Agile Software Development

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Who am I?

John York

Director of Engineering at ProQuest Dialog

Chief Technologist SpellBound AR

A Computer Engineer from the University of Michigan!

An agile development expert with over 12 years of experience deploying and managing agile development at several local companies

Certified Scrum Master

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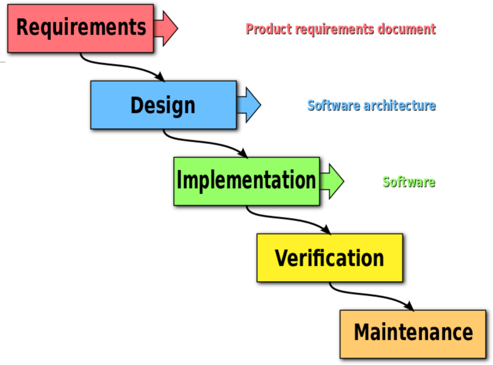
Software Development Methodologies

A BRIEF LOOK

Waterfall



Requirements → Product requirements document

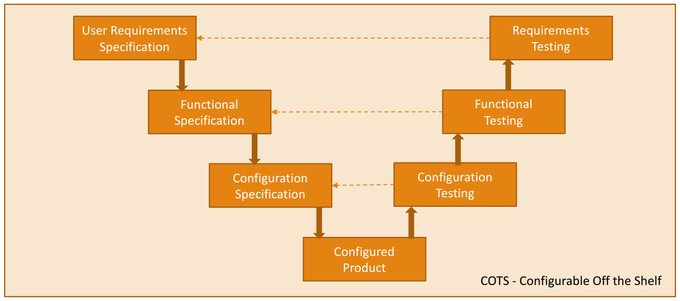
Design → Software architecture

Implementation → Software

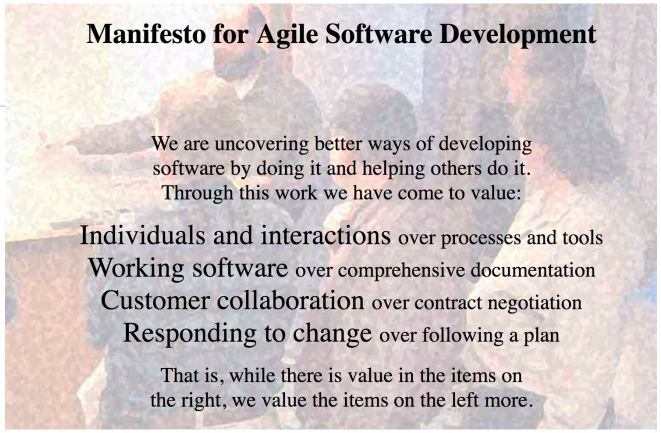
Verification

Maintenance

Iterative/GAMP 5 – V Model



Agile

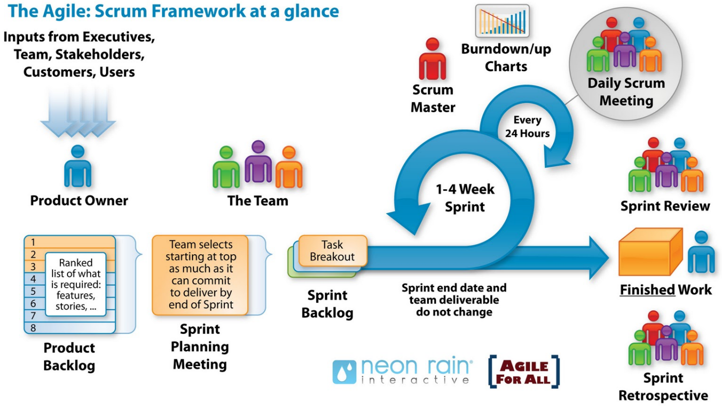


Manifesto for Agile Software Development

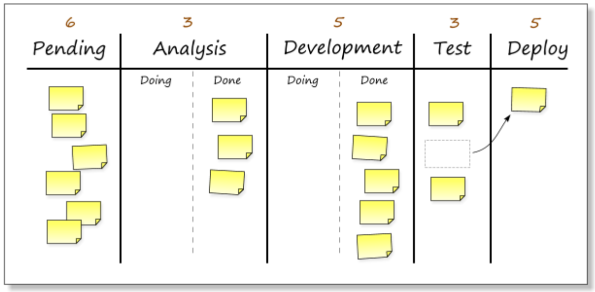
We are uncovering better ways of developing
software by doing it and helping others do it.
Through this work we have come to value:

Individuals and interactions over processes and tools
Working software over comprehensive documentation
Customer collaboration over contract negotiation
Responding to change over following a plan

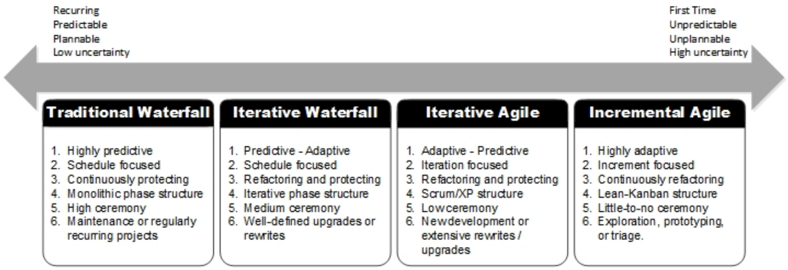
That is, while there is value in the items on
the right, we value the items on the left more.


The Agile: Scrum Framework at a glance
Inputs from Executives, Team, Stakeholders, Customers, Users
Product Owner
The Team
1
2
3
4
5
6
7
8
Ranked list of what is required: features, stories, ...
Product Backlog
Team selects starting at top as much as it can commit to deliver by end of Sprint
Sprint Planning Meeting
Task Breakout
Sprint Backlog
Scrum Master
Burndown/up Charts
Daily Scrum Meeting
Every 24 Hours
1-4 Week Sprint
Sprint end date and team deliverable do not change
Sprint Review
Finished Work
Sprint Retrospective
neon rain interactive
AGILE FOR ALL

Kanban



Which method is right for me?



Recurring
Predictable
Plannable
Low uncertainty

First Time
Unpredictable
Unplannable
High uncertainty

Traditional Waterfall

1. Highly predictive
2. Schedule focused
3. Continuously protecting
4. Monolithic phase structure
5. High ceremony
6. Maintenance or regularly recurring projects

Iterative Waterfall

1. Predictive - Adaptive
2. Schedule focused
3. Refactoring and protecting
4. Iterative phase structure
5. Medium ceremony
6. Well-defined upgrades or rewrites

Iterative Agile

1. Adaptive - Predictive
2. Iteration focused
3. Refactoring and protecting
4. Scrum/XP structure
5. Lowceremony
6. Newdevelopment or extensive rewrites / upgrades

Incremental Agile

1. Highly adaptive
2. Increment focused
3. Continuously refactoring
4. Lean-Kanban structure
5. Little-to-no ceremony
6. Exploration, prototyping, or triage.

Waterfall Iterative Scrum Kanban

Scrum in Detail

Components of Scrum

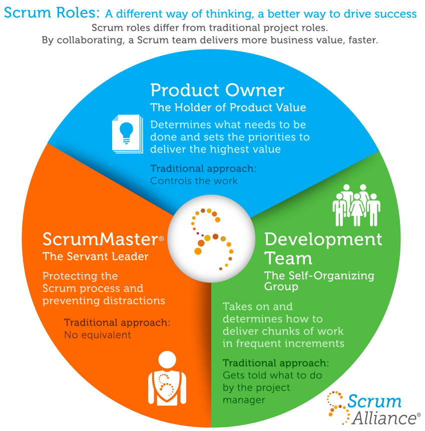
3 Roles

3 Artifacts

4 Ceremonies

Three Roles

Responsibilities



Scrum Roles: A different way of thinking, a better way to drive success

Scrum roles differ from traditional project roles.
By collaborating, a Scrum team delivers more business value, faster.

Product Owner
The Holder of Product Value

Determines what needs to be done and sets the priorities to deliver the highest value

Traditional approach:
Controls the work

ScrumMaster®
The Servant Leader

Protecting the Scrum process and preventing distractions

Traditional approach:
No equivalent

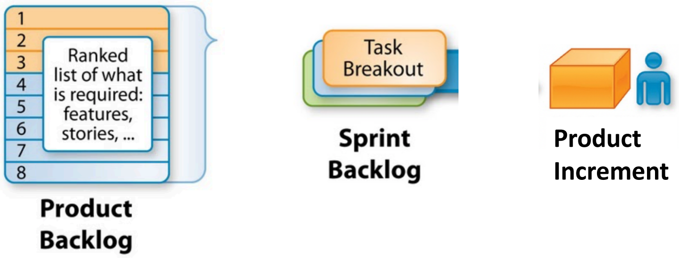
Development Team
The Self-Organizing Group

Takes on and determines how to deliver chunks of work in frequent increments

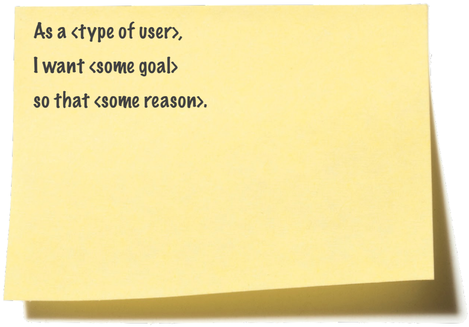
Traditional approach:
Gets told what to do by the project manager

Scrum Alliance®

Three Main Artifacts



User Stories



As a <type of user>,
I want <some goal>
so that <some reason>.

Acceptance Criteria

Acceptance criteria are the conditions that a software product must satisfy to be accepted by a user, customer, or in the case of system level functionality, the consuming system

Estimating and Story Points

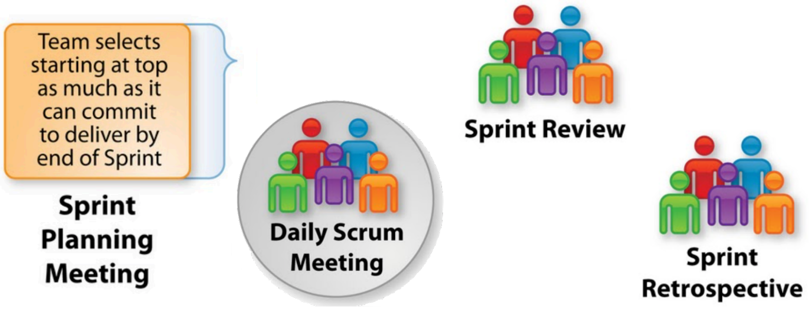
Story points are a unit of measure for expressing an estimate of the overall effort that will be required to fully implement a product backlog item or any other piece of work.

- The amount of work to do
- The complexity of the work
- Any risk or uncertainty in doing the work

Use Fibonacci, not time!

(0, 1) 1 2 3 5 8 13 21 34 55

Four Ceremonies



Team selects starting at top as much as it can commit to deliver by end of Sprint

Sprint Planning Meeting

Daily Scrum Meeting

Sprint Review

Sprint Retrospective

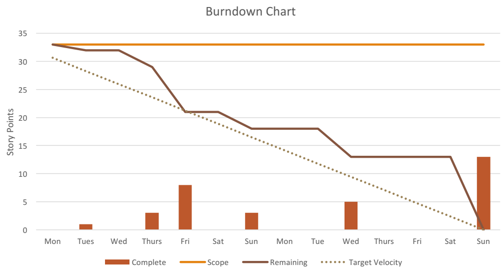
Daily Scrum

Three Questions

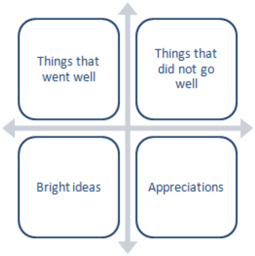
What did you do yesterday?

What will you do today?

What is blocking your progress?



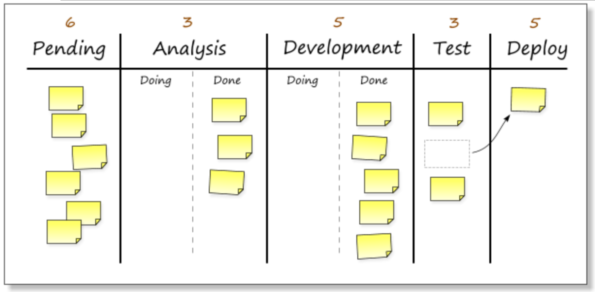
Retrospective



Things that went well	Things that did not go well
Bright ideas	Appreciations

Why Kanban?

Kanban



- Great fit for small teams/startups
- Great for prototyping
- Great for learning
- All team members help complete each step/no formal roles

A Scrum Example

CLASS REGISTRATION APP

Steps for a Scrum Project

1. Define the Problem/Goal
2. Assign Roles
   - Scrum Master
   - Product Owner
   - Team
3. Break it Down
   - Story Map
   - Product Backlog
4. Determine Minimum Viable Product
5. Write User Stories
6. Groom/Estimate User Stories
7. Sprint Planning
8. Sprint (1-4 weeks)
   - Daily Scrum
   - Sprint Review
   - Sprint Retrospective
9. Iterate 5-8 until MVP
10. Release?
11. Repeat 1-11 while $$$

1. Problem Statement and Goal

PROBLEM STATEMENT

Create a mobile app to allow students to register for classes

GOAL

Find a class and register a student for it

2. Assign Roles

Ideally Self-Assigned

Scrum Master - ?

Product Owner - ?

Team - ?

3. Break it Down

Product Owner

The Team

Scrum Master

Product Owner Driven

User Activities

- Login
- Find class
- Register for the class
- View class schedule

3. Story Map/Product Backlog

Product Owner

The Team

Scrum Master

User Activities

- Login
  - Create home page
  - Create navigation
  - Register
  - Reset password
- Find class
  - Display list of classes
  - View a single class
- Register for the class
  - Add register link to class view page
  - Register page
  - Confirmation page
- View class schedule
  - Add link to navigation page
  - View class schedule

Goal - Find a class and register a student for it

4. MVP

Product Owner

The Team

Scrum Master

User Activities

- Login
  - Create home page
  - Create navigation
  - ~~Register~~
  - ~~Reset password~~
- Find class
  - Display list of classes
  - View a single class
- Register for the class
  - Add register link to class view page
  - Register page
  - Confirmation page
- View class schedule
  - ~~Add link to navigation page~~
  - ~~View class schedule~~

Epics

User Stories

Goal - Find a class and register a student for it

5. Write User Stories

Product Owner

The Team

Scrum Master

User Activities

- Login
  - Create home page
  - Create navigation
  - ~~Register~~
  - ~~Reset password~~
- Find class
  - Display list of classes
  - View a single class

Create Home Page

As a student

I want to start the app

so that I can register for classes

Acceptance Criteria

AC1 – Create an app icon

AC2 – Show the home page at launch

6. Groom/Estimate/Prioritize Stories

Product Owner

The Team

Scrum Master

Create Home Page 3

As a student

I want to start the app

so that I can register for classes

Acceptance Criteria

AC1 – Create an app icon

AC2 – Show the home page at launch

Create Navigation 5

As a student

I want buttons

so that I can access main functions of the app

Acceptance Criteria

AC1 – Navigation at top of app

AC2 – Show buttons for Classes and Schedule

7. Sprint Planning

Product Owner

The Team

Scrum Master

Scrum Master Driven

Review the top priority stories from the product backlog and decide how many stories can be completed in the sprint.

Pull as many stories as the team thinks can be achieved into the sprint backlog.

Break stories down into tasks doable in a few hours. If story is not doable in a single sprint, consider breaking it down into smaller stories.

8. Sprint

Scrum Master Drives Daily Meeting, Sprint Review at end of Sprint and Sprint Retrospective

Team raises any obstacles, Scrum Master works to help resolve them through Product Owner, other team members, outside resources, etc.

Scrum master can create a burn down chart for stories in the sprint and track daily progress against it.

Product Owner

The Team

Scrum Master

9. Iterate 5-8 until MVP

If product meets MVP, release it! If not, keep iterating until it does.

Product Owner

The Team

Scrum Master

10. Release

Congrats!

Product Owner

The Team

Scrum Master

11. Repeat 1-11 while $$$

Define new goals, update product backlog, define new MVP and iterate

Product Owner

The Team

Scrum Master

Appendix

Product Owner Challenges

- Get a backlog
- Maintaining the backlog
- Managing scope
- Writing user stories
- Reviewing completed work
- Customer proxy

Team Challenges

- Cross functional
- Co-located vs. disperse
- Existing siloes such as UX, QA, etc
- Over/under committing
- Sizing vs. estimating
- Technical debt
- Team size (3-9 optimal)

Scrum Master Challenges

- Removing obstacles/impediments
- Coaching vs. controlling
- Managing tools (JIRA, Trello, Excel, etc)
- “Recovering” project manager
- Gaining team commitments

Optional Artifacts

Burndown/up Charts

An agreed team Definition of Done is essential to Working Agile!

Definition of Done

Definition of Ready

User Story - Definition of Ready

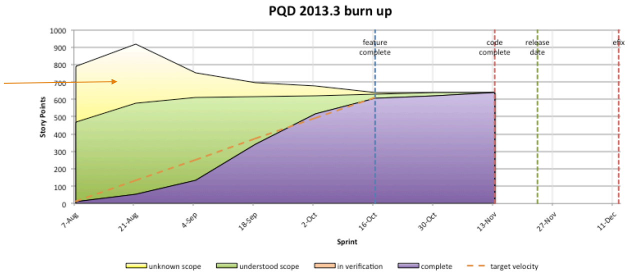
- User Story must be clearly understood by all team members
- User Story must have Acceptance Criteria
- User Story must be estimated
- User Story must be sized appropriately
- User Story must be free of external dependencies

User Story - Definition of Done Example

- QA Manual regression Test scripts written and updated
- Automated tests (JUNIT or Selenium or etc.) with documented exceptions
- All Acceptance Criteria tested and passed
- Code peer-review with component owner
- Adhere to code conventions
- Product owner review/sign off

Burn Up Chart

Manage Scope!


PQD 2013.3 burn up
Story Points
feature complete
code complete
release date
efix
7-Aug
21-Aug
4-Sep
18-Sep
2-Oct
16-Oct
30-Oct
13-Nov
27-Nov
11-Dec
Sprint
unknown scope
understood scope
in verification
complete
target velocity