Kanban At Scale: Actionable Metrics
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Health Services, a Global Provider of Healthcare Information Technology Solutions

Soarian Financials was our first Kanban implementation

Org. of about 500 people
- 15 cross-functional teams
- 3 continents
- Software deployed to hundreds of Healthcare facilities
- Highly regulated
- Mission Critical
Agile Journey Began in 2005

- 30 day sprints
- Stable feature teams
- Agile Roles
- Release Cycles about every 12 months
- Agile XP practices
<table>
<thead>
<tr>
<th>Adoption of Agile Led to Benefits; but we were challenged in key areas</th>
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</thead>
<tbody>
<tr>
<td>Difficulties to estimate scope, required resources</td>
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<tr>
<td>Quality issues</td>
</tr>
<tr>
<td>Operational in-efficiencies and speed of development</td>
</tr>
<tr>
<td>Predictability</td>
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While velocity rates at sprint reviews often seemed okay, reality pointed to a large number of stories blocked or incomplete and multiple features in progress with few, if any, features completing until end of the release.
People normally associate Kanban with the visibility that the board provides.
However, the “metrics of flow” (WIP, Cycle Time, Throughput) are tangible, provide a deep level of transparency, and are highly actionable.
No more estimation!!

By using historical metrics we are able to forecast feature and release completion timeframes.
Predictability

Predictability

Predictability
Predictability is the degree to which we can correctly forecast a system’s (process’) future state.

A predictable process is one that behaves the way it is expected to behave.
Avg Cycle Time = $\frac{\text{Avg WIP}}{\text{Avg Throughput}}$
UNDERSTANDING CUMULATIVE FLOW DIAGRAMS
Slope of top line is process average arrival rate.

Vertical distance is total WIP.

Horizontal distance is approximate average cycle time.

Slope of bottom line is process average throughput.
UNDERSTANDING SCATTERPLOTS
Cycle Time

Calendar Time
Scatterplot Percentiles

95th <= 63 days

85th <= 43 days

50th <= 19 days
Release before limiting
WIP
85% of stories finished in 71 days or less

50% of stories finished in 21 days or less
What about the next release?
When we finally Limited WIP
85% of stories finished in 43 days or less
And the release after that?
(still limiting WIP)
85% of stories finished in 40 days or less
43 days
1st Kanban Release

40 days
2nd Kanban Release
RESULTS!!
Improved Quality
Improved Speed and Operational Efficiency
### Decreasing CT Increased TH

<table>
<thead>
<tr>
<th>Percentile</th>
<th>Cycle times prior to Kanban</th>
<th>After Kanban</th>
<th>Improvement</th>
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<tbody>
<tr>
<td>50%</td>
<td>21</td>
<td>15</td>
<td>28.57%</td>
</tr>
<tr>
<td>70%</td>
<td>40</td>
<td>26</td>
<td>35.00%</td>
</tr>
<tr>
<td>85%</td>
<td>71</td>
<td>40</td>
<td>45.07%</td>
</tr>
<tr>
<td>97%</td>
<td>126</td>
<td>66</td>
<td>47.62%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Release</th>
<th>Median Cycle Time</th>
<th>Throughput per /day</th>
<th>Stories completed*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; Kanban</td>
<td>19</td>
<td>3.52</td>
<td>525</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; Kanban</td>
<td>15</td>
<td>5.28</td>
<td>787</td>
</tr>
<tr>
<td>Improvement</td>
<td>-21.05%</td>
<td>+33%</td>
<td>+33%</td>
</tr>
</tbody>
</table>
We have a problem?
If you want to learn more...

All CFDs and Scatterplots were generated by the tool available at:

http://www.actionableagile.com
Case Studies

http://www.infoq.com/articles/kanban-siemens-health-services

THANK-YOU!

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