

Software Quality Metrics That Matter



Outside The Box

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Software Quality Is...

- ◆ **Conformance to specifications?**
- ◆ **Zero critical or serious open defects?**
- ◆ **All system regression tests passing?**
- ◆ **All UAT cases passing?**
- ◆ **MTBDD greater than epsilon?**
- ◆ **End user satisfaction?**
- ◆ **Or ??**

Go ahead. Ask questions. It's okay. Really.



How Can You Tell?



Or



A Many-Splendored Thing

- ◆ **F**unctionality
- ◆ **U**sability
- ◆ **R**eliability
- ◆ **P**erformance
- ◆ **S**upportability
- ◆ **+** *etcetera*

Today's Double Jeopardy Question: The FURPS model was invented by this HP engineer in 1982.

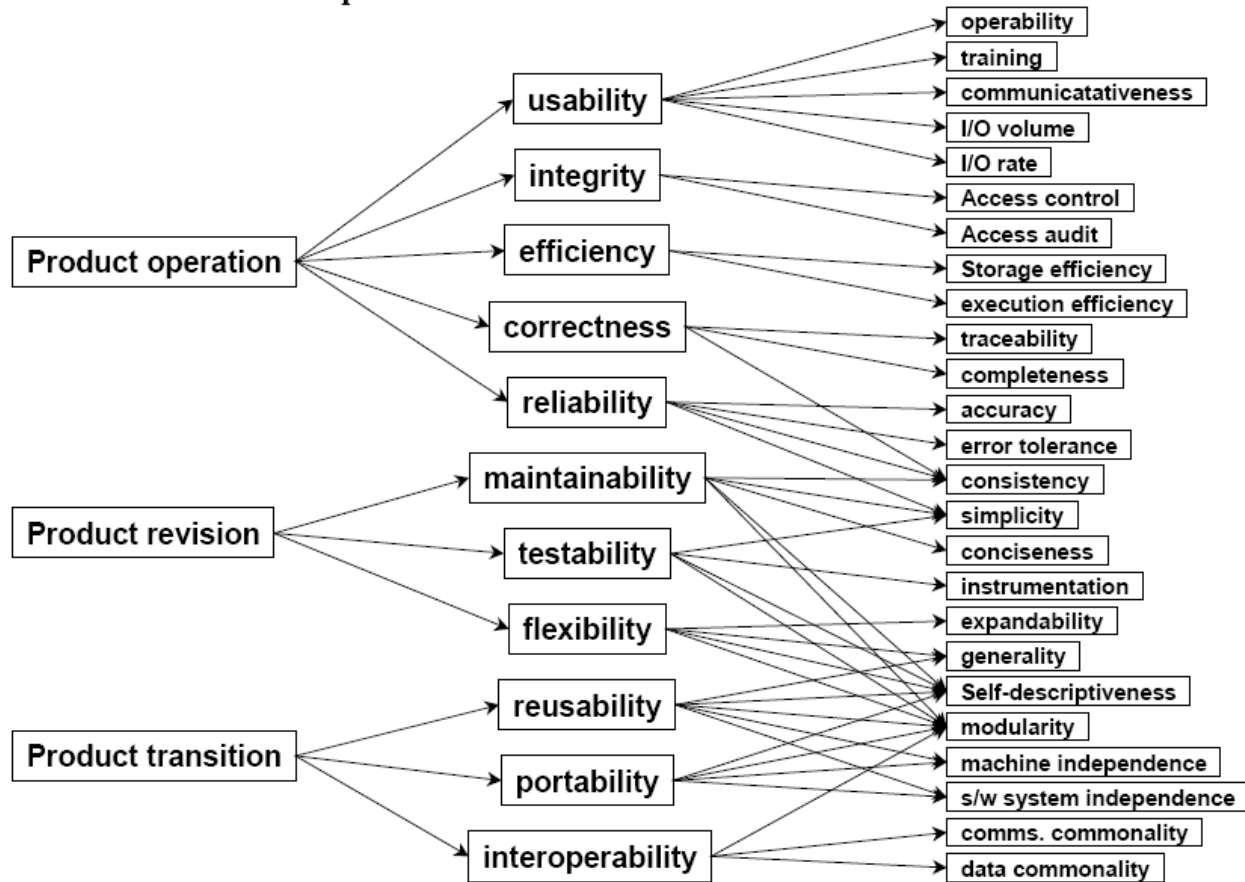


More Splendor

- ◆ **Functionality**
 - What functions are there
 - How general are they
 - Security
- ◆ **Usability**
 - Human Factors
 - Aesthetics
 - Consistency
 - Documentation
- ◆ **Reliability**
 - Failure frequency and severity
 - Output Accuracy
 - MTBF
 - Failure recovery
 - Program predictability
- ◆ **Performance**
 - Speed
 - Response time
 - Resource consumption
 - Efficiency
- ◆ **Supportability**
 - Testability
 - Maintainability
 - Extensibility
 - Adaptability
 - Serviceability
 - Compatibility
 - Configurability
 - Ease of installation
 - Ease of problem localization



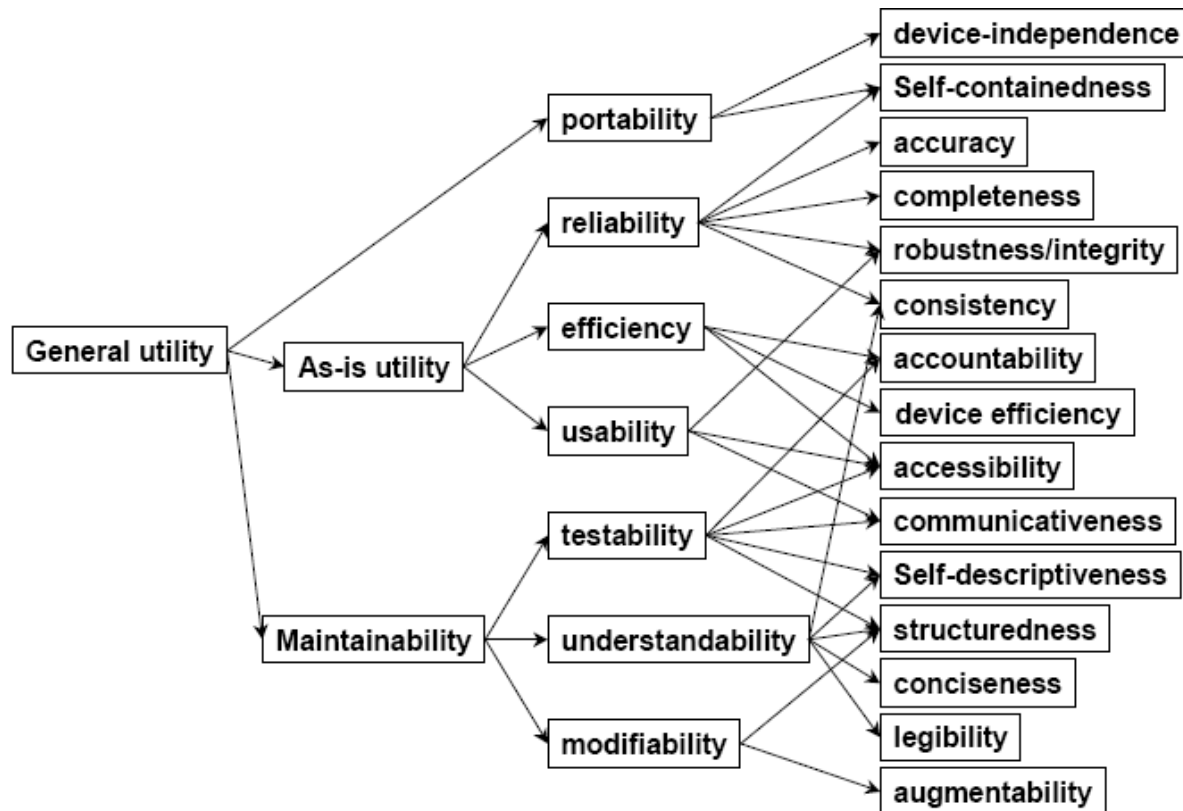
Even More Splendor



McCall's Quality Factors (1977)



Yet More Splendor

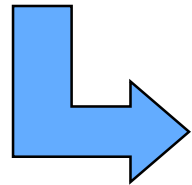


Boehm's Quality Factors (1976)

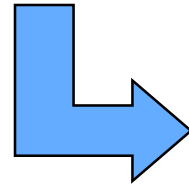


Common Thread

Quality Factor



Quality Criteria



Quality Metric



So Much To Measure

Where do I start?



GQM to the Rescue



Basili's GQM Model (1984)



Still So Much To Measure

Mind what you measure.

Measure what matters.



Metrics Litmus Tests

- ◆ Traceable to program goals
- ◆ Strongly correlated with underlying behavior
- ◆ Accurate and reproducible
- ◆ Lead to decision / action
- ◆ Cost-effective to collect and manage
- ◆ Few in number
- ◆ Can be leveraged on future programs

Not because we always do it

Not because it's easy to measure

Not because it would be nice to know



Outside The Box

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Thank you for your attention,

-DKH



References

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