Project Metrics

Anything you need to quantify can be measured in some way that is superior to not measuring it at all.
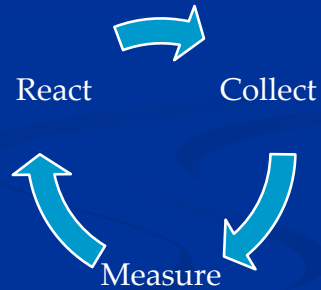
The purpose of Metrics is so that we can decide how to improve the system.

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.

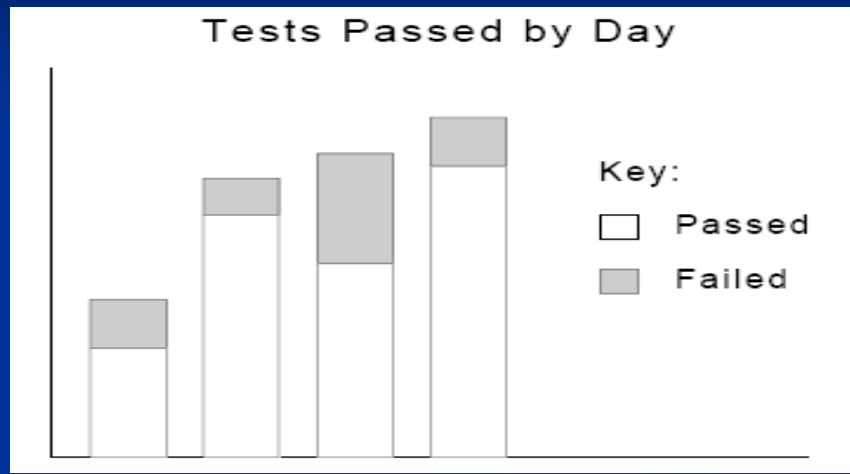Retrospectives that use data will likely be more productive than using opinions.

Comarative – 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

Tests Passed by Day

Key:
- ☐ Passed
- ▨ Failed

White card – Feature

Yellow card – user story

Blue card – Task

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

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Typical Metric

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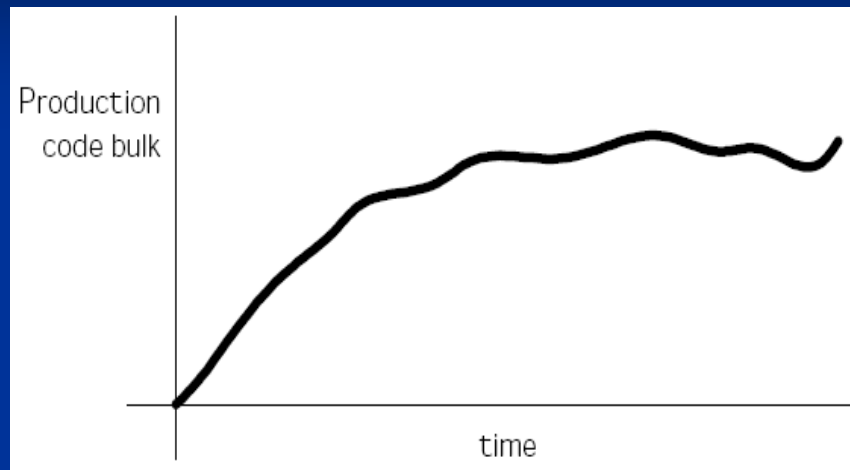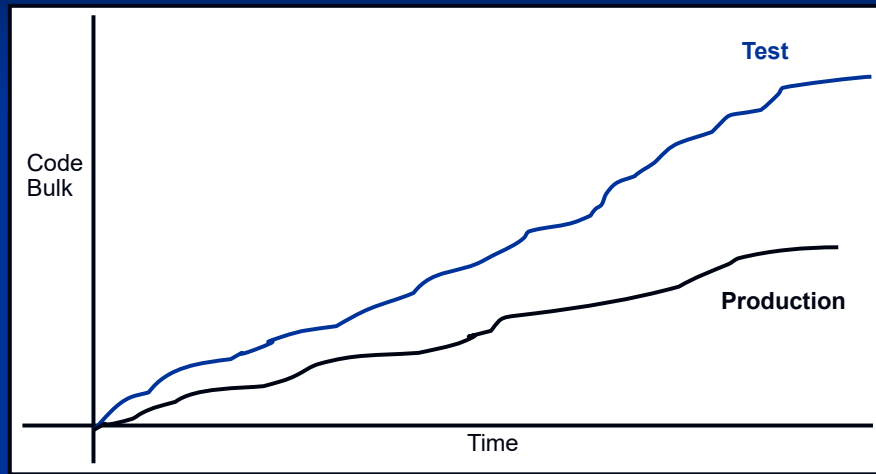
The size of test code will usually be more than the LOC of the code. If the size of the test code is less than the size of project LOC, then probably the team is not writing enough tests.

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

CLOC
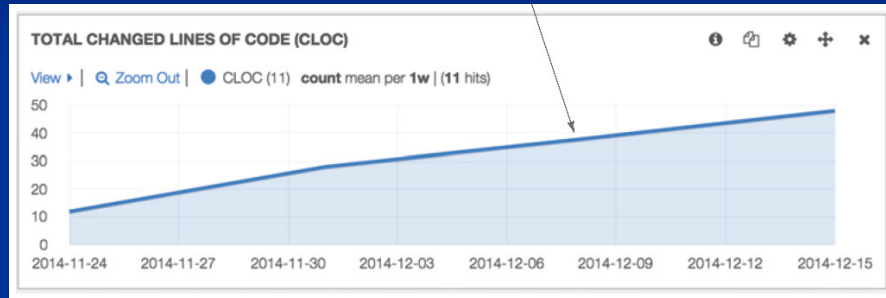
Changed Lines of Code

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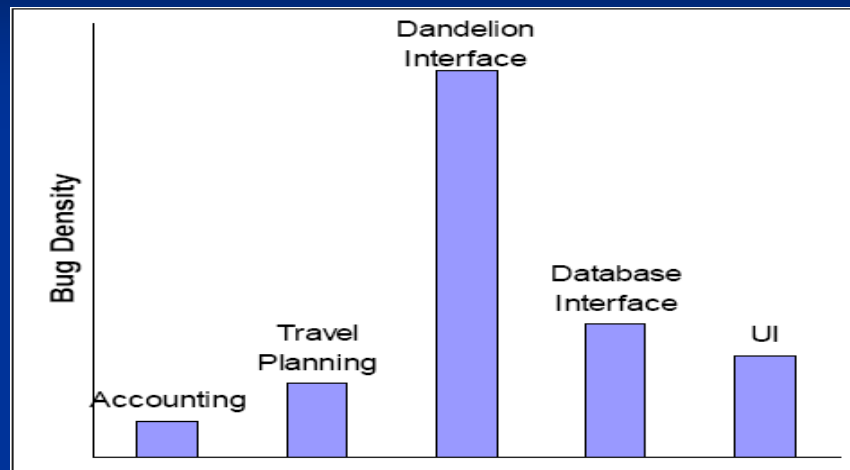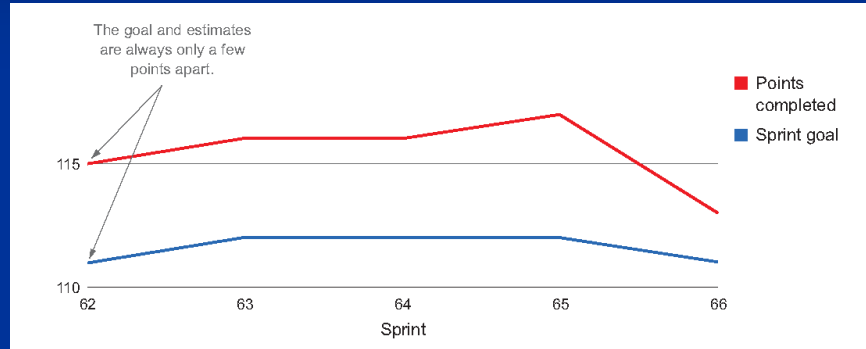
If estimates are this accurate, then team is likely overestimating. Because they have a buffer, they are able to meet their goals.

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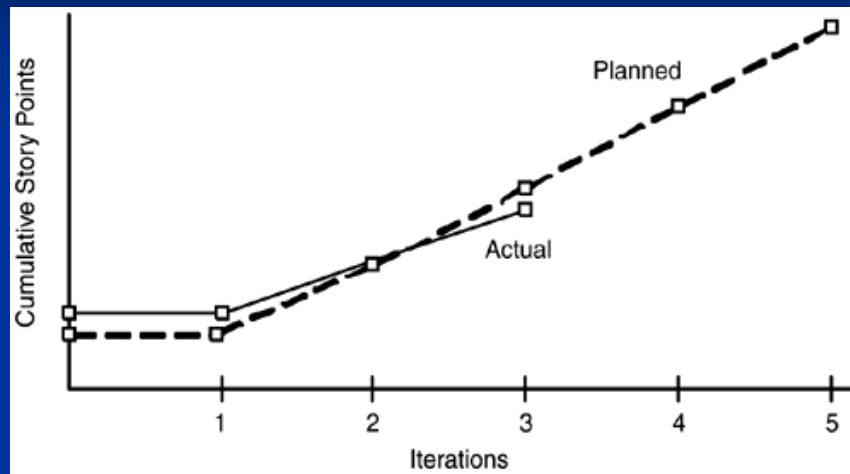
Product Burndown Chart
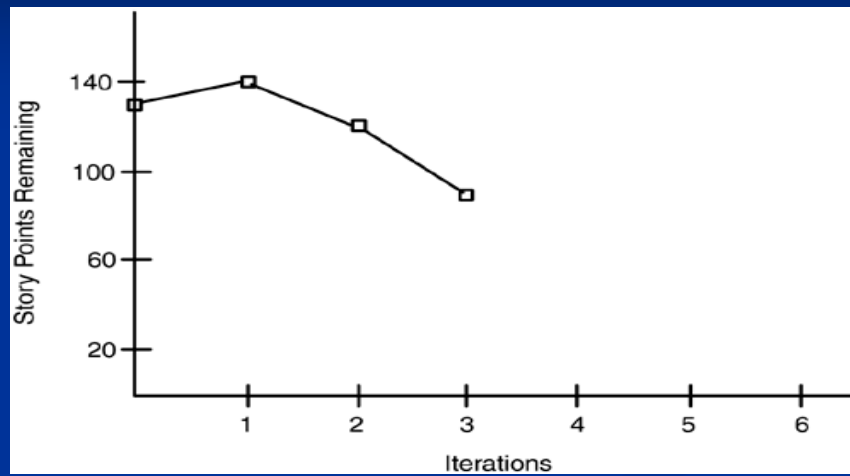
Sprint Burndown Chart
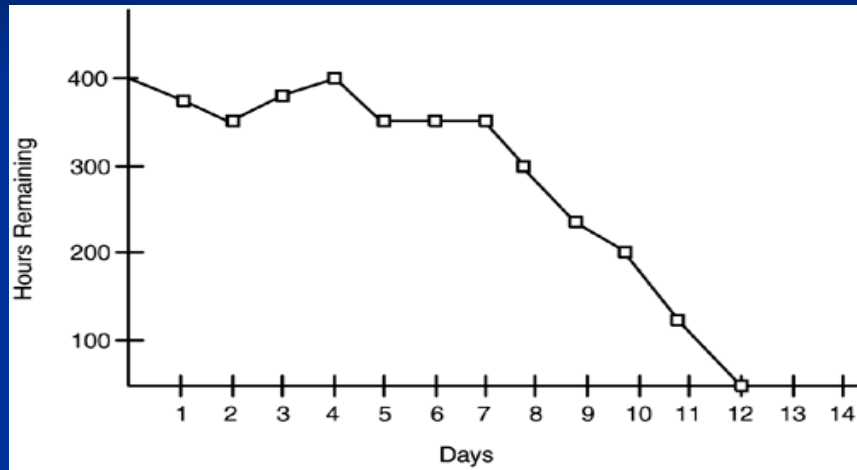
To generate these reports automatically, tools exist. However for a small project, paper tracking seems easier.

For large teams these tools are useful.

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

Bugs

Number of bugs that were
found in the development cycle

Found bugs

■ Completed bugs
■ Open bugs

Total issues: 1616
Period: last 90 days
(grouped weekly)

Code Coverage

Emma

Chart showing Code Coverage (%) by Package:
- M6, 60%
- M5, 95%
- M4, 90%
- M3, 85%
- M2, 87%
- M1, 30%

X-axis: Code Coverage (0% to 100%)
Y-axis: Package (M1, M3, M5)
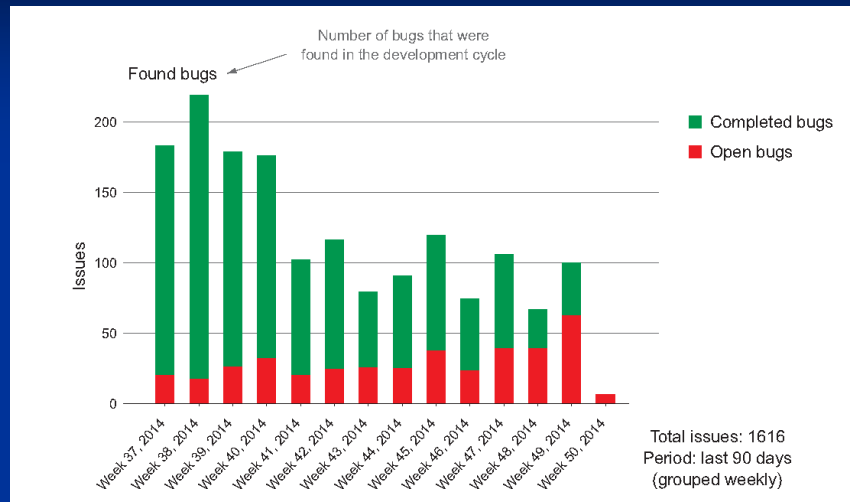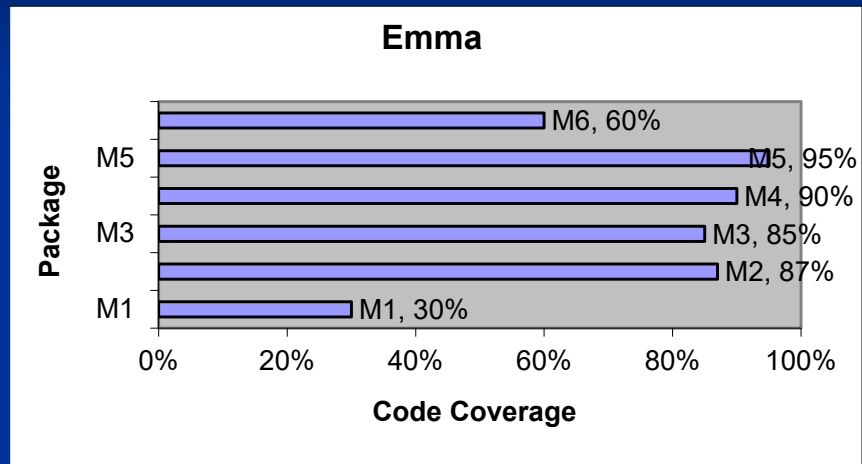
Code coverage in automated tests using tools like Emma, Cobertura, Clover, etc.
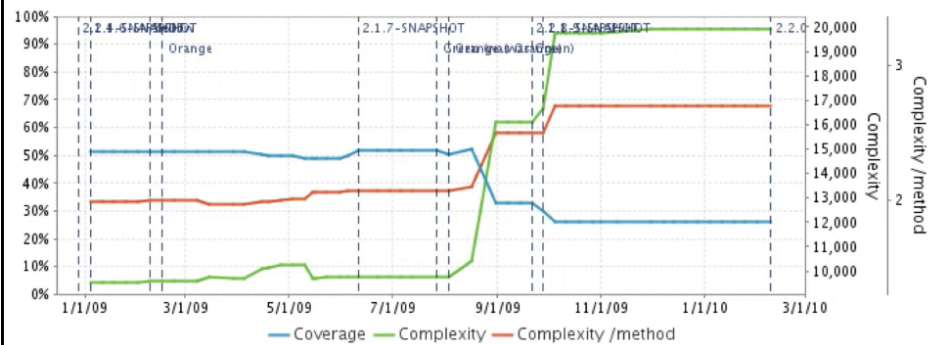
Mentioned in "Software Architecture Fundamentals" part 2 by O'rielly. Author Neal Ford, Mark Richards.

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

Other Metrics

- Tools like PMD to detect potential problems and duplication
- Common errors reported by tools like Findbugs
- Number of defects found after release
- Stability of a package with Jdepend
- Cyclomatic Complexity Number with JavaNCSS

Code coverage of typical agile projects is between 80 to 95%.

Defects reported

> Some XP teams that have been on the path of improvement for several years see only a handful of defects per year.

> No defect is acceptable; each is an opportunity for the team to learn and improve.

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 = (Size in KLoc) / (Time in months * Effort in Person Months)
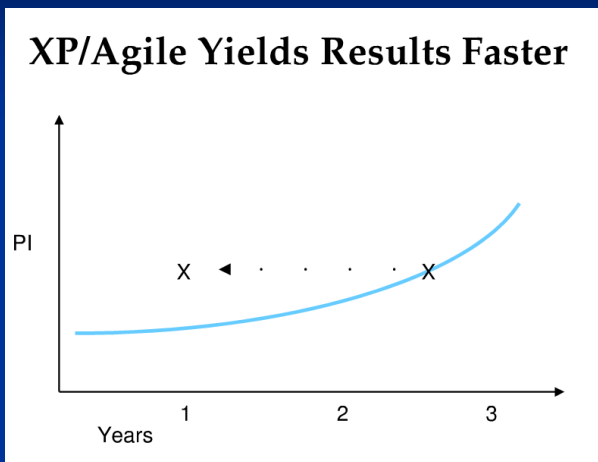
After doing agile, the PI index moved for a company. See details at
http://www.infoq.com/presentations/10-tips-for-agile-transitions

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 indepen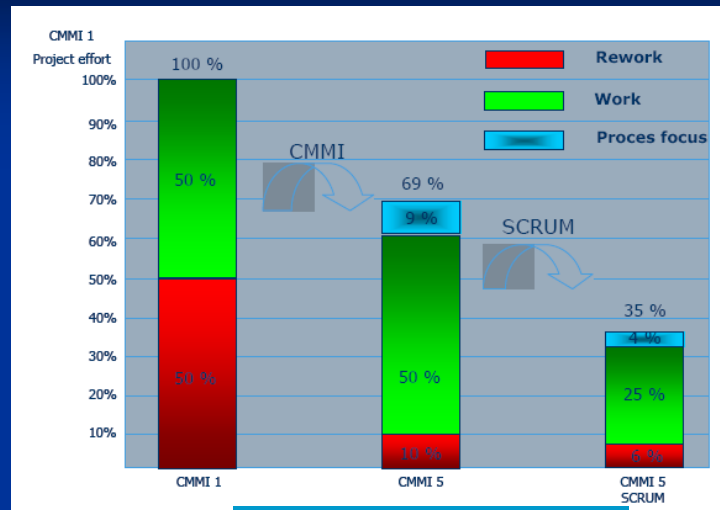dent software and systems company focusing on complex and critical IT solutions within information and communication systems. Often these systems are mission critical with high demands on reliability, safety, accuracy and usability.

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 Suttherland.

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 metics:

1) How many people leave comments on our webpage?
2) How many people downloaded out 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 – Alistar 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