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Atomic Requirements Quick Notes

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Atomic Requirements Quick Notes

Working paper on atomic requirements for systems development and the importance of singular, cohesive, individual requirements statements. Covers possible definitions of atomic requirements, and their characteristics. Atomic requirements improve many parts of the development process from requirements to testing and contracting.

What makes a requirements statement atomic?

An atomic requirement statement documents a single customer or product function, need, or capability.

1. All information, details, limits, and characteristics necessary to provide a complete definition of a capability must be included (or in glossary of terms used by the requirements statement). Both functional and non functional aspects of the feature may be included.
2. Only information related to a single feature, function or capability is included; cover the simplest and smallest amount of information about the capabilities of the system that make sense to describe separately. Divide into multiple requirements if possible when such separation aids understanding.
3. Use judgement and when in doubt make more individual requirements instead of larger and broader statements.

Atomic requirements could also be called Individual requirements, single requirements, complete requirements, or cohesive requirements.

The goal of making requirements atomic is to aid understandability of the requirement and support further tracking and metrics during the product development process.

Each individual atomic requirement is given an identification number which never changes.

Alternative definition: One atomic requirement completely describes a single function, feature, need, or capability, including all information, details, limits, and characteristics.

Characteristics of Atomic Requirements

1. Atomic requirements are separately implementable and testable.
2. Testing of an atomic requirement should fully exercise the capability and either 100% pass or fail. While possible that only some parts of the test fail, it will usually not be useful or meaningful to use the product in this state.
3. A use case that describes a full system event from start to finish will represent one or more atomic requirements.
4. Atomic requirements are useful for agreements between developers and customers, including contracts. Payments may be tied to individual atomic requirements. Value may be calculated from the number of atomic requirements that are (fully) completed and tested.
5. Atomic requirements make modifications easier as often only one requirement statement is affected by each change.
6. Atomic requirements support clear ranking of requirements for importance (each atomic requirement can have a single, precise importance value).
7. Atomic requirements allow for easy and clear reductions in product scope or delay of capabilities to future releases.

8. Agile development may focus on implementing one atomic requirement at a time.
9. General information about the system such as product goals, stakeholders, and other background can be documented in other sections of the requirements documentation.

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V2.0 (short form of definition, edits to characteristics) May 2016

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