IS4301 Agile IT with DevOps – Lecture 6

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Learning Objectives

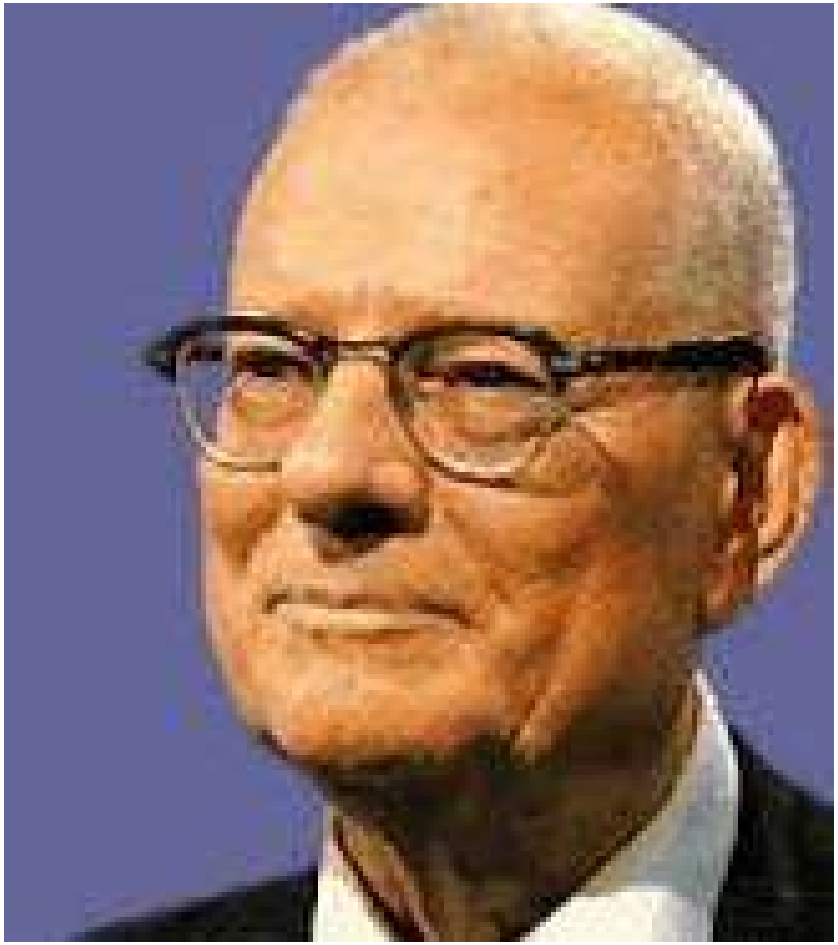
At the end of this lecture, you will understand:

- Quality, Testing, Acceptance criteria in user stories
- Sprint Planning, Backlog Refinement

Testing - Building Quality Into Development Early-on

"Cease dependence on mass inspection to achieve quality. Improve the process and build quality into the product in the first place."

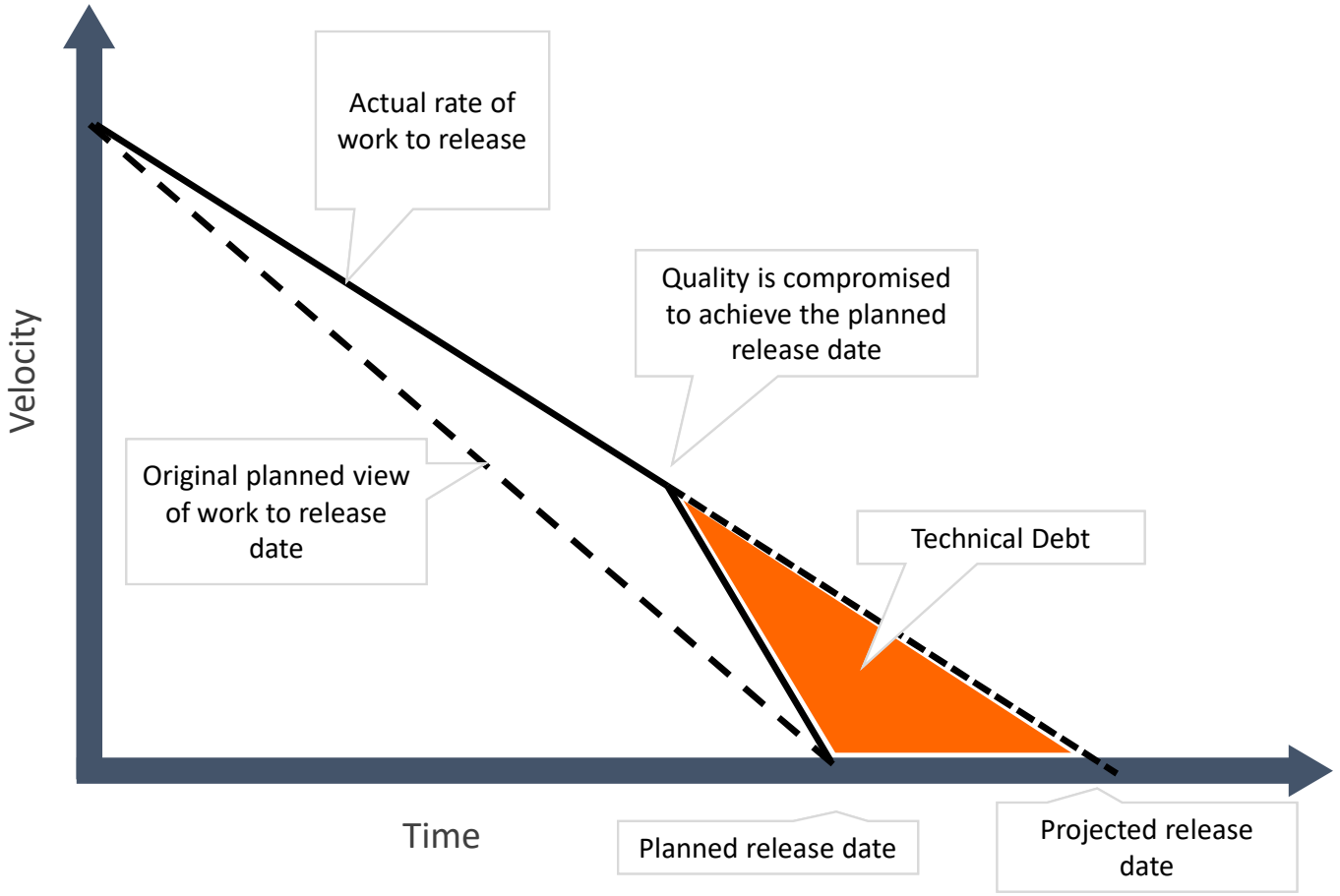
W. Edwards Deming



Testing – Traditional vs. Agile

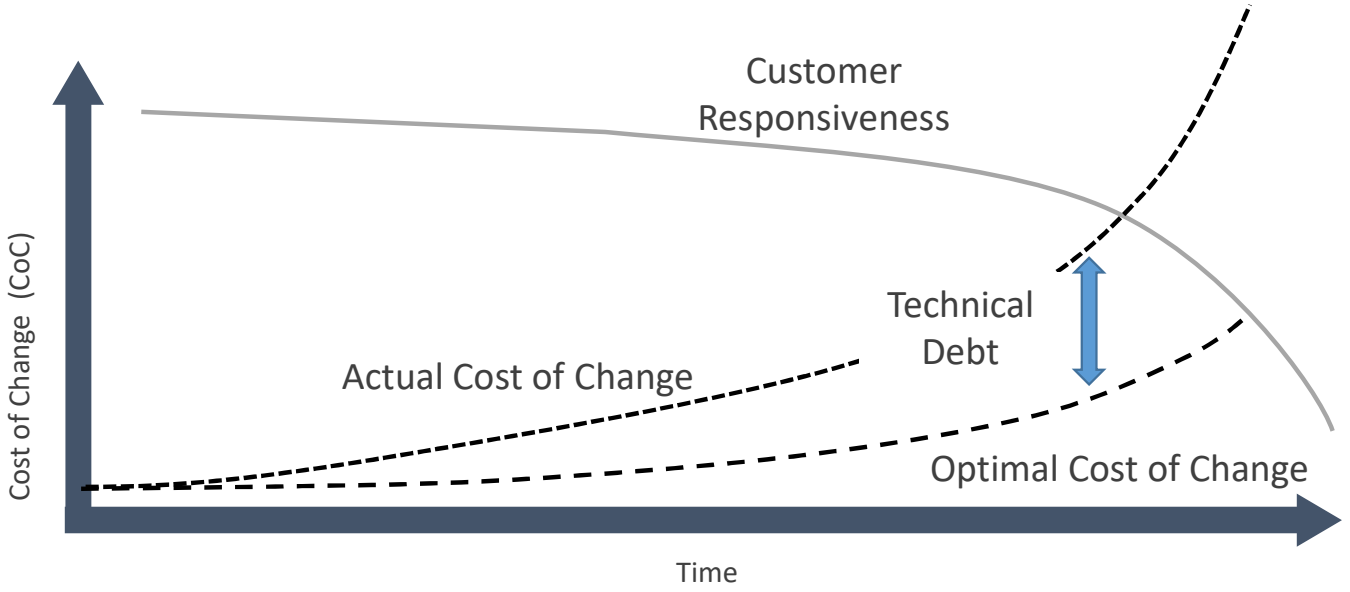
	Traditional Project	Agile Project
When?	Testing phase only.	Continuous testing and integration.
Techniques	Manual and automation	Automate to the extreme if possible
Reporting and Feedback	Visibility of system health unclear until testing is completed.	Continuous feedback about the quality of the system and the development process.
Role Collaboration	Testers have specialized roles and only perform testing	Testers are developers and developers are testers
Documentation	Test cases captured in Test Plan documentation. Some level of test case automation.	Test case captured in user stories with automated scripts stored together with source code.
Customer Involvement	Involved as part of acceptance at the end of the project.	Involved continuously as working software is developed and accepted by the customer.

Quality and Technical Debt



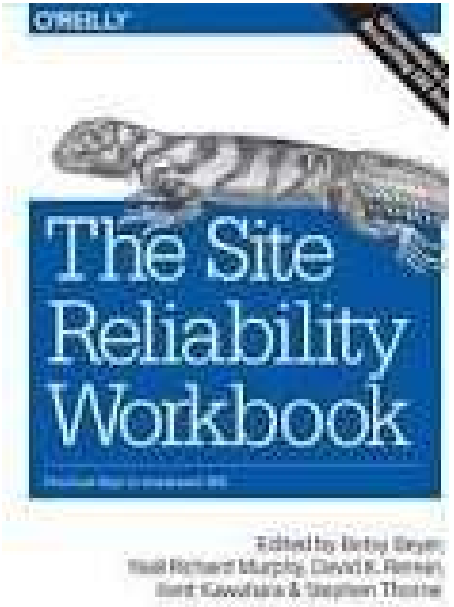
Managing Technical Debt

- Cost of technical debt increases over time and becomes more expensive over time to implement changes.
- Technical debt is best addressed on a continuous basis by making small and frequent payments by allocating efforts to reduce Technical Debt.
  - Examples of efforts: automate testing, code review, refactoring

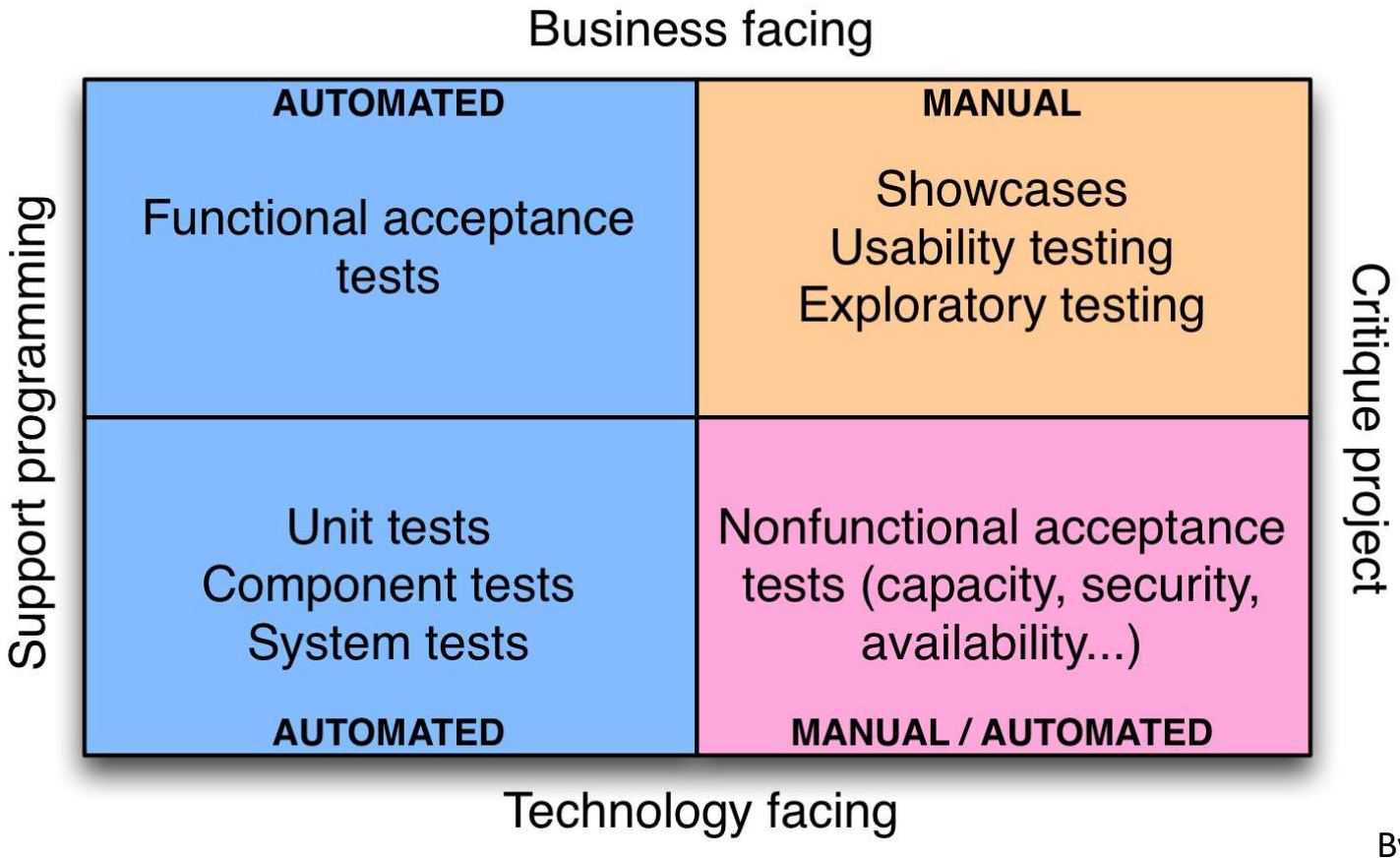


Regulating with Error Budgets in Site Reliability Engineering (SRE)

- Error budgets are the tool SRE uses to balance service reliability with the pace of innovation. Changes are a major source of instability, representing roughly 70% of outages, and development work for features competes with development work for stability. The error budget forms a control mechanism for diverting attention to stability as needed.
- An error budget is 1 minus the SLO (service level objectives) of the service. A 99.9% SLO service has a 0.1% error budget.
- If our service receives 1,000,000 requests in four weeks, a 99.9% availability SLO gives us a budget of 1,000 errors over that period.

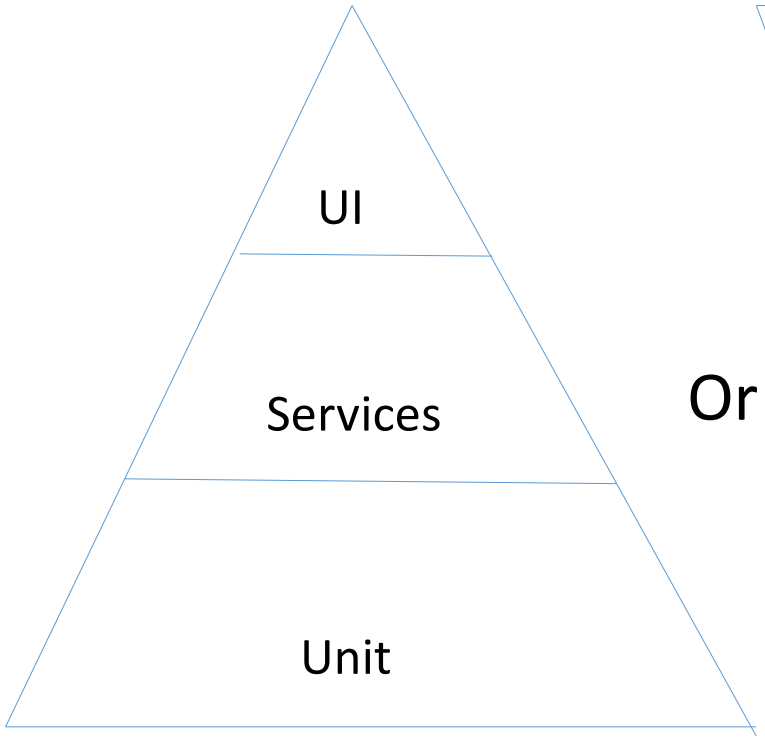


Kinds of Testing

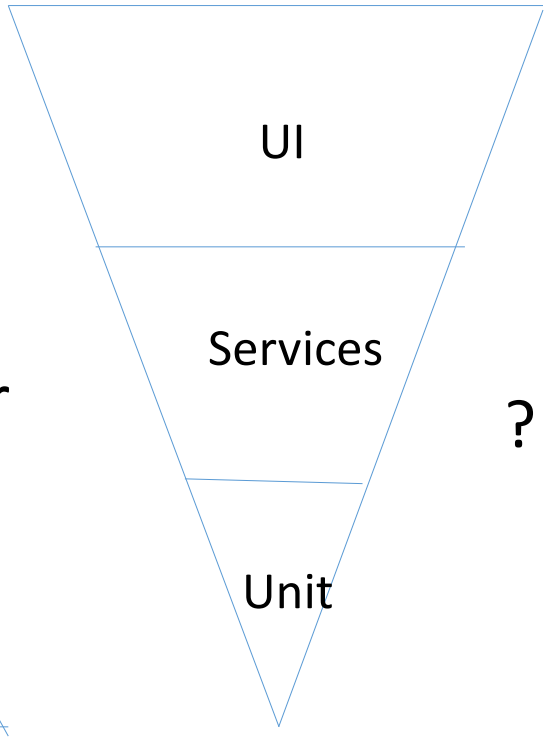


By Brian Madrick

Levels of Testing



Or



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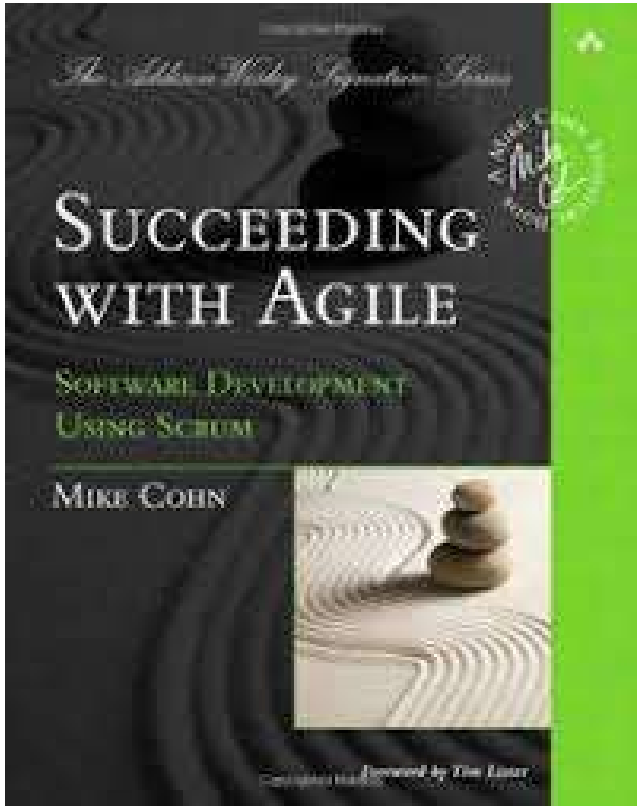


Acceptance Testing

CREATE GOOD QUALITY ACCEPTANCE TESTS

DEVELOP MAINTAINABLE ACCEPTANCE TEST SUITE

EFFECTIVE TEAMWORK

MANAGE TEST DATA

Acceptance Testing

- Writing Acceptance Criteria before writing Tests
- Writing Tests before Coding (TDD)
- Customers should specify Test Scenarios
- Tester / Quality Analyst is a role, not a person
- Structure and maintain acceptance test suite

User Story Acceptance

Each user story has an N number of acceptance criteria

Acceptance Criteria Format:

GIVEN ~~ putting the system in a known state	WHEN ~~ describing the key action a user performs	THEN ~~ observing outcomes

User Story Acceptance

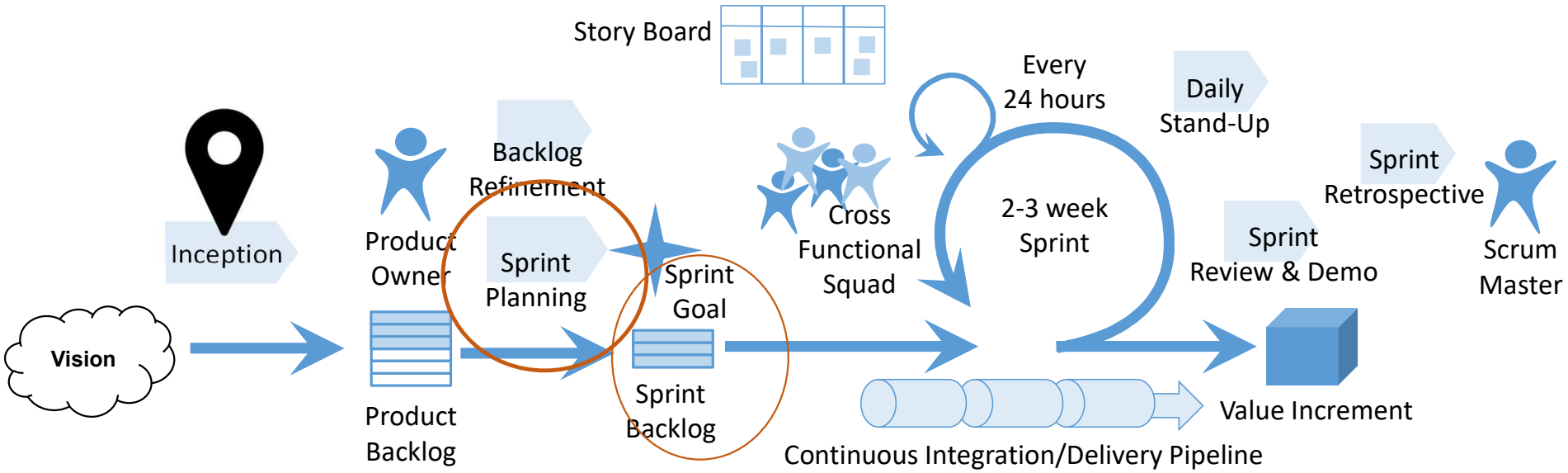
- For example:
  1. Map is displayed when start and end points are indicated.
  2. 3 shortest routes by time are displayed on map.
  3. Detail turn-by-turn travel instructions are colored indicated on the map when a route is selected along with distance and time.
  4. Map is centered on start and end points and size automatically with distance between the two points.
- Acceptance tests are developed for each of the acceptance criteria.

User Story Example for Discussions

As a travel planner, I would like to have computed travel path by car displayed on a map so that I can plan my route.

- Questions:
  - Does this meet the INVEST principle?
  - Is this negotiable (N in INVEST) ?
  - What are the possible acceptance criteria for this user story?

Sprint Planning in the Agile life cycle and ceremonies



- Each sprint begins with a sprint planning. For a two-week sprint, planning could take anywhere between 1 to 4 hours, depending on how much backlog refinement has been done.
- **Pre-requisite:** Backlog refinement done with user stories, already estimated in story points, that are small enough to be planned in a sprint.

Sprint Planning - Questions

Sprint Planning is conducted before commencement of each sprint cycle.

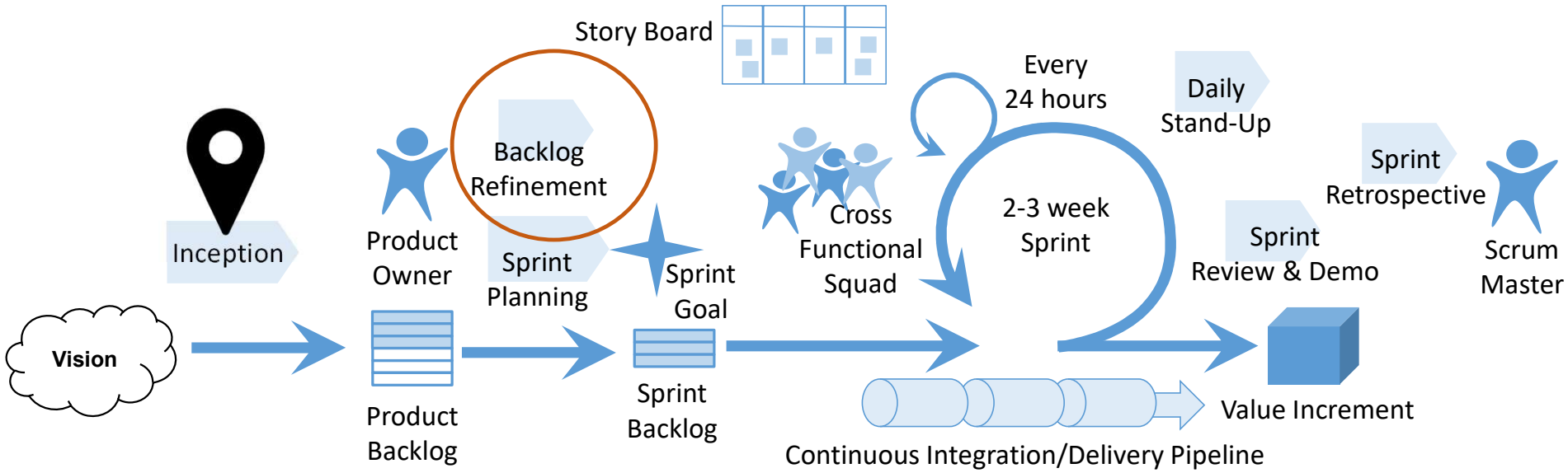
- Questions:
  - Who leads sprint planning?
  - Who are involved ?
  - What should be stated at start of the sprint planning?
  - What inputs are required for sprint planning?
  - What are the outputs from sprint planning?

Sprint Planning - Questions

Sprint Planning is conducted before commencement of each sprint cycle.

- Questions:
  - Who leads sprint planning? (Product Onwer)
  - Who are involved ? (Agile squad)
  - What should be stated at start of the sprint planning? (Goal for this sprint)
  - What inputs are required for sprint planning? (Product Backlog, Team Velocity, Team Capacity, Retrospectives)
  - What are the outputs from sprint planning? (User stories planned for this sprint, Sprint Backlog, Task breakdown)

Backlog Refinement in the Agile life cycle and ceremonies



Backlog Refinement - Questions

Backlog grooming is held near the end of one sprint, but a couple of days before the next sprint starts, so that the team and product owner have enough time to discuss and clarify the items to be planned in the next sprint.

Questions:

- Who leads backlog grooming?
- Who are involved ?
- What inputs are required for backlog grooming?
- What are the outputs from backlog grooming?

Backlog Refinement - Questions

Backlog grooming is held near the end of one sprint, but a couple of days before the next sprint starts, so that the team and product owner have enough time to discuss and clarify the items to be planned in the next sprint.

Questions:

- Who leads backlog grooming? (Product Owner)
- Who are involved ? (Business stakeholders and agile squad)
- What inputs are required for backlog refinement? (User stories, change requests, product backlog, operational defects)
- What are the outputs from backlog grooming? (product backlog)