How to Measure Value, True Progress and Business Agility - Lessons from the Labs (and Clients)

Jon Tilt / Tony Grout
Role: Solution Delivery Transformation Engineer / World Wide Tiger

If we don't continuously monitor and measure

Beware the black swan:

1,471 projects were surveyed

Average cost overrun was 27%

One in six projects had cost overran by 200% on average

Schedule overun of 70%

Harvard Business Review
EMBRACING COMPLEXITY
You can't avoid it, but your business can profit from it.

Innovate2011

Software. Everyware.

What do we mean by measurement?

Measurement: A set of observations that reduce uncertainty where the result is expressed as a value

How To Measure Anything, Douglas Hubbard

Keeping it simple and use the maths

Fermi's Piano Tuners: **How many piano tuners are in Southampton?**

The Rule of Five: **Finding the median**

What's a good metric?

- **What are you trying to measure?**

- **What are the decisions that arise from this measure?**

- **What margin of error is tolerable versus the cost of perfect?**

- **What is the value of the information versus the cost?**

- **How do you remove errors where possible for the least cost?**

Software. Everyware.

What do we mean by value?

Stakeholder	Value
Customers	Lower cost, better or new service
Business	Revenue generated
Shareholders	Better Price to Earnings Ratio
Sponsoring executive	Meets their KPI's
Development team	Increased knowledge of business or technology
IT Operations	Reduction in operating costs
Society	Lower carbon emissions

Innovate2011

Software. Everyware.

What does agile have to offer and how are we at IBM thinking?

Mike Cohn's template for user stories:-

As a <type of user>, I want <some goal> so that <some reason>

The <some reason> is the value which should be quantified

Software. Everyware.

What do we mean by progress?

Number of lines of code

Number of test cases executed

Number of documents signed off

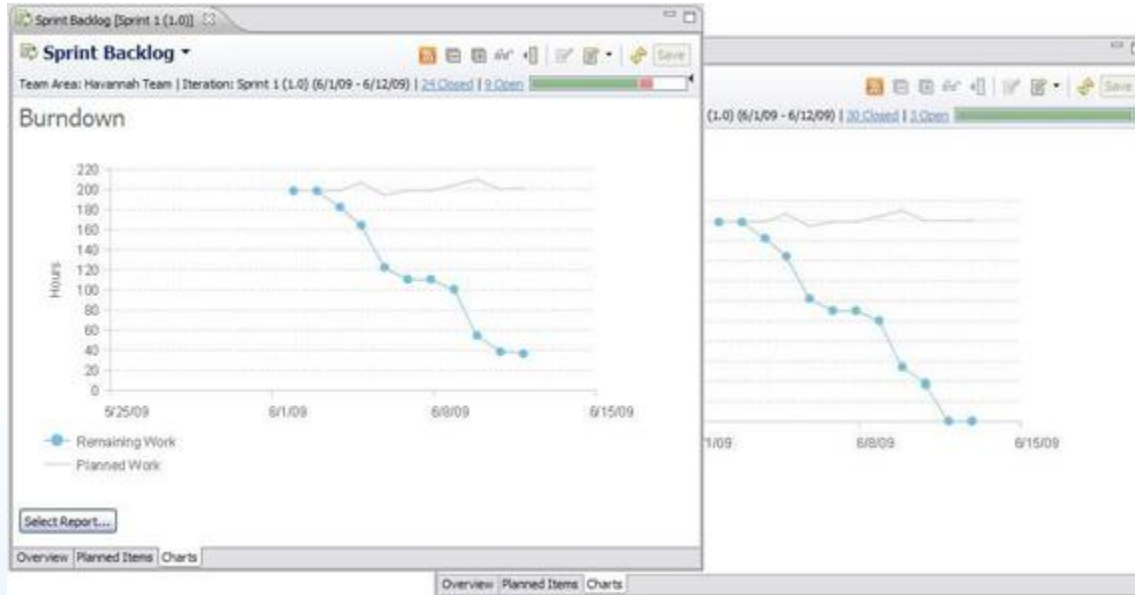Number of accepted executable requirements

Number of executable function points

Number of executable stories / epics

Some are better than others

Software. Everyware.

What does agile have to offer and how are we thinking?

What do we mean by business agility?

How quickly can we change business processes?

How quickly can we integrate with third parties?

How quickly can we decommission under-performing processes?

How quickly can we get take advantage of new markets?

Innovate2011

Software. Everyware.

What does agile have to offer and how are we thinking?

It's not just about agile it's also about architecture

Building the adaptive architectures that agile at scale requires allows rewiring of processes more easily

The use of REST based interfaces allows combined with the iterative nature of agile makes integration easier

An agile development culture enables faster time to market with acceptable quality and growing functionality

Innovate2011

Software. Everyware.

We've begun to think of measures in two ways

Challenge how we examine our deliverables

- The **Stakeholder View**: *Are we delivering the right thing?*
- *Likelihood of successfully delivering on our commitments*
- The **Operational View**: *Are we delivering the right thing the right way?*
- *The efficiency and effectiveness of our process*

The Stakeholder View metrics

Explore the quality of the deliverable

- **Time to Value / Performance**

- An assessment of how quickly a stakeholder can realise value under certain scenarios

- Benchmarks, capacity planning, speed and footprint

- **Quality Confidence**

- Demonstrates the delivery team's view of the deliverable using both objective and subjective measurements including Internal & External Stakeholder questionnaires

- **Integration Points**

- A demonstration of this team's confidence in interactions with other deliverables

Outcome "Lag" v Supporting "Leading" measures
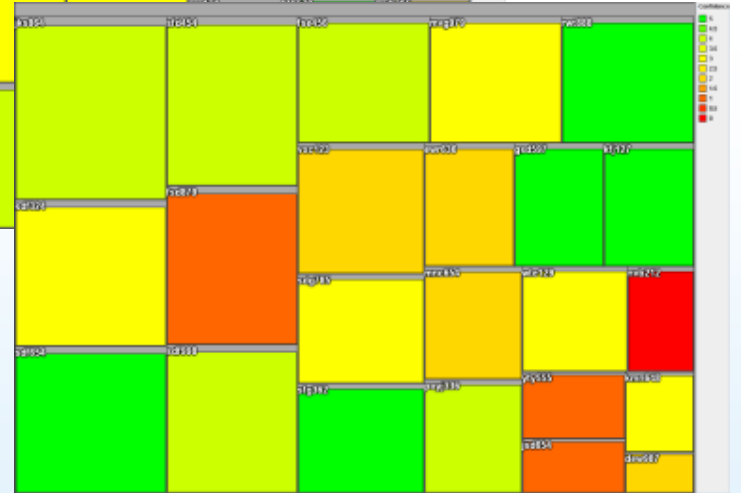
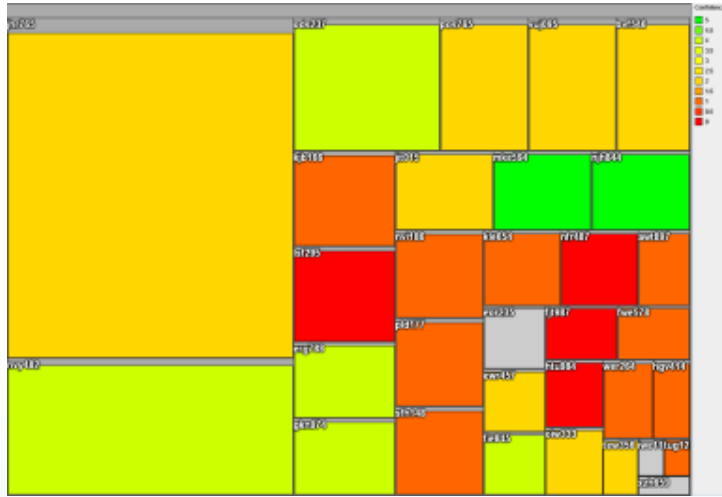**Innovate2011**

Software. Everyware.

The Operational View metrics

Explore the project's control and discipline

- **Technical Debt** – Valuable Activities that have been postponed

- The challenge is zero technical debt at the end of every iteration

- **Release Burn-down**

- Demonstrating that the team is progressing during a release

- **Stakeholder Interaction**

- Demonstrating that the team is really engaged with their stakeholders

Innovate2011

Software. Everyware.

Confidence charts

A bank's view of value, progress and agility

	Business-related	Agile-related
Cycle time reduction	•**Time spent from project initiation to delivery of first increment** •**Time spent from project initiation to project closure**	•**Sprint velocity** •**Blocking work items**
Quality	•**Defects (severity 1 and 2) in production per 100 FPs**	•**Defect trend**
Continuous optimisation	•**Process maturity level**	•**Adoption of agile practices**
Productivity	•**Function points per man year**	•**Sprint burndown chart** •**Release burndown chart**

Stakeholder / Business Agility

Operational / Progress

Where's the Value?

Innovate2011

Software. Everyware.

A systems view of value, progress and agility

Key Success Factor	Measurable Concept	Metrics Used
Improve the organizations capability to deliver value to the business faster	**Scope, Cost, Schedule**	-**Release Burn Up** -**Team Velocity** -**Actual verses Planned Cost** -**Defect Density at Customer Ship (end o**
Increase business agility and ability to implement changes effectively	**Customer Satisfaction** **Quality**	-**Requirement Test Coverage** -**Defect Trends** -**Build Health** -**Test Execution Status (UAT tests)** -**Defects Density at Customer Ship (or found by Customer / Customer Service)**
Increase collaboration between business stakeholders and development teams	**Collaboration**	-**Stakeholder Involvement** -**Enhancement Request Trends (Scope Creep)** -**Release Burn Up**
Improve the organization's ability to <u>Learn and Grow</u> as business climate changes	**Eliminate Waste** **Inspect and Adapt**	-**Blocked Work Items (Impediments removed)** -**SelfCheck (Agile practices successfully adopted)** # **Qualified Agile Coaches** # **Experience Agile Practitioners**

> Only UAT has the potential as an Outcome "Lag" indicator. The rest our Supporting "Lead" indicators"

> Operational / Agility

Innovate2011

Software. Everyware.

Regulatory body outsourcing

	Name	Definition	Frequency
Productivity	**Time to value**	Number of executable use case scenarios delivered that add a quantified business value over time	Per Iteration
Client Satisfaction	**Software use case scenarios accepted by the business**	The business accepts the executable code as delivering what they need from a business perspective	Per Iteration ideally or could be batched up to a number of iterations
Cost and Schedule	**Cost per Function Point, SLOC or Use Case Point**	Depending on the contract structure will show the cost over time of building the solution	Per Iteration
	Burn down chart	Shows work completed and remaining work to be complete by time to forecast expected time to complete	Continuous
Quality	**Open defects versus closed defects over time by severity and discipline**	Shows whether defects are being closed faster than they're being open and whether discipline containment is being achieved	Continuous
	Number of architectural risks remaining	How many use case scenarios categorised as high technical risk are left to complete	Per Iteration (focus of Elaboration)
	Architectural Churn	The number of lines of source code added, deleted or modified in architectural significant parts of the system	Continuous
	Code complexity and security	Using static code analysis to identify areas likely to contain defects	Continuous
	Build Health	Shows a stacked green or red bar for each successful or unsuccessful time a build occurs	Continuous

Five takeaways

- If something is observable it's measureable and you're better off knowing something about it rather than nothing

- Value is in the eye of the beholder: Get the stakeholders to quantify the a range for the value of the requirements

- Progress is best measured by delivery of prioritised executables

- Business agility is a requirement that can be measured

- Metrics are broken down in to stakeholder and operational measures whether by design or by chance. Start by design

Innovate2011

Software. Everyware.

What do we use in the labs and why?

Value to the business directly = dollars sold versus dollars invested and

Indirectly value to the customer = customers buy more if it adds value to their business

Software. Everyware.

Accuracy and Precision

Software. Everyware.

Accuracy and Precision

Low Accuracy High Precision   **High Accuracy Low Precision**   **High Accuracy High Precision**

Innovate2011

Software. Everyware.