Affordability Case Study of a Ground System Program

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Scrum is an iterative, incremental methodology for project management often seen in agile software development, a type of software engineering.

Our programs have traditional customer review schedules.
Once the plans are in place, the product backlog iterations begin
3-Week Iteration Timeline

15-min. Standup Meeting – Occurs Daily

Iteration Planning

Vision and Scope
- Product Owner presents high-priority stories to the team to complete
- Team estimates all product backlog items selected
- Attendees: Product Owner, ScrumMaster, Team Members

Detailed Planning
- Team breaks select high-priority stories into tasks and estimates in hours
- Team commits to the work
- Attendees: Product Owner, ScrumMaster, Team Members

Iteration Execution

Team Members
- Select / estimate work tasks
- Create or modify: design, code, unit tests and documentation
- Participate in peer reviews
- Raise impediments
- Ask Product Owner clarifying questions
- Respond to Help Needed requests
- Update Taskboard

Product Owner
- Reviews stories to be included in product backlog
- Grooms product backlog (add, modify, remove, prioritize)
- Answers team questions to clarify stories and acceptance tests
- Accepts completed tasks
- Is customer proxy
- Revises Release Plan

ScrumMaster
- Removes team member’s impediments
- Shields team members from all interruptions
- Fosters team cohesion
- Facilitates daily stand-ups
- Monitors iteration progress
- Reports status as required
- Participates in “Scrum of Scrums”

Iteration Review

Demonstration
- Team members demonstrate the working software products and discuss iteration progress.
- Attendees: Product Owner, ScrumMaster, Stakeholders, Team Members

Retrospective
- ScrumMaster facilitates team to identify what worked and what needs improvement.
- Team adjusts accordingly in next iteration.
- Attendees: ScrumMaster, Team Members

Teams start and end iterations together

Days 2-14
Agile Roadmap Template

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Authority To Proceed

- Preplanning:
  - tbd iterations
  - Infrastructure
  - Development Environment
  - Continuous Integration Environment

Date

- Release 1: xx weeks
  - x iterations
  - Release 1 priority features

- Release 2: xx weeks
  - y iterations
  - Release 2 priority Features

- Release 3: xx weeks
  - z iterations
  - Release 3 priority Features

- Release 4: xx weeks
  - a iterations
  - Release 4 priority Features

Future: as needed

- TBD

zz month project lifecycle

Each release is potentially deliverable
Agile and Earned Value Management (EVM)

- Each software release is a milestone deliverable
- Progress reported weekly on the % complete story points for each release’s planned total story points
- Story points are the estimated effort to complete a backlog item, or user story
  - Example, some features might have a total of 120 story points and 10 user stories
  - Others might have 20 story points and 2 user stories
- Business value is in the completion of the feature
- A release might have a partial feature delivered that will be finished in the next release

Features are measured in story points, a measure of effort or complexity

Hybrid Agile

Contract Start April 2010
PDR Feb 2011
CDR Jul 2011

Hybrid Agile
Started iterations, first release
Second Release
Hybrid: CI team continued with 2 week sprints, SW Developers worked detailed design until CDR
Metrics used to track progress

Customer attends the demonstrations every 3 weeks and has visibility of the detailed progress
Productivity

Productivity is Source Lines Of Code (SLOC) per hour

Analyzing cumulative productivity each release

Effective Source Lines of Code (ESLOC):
  - Factors for integrating and reusing the legacy products
  - Factors for the autogenerated software: user interface software, other

Improvement of 100%

FQT is complete

Boeing Agile Software Process (BASP)
  - Scrum
  - Continuous Integration
  - Automated Testing
Continuous Integration, Automated Testing

- Code repository
- CI Server Environment
  - Build master
  - Build slaves
  - Run unit tests
  - Run status tests
  - Analyze source code
- CI Scoreboard
Agile Teams Established

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