Understanding an Agile Software Development Team’s Decision Making

Summary:

This PRTLI-4 funded research focuses on how information is best presented, how decisions are made and how decisions can be supported in agile software development environments to improve the quality and timeliness of team outputs. A case study was conducted with an agile software development team over 8 months. Findings indicate that the team was not making decisions collaboratively, estimates were inaccurate when there was little experience and decisions were not tracked so decision quality was unclear. These findings help drive the development of improved decision strategies and tracking mechanisms to assist these teams to improve their outputs.

Research Context

Over 22% of companies have adopted agile processes (VersionOne 2009), but when issues arise, teams often revert to traditional linear development approaches to reduce increasing volatility and do not capitalise on benefits of iterative approaches (Augustine, et al. 2005). Agile software development teams are characterised by:

- Flexible team structures
- Team members taking different roles to learn new skills
- Collaborative, group decision making
- Customers / Product Owners as team members
- Short iterations in dynamic environment with decisions made daily
- Team leader as facilitator instead of accountable decision maker
- Minimal documentation and tracking

These characteristics can impact the decision making process as flexible structures, short iterations and minimal documentation could indicate that decision making in an agile environment should be ad hoc, unstructured and without discipline. However, it is unclear how these characteristics affect the decision process.
### Key Questions

Thus, this research seeks to understand how decision making occurs on agile and lean software development teams.

- How is data best presented during sprint planning meetings & sprints?
- What decisions are made during sprint planning meetings & sprints?
- What decision strategies do agile software development teams use?
- How do agile software development teams define and track ‘decision quality’?

### Research Method

A case study was conducted of an agile development team at a Dublin-based software development company. The team consisted of 8 members: 1 Scrum Master, 1 Business Analyst, 2 Senior Developers, 2 Junior Developers and 2 Quality Assurance Testers. The data was analysed using open coding, “the process of breaking down, examining, comparing, conceptualising, and categorising data” (Strauss & Corbin 1998), across 3 types of data collected:

<table>
<thead>
<tr>
<th>To Answer</th>
<th>RQ 1 - 2</th>
<th>RQ 1</th>
<th>RQ 1 - 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collect this data</td>
<td>Field notes and observations explaining sprint planning meeting, data presentation and decisions made.</td>
<td>Literary material written by team members and project documents, i.e. emails, IMs, whiteboard notes, screenshots.</td>
<td>In depth, transcribed interviews discussing decisions made, data used, decision strategy used &amp; quality defined.</td>
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<tr>
<td>For this purpose</td>
<td>Develop an overview of how data is presented and what decisions are made during planning meetings and sprint.</td>
<td>Aggregate and classify information (data) used during decisions.</td>
<td>Gain deeper understanding of decision making, tracking and evaluation and identify best practices for data presentation.</td>
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<tr>
<td>With this sample</td>
<td>Agile software development team at Information Mosaic.</td>
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<tr>
<td>Via this method</td>
<td>Structured observation of fortnightly sprint planning meetings.</td>
<td>Email request for data examples, acceptance criteria and screen shots; photos.</td>
<td>Face-to-face individual interviews with all team members.</td>
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### Key Findings

Based on this research, we have found that agile teams are not making decisions collaboratively. Senior team members and developers are still making the final decisions. The issue is that team members say decisions are collaborative, but in reality a few people make them even though the entire team is accountable for the functionality to be delivered on time. Sprint planning meetings also address decisions for retrospective and story elaboration meetings not just planning decisions. These meetings should be focusing purely on planning decisions. The retrospective meetings make decisions for changes to improve the process of work based on lessons learned by the team in the previous sprint. The story elaboration meetings should focus on decisions for how to develop functionality to complete the user stories.

Additionally, estimates given for time to complete tasks are inaccurate, though they sometimes improve over time with experience.

A key issue here is that data is not presented clearly to all team members so tasks take longer and task estimates are inaccurate. This unclear data still creates drag on the team’s ability to complete tasks on time.

Decisions are also not clearly tracked so teams do not know when something was discussed when bugs or defects arise. Presenting and tracking data (i.e. tasks, decisions made) on the whiteboard and Jira (software tool to track tasks) is leading to wasted time because there is duplicated manual entry of these tasks both on the whiteboard and in the software tool. This duplication increases errors as it is often unclear which method is updated when. As a result, teams do not know if their decisions were successful.

### Next Steps

Based on our findings, we have a better understanding of what decisions are made and when during an iteration. We also have found that decisions are not necessarily collaborative, though it is unclear as to how they are made. Additional research is now underway to understand how teams use their experience to make their decisions. We have also learned that agile teams find it difficult to determine decision quality as they have trouble tracking decisions. Future research is also underway to better understand how we can track decision quality so that teams can make the best possible decisions.

### About us

The InterTradeIreland All-Island Innovation Programme - Community of Researchers is an initiative to bring together academics, postgraduate students, policy makers and business people who are interested in innovation in Ireland. We aim to ‘create a virtual community to strengthen innovation studies research in Ireland and its contribution to strategy, practice and policy.’ This research briefing series is one way of achieving this aim along with meetings, workshops and postgraduate research awards.

For more information about the InterTradeIreland All-Island Innovation Programme and the Community of Researchers visit www.intertradeireland/all-island-innovation-programme/ or you can contact Bernadette McGahon on 028 3083 4168 (048 from Ireland).