> : I will run the simulation today. UPI integration is complete</p> <p><u>Shefali</u> : The bug has been reassigned to me for testing. I have environment issues to connect. Will test it as soon as the issue is resolved</p>	<p><u>Remya</u>: I have pushed the code for testing. I will pick another card for dev today</p> <p><u>Sreeram</u>: I will continue on yesterday tasks today</p> <p><u>Rahul</u>: The simulation is still going on. Will complete it tomorrow</p> <p><u>Shefali</u>: All the test cases are ready. The impediment I has yesterday is resolved</p>

Sprint Planning



Sprint Goal:

•**Goal:** Deliver a functional shopping cart and checkout system to enhance user purchasing capabilities.

Selected User Stories for the Sprint:

- As a user, I want to add products to a shopping cart so I can view them before purchase.
 - **Story Points:** 5
- As a user, I want to modify quantities or remove items from my cart for more flexibility during purchase.
 - **Story Points:** 8
- As a user, I want a secure checkout process with multiple payment options to ensure trust and security.
 - **Story Points:** 10
- As a user, I want to receive a purchase confirmation via email to validate my order.
 - **Story Points:** 7

Task Breakdown:

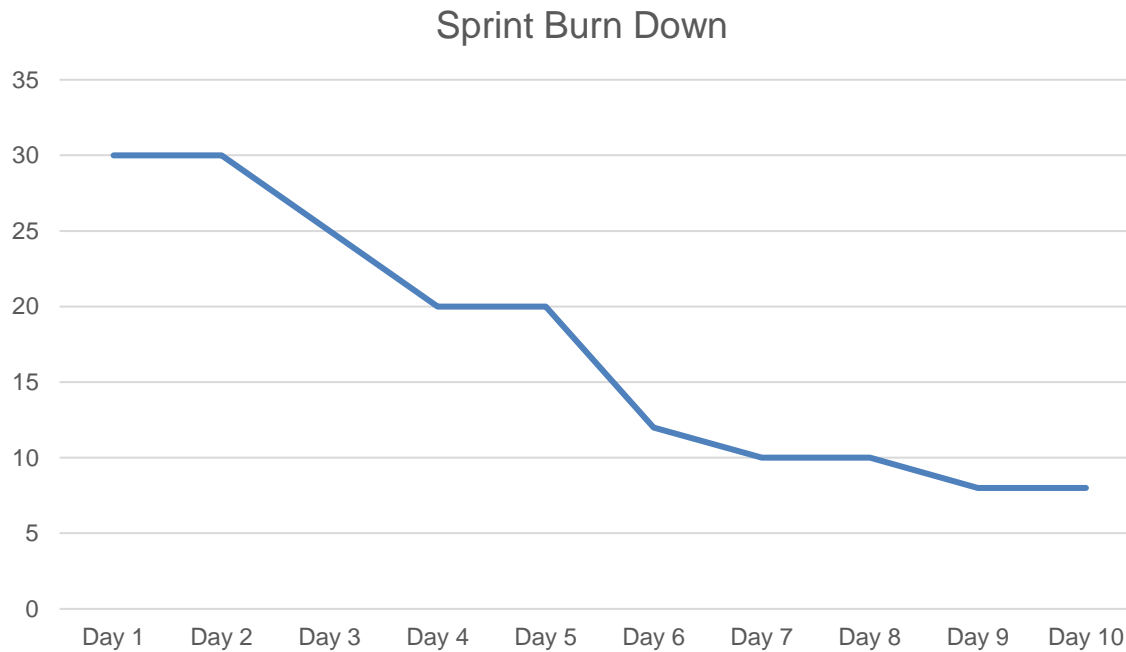
- **Add Products to Cart:**
 - Develop "Add to Cart" functionality (3 hrs)
 - Update user interface for cart (4 hrs)
- **Modify/Remove Cart Items:**
 - Create item modification options (5 hrs)
 - Backend update and synchronization (6 hrs)
- **Checkout Process:**
 - Integrate payment gateway (8 hrs)
 - Security and data validation (5 hrs)
- **Order Confirmation Email:**
 - Develop email notification system (4 hrs)
 - Integration with order database (3 hrs)
 - Testing and email validation (4 hrs)

Justification for User Story Selection:

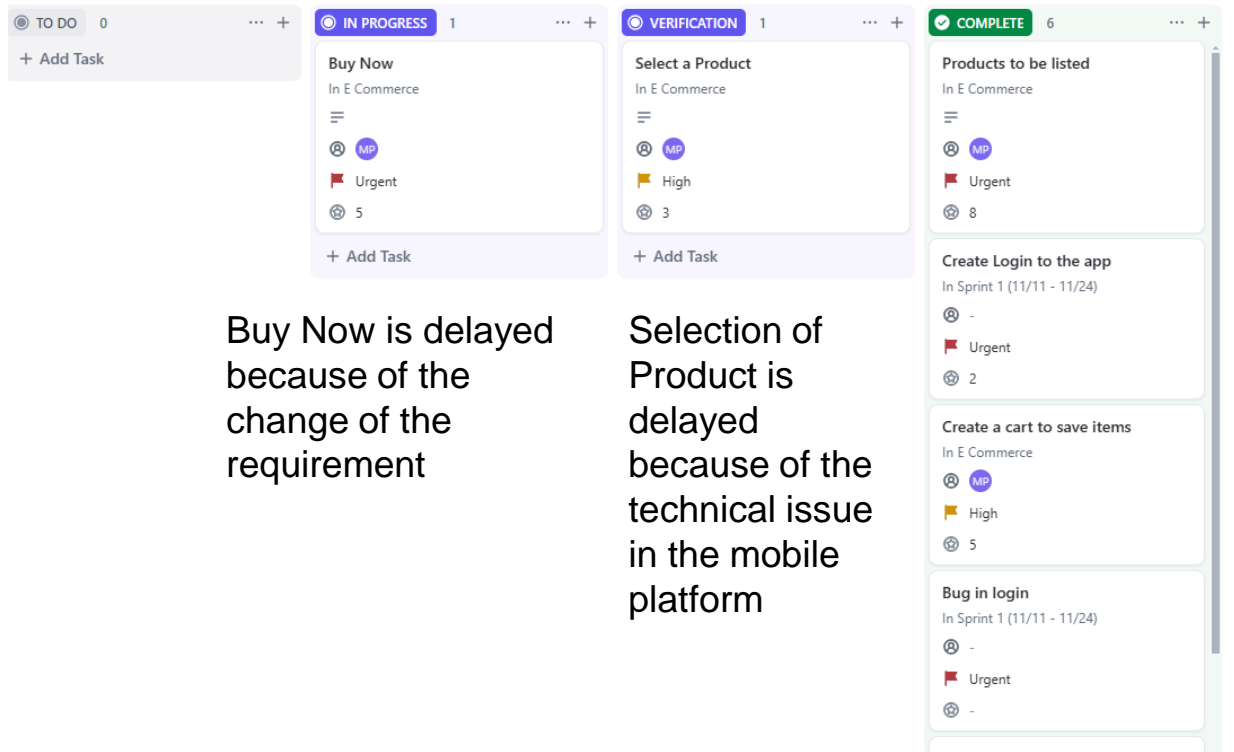
•**Prioritization Basis:** Selected user stories are high-priority items aligned with the product vision of delivering core e-commerce functionality.

•**Team Capacity:** Based on a team velocity of 30 story points, the chosen stories fit within the capacity constraints, ensuring manageable workload distribution among four developers and one tester.

Burn Down Chart



Task Board post Sprint Completion





Sprint Execution and Review

Stakeholder Feedback Summary:

- **Positive Feedback:**
 - Smooth shopping cart functionality, easy to use.
 - Checkout process well-received for its security features and multiple payment options.
- **Improvement Areas:**
 - Stakeholders suggested enhancing the UI for the order summary screen to make it more user-friendly.
 - Requested the addition of a progress indicator during the checkout process.

Proposed Scope Adjustments for Next Sprint:

- 1. Complete the pending "Purchase Confirmation Email"** user story with additional testing and integration improvements.
 - 2. Incorporate UI enhancements** based on stakeholder feedback to improve the order summary screen and add a checkout progress indicator.
 - 3. Plan and prioritize** any new user stories derived from stakeholder suggestions, ensuring alignment with the overall product vision.
-

Sprint Review



Sprint Completion Status:

- **Completed User Stories:**
 - Add products to a shopping cart (Story Points: 5)
 - Modify and remove items from the cart (Story Points: 8)
 - Secure checkout process with multiple payment options (Story Points: 10)
- **Incomplete User Story:**
 - Purchase confirmation email (Story Points: 7)
 - **Reason for Non-Completion:** Delayed due to dependencies on order database integration and additional testing requirements.

Stakeholder Feedback Summary:

- **Positive Feedback:**
 - Smooth shopping cart functionality, easy to use.
 - Checkout process well-received for its security features and multiple payment options.
- **Improvement Areas:**
 - Stakeholders suggested enhancing the UI for the order summary screen to make it more user-friendly.
 - Requested the addition of a progress indicator during the checkout process.

Proposed Scope Adjustments for Next Sprint:

- 1. Complete the pending "Purchase Confirmation Email"** user story with additional testing and integration improvements.
- 2. Incorporate UI enhancements** based on stakeholder feedback to improve the order summary screen and add a checkout progress indicator.
- 3. Plan and prioritize** any new user stories derived from stakeholder suggestions, ensuring alignment with the overall product vision.

Sprint Retrospective



Retrospective Highlights:

- **Start Doing:**
 - **Daily Pair Programming:** Encourage developers to work together on complex tasks to improve code quality and reduce defects.
 - **Early Stakeholder Demos:** Conduct mid-sprint demos with stakeholders to gather early feedback, minimizing major revisions later.
 - **Dedicated Blocker Resolution Meetings:** Allocate short, focused meetings to quickly resolve blockers.
- **Stop Doing:**
 - **Over-committing to Story Points:** Avoid adding too many user stories to the sprint, which can lead to unfinished work.
 - **Multi-tasking Across Stories:** Reduce switching between user stories to improve individual focus and task completion.
 - **Extensive Manual Testing:** Shift towards automated testing to save time and improve accuracy.
- **Continue Doing:**
 - **Daily Stand-Up Meetings:** Maintain short, focused daily stand-ups to align on tasks and discuss blockers.
 - **Regular Code Reviews:** Continue peer code reviews to ensure coding standards, knowledge sharing, and improved quality.
 - **Transparent Progress Tracking:** Use tools such as task boards and burndown charts to visualize progress and adapt plans.

Expected Improvements for the Next Sprint:

- **Increased Team Efficiency:** Pair programming and blocker resolution will accelerate task completion.
- **Enhanced Quality and Stakeholder Satisfaction:** Early demos will ensure alignment with stakeholder expectations.
- **Focused Workflow:** Reduced multi-tasking will lead to higher productivity and better story completion rates.

Metrics Analysis



1. Velocity Trend Analysis:

- **Observed Trend Over 3 Sprints:**
 - **Sprint 1** : 2 Stories are pending
 - Sprint 2: All stories are done
 - Sprint 3: All stories are done
- **Inconsistencies Identified:**
 - Slight fluctuations due to unexpected dependencies and scope changes.
- **Proposed Solutions:**
 - **Improve Task Breakdown:** Break down large stories into smaller, manageable tasks to enhance estimation accuracy.
 - **Buffer for Unplanned Work:** Allocate a buffer for unforeseen tasks or urgent issues that may arise during sprints.

2. Defect Rate and Lead Time:

- **Defect Rate Analysis:**
 - Increased defects noted when new features were integrated without automated testing coverage.
- **Lead Time Evaluation:**
 - Longer lead times were observed due to delayed dependencies and testing cycles.
- **Improvement Suggestions:**
 - **Implement Automated Testing:** Increase coverage to detect issues earlier and reduce manual testing time.
 - **Adopt Continuous Integration (CI):** Use CI pipelines to ensure that code changes are continuously built, tested, and integrated.

3. Task Flow Management Strategy:

- **Issue:** Tasks getting stuck in "In Progress" due to unresolved dependencies.
- **Proposed Solutions:**
 - **Swarming:** Have team members collaborate to resolve blockers together quickly.
 - **Limit Work In Progress (WIP):** Restrict the number of tasks being worked on at any given time to reduce bottlenecks.
 - **Enhanced Communication:** Use daily stand-ups and additional check-ins focused on dependency resolution to ensure smooth task flow.

Task Flow Management



Task Flow Management Strategy:

- **Scenario:** Tasks stuck in "In Progress" due to unresolved dependencies.
- **Proposed Solutions:**
 - **Swarming Technique:** The team works collectively to resolve high-priority blockers, pooling expertise to speed up task completion.
 - **Limit Work In Progress (WIP):** Enforce limits on the number of concurrent tasks to avoid bottlenecks and enhance focus.
 - **Effective Communication:** Schedule focused discussions to address and clear dependencies quickly. Use daily stand-ups and ad-hoc sync meetings as needed.

Information Radiator Design:

- **Visual Components:**
 - **Task Board:** Clearly displays tasks in columns as "To Do," "In Progress," "Verification," and "Done."
 - **Burndown Chart:** Tracks progress of completed story points over the sprint period, providing a visual cue on remaining workload.
 - **Dependency Tracker:** Highlights tasks waiting on dependencies, ensuring blockers are prioritized.

Benefits of an Information Radiator:

- **Improved Transparency:** All team members and stakeholders can see sprint progress at a glance, enhancing accountability.
- **Real-Time Updates:** Enables quick course corrections and status alignment.
- **Enhanced Communication:** Facilitates proactive discussions on blockers and progress during stand-ups and reviews, fostering collaboration and trust.

Conclusion



Summary of Agile Practices Applied:

- **Product Vision and Roadmap Creation:** Defined a clear vision and outlined major milestones to guide development.
- **User Stories and Backlog Management:** Developed user stories using the INVEST criteria, prioritized backlog items, and estimated story points.
- **Sprint Planning and Execution:** Conducted sprint planning, broke down tasks, and managed a simulated two-week sprint with daily stand-ups, burndown tracking, and progress monitoring.
- **Sprint Review and Retrospective:** Assessed completed stories, gathered stakeholder feedback, and identified areas of improvement for future iterations.
- **Metrics Analysis and Flow Management:** Analyzed velocity trends, defect rates, and task flow, proposing strategies to optimize productivity, communication, and quality.

Key Takeaways:

- **Adaptability:** Agile enables teams to rapidly adapt to changes, ensuring that the product remains aligned with evolving stakeholder needs.
- **Collaboration:** Effective communication, collaboration, and transparency are at the heart of Agile, leading to more cohesive team efforts and better outcomes.
- **Continuous Improvement:** Agile's iterative approach encourages regular assessment and refinement of processes, enhancing product quality and team performance over time.

Final Thought:

- **Agile Practices Drive Success:** By applying Agile principles and metrics, teams can ensure their work is efficient, transparent, and aligned with business goals, resulting in a superior product and satisfied stakeholders.

Thank You