



## Building Better Business Systems using Agile Project Management Processes

Amy Stapleton, PMP, Certified Scrum Master (CSM)  
Manager, Application Development & Software Assurance  
Integrated Enterprise Management Program  
NASA

May 2008

Page 1



## Why the Need for Change?

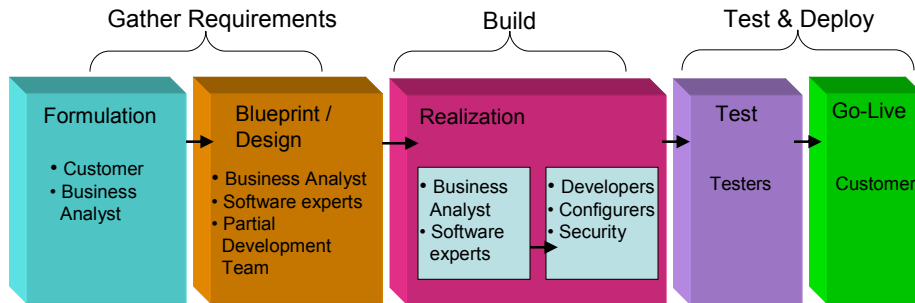
- We weren't discovering the customer's 'real' requirements until it was too late
- We never had enough time to perform adequate testing
- The internal customers were not happy with the systems we delivered
- The work environment wasn't fun and creative
- We weren't moving towards our vision



Page 2



## Teams in a Traditional Software Implementation Process

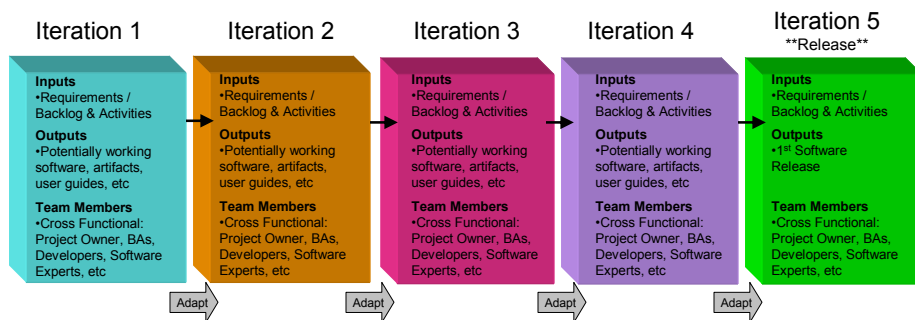


- Focus is on sequential (non-overlapping) phases
- 'Teams' divided up into areas of expertise to accommodate phases
- Each 'team' hands its work off to the others
- Limited interaction with customer
  - "Don't talk to the customer now. They might change a requirement"

Page 3



## Teams in an Iterative Software Implementation Process

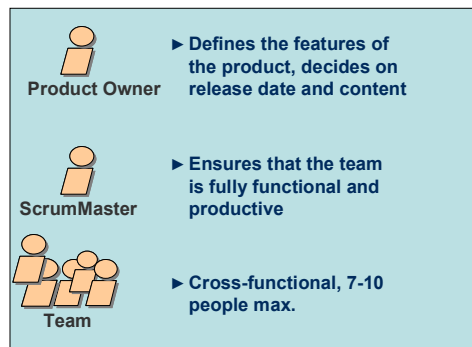


- Focus is on shorter lead time to produce working software
- Teams are cross-functional and typically remain the same across all iterations
- Collaboration of team members is necessary to achieve each iteration goal
- Close interaction with customer is needed
- **A set of recognized practices exists to support this process!!**

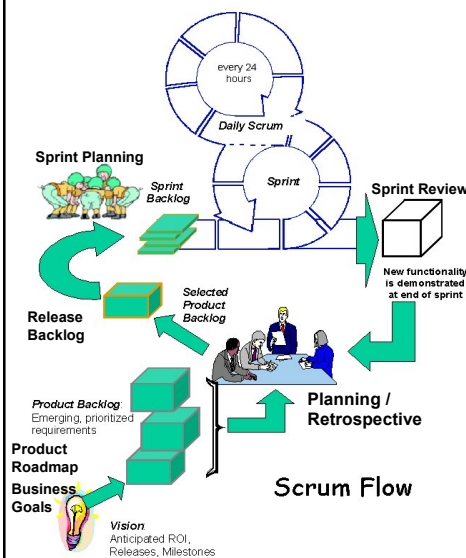
Page 4

## What is Scrum?

- Name refers to a Rugby Scrum where adaptive team behavior moves a ball up the field toward a common goal
- A set of project management values and practices that cut through complexity to focus on building software with high business value



## Scrum Workflow

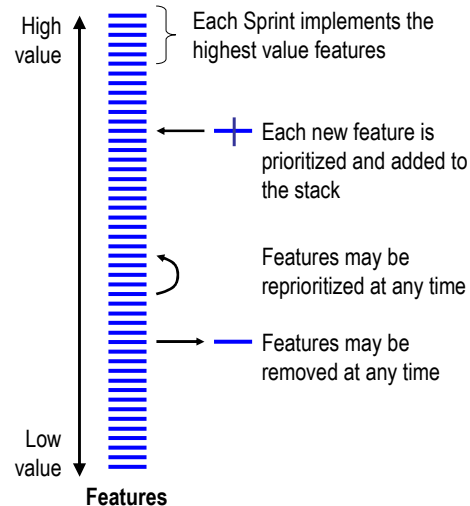


### Key Practices

- Self-directed; self-organizing teams (preferably co-located)
- Iterative Adaptive planning
- Stakeholder/Customer Involvement
- 30-calendar day iterations
- 15 minute daily stand-up meeting
- Team measures progress daily
- Each iteration delivers tested, fully-functional software for demonstration
- Always 30-days from potential production release
- Iterative Retrospective Process
- Create a rhythm and flow

## The Product Backlog

- 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 by anyone
- Product Owner prioritizes the Product Backlog
- Avoid “Scope Creep” by concentrating on features with the highest value (Product Owner must make trade offs)

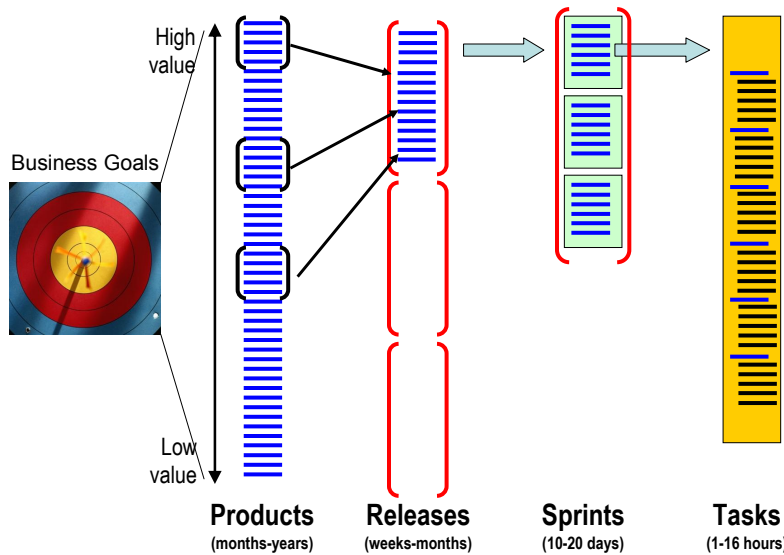


## Feature Breakdown Structure & User Stories

- **Scrum promotes the use of the Feature Breakdown Structure over the Work Breakdown Structure**
  - The Feature Breakdown Structure is a great way to track earned value (it allows you to check off the system features that the team has completed to date)
- **System requirements are written as User Stories:**
  - As a <actor>, I would like to <action>, so that <value>

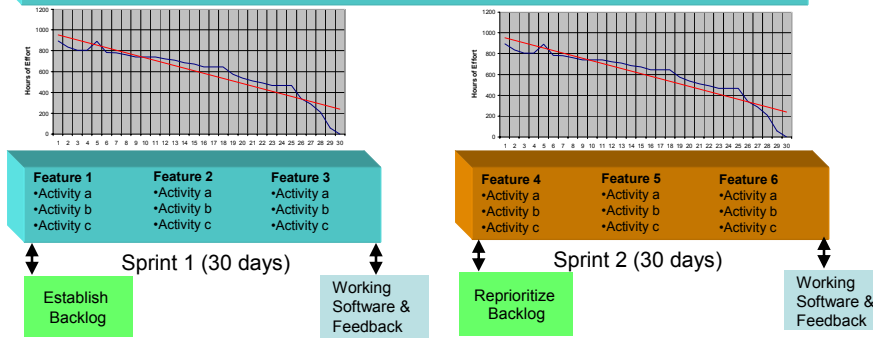


# Turning Backlog into Product



# High Performance Teams using Scrum

**Co-located Scrum Team:**  
 Product Owner, Scrum Master, Business Analysts, Software experts, Developers, Security, Testers, etc.

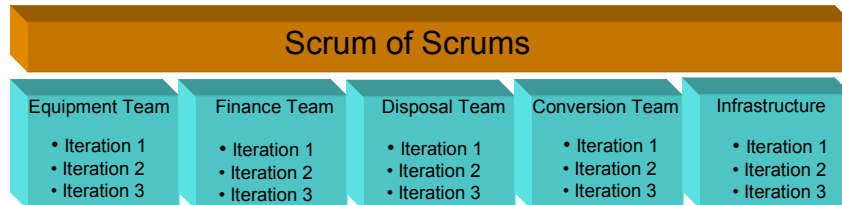


- Entire team commits to the work to be accomplished in each sprint
- Team encourages and thrives on continuous customer feedback
- Team measures its velocity over time and commits with confidence



## Example Scrum Project at IEMP Competency Center

- **Integrated Asset Management / Property Plant & Equipment**
  - Vision: Improve NASA's ability to manage its property plant & equipment by providing a system that integrates logistics and financial accounting functions
  - 1 ½ year project duration
  - Configuration and Enhancement of SAP software
  - Custom development of two web applications
    - N-PROP for end user property management and browsing of available property
    - DSPL for managing the sale and disposal of items ready for excess



Page 11



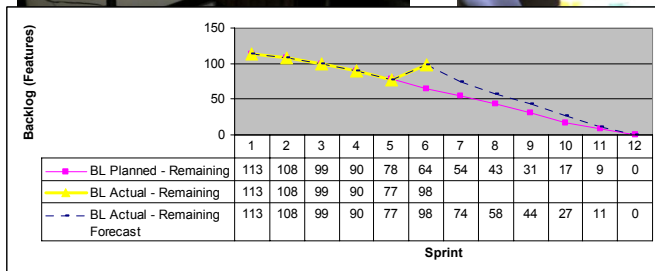
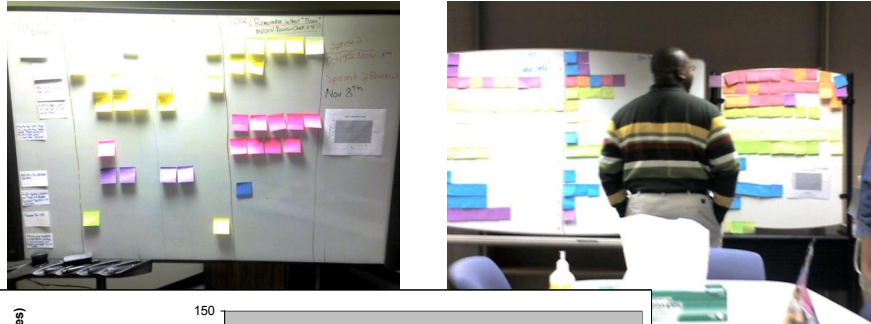
## What We Have Accomplished

- **Teams are better equipped to estimate cost & schedule**
  - Management can now make decisions based on solid facts
  - The IAM PP&E project schedule and budget were re-baselined to coincide with the team's revised understanding of the backlog
- **Customers are excited about their new level of involvement**
  - Customers can't believe they are seeing the software so early in the life cycle
- **Team members are more engaged and have a new level of commitment to their work**
  - Teams understand that they are self-managed
  - There is more room for creativity and for working closely with the end user



Page 12

## What Scrum Looks Like in Action



Scrum task boards and Product Burndown charts

We are still improving the process!

## Reference Sources

- Agile Project Management with Scrum – Ken Schwaber**

- Agile Estimating and Planning – Mike Cohn**
- User Stories Applied: For Agile Software Development – Mike Cohn**

- <http://www.scrumalliance.org/>

