What is Large in Large-Scale Agile Development

A Taxonomy of Scale for Agile Software Development

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Why Large-Scale Agile?

“agile value set and practices best suit colocated teams of about 50 people or fewer who have easy access to user and business experts and are developing projects that are not life-critical”  
(Williams and Cockburn, 2003)

- Agile methods increasingly used in large scale projects
- Projects that are critical for society
- Little research-based knowledge on the topic
- Top “burning research question” from practitioners  
(Freudenberg and Sharp 2010)
An Example: The "Omega" Programme

- Total budget: EUR 120 million
- January 2008 - March 2012
- 175 people involved in project
  - 100 external consultants
  - 5 companies
- 800,000 person hours
- 2,500 user stories in 300 epics
What is large-scale agile development?

Table 1. Definitions of large-scale development in identified articles.

<table>
<thead>
<tr>
<th>Study</th>
<th>Definition</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batra</td>
<td>$15 million project</td>
<td>[16]</td>
</tr>
<tr>
<td>Berger</td>
<td>10 million british pounds</td>
<td>[17]</td>
</tr>
<tr>
<td>Bjarnason</td>
<td>2 years, 60-80 new features</td>
<td>[18]</td>
</tr>
<tr>
<td>Bjarnason</td>
<td>2 years, 60-80 new features</td>
<td>[19]</td>
</tr>
<tr>
<td>Giblin</td>
<td>-</td>
<td>[20]</td>
</tr>
<tr>
<td>Giblin</td>
<td>-</td>
<td>[21]</td>
</tr>
<tr>
<td>Paasivaara</td>
<td>40 people, 7 teams, 2 sites</td>
<td>[22, 23]</td>
</tr>
<tr>
<td>Petersen</td>
<td>More than 5 million lines of code</td>
<td>[24]</td>
</tr>
<tr>
<td>Petersen</td>
<td>More than 5 million lines of code</td>
<td>[25]</td>
</tr>
<tr>
<td>Tessem</td>
<td>150 person years (70 people, 30 developers)</td>
<td>[10]</td>
</tr>
</tbody>
</table>
Why do we need a definition?

- We need awareness on scale to:
  - Discuss plans for studies
  - Identify basic assumptions and knowledge gaps
  - Clarify what researchers are addressing
  - Increase understanding of relevant implications
THREE DIGIT DEVELOPERS, MULTITASK PROS. OFTEN NOT COLLABORATIVE AGILE FOR ITSELF

Lots of people in many teams contribute to a common goal (e.g. product or system) with lots of features and high locs.

MORE THAN 50 DEV. OR MORE THAN 6-7 TEAMS ON THE SAME PRODUCT

Developing complex systems in an agile manner over a long period of time in a multi-stakeholder context.

OVER 4-5 TEAMS
OVER 40-50 PERSONS IN A PROJECT

MULTIPLE STEPS BETWEEN THE END USER & TEAM

30+ PEOPLE IN 3+ TEAMS DIFFERENT ROOM

2+ LOCATIONS 5+ TEAMS

≥4 TEAMS OF 7 PEOPLE

LARGE SCALE: WHEN SOMETHING IS LARGE/IN THE PROJECT

LARGE SCALE = COMPLEX = LOTS OF PEOPLE OR LOCATIONS OR PERSPECTIVES

ANYTHING THAT GOES BEYOND THE ORIGINAL SWEET SPOT OF AGILE?

INVOLVING A LOT OF PERSONS

SELF-MANAGEMENT IS NOT ENOUGH... SOME SUPPORT NEEDED
What is Large in Large-Scale?

- Cost?
- Code size?
- Number of requirements / features?

Our suggestion:
- Coordination overhead will increase with number of teams involved
- Agile teams usually have 7±2 members
Our suggestion

<table>
<thead>
<tr>
<th>Level</th>
<th>Number of teams</th>
<th>Coordination approaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small-scale</td>
<td>1</td>
<td>Coordinating the team can be done using agile practices such as daily meetings, common planning, review and retrospective meetings.</td>
</tr>
<tr>
<td>Large-scale</td>
<td>2-9</td>
<td>Coordination of teams can be achieved in a new forum such as a Scrum of Scrums forum.</td>
</tr>
<tr>
<td>Very large-scale</td>
<td>10+</td>
<td>Several forums are needed for coordination, such as multiple Scrum of Scrums.</td>
</tr>
</tbody>
</table>

Theme: Delivering Value - Moving from Cyclic to Continuous Value Delivery