

Project Metrics

Anything you need to quantify can be measured in some way that is superior to not measuring it at all.

12/14/2023

vijaynathani.github.io

1

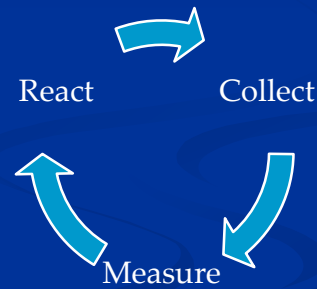
The purpose of Metrics is so that we can decide how to improve the system.
What is measured, gets managed. What is managed, gets done.

Many teams check and adjust based on gut feelings or some idea from Internet.
They don't use real data to determine their direction.

Retrospectives that use data will likely be more productive than using opinions.

Good Metrics

- Comparative
- Actionable
- Accessible
- Auditable



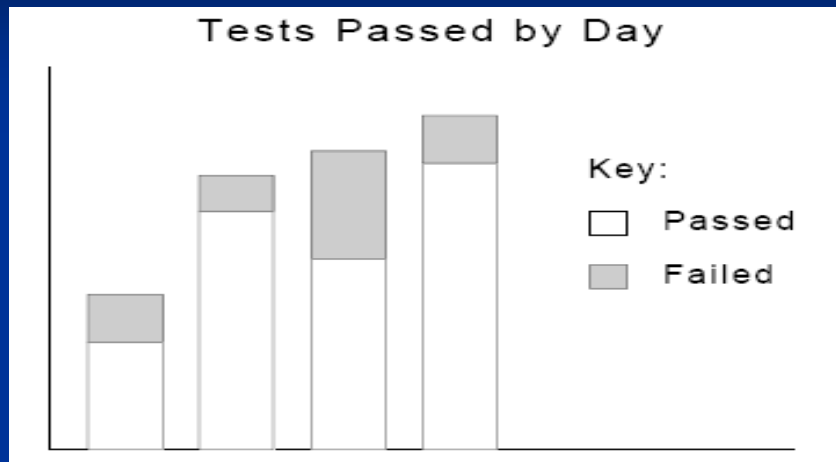
Comparative – Our sales are 1 Million units makes little sense. Our sales are 20% higher than the same period last year is better.

Actionable – A person should know what to do, when he looks at it.

Accessible – It should be available regularly on a frequent basis.

Auditable – Can be verified e.g. A team wanted to know what effect a change will have on call time in call center. The metric is useless if we don't measure the call time currently.

Typical Metric



Sprint Boards



The image shows three sample cards used in a sprint board. The top card is a 'Feature' card with fields for 'Feature ID', 'Business Value', and 'Size (Points)'. The middle card is a 'Story' card with fields for 'Story ID', 'User Story', 'Acceptance Criteria', and 'Status'. The bottom card is a 'Task' card with fields for 'Task ID', 'Task Name', 'Task Description', and 'Status'. To the right of the cards is a vertical column of four colored circles: blue, green, yellow, and red.

Post-It's:

- White- Feature
- Yellow- Story
- Blue- Task

Dots:

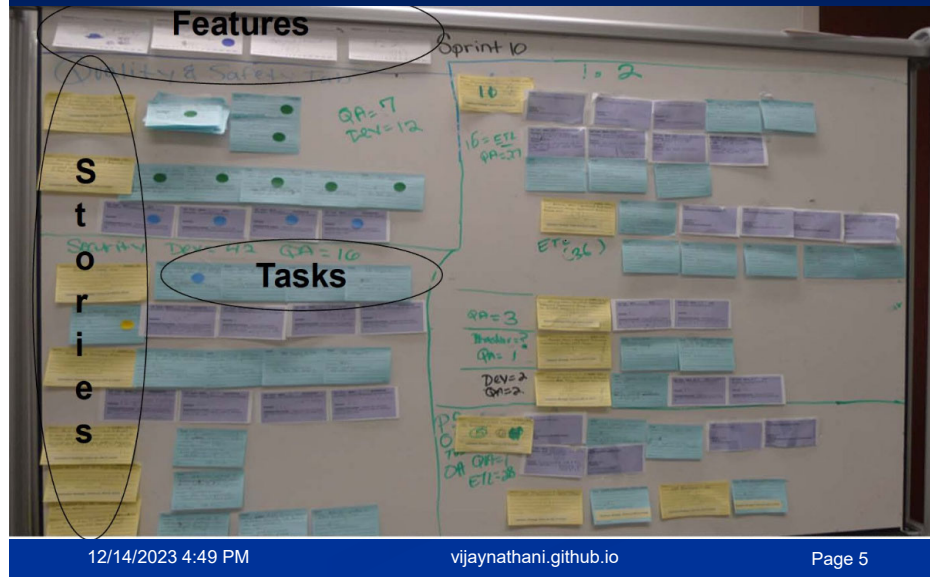
- Blue- Task in progress
- Green- Task complete
- Yellow- Dependency
- Red- **Impediment** / Blocked

White card – Feature

Yellow card – user story

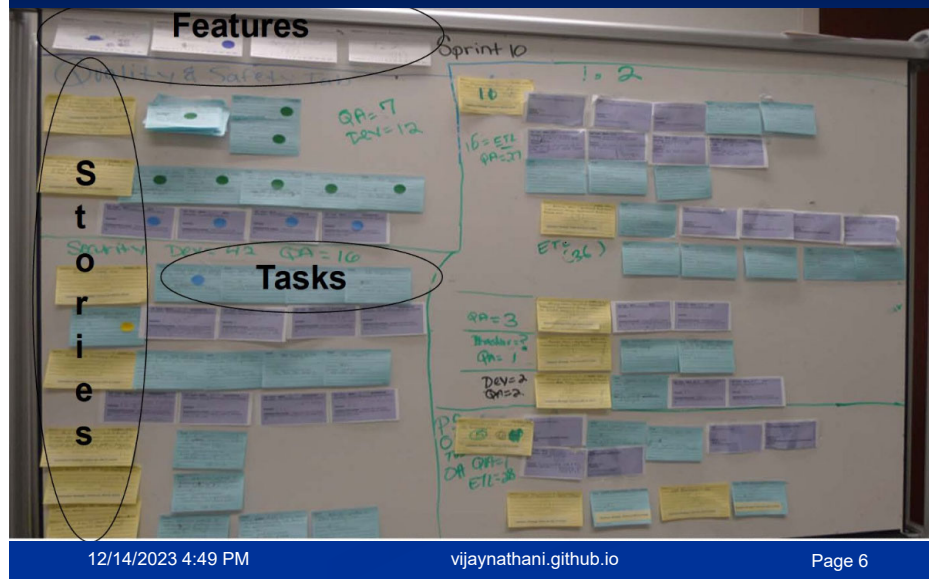
Blue card – Task

Status of Current Iteration



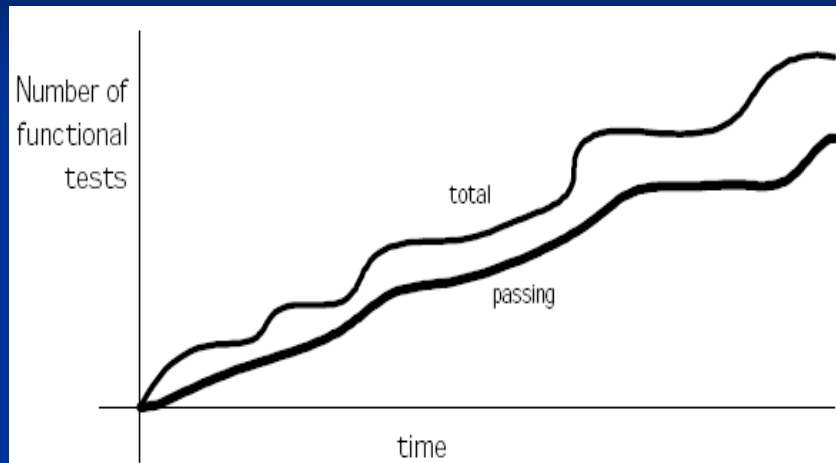
Taken from <http://www.infoq.com/presentations/The-Power-of-Visibility>

Status of Current Iteration

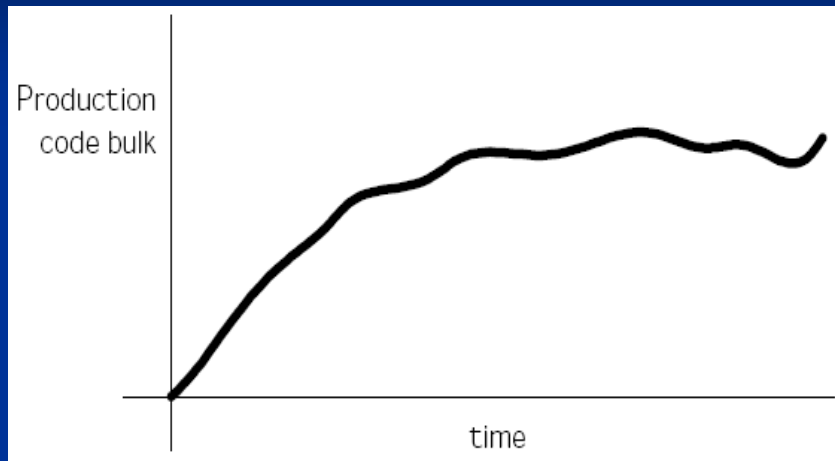


Taken from <http://www.infoq.com/presentations/The-Power-of-Visibility>

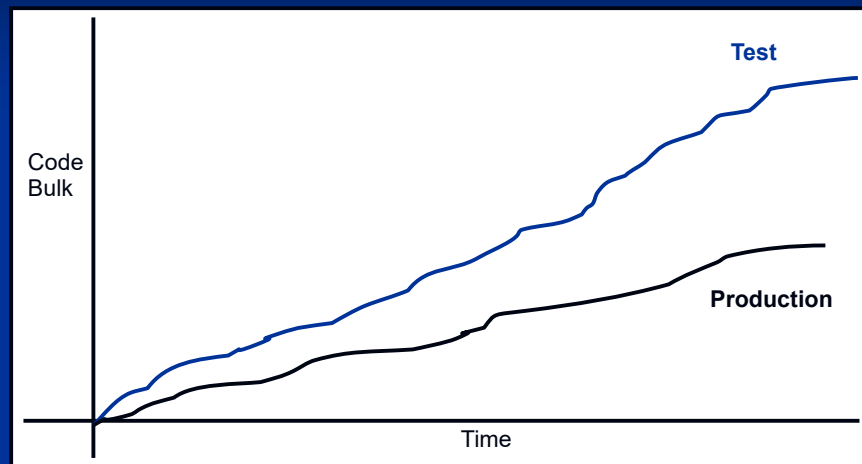
Typical Metric



Typical Metric



Code & Tests LOC



12/14/2023 4:49 PM

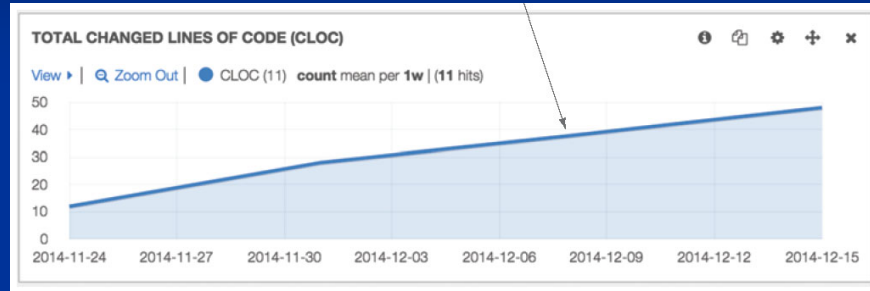
[vijaynathani.github.io](https://github.com/vijaynathani)

Page 9

The size of test code will usually be more than the LOC of the code. If the size of the test code is less than the size of project LOC, then probably the team is not writing enough tests.

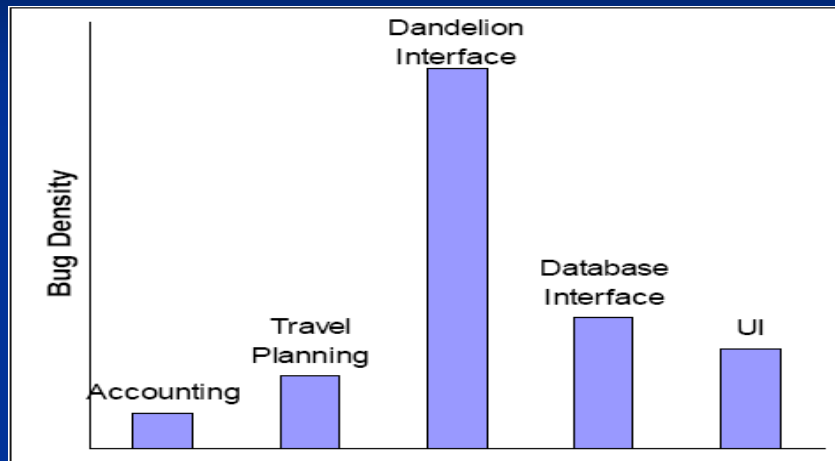
If Production code is 100KLOC, expect the Test LOC to be between 150KLOC to 300KLOC.

CLOC

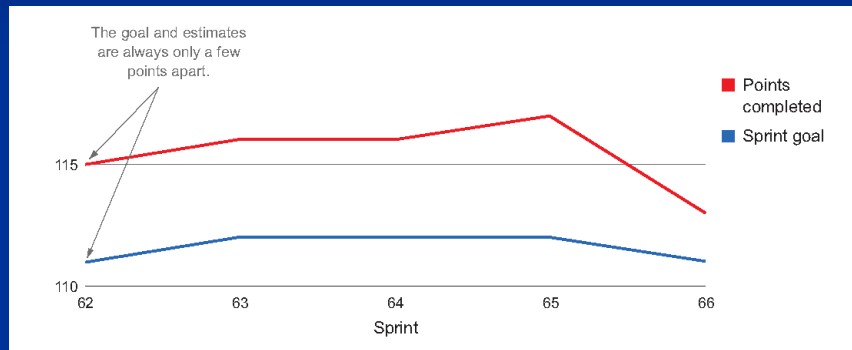


Changed Lines of Code

Cluster for Bugs



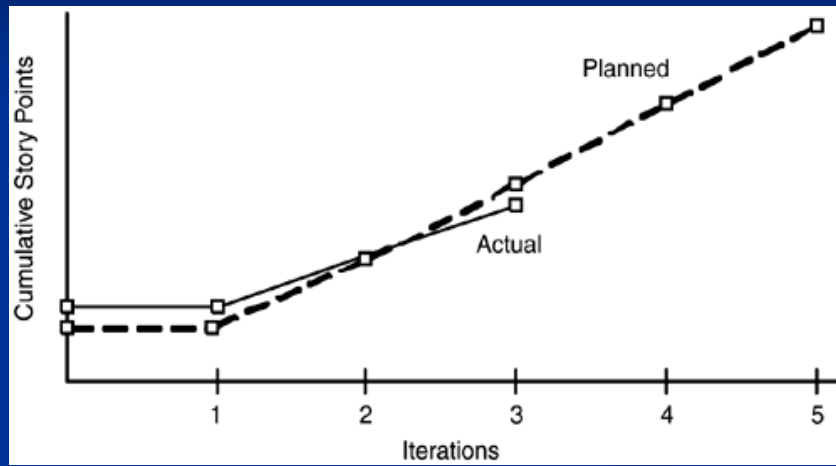
Progress by Iteration



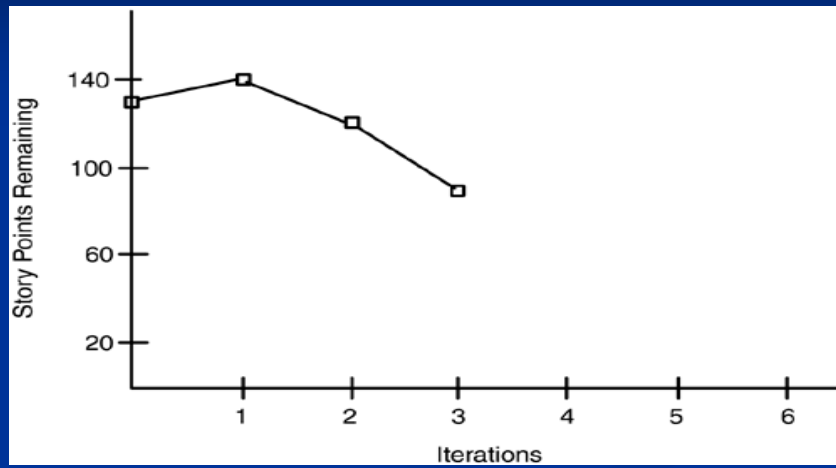
If estimates are this accurate, then team is likely overestimating. Because they have a buffer, they are able to meet their goals.

This tells us about capacity of the team. A Manager, who tries to jack up the velocity by pushing the team, is misusing this metric.

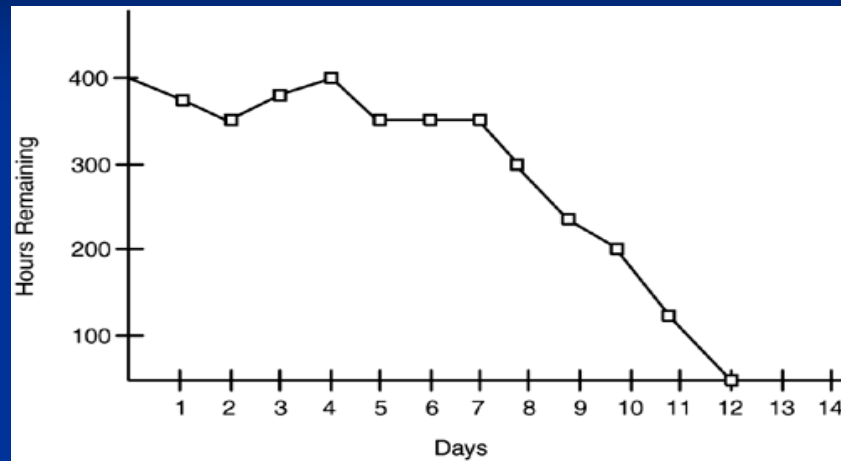
Cumulative Progress



Product Burndown Chart



Sprint Burndown Chart



12/14/2023 4:49 PM

[vijaynathani.github.io](https://github.com/vijaynathani)

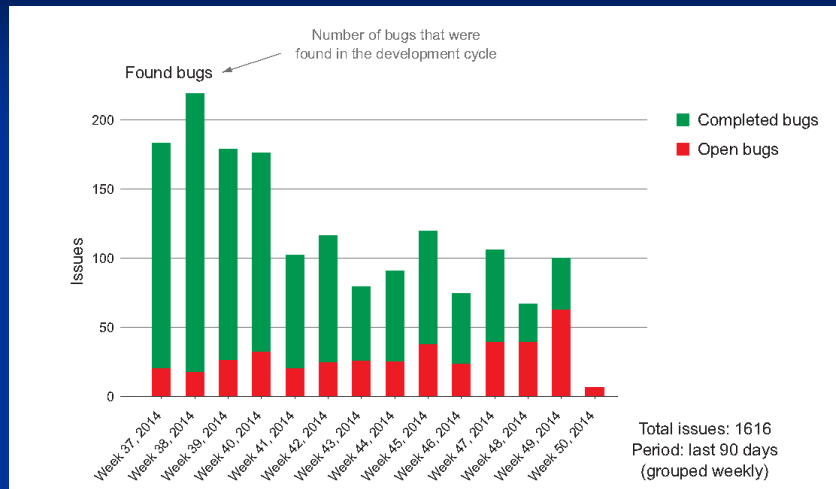
Page 15

To generate these reports automatically, tools exist. However for a small project, paper tracking seems easier.

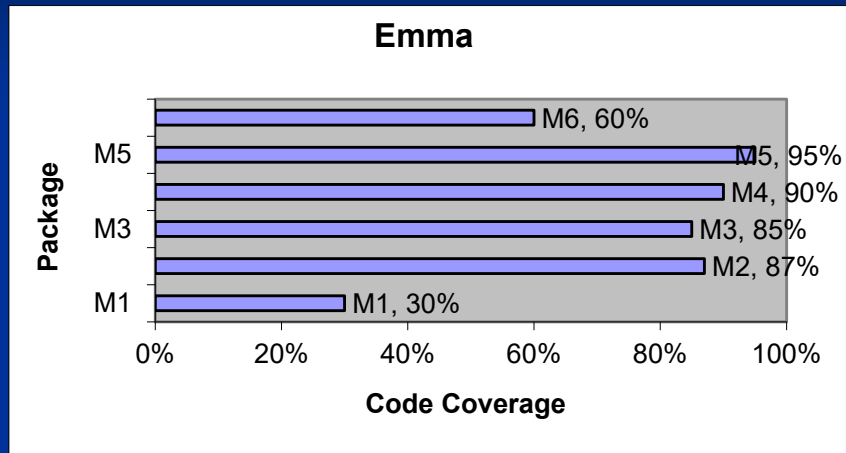
For large teams these tools are useful.

Some of the tools are VersionOne, Rally Software, ScrumWorks, XPlanner.

Bugs

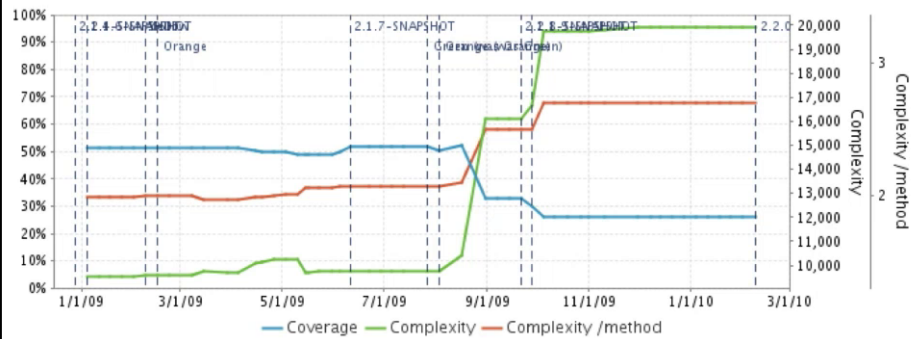


Code Coverage



Code coverage in automated tests using tools like Emma, Cobertura, Clover, etc.

Struts – Time Machine



Mentioned in “Software Architecture Fundamentals” part 2 by O’rielly. Author Neal Ford, Mark Richards.

Something horrible happened on the project on 1-Sep-2009.

Productivity change after Scrum

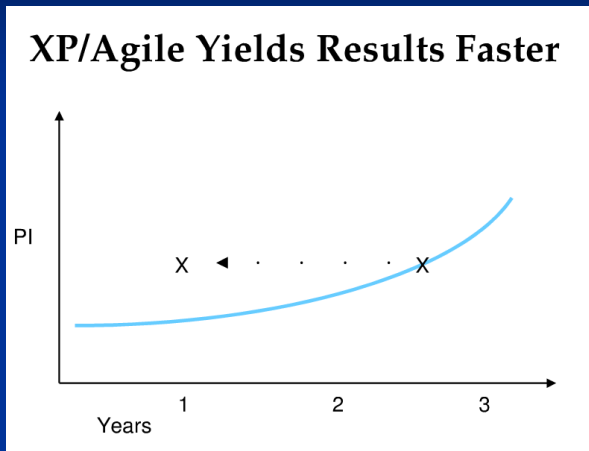
| Months since Scrum implemented | 3 | 12 | 24 |
|--|------|-----|------|
| Productivity (product backlog requirements per \$100,000 investment) | 4.5 | 9.0 | 12.2 |
| Quality (Bugs per release) | 100+ | 100 | 5 |

Source: Jeff Sutherland in RootsofScrumJAOO28Sep2005.pdf

Metrics for Finance Managers

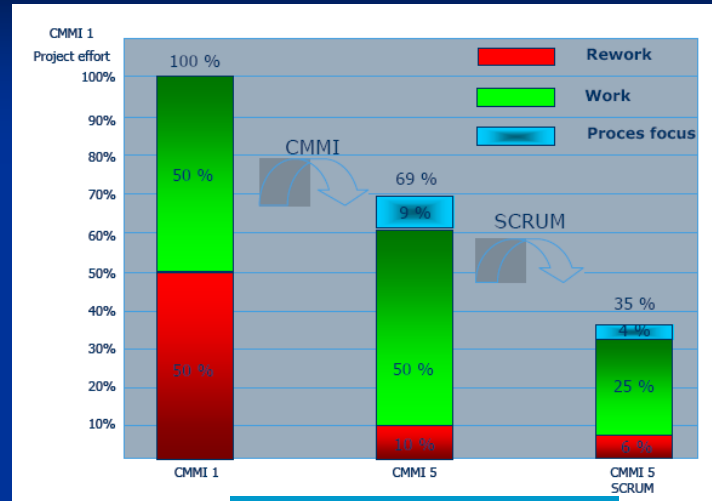
- Revenue / Person
- Profit / Person
- ROI
- Cycle Time - Time lag between the beginning of investment in an idea and when the idea first generates revenue.
- PI (Process Productivity)
 - $PI = (\text{Size in KLoc}) / (\text{Time in months} * \text{Effort in Person Months})$

Example usage of PI Metric



After doing agile, the PI index moved for a company. See details at <http://www.infoq.com/presentations/10-tips-for-agile-transitions>

Productivity at Systematic



Source: ScrumPapers20070424.pdf

Systematic was established in 1985 and employs 371 people worldwide with offices in Denmark, USA and the UK. It is an independent software and systems company focusing on complex and critical IT solutions within information and communication systems. Often these systems are mission critical with high demands on reliability, safety, accuracy and usability.

Customers are typically professional IT-departments in public institutions and large companies and service industries. Systematic was appraised 11 November 2005 method and found to be CMMI level 5 compliant.

This is documented in a presentation on Infoq website. Presentation by Jeff Sutherland.

Bad Metrics

- Vanity Metric
 - Makes us feel good/bad about the product
 - Doesn't help us to take decision.

Metrics must demonstrate cause and effect
Not *more* metrics, the *right* metrics

Vanity metrics:

- 1) How many people leave comments on our webpage?
- 2) How many people downloaded our app? (not who are using)
- 3) Page Views
- 4) Time on Site

KPI – Key Performance Indicators.

Less is good. Choose one useful metric over 10 useless ones.

- 1) Sign-up, Trail and conversion rates
- 2) Profit per ...

At Amazon, the market VP was against “Customer buying this product also bought ...” He said that once a customer has put something in shopping cart, he should not be distracted. It was a NO, NO, NO.

But the team went ahead and did the experiment. The sales increased by nearly 3% because of this one idea.

At Microsoft, they found that “Experts are usually wrong”. So we need to measure and then take action.

Summary

Information is the currency of democracy –
Thomas Jefferson

Agile is

- A set of Methods & Skills
- OR
- A leadership mindset & culture

Cultural change is the hardest part of the Scrum – Jeff Sutherland.
A co-operative game – Alistair Cockburn.

References

- Extreme Programming Explained –
Kent Beck, Cynthia Andres
- Enterprise and Scrum – Ken Schwaber
- User Stories Applied – Mike Cohn
- Maverick & Seven day weekend - Ricardo Semler

The End

"Believe nothing, no matter where you read it or who has said it, not even if I have said it, unless it agrees with your own reason and your own common sense."

- Buddha

Note: Give feedback and take an objective test before leaving for the day