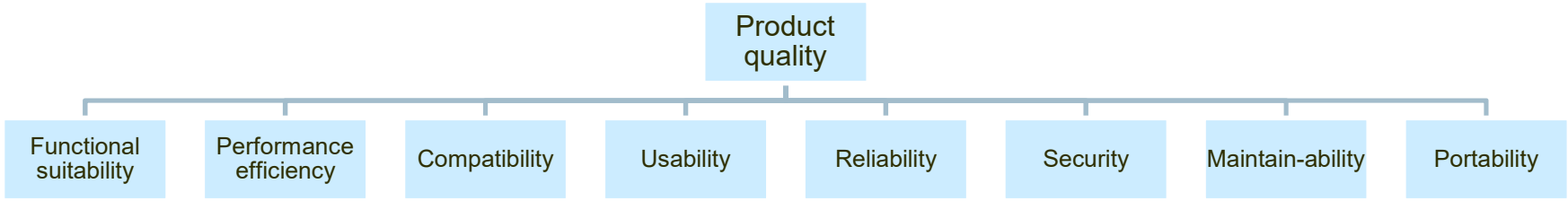
ISO/IEC 25010
Quality Model for
Software Products

ISO/IEC 25010. Quality Model for software products

The ISO/IEC 25010 quality model categorizes the sofware product quality into characteristics and sub-characteristics.

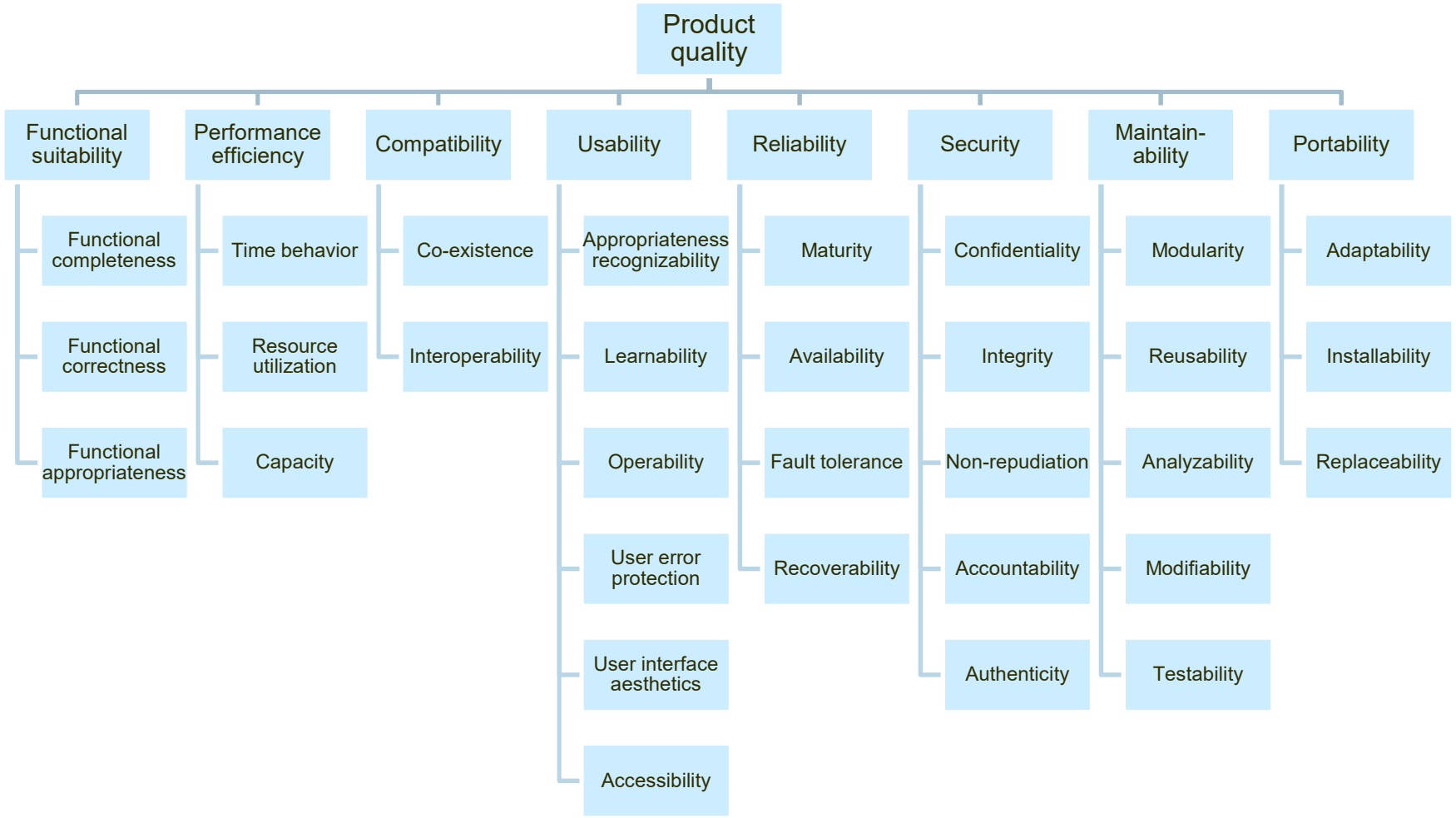
Product Measurement
ISO/IEC 25010 - Product Quality

Characteristics



Product Measurement

ISO/IEC 25010 - Product Quality



Functional Suitability

This characteristic represents the degree to which a product or system provides functions that meet stated and implied needs when used under specified conditions.

Sub-characteristics

- Functional completeness.
- Functional correctness.
- Functional appropriateness.

Functional Suitability's Sub-characteristics

- **Functional completeness.** Degree to which the set of functions covers all the specified tasks and user objectives.
- **Functional correctness.** Degree to which a product or system provides the correct results with the needed degree of precision.
- **Functional appropriateness.** Degree to which the functions facilitate the accomplishment of specified tasks and objectives.

Performance efficiency

This characteristic represents the performance relative to the amount of resources used under stated conditions.

Sub-characteristics

- Time behavior
- Resource utilization
- Capacity

Performance efficiency's sub-characteristics

- **Time behavior.** Degree to which the response and processing times and throughput rates of a product or system, when performing its functions, meet requirements.
- **Resource utilization.** Degree to which the amounts and types of resources used by a product or system, when performing its functions, meet requirements.
- **Capacity.** Degree to which the maximum limits of a product or system parameter meet requirements.

Compatibility

Degree to which a product, system or component can exchange information with other products, systems or components, and/or perform its required functions, while sharing the same hardware or software environment.

Sub-characteristics

- Co-existence
- Interoperability

Compatibility's sub-characteristics

- **Co-existence.** Degree to which a product can perform its required functions efficiently while sharing a common environment and resources with other products, without detrimental impact on any other product.
- **Interoperability.** Degree to which two or more systems, products or components can exchange information and use the information that has been exchanged.

Usability

Degree to which a product or system can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.

Sub-characteristics

- Appropriateness recognizability
- Learnability
- Operability
- User error protection
- User interface aesthetics
- Accessibility.

Usability's Sub-characteristics

- **Appropriateness recognizability.** Degree to which users can recognize whether a product or system is appropriate for their needs.
- **Learnability.** Degree to which a product or system can be used by specified users to achieve specified goals of learning to use the product or system with effectiveness, efficiency, freedom from risk and satisfaction in a specified context of use.
- **Operability.** Degree to which a product or system has attributes that make it easy to operate and control.

Usability's Sub-characteristics

- **User error protection.** Degree to which a system protects users against making errors.
- **User interface aesthetics.** Degree to which a user interface enables pleasing and satisfying interaction for the user.
- **Accessibility.** Degree to which a product or system can be used by people with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use.

Reliability

Degree to which a system, product or component performs specified functions under specified conditions for a specified period of time.

Sub-characteristics

- Maturity
- Availability
- Fault tolerance
- Recoverability

Reliability's Sub-characteristics

- **Maturity.** Degree to which a system, product or component meets needs for reliability under normal operation.
- **Availability**. Degree to which a system, product or component is operational and accessible when required for use.
- **Fault tolerance.** Degree to which a system, product or component operates as intended despite the presence of hardware or software faults.
- **Recoverability.** Degree to which, in the event of an interruption or a failure, a product or system can recover the data directly affected and re-establish the desired state of the system.

Security

Degree to which a product or system protects information and data so that persons or other products or systems have the degree of data access appropriate to their types and levels of authorization.

Sub-characteristics

- Confidentiality
- Integrity
- Non-repudiation
- Accountability
- Authenticity.

Security's Sub-characteristics

- **Confidentiality.** Degree to which a product or system ensures that data are accessible only to those authorized to have access.
- **Integrity.** Degree to which a system, product or component prevents unauthorized access to, or modification of, computer programs or data.
- **Non-repudiation.** Degree to which actions or events can be proven to have taken place, so that the events or actions cannot be repudiated later.
- **Accountability.** Degree to which the actions of an entity can be traced uniquely to the entity.
- **Authenticity.** Degree to which the identity of a subject or resource can be proved to be the one claimed.

Maintainability

This characteristic represents the degree of effectiveness and efficiency with which a product or system can be modified to improve it, correct it or adapt it to changes in environment, and in requirements.

Sub-characteristics

- Modularity
- Reusability
- Analyzability
- Modifiability
- Testability.

Maintainability's Sub-characteristics

- **Modularity.** Degree to which a system or computer program is composed of discrete components such that a change to one component has minimal impact on other components.
- **Reusability.** Degree to which an asset can be used in more than one system, or in building other assets.
- **Analyzability.** Degree of effectiveness and efficiency with which it is possible to assess the *impact* on a product or system *of an intended change* to one or more of its parts, or to diagnose a product for *deficiencies* or *causes of failures*, or to identify parts to be *modified*.

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Maintainability's Sub-characteristics

- **Modifiability.** Degree to which a product or system can be effectively and efficiently modified *without introducing defects or degrading existing product* quality.
- **Testability.** Degree of effectiveness and efficiency with which test criteria can be *established* for a system, product or component and tests can be *performed* to determine whether those criteria have been met.

Portability

Degree of effectiveness and efficiency with which a system, product or component can be transferred from one hardware, software or other operational or usage environment to another.

Sub-characteristics

- Adaptability
- Installability
- Replaceability

Portability's Sub-characteristics

- **Adaptability.** Degree to which a product or system can effectively and efficiently be adapted for different or evolving hardware, software or other operational or usage environments.
- **Installability.** Degree of effectiveness and efficiency with which a product or system can be successfully installed and/or uninstalled in a specified environment.
- **Replaceability.** Degree to which a product can replace another specified software product for the same purpose in the same environment.