Agile Development in Today’s Industry

Duke CS408 Session 2019
Agenda

- Introductions
- Agile Development Process
- Agile Development Exercise
- Questions
Agile Methodologies

Agile software development is a group of software development methods based on iterative and incremental development, where requirements and solutions evolve through collaboration.

(because so many have suffered before you)

Agile Methods

- Scrum
- Rational Unified Process
- Crystal Clear
- Extreme Programming
- Adaptive Software Development
- Feature Driven Development
- Dynamic Systems Development Method (DSDM)
Agile Manifesto

A Statement of Values

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

[http://www.agilemanifesto.org](http://www.agilemanifesto.org)

Agilists value the things on the right, but value the things on the left more.

Agilists assume you cannot have all the requirements and a complete design up-front.
Scrum Development Process
## Agile Scrum Development Exercise

<table>
<thead>
<tr>
<th>Duration</th>
<th>Topic</th>
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<tbody>
<tr>
<td>10</td>
<td>Overview</td>
</tr>
<tr>
<td>10</td>
<td>Requirements</td>
</tr>
<tr>
<td>15</td>
<td>Sprint Planning for all 3 sprints</td>
</tr>
<tr>
<td></td>
<td>1) Estimation</td>
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<tr>
<td></td>
<td>2) Planning Wall – add to back log</td>
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<tr>
<td>5</td>
<td>Briefing – details on Sprint</td>
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<tr>
<td></td>
<td>Separate into Teams</td>
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<tr>
<td>15</td>
<td>Sprint – 1 (plan, implement, review)</td>
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<tr>
<td>15</td>
<td>Sprint – 2 (plan, implement, review)</td>
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<tr>
<td>15</td>
<td>Sprint – 3 (plan, implement, review)</td>
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<tr>
<td>10</td>
<td>Debrief</td>
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</table>
Game Process

- **Pre-game**
  - Organize into teams
  - Review the process
  - Describe the project chartering
  - Build the backlog
  - Estimating

- **Game**
  - Plan the sprint
  - Sprint
  - Review the sprint (retrospective)

- **Post-game**
  - Debrief
Six Teams build one city

Commercial
West
- office buildings
- restaurants
- gas stations

Commercial
East
- office buildings
- restaurants
- gas stations

Government
West
- Power plant
- Clock tower
- Water tower

Government
East
- Power plant
- Clock tower
- Water tower

Residential
West
- Apartments
- Houses
- Parks
- Schools

Residential
East
- Apartments
- Houses
- Parks
- Schools
Team Roles

PM/Team Lead
Tracks estimates and actuals

Business Analyst
Communicates with product owner

QA/Tester
Ensure build meets requirements

Technical Lead
Makes technical decisions concerning the build

2 Fetchers
Gets Legos for sprint

2 builders
Builds with Legos
# Planning Wall

<table>
<thead>
<tr>
<th>Sprint #1</th>
<th>west</th>
<th>east</th>
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</thead>
<tbody>
<tr>
<td><strong>Backlog</strong></td>
<td>Government (west)</td>
<td>Residential (west)</td>
</tr>
<tr>
<td></td>
<td>High School (4)</td>
<td>House (2)</td>
</tr>
<tr>
<td></td>
<td>Bridge I (4)</td>
<td>Office Building (4)</td>
</tr>
<tr>
<td></td>
<td>Planned: 10</td>
<td>Planned: 12</td>
</tr>
<tr>
<td></td>
<td>Actual: 8</td>
<td>Actual: 6</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Sprint #2</th>
<th>west</th>
<th>east</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Commercial (west)</td>
<td>Residential (east)</td>
</tr>
<tr>
<td></td>
<td>Skyscraper (4)</td>
<td>Office Building (8)</td>
</tr>
<tr>
<td></td>
<td>Bridge I (4)</td>
<td>Apartment (4)</td>
</tr>
<tr>
<td></td>
<td>Planned: 18</td>
<td>Planned: 8</td>
</tr>
<tr>
<td></td>
<td>Actual: 12</td>
<td>Actual: 8</td>
</tr>
</tbody>
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<tr>
<th>Sprint #3</th>
<th>west</th>
<th>east</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Commercial (west)</td>
<td>Residential (east)</td>
</tr>
<tr>
<td></td>
<td>Planned: 10</td>
<td>Planned: 8</td>
</tr>
<tr>
<td></td>
<td>Actual: 6</td>
<td>Actual: 6</td>
</tr>
</tbody>
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### Project Types
- **Skyscraper**
- **Bridge II**
- **Power Plant**
- **Hospital**
- **School**
- **Apartment**

### Locations
- **west**
- **east**
Client is the Product Owner

1. All teams will be building a single product – you are not competing, All working for the same vendor.
2. The product is a CITY with the features already listed.
3. The main building elements are LEGOs.
4. The client/product owner is the main decision maker of the product – it is their city.
5. The client will be involved in the development process by being available to answer questions and provide feedback.
A Few Rules

- Building materials are in separate room
- Only take enough materials to complete the current sprint
- Only 2 members from each team to collect materials at a time
- Only 2 members from each team to place pieces on the game board after product owner approval
- Team identifies which members are collecting materials and which are modifying the game board during planning.
- There will be a single landscape for all teams to build upon
- Teams will be evaluated based on customer satisfaction
Best Practice

- Many teams ONE city.
- Do the simplest thing that works.
- Don’t worry about the details until you have something built.
Questions ???
Backup slides
Development Process

Pre-Project
- Select high priority project

Planning
- Project Charter
- Business Requirements
- Test Plan
- Use Case(s)

Iteration Planning
- Architecture Review
- Usability Review
- Source Code Review

Update Backlog

Daily Standups
- Users accept application for production use
- Deployment Review

Iteration Review
- Support Transition Review
- User Guide

Release

Warranty Period

- Production use
- Transition to Production Support
- Subset of development team supports application
- Define lessons learned

Issue Management

Risk Management

- Assemble project team
- Initial release plan
- Develop Use Cases
- Get stakeholder buy-in
- Conduct kick-off meeting
- Create Project Charter
- Create JIRA Project
- Create Subversion entry
- Engage tech writer; support; testing; training; architecture; DBAs
- Populate initial set of stories in product backlog
- Conduct business process re-engineering
- Conduct analysis & design
- Prepare test plan

- Hardware purchased and installed
- Unit testing
- Automated system testing (TDD)
- Status updates from PM
- Prepare installation instructions
- Develop training material
- Prepare user documentation
- User beta testing after each iteration
- Define user acceptance test scenarios for each story in product backlog

- Complete support transition checklist
- Product is deployed to the production environment
Agile is...