

List of system quality attributes

Within systems engineering, **quality attributes** are realized non-functional requirements used to evaluate the performance of a system. These are sometimes named “ilities” after the suffix many of the words share. They are usually Architecturally Significant Requirements that require architects’ attention.^[1]

1 Quality attributes

Notable quality attributes include:

- accessibility
- accountability
- accuracy
- adaptability
- administrability
- affordability
- agility [Toll] (see Common Subsets below)
- auditability
- autonomy [Erl]
- availability
- compatibility
- composability [Erl]
- configurability
- correctness
- credibility
- customizability
- debugability
- degradability
- determinability
- demonstrability
- dependability
- deployability
- discoverability [Erl]
- distributability
- durability
- effectiveness
- efficiency
- evolvability
- extensibility
- failure transparency
- fault-tolerance
- fidelity
- flexibility
- inspectability
- installability
- integrity
- interchangeability
- interoperability [Erl]
- learnability
- maintainability
- manageability
- mobility
- modifiability
- modularity
- operability
- orthogonality
- portability
- precision
- predictability
- process capabilities
- producibility
- provability
- recoverability

- relevance
- reliability
- repeatability
- reproducibility
- resilience
- responsiveness
- reusability [Erl]
- robustness
- safety
- scalability
- seamlessness
- self-sustainability
- serviceability (a.k.a. supportability)
- securability
- simplicity
- stability
- standards compliance
- survivability
- sustainability
- tailorability
- testability
- timeliness
- traceability
- transparency
- ubiquity
- understandability
- upgradability
- usability

Many of these quality attributes can also be applied to data quality.

2 Common subsets

- Together, reliability, availability, serviceability, usability and installability, are referred to as RASUI.
- Functionality, usability, reliability, performance and supportability are together referred to as FURPS in relation to software requirements.
- Agility in working software is an aggregation of seven architecturally sensitive attributes: debuggability, extensibility, portability, scalability, securability, testability and understandability.
- For databases reliability, availability, scalability and recoverability (RASR), is an important concept.
- Atomicity, consistency, isolation (sometimes integrity), durability (ACID) is a transaction metric.
- When dealing with safety-critical systems, the acronym reliability, availability, maintainability and safety (RAMS) is frequently used.
- Dependability is an aggregate of availability, reliability, safety, integrity and maintainability.
 - Integrity depends on security and survivability.
 - Security is a composite of confidentiality, integrity and availability. Security and dependability are often treated together.

3 See also

- Non-functional requirement
- Information quality
- ISO/IEC 9126 *Software engineering—product quality*
- Cognitive dimensions of notations
- Software quality

4 References

- [1] Chen, Lianping (2013). “Characterizing Architecturally Significant Requirements”. *IEEE Software*. **30** (2): 38–45. doi:10.1109/MS.2012.174.

5 Further reading

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- [Len Bass, Paul C. Clements, Rick Kazman]" (2012). "Software Architecture in Practice-3rd Edition, 2012"

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6.1 Text

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