Requirements Metrics - Definitions of a Working List of Possible Metrics for Requirements Quality

William L. Honig
Loyola University Chicago, whonig@luc.edu

Follow this and additional works at: https://ecommons.luc.edu/cs_facpubs

Part of the Computer Engineering Commons, Electrical and Computer Engineering Commons, and the Software Engineering Commons

Recommended Citation
Honig, William L.. Requirements Metrics - Definitions of a Working List of Possible Metrics for Requirements Quality. , , , 2016. Retrieved from Loyola eCommons, Computer Science: Faculty Publications and Other Works,

This Working Paper is brought to you for free and open access by the Faculty Publications at Loyola eCommons. It has been accepted for inclusion in Computer Science: Faculty Publications and Other Works by an authorized administrator of Loyola eCommons. For more information, please contact ecommons@luc.edu.

This work is licensed under a Creative Commons Attribution-Noncommercial-No Derivative Works 3.0 License.
© 2016 William L. Honig.
Requirements Metrics
v 1.0 (original)

Entry Criteria:
1 Atomic Requirements
   Uniquely numbered atomic requirements have been created, in natural language or other form, and are ready to review
2 Time to Review Requirements
   The author(s) of the requirements or an inspection team has been assigned to evaluate the requirements and generate metrics

Process:
Metrics to be calculated either during initial review or formal inspection of Requirements Document(s)
Can be used to evaluate partial or draft documents as well as "finished" document

Exit Criteria:
1 Metrics Generated
   The metrics defined below have been generated from the review and are available in the system development repository
2 Time Recorded (Optional)
   The total time in person minutes for the review has been recorded with the metrics

Metrics
<table>
<thead>
<tr>
<th>Scale</th>
<th>Evaluation Method</th>
<th>Notes and References</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 10</td>
<td>Subjective Evaluation</td>
<td></td>
</tr>
</tbody>
</table>

For individual atomic requirements
Ra1 Requirement Correctness
Is the individual requirement properly defining a genuine system function and need? In some cases the measure may be determined by a formal system requirement verification process.

Ra2 Requirement Unambiguity
Is the requirement clear and understandable to the expected users of the document? Are multiple different interpretations of the requirement by different readers unlikely? Length of requirement may be meaningful

Ra3 Requirement Completeness
Does this single atomic requirement include everything necessary to fully understand the desired function? Are all realizable types of input data, events, system environment covered? Are all terms used understandable or included in the glossary?

Ra4 Requirement Verifiability
How adequately can this requirement be tested? Is it perfectly clear what test(s) are needed to confirm the requirement is met? Is it clear what should be considered a failure of a test of this requirement?

Ra5 Requirement Modifiability
Is the individual requirement written so as to be easy to update, change, and eliminate in the future as system needs evolve?
Consider dropping??

Ra6 Requirement Atomicity
Is the requirement all one, individual, atomic requirement, including limits, constraints, and all details of the functionality?

For entire document or set of atomic requirements
Rd1 Requirements Completeness
Is the set of atomic requirements complete and providing a full definition of all necessary functionality for the entire system (or the current portion being reviewed)?

Rd2 Requirements Consistency
Is the set of atomic requirements internally consistent, with no contradictions, no duplication between individual requirements?

Rd3 Requirements Importance Ranking
The set of atomic requirements are individually assigned to suitable importance categories (e.g. Essential, Desirable, Optional/Frill) and the assignment of values is appropriate

Rd4 Requirements Traceability
Are the individual atomic requirements uniquely identified with unchanging numbers? Are other existing documents or deliverables linked to individual requirements appropriately (e.g. Use Cases related to atomic requirements)?

Rd5 Requirements Purity
Is the document free from system design and project schedule, staffing, etc.?

Rd6 Requirements Count
Current number of individually identified and numbered atomic requirements

Notes, questions, thoughts,...
Requirements churn deserves a metric

Possibly Humphrey style phase containment on requirements, total requirements size in pages (or words)