


Presented to
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Metrics – Thinking in N-Dimensions

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*Thinking
Through
Testing*



What Are Metrics?

- ❖ *“Means by which software engineers measure and predict aspects of processes, resources, and products that are relevant to the software engineering activity.”*
– Software Program Managers Network (SPMN)
<http://www.iceincusa.com/16csp/content/hmfrm.htm>
- ❖ *“Software quality metric: A function whose inputs are software data and whose output is a single numerical value that can be interpreted as the degree to which software possesses a given attribute that affects its quality.”*
– IEEE Standard for a Software Quality Metrics Methodology IEEE Std 1061-1998

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Goals of a Metrics Programme



- ❖ Reduce software lifecycle costs by improving process effectiveness and customer satisfaction
- ❖ Provide a quantitative basis for evaluating and making decisions about software quality in a timely manner
- ❖ Identify and increase awareness of quality requirements and goals
- ❖ Provide feedback on the metrics programme itself and validate the set of metrics being tracked

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3

Principles of Good Software




- ❖ *“Satisfaction with the overall quality of the product and its specific dimensions is usually obtained through various methods of customer surveys.*
- ❖ *For example, the specific parameters of customer satisfaction in software monitored by IBM include the CUPRIMDSO categories (capability / functionality, usability, performance, reliability, installability, maintainability, documentation / information, service, and overall);*
- ❖ *for Hewlett-Packard they are FURPS (functionality, usability, reliability, performance, and service).”*

– Stephen H. Kan, “Metrics and Models in Software Quality Engineering”

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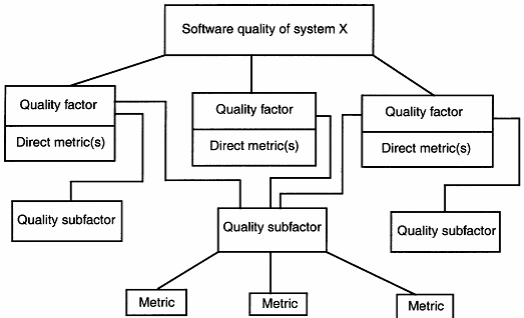
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Metrics: Measures & Indicators



- ❖ Quality attributes
- ❖ Quality factors
- ❖ Quality subfactors
- ❖ Metrics
- ❖ Measures
- ❖ Indicators

❖ A Metrics Framework




IEEE Standard for a Software Quality Metrics Methodology
IEEE Std 1061-1998

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5

Some Common Metrics?



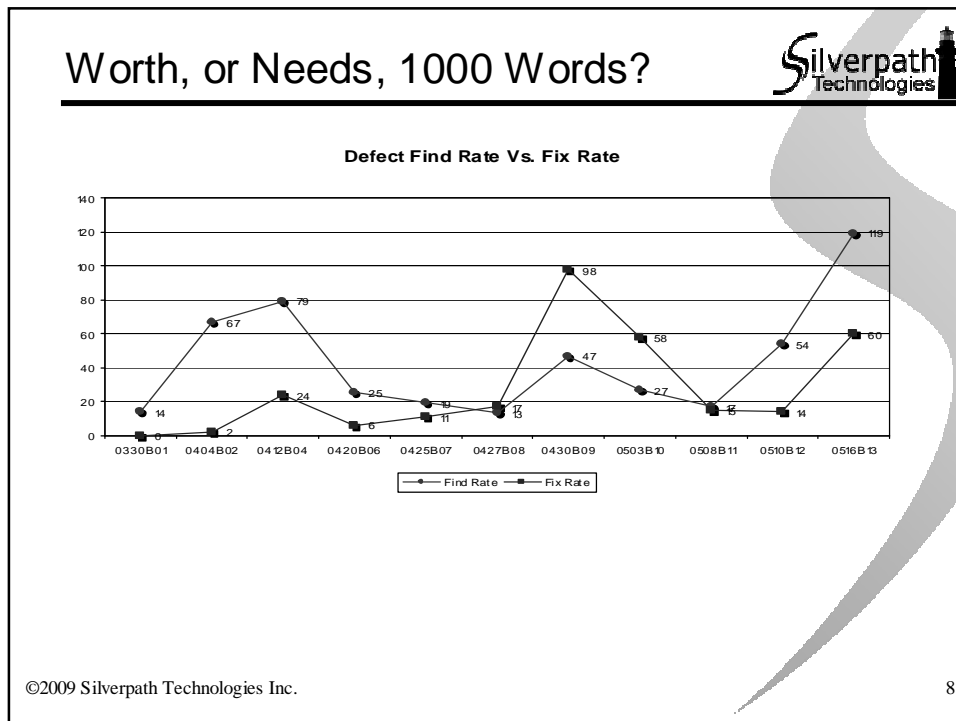
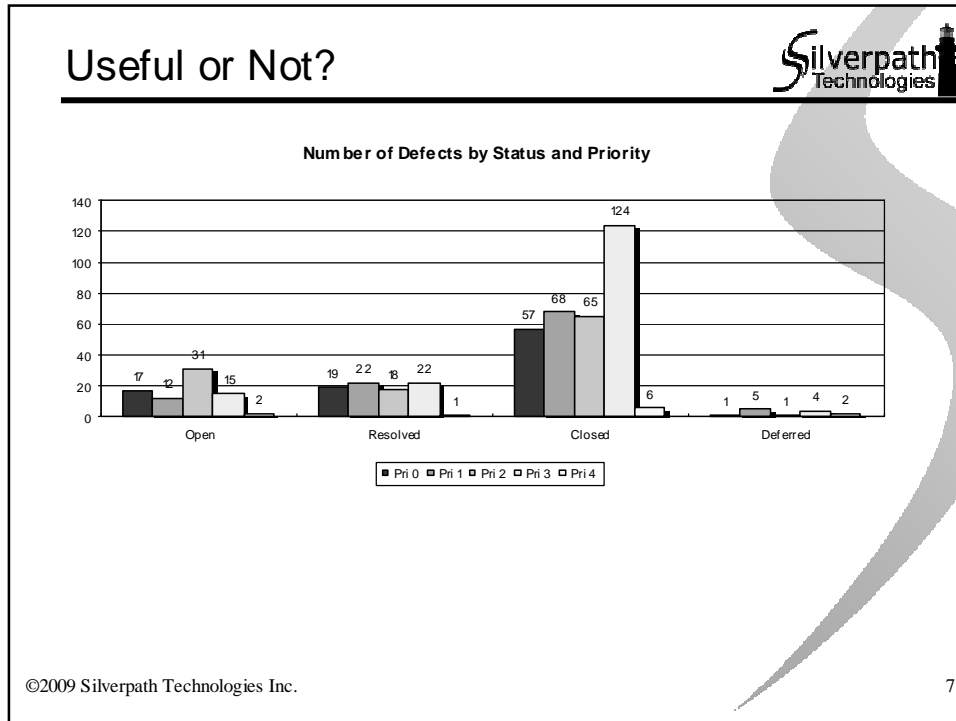
- ❖ Examples of metrics for:
 - ❖ Product quality
 - ❖ Product performance
 - ❖ Schedule and progress
 - ❖ Resources and cost
 - ❖ Development process

- ❖ What questions are being answered?
- ❖ What decisions are being made?


Recommend reading:
Stephen H. Kan,
"Metrics and Models in Software
Quality Engineering", 2nd Edition.
[http://www.infomit.com/content/images/
0201729156/samplechapter/kanch10.pdf](http://www.infomit.com/content/images/0201729156/samplechapter/kanch10.pdf)

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6

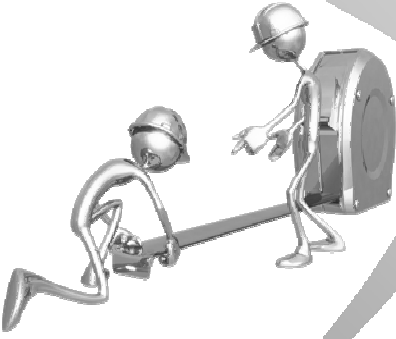


Measuring the Extent of Testing




How much testing have you got done?

How much more testing do you have to do?



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Right-click → Context Menu




- ❖ We've tested 60% of lines of code
- ❖ We've tested 80% of the test cases
- ❖ We've discovered 354 defects
- ❖ We've tested for 176 hours

- ❖ 1-Dimensional – ambiguous – demanding questions rather than giving answers
- ❖ However, if taken together, a multi-dimensional story could be told

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Thinking in N-Dimensions



- ❖ 1 Dimension
- ❖ 2 Dimensions
- ❖ 3 Dimensions
- ❖ More...correlate 3 or more metrics for an increasingly complete version of the real story
-
-
-
- ❖ N-Dimensions – “How many dimensions are needed to describe the universe is still an open question.”
<http://en.wikipedia.org/wiki/Spacetime>

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Choosing Metrics Tips



- ❖ Practical metrics
 - ❖ Combine metrics to support answering real world questions and making timely decisions
 - ❖ Look for “quick wins” when getting started; what do you already collect?
 - ❖ Don’t rely on new metrics to save the day the first time out
- ❖ Metrics change behaviour
 - ❖ But not always the way you may hope
 - ❖ Heisenberg’s Uncertainty Principle
- ❖ Build a data/OLAP cube
 - ❖ Collect the data now for later analysis and use
 - ❖ http://en.wikipedia.org/wiki/OLAP_cube

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About Silverpath



- ❖ Silverpath is founded on the principle vision of providing high value to software companies by raising the quality of their software systems and teams while simultaneously driving down the total costs to achieve that quality.
- ❖ Within this vision, Silverpath engages in a highly collaborative relationship with each customer where focus is driven by the emphasis on improving the effectiveness and efficiency of quality and testing activities. Working together, we obtain the practical results needed from the optimal balance of quality requirements, scope of effort, and project constraints and thereby achieve the greatest return on investment .
- ❖ Visit <http://www.silverpath.com>

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13