Al Goerner
Drunk under a Streetlight – A Tale of Enterprise Agile Metrics
Drunk under a Streetlight

Don’t search where it is easier to see; search where the problem actually is.
Cargo Cults & False Idols

“The map is not the terrain. At the wrong scale, it doesn’t even help you navigate.”
Here, There be Dragons!

If we do metrics badly, we can inadvertently incent ... 
  • Increase in non-value-added behavior 
  • Non-cooperation and destructive competition 
  • Falsification of data and degrading of corporate values 
  • Resentment and distrust

If we do it well, we gain ... 
a reliable map of dangerous seas.
A Cautionary Tale

The Best Laid Schemes o’ Mice an’ Men Gang Oft Agley.

– Robert Burns

6 Good Men, and True

- 6 distinct personalities
- 180+ years of experience
- 1 Vague Charter: “What metrics should we be gathering for all of our projects and programs under this new enterprise agile methodology?”
- The Best of Intentions

The Negotiator  The Connoisseur  The Analyst
The Fisherman  The Self-Promoter  The Traditionalist
Let us watch well our beginnings, and results will manage themselves. — Alexander Clark

1. Mandate & Scope
   Develop & deploy a robust metrics framework that allows:
   ✓ Effective management of the software lifecycle
   ✓ Measurement of the impact & value of process changes & investments
   ✓ Consistent global measurement across regions and organizational units

2. Overall Design Principles
   Desirable characteristics of a good metrics framework to guide its design

3. Metrics Usage & Incentives Principles
   Guideline for metrics usage and analysis; how to incentivize desired behaviors

4. Consumers, Needs, Objectives
   What to measure, for whom, why?

5. Metrics
   Measurement goals, high-level metrics definition & structure

6. Operation-alization
   Detail definitions, collect/store/report, organization, deployment plan

7. Deployment
   Initiate measurement & reporting

Good planning only helps if you make some conscious attempt to follow the plan. — Me
Generic Types of Metrics

Why do we need metrics?

- To Monitor **Progress** to Goal  – monitors the flow of units through a process or steps made toward an objective
- To Warn of Failing **Health**  – anticipates when a process is deviating from or recovering towards norms
- To Help **Diagnose** Problems  – enlightens possible causes for failing health and provides guidance for corrective action

Everything else is noise.

**But, what** are we measuring?
Principles of **Metrics Design**

A metrics framework should be, as much as possible:

- **Motivated** – directly supports the need of a specific stakeholder to gain insight and make a decision.
- **Prioritized** – covers the aspects of solution delivery lifecycle of greatest and vital interest to stakeholders.
- **Insightful** – enabling diagnosis and drill-down to support continuous improvement.
- **Actionable** – sufficiently discriminating to enable the triggering and directing of specific action.
- **Objective** – provide objective facts, resistant to manipulation and subjective interpretation, except where the subject itself is a subjective (e.g. satisfaction surveys).
- **Lean** – based on a minimal set of core metrics from which others may be derived.
- **Organic** – as far as possible, based on existing available data, minimizing new tooling and additions or changes in practice.
- **Simple** – based on direct counting and calculations no more complex than a standard deviation (i.e., using only $+,-,\ast,\div,x^2,\sqrt{x},\max(x_i,\ldots),\min(x_i,\ldots)$).
Principles of **Metrics Usage**

Metrics, and their usage, should be:

- **Localized**  
  - descriptive of a specific entity, scope and/or timeframe.

- **Impersonal**  
  - localized to any entity no smaller than a team.

- **Improvement-oriented**  
  - used to drive improvement for the subject entity.

- **Non-Judgmental**  
  - not used directly to punish or reward the subject entity.

- **Non-Comparative**  
  - not used directly to compare the performance of 2 or more subject entities.

- **Analytically Aggregated**  
  - sets of homogeneous entities are analyzed as a population using only standard aggregation statistics, e.g. max, min, mean, and variance.

- **Trends-oriented**  
  - emphasizing trends in a measure over time, rather than absolute values and thresholds.
Hi! My name is <redacted>, and I abuse metrics.

- Metrics are used for judging individual performance (MBOs).
  - As a consequence, the metric becomes more important than the objective.

- “Green-light reporting” is rewarded rather than reality-based reporting.
  - When the messenger is routinely shot, there is no one to raise a warning until the barbarians are already at the gates.

- Project costs are the costs charged to Business, rather than the actual incurred project costs.
  - The Business cannot see a correlation between effort and cost ... and trust erodes.

- Analyses and diagnoses either (a) are not carried out or (b) require substantial effort – due to the lack of reliable and true metrics.
- The organization is completely disabled from learning & continuous improvement.
Sometimes I lie awake at night, and I ask, "Where have I gone wrong?" Then a voice says to me, "This is going to take more than one night."

— Charles M. Schulz

**Where We Left the Path**

1. Mandate & Scope
   - **Senior Mgmt, 1st.**
   - **PMO, 2nd.**
   - **Practitioners, 3rd.**

2. Overall Design Principles
   - **Metrics Usage & Incentives Principles**

3. Metrics
   - More than 65 “essential” metrics
   - Right Questions; Wrong Context and Order.
   - Trying to Reproduce Past Glories.

4. Consumers, Needs, Objectives
   - **Senior Mgmt, 1st.**
   - **PMO, 2nd.**
   - **Practitioners, 3rd.**

5. Operation- alization
   - Document, 1st.
   - Spreadsheet, 2nd.
   - Process Mod and Training???

6. Deployment
   - Wait for It!
   - BANG!!!

**End Result:** Work was completed and ... abandoned as “too complex”.
Fractal Model of Enterprise AppDev Metrics

- Feature Redundancy (Product per Feature)
- Feature Richness (Feature per Product)
- Feature Count (i.e. Scope Size)
- Reqmts. Complexity (e.g. Function Points)
- Responsibility Load (Feature per Resource)
- “Bus Accident” Risk Exposure; Cost per Feature (Resource per Feature)
- Head Count; FTE-Skillset Profile
- Budget Allocated; Budget Consumed
- Staff Availability; Budget Burn Rate (Resource per Time)
- Staff
- Budget
- Non-Value-Added Overhead (Time per Resource)
- Project or Release Duration
- Iteration or Monitoring Cycle Duration
- Strategic Cycle
- Tactical Cycle
- Concept-to-Usage Cycle Time (Time per Feature)
- Cost of Development-Ownership (Resource per Product)
- Productivity (Feature per Time)
- Product
- Feature
- Resource
- Time
- Don’t Do This!
You Mess with My Cheese
I Mess with Your Maze
A little learning is a dangerous thing but a lot of ignorance is just as bad.  

– Bob Edwards

Lessons Learned

1. Mandate & Scope

2. Overall Design Principles

3. Metrics Usage & Incentives Principles

4. Consumers, Needs, Objectives

5. Metrics

   Not more than 6-8 “essential” metrics

   Stay close to the Process, Product & People.

   Simple patterns, applied fractally.

6. Operation-alization

   Talk to Teams, 1st.

   Mod the Tools, 2nd.

   Train, Pilot, Refine, 3rd.

   No d@%* spreadsheets!

7. Deployment

   Incremental (program at a time) & Iterative (make it work, then reproduce)
Traditional Balanced Scorecard

Designed for corporate strategic planning, the traditional BSC does not distinguish unique aspects of IT management and Agile methods.
Maps of the Terrain

Agile Balance Scorecard

Delivered Value
- Progress: Epic-Features Accepted per Plan
- Health: Non-Functional Performance
- Diagnostic: NF Trends

Quality
- Progress: Test Coverage
- Health: Defect Outstanding & Trends
- Diagnostic: Defect Types, Sources & Severity

Product
- Progress: Plan Fidelity & Velocity Trends
- Health: Plan Fidelity & Velocity
- Diagnostic: Plan Fidelity & Velocity Trends

Process
- Scope & Requirements
- Health: Scope & Requirements
- Diagnostic: Scope & Requirements

People
- Staff
- Health: Staff Satisfaction
- Diagnostic: Staff Satisfaction Trends

Customers
- Health: Customer Satisfaction
- Diagnostic: Customer Satisfaction Trends

Why? & What?

Distinguishes internal from external metrics in 3 Areas: Product, Process & People.

Internal metrics are used to directly manage Product, Process and People.

External metrics are used to measure impact on Product, Process and People.

Internal metrics are used to directly manage Product, Process and People.

External metrics are used to measure impact on Product, Process and People.
Internal Metrics

Used to provide transparency into the Product, Process and People engaged in Development.

**Product**
- **Progress:**
  - Feature-Functions
    - Completed
    - Remaining
  - Quality Issues-Improvements
    - Completed
    - Remaining
- **Health Trends:**
  - Defect Density (Weighted)
  - Stability-Performance

**Process**
- **Progress:**
  - Work (in pts, hrs, days, ...)
    - Completed
    - Remaining
- **Health Trends:**
  - Ratio of Work-Done to Work-Committed
  - Time-in-State & Flow-Balance

**People**
- **Progress:**
  - Pairing Time
  - Sharing Time
- **Health Trends:**
  - Satisfaction with Role
  - Satisfaction with Team
  - Satisfaction with Process

*Diagnostic Metrics are always transient and depend on the problem being diagnosed.*
External Metrics

Used to provide *insight* into the Product-in-Use, Relation-with-Business and Customers-Users.

**Product**
- **Progress:**
  - Usage Rate
  - Market Share
- **Health Trends:**
  - Up-time
  - Support Volume

**Process**
- **Progress:**
  - Concept-to-Usage Cycle Time
- **Health Trends:**
  - Ratios of New Work and Rework to Total Work
  - Product Backlog Size and Growth Rate

**People**
- **Progress:**
  - User Productivity
  - User Sophistication
- **Health Trends:**
  - Satisfaction with IT Partnership
  - Satisfaction with Process

*Diagnostic Metrics are always transient and depend on the problem being diagnosed.*
SAFe with Expanded Context

Executive Oversight

IT Strategic Planning

- Business Impact per Quarter
- Strategic Planning
- Strategic Architecture
- Strategic Investment Themes
  - Business Process changes

Business & IT Architecture

- Commit to AOP / MYP
- Portfolio per PSI & Release
- Business Improvement

- Impacted Business Process
- Epics – new, modified, obsoleted

Product Management

- First Complete View
- Program per Sprint & PSI
- Roll up to PSI/Release

Product Backlog

- Product Owner
- Product Family
- Product Family Team

Sandbox & Devlopmt Pod / Team

Devs & Testers

SM PO

Product Family Bklg

- Product Owner
- Product Family
- Product Family Team

Product Backlog

- Product Owner

Sprint Backlogs of PSI

Portfolio per PSI & Release

Strategic Funnels

- Strategic Planning
- Enterprise Architecture

Product Family Bklg

Strategic Planning

Enterprise Architecture

DevOps / Deployment Mgmt

- DevOps
- Product Release Team
- RTE

System Team Bklg

Solution Architect

Application Management Services

Development Execution & Agile QA/QC

- Team per Sprint & PSI
- Team-per-Sprint
- Roll up Internal Metrics to Team-per-Sprint
- Roll up to PSI/Release

Features → Stories

Stories → Tasks

Apply Improvement & Knowledge Management

- Delivery Improvement
- Knowledge Management
- Roll up to PSI/Release

Customer per Release

- Customer Impact per Quarter

Ops

Agile2014 – Orlando
Summing Up

Design & Usage Principles

Progress, Health, & Diagnostic Metrics

Agile Balanced Scorecard

Enterprise Process Context

REMEMBER: Have only metrics used by someone to make a decision. Get rid of all the rest.
Please provide feedback on this session!

You can do so in **3 ways:**
1. Visit this session on the Mobile App. Click Session Feedback.
2. Scan the unique QR Code for this session located at the front and back of the room.
3. Visit the unique URL for this session located at the front and back of the room.

Thank you for providing your feedback 😊
Thank You!

If you have technical questions or comments that you would like to address to me, Please feel free to email me at:

Alan.Goerner@UST-Global.com

or

Al.Goerner@gmail.com