Introduction

Quality Management	ensure that the development processes are suitable
Quality Assurance	ensure that the development steps provided the desired results

Terminology

System

* Technical and organizational means for the autonomous fulfilment of a task
*Generally, a system can consist of hardware, software, people (service and maintenance personnel) and logistic assistance

Technical System

* System where influences by people and logistics are ignored

Quality

* Degree in which the inherent (anhaftend, dazugehörend) attributes of an entitiy fulfill quality requirements

Quality Requirement

* Expectation or demand defined (by a customer) that is generally assumed or mandatory

Quality Characteristics

* Property of an entity on the basis of which its quality is described and estimated, but which makes no statement about the degree of fulfillment of the characteristic
* A quality characteristic can be refined incrementally into partial characteristics
* Inherent attribute of a process, product or a system that relates to a quality requirement /DIN EN ISO 9000 05/

Quality Measure

* Measure which allows to draw conclusions on the fulfillment of specific quality characteristics. For instance, MTTF (Mean Time To Failure) is a quality measure of the quality characteristic Reliability

Terminology (cont)

Safety

* State where the danger of a personal or property damage is reduced to an acceptable value (DIN EN ISO 8402)
* Birolini defines safety as a measure for the ability of an item to endanger neither persons, property nor the environment
* A distinction is drawn between the safety of a failure-free system (accident prevention) and the technical safety of a failure afflicted system
* Absence of unacceptable risks /IEC 61508 98/
Safety analysis aims at proving that the actual risk is below the acceptable risk

Technical Safety

* Measure for the ability of a failure afflicted item to endanger neither persons, property nor the environment

Correctness

* Correctness has a binary character, i.e., an item is either correct or incorrect
* A fault-free realization is correct
* An artifact is correct if it is consistent to its specification
* If no specification exists for an artifact, correctness is not defined

Completeness

* A system is functional complete, if all functions required in the specification are implemented. This concerns the treatment of normal cases as well as the interception of failure situations

Robustness

* Property to deliver an acceptable behavior also in exceptional situations (e.g. ability of a software to detect hardware failures)
* A correct system – as measured by the specification – can have a low robustness, actually
* Accordingly, robustness is rather a property of the specification than of the implementation
* A robust program is the result of the correct implementation of a good and complete specification
* Robustness has a gradual character

Terminology (cont)

Reliability

* Part of the quality with regard to the behavior of an entity during or after given time periods with given working conditions (DIN 40041)
* Collective term for the description of the power concerning availability and its influencing factors: power concerning functionality, maintainability and maintainability support (DIN EN ISO 8402)
* Property of an entity regarding its qualification to fulfill the reliability requirements during or after given time periods with given application requirements (DIN ISO 9000)
* Measure for the ability of an item to remain functional, expressed by the probability that the required function is executed failure-free under given working conditions during a given time period (based on Birolini, ETH)

Availability

* Measure for the ability of an item to be functional at a given time