



Introduction to Agile Planning and Estimation



Welcome & Intro

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- 20 Years software development experience
- 6 Years Agile experience



Planning Software Projects is Hard



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How did it get this way?

- Dr. Winston Royce – Planning the Development of Large Software Systems

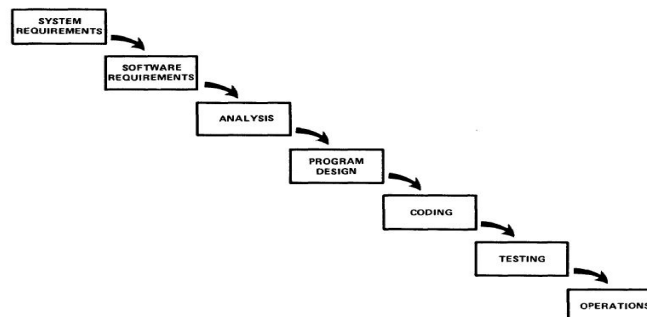


Figure 2. Implementation steps to develop a large computer program for delivery to a customer.

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How a waterfall becomes an avalanche

- All of the requirements were done up front, prior to really knowing what the system will do and how it will grow.
- Once the flow starts, entropy sets in – no room for change
 - But things need to change anyway
- Just as the phases cascade, any delay will cascade from phase to phase, snowballing along the way



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So we tried to fix it...

- Once the requirements are written, they aren't allowed to change
 - But they do
- Everyone will write the requirements in the exact same way, so everything is clear
 - But it really isn't ever clear enough
- We will pay very experienced people a lot of money and give them exalted titles so they can tell us exactly how a system will look and how long it will take.



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Ok, that didn't work, now what?



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Agile Software Development

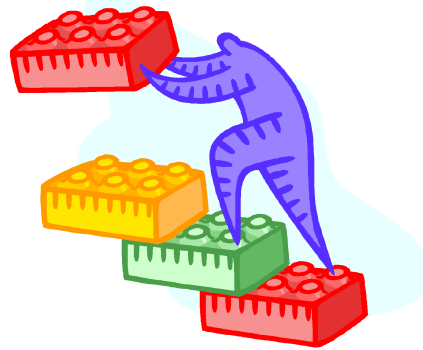
- We are uncovering new ways of developing software by doing it and helping others do it. Through this work we have come to value:
 - Individuals and interactions over processes and tools
 - Working software over comprehensive documentation
 - Customer Collaboration over contract negotiation
 - Responding to Change over following a plan
- That is, while there is value in the items on the right, we value the items on the left more.

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Agile Planning Building blocks

- User Stories
- Backlog
- Estimation
- Release Planning
- Iteration Planning



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User Stories

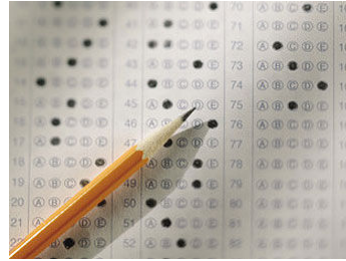


- A brief description of a piece of functionality that will provide value
- Should be small enough to fit on a 3x5 index card
- A story is merely a reminder to have a conversation about a feature – it is not a specific requirement
- A story should be able to be completed in one iteration.

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Acceptance Tests



- What is “done”?
- Product owner/customer and development team work together to define done.
- Acceptance Tests are a list of criteria that, when met indicate that the story is complete.
- Whenever possible, these should be automated

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Backlog Fundamentals

Backlog

A prioritized list

Backlog item (Story)

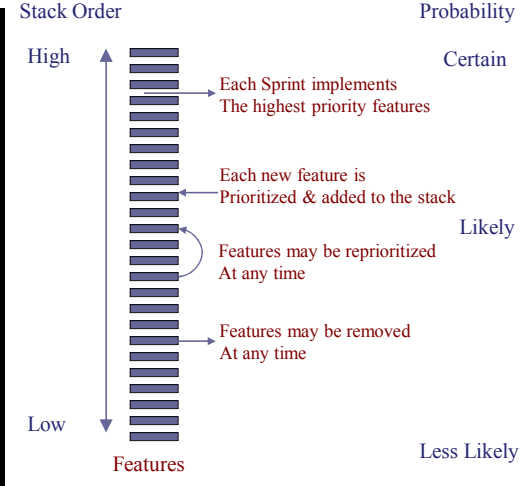
A high level description of an individual feature in the backlog. It is a placeholder for a future conversation about that feature.

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Product Backlog Design

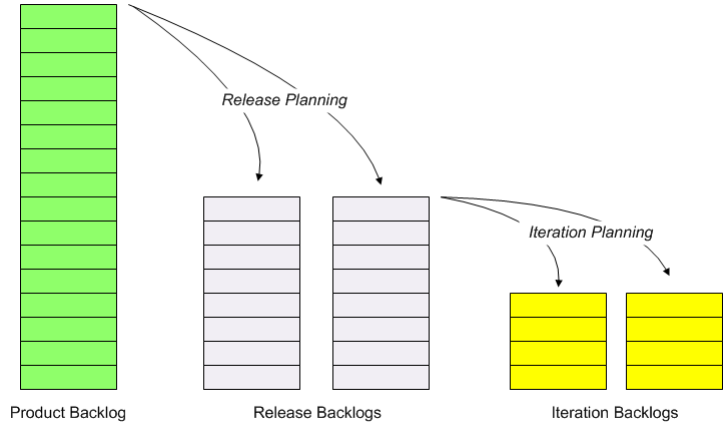
- All possible system features are captured in a prioritized list – the Product Backlog
- New features can be added at any time to the Product Backlog
- Features have only a gross estimate of effort and value



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Planning and Backlogs



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Backlog Item Prioritization

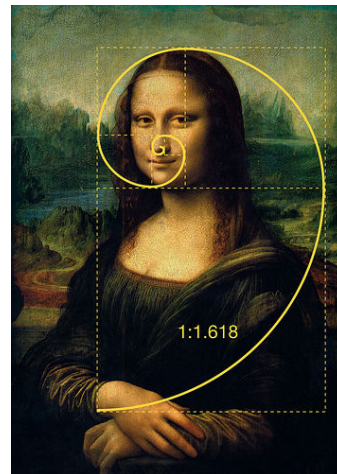
- Backlogs are lists of stories that are arranged in rank order – “What is the next most important thing to do?”
- The order in which the stories are arranged depends on the combination of factors that are important to your business
- These individual factors can (and will) change, which will affect the rank order of the stories
- The Product owner ultimately decides the rank order

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Estimation

- In Agile methods, we estimate size, not duration
- Estimates are intentionally vague, and often unit-less
- Common estimate values are
 - T-shirt sizes
 - Scale of 1-10
 - Fibonacci Sequence



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Planning Poker



- Product Owner reads the story
- Team asks questions and discusses for 5 minutes
- Each team member selects a card for the size they believe the story is
- High and low values get 5 minutes to explain why they believe so
- Repeat until consensus is reached

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Velocity

- The **rate** at which a team can produce working software
- Measured in non-time-referent terms (e.g., Story Points) per Sprint
- Used for estimation and planning
- Should not be used as a measure of comparison across teams



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Velocity Example

Team A is working in 2-week sprints on work that it has estimated together. Team A has been working together for several sprints, and consistently delivers between 18 and 23 points of working software every sprint.

- We could reasonably expect Team A to deliver roughly 20 points per 2-week sprint, and so we consider that to be the team's velocity for planning purposes.
- If there are eight 2-week sprints in a release, we can extrapolate that Team A has the capability to deliver 160 points in a release.

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Connecting the Dots

- **Size (complexity) is *estimated***
 - A story is estimated to be 3 story points in relative complexity
- **Velocity is *measured***
 - “Team A can deliver 20 story points in a 3-week sprint”
- **Duration is *derived***
 - “Based on Team A's measured velocity of 20 story points per sprint, it will take Team A 3 sprints to deliver 60 story points.”

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So...

- Backlog Item estimates answer the question “how big?”, rather than “how long?”
- Size estimates and observed Velocity, used together, are answer the question “how long?”

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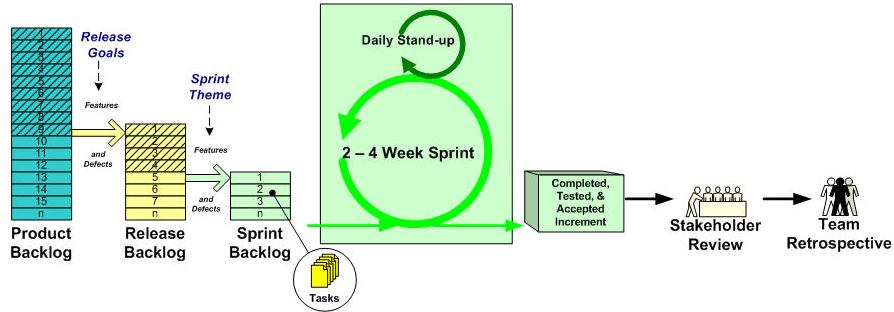


Agile Planning

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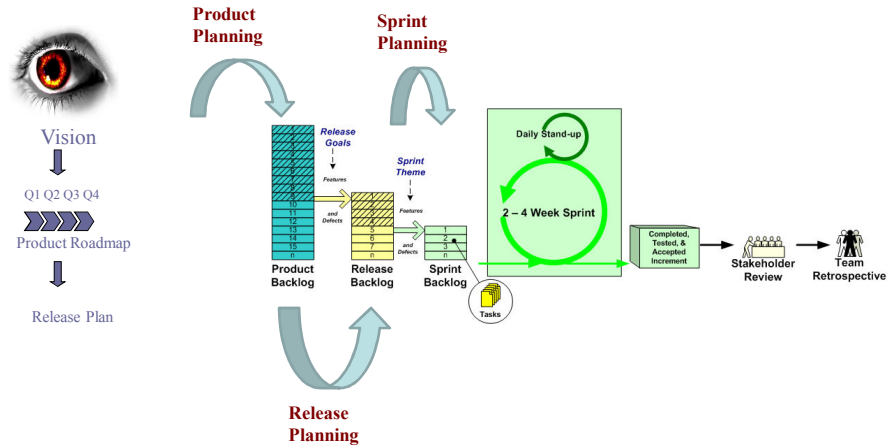
Scrum Framework



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Expanded Framework

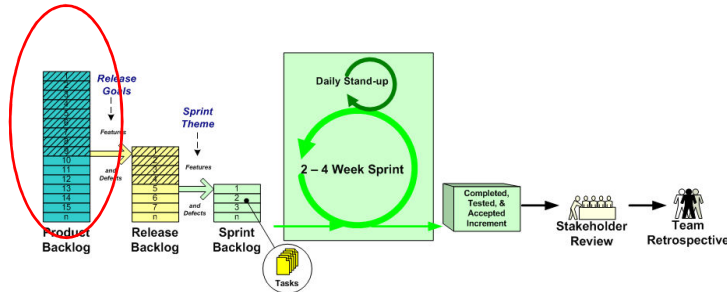


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Product Planning

- Answers the question, “What business objectives will the product fulfill?”
- Is ongoing during the life of the product
- Results in the Product Backlog



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Release Planning

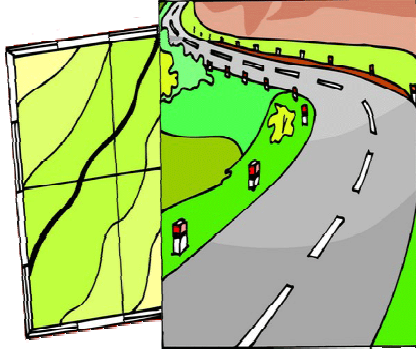
- Answers the questions,
 - What subset of business objectives will each release achieve?
 - What user constituencies will the release serve?
 - What general capabilities (epics, feature groups) will the release offer?
- Results in the
 - Release Roadmap
 - Release Plan
 - Release Backlog



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Release Planning



- Product Owner/Customer prioritizes stories in order of when she would like to see them.
- Product Owner identifies the release date.
- Team estimates size of stories using agile estimation techniques such as planning poker
- Based on velocity, identify how many stories should be completed by the release date.
- This release plan will change over the course of the iterations.

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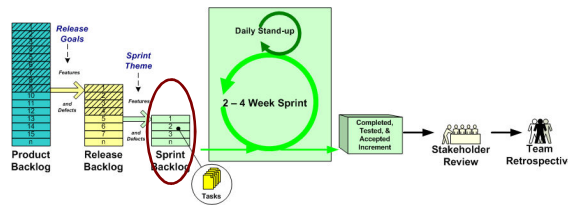
Sprint Planning

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Sprint Planning

- Answers the questions, “What are we building over the next 2-4 weeks?”
- Results in the Sprint Backlog



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Sprint Planning

- Determine Capacity for this iteration
 - What can the team comfortably commit to?
- Start with the top story in the list
- Discuss what it will take to get this story done
- Is the current estimate still good, or should we re-estimate?
- If we are using tasks, this is a good time to identify and estimate them
- Can we commit to accomplishing these stories this iteration?



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Questions?



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Thanks!



