11-12 NOVEMBER 2014 IN LONDON

Rallyon!

Europe
THE IMPACT OF AGILE
QUANTIFIED
SWAPPING INTUITION FOR INSIGHT
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Wouldn’t You Like Quantitative Data to Answer Questions Like These?

- Are you seeing improvements from your use of Agile practices?
- How productive and predictable are your teams and programs?
- How do you stack up against other companies in the industry?
The Software Development Performance Index

The SDPI framework is a balanced set of outcome metrics designed to help you measure and improve your software development performance. These fall along the dimensions of Responsiveness, Quality, Productivity, and Predictability, as well as softer aspects such as employee engagement, customer satisfaction, and what we think of as a “build-the-rightThing” metric.
160,000 projects
50,000 Agile teams
13,000+ active teams
SDPI Dimensions
Productivity

Productivity measures how much work a team accomplishes over time, based on either the number of items or the number of points accepted. High Productivity means more business value has been delivered or more technical debt has been reduced.

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**Productivity**  
*Higher is better*

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<tbody>
<tr>
<td>Project</td>
<td>75</td>
<td>70</td>
<td>65</td>
<td>60</td>
<td>55</td>
<td>50</td>
<td>55</td>
<td>60</td>
<td>65</td>
<td>70</td>
<td>75</td>
<td>80</td>
<td>85</td>
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<tr>
<td>Workspace Average</td>
<td>80</td>
<td>75</td>
<td>70</td>
<td>65</td>
<td>60</td>
<td>55</td>
<td>50</td>
<td>45</td>
<td>40</td>
<td>35</td>
<td>30</td>
<td>25</td>
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Predictability

Predictability measures how consistent a team is at producing work over time. High predictability means stakeholders can confidently plan when work will be delivered. This is also an indication that teams are better at estimating their work and flowing consistently-sized increments of value.
Responsiveness

Responsiveness measures the ability of a team to deliver functionality soon after it's requested. High Responsiveness can dramatically impact the ability of businesses to react to changing markets and customer needs. Responsiveness is central to Agile.
Quality

Quality measures how disciplined a team is in preventing defects being introduced and how quickly they resolve any that occur. Sustainable delivery of value requires a consistently high level of Quality for all work delivered to production.

Quality

*Higher is better*

![Quality Chart](chart.png)

- Project
- Workspace Average
Overall Performance

Software Development Performance Index

Higher is better

Percentile within all companies

2012Q4
2013Q1
2013Q2
2013Q3

Productivity
Predictability
Responsiveness
Quality
Workspace Average
SDPI Insights
CAUTION:
Correlation does not necessarily mean causation
CAUTION:
There are no best practices
Only good practices in context
Evidence and Motivation
Evidence Found

- Motive has a small but statistically significant impact on Performance
- Extrinsic motivation does not have a negative impact on Performance
- Executive support is critical for success with Agile
- Teamwork is not the dominant factor: talent, skills, and experience are
- Those motivated by quality perform best
Controlling Work in Process (WiP)
Most obvious finding: Little’s Law

RESPONSIVENESS
Work in Process (WIP) per Person relationship to Performance

Performance index

0 10 20 30 40 50 60 70 80

Work in Process (WIP) per Person

0 - 1
1 - 2
2 - 3
3 - 5
5 - 7
> 7
Most dramatic finding
PREDICTABILITY

Work in Process (WIP) per Person relationship to Performance

Performance index

0 - 1
1 - 2
2 - 3
3 - 5
5 - 7
> 7

Work in Process (WIP) per Person
Facts Discovered

Teams that most aggressively control work in process (WiP):

- Have \( \frac{1}{2} \) the Time in Process (TiP)
- Have \( \frac{1}{4} \) as many defects
- But have 34% lower productivity
Recommendations

If your WiP is high, reduce it

If your WiP is already low, consider your economic drivers

- If Productivity drives your bottom line, don’t push WiP too low
- If time to market or quality drives your bottom line, push WiP as low as it will go
iteration length
RESPONSIVENESS

Iteration Length relationship to Performance

Performance index

1 week | 2 weeks | 3 weeks | 4 weeks | 5+ weeks
---|---|---|---|---
High | Medium | Low | Lower | Lowest

Iteration Length

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PREDICTABILITY
Iteration Length relationship to Performance

<table>
<thead>
<tr>
<th>Iteration Length</th>
<th>Performance Index</th>
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<tbody>
<tr>
<td>1 week</td>
<td>50</td>
</tr>
<tr>
<td>2 weeks</td>
<td>70</td>
</tr>
<tr>
<td>3 weeks</td>
<td>50</td>
</tr>
<tr>
<td>4 weeks</td>
<td>40</td>
</tr>
<tr>
<td>5+ weeks</td>
<td>40</td>
</tr>
</tbody>
</table>
PERFORMANCE
Iteration Length relationship to Performance

- Productivity
- Predictability
- Responsiveness
- Quality
Iteration Length Transition vs Avg Responsiveness

- Green line: 2 weeks → 3 weeks (107)
- Blue line: 3 weeks → 2 weeks (86)
Iteration Length Transition vs Avg Performance Index

- Green line: 2 weeks → 3 weeks (43)
- Blue line: 3 weeks → 2 weeks (32)
Facts Discovered

Teams using two-week iterations have the best balanced performance

Longer iterations correlate with higher Quality

Shorter iterations correlate with higher Productivity and Responsiveness
Team Size
PERFORMANCE
Team Size relationship to performance
PERFORMANCE

Team Size relationship to performance

Performance index total

< 3  3 - 5  5 - 9  9 - 15  15 - 20  > 20

- Productivity
- Predictability
- Responsiveness
- Quality
PERFORMANCE

Team Size relationship to performance

Performance index score

Productivity | Predictability | Responsiveness | Quality

< 3 | 3 - 5 | 5 - 9 | 9 - 15 | 15 - 20 | > 20
PERFORMANCE

Team Size relationship to performance

Performance index score

< 3  |  3 - 5  |  5 - 9  |  9 - 15  |  15 - 20  |  > 20

- Productivity
- Predictability
- Responsiveness
- Quality
Facts Discovered

- Small teams (of 1-3) people have:
  - 17% lower Quality
  - but 17% more Productivity
  than teams of the recommended size

- Set up team size of 7±2 people for the most balanced performance

- If you are doing well with larger teams, there’s no evidence that you need to change
Team Stability
Facts Discovered

Stable teams result in up to:
60% better Productivity
40% better Predictability

Recommendations:
Dedicate people to a single team
Keep teams intact and stable
Process Type
<table>
<thead>
<tr>
<th>Process Type</th>
<th>Teams Using</th>
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<tbody>
<tr>
<td>No Estimates</td>
<td>3%</td>
</tr>
<tr>
<td>Full Scrum (Estimates + Tasking out stories)</td>
<td>79%</td>
</tr>
<tr>
<td>Lightweight Scrum (Estimates but no tasking out Stories)</td>
<td>10%</td>
</tr>
<tr>
<td>Hourly-Oriented</td>
<td>8%</td>
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</table>
Facts Discovered

- Teams doing full scrum have the best quality
- Lightweight scrum has overall best performance
Ratio of Developers to Testers
PRODUCTIVITY

Testers per Developer relationship to Performance

Performance index

Testers per Developer

0  < 0.3  0.3-0.6  0.6-1
QUALITY

Testers per Developer relationship to Performance
Facts Discovered

- More testers lead to better Quality
  But they also generally lead to worse Productivity and Responsiveness

- Interestingly, teams that self-identify as having no testers have:
  The best Productivity
  Almost as good Quality
  But much wider variation in Quality
What Next?
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Learn how you can build high performing teams

Learn how you can achieve Business Agility

Hear from Rally customers
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