Quality Management of Software and Systems (WS19/20)

Problem Set 4

Problem 1: ISO 9000 Structure

a) What is the purpose of ISO 9000 framework?

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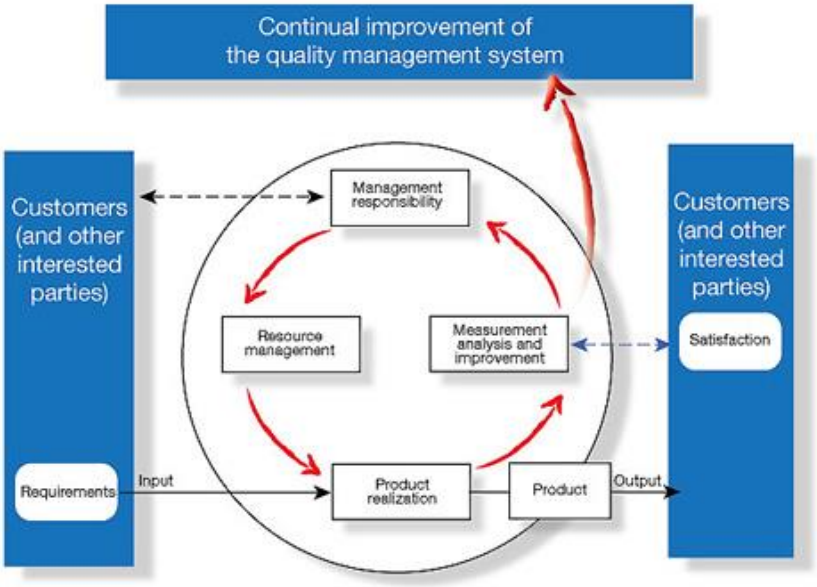
The ISO 9000 framework addresses “Quality management”.

This means what the organization does to fulfill the customer’s quality requirements, and applicable regulatory requirements while aiming to increase customer satisfaction, and achieve continual improvements of its performance in pursuit of these objectives.

The ISO 9000 process approach



b) Of which parts consists the ISO 9000 framework? What is the main purpose of each part?

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ISO 9000 framework

- DIN EN ISO 9000:2005 Quality management systems -Fundamentals and vocabulary.
- DIN EN ISO 9001:2008 Quality management systems –Requirements.
- DIN EN ISO 9004:2009 Managing for the sustained success of an organization -A quality management approach.
- DIN EN ISO 19011:2011 Guidelines for auditing management systems.
- ISO 90003: Software engineering. Guidelines for the application of ISO 9001:2000 to computer software.

Problem 2: ISO 9000-3

a) What is the focus of the ISO 9000-3?

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None of ISO 9000 to ISO 9004 is “designed explicitly for the application to software or software based systems”

ISO 9000-3 provides guidelines for the application of ISO 9001 to the Specification, development, installation and support of software.

- QA-System -framework
  - Responsibility of the top management
  - Quality assurance system, internal quality audits, corrective actions
- QA-System –life cycle activities
  - Contract verification, determination of the requirements on the part of the client
  - Planning of the development, planning of the QA
  - Design and implementation, testing and validation
  - Acceptance, duplication, delivery and installation, maintenance
- QA-System –supporting activities
  - Configuration management, management of documents, quality records
  - Measurements, rules, methods and agreements, tools and techniques
  - Acquisition/provision, subcontractor management, training

b) Which tasks are addressed by the norm? ** Exam: summarize and explain in your own words from 2(a)*

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Individual of every department should know their task and responsibility and what need to be done.

****summary of QA system framework, life-cycle and supporting activities.*

c) What documents are covered? ** Exam: summarize and explain in your own words from 2(a)*

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Test plan, development plan, management plan, configuration plan, measurement, agreement, methods etc. are covered by ISO 9000-3.

d) What actions need to be performed? ** Exam: summarize and explain in your own words from 2(a)*

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Several action need to be performed in ISO 9000-3 such as, planning of development, planning for QA, design and implementation, testing and validation etc.

Problem 3: Certification

a) Who can give a certificate?

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Certificates are given by external auditors of accredited certificate authorities

- Technical inspection authorities, TÜV Cert e.V., Bonn
- DEKRA AG certification center, Stuttgart
- Germanic LIoyd QA certification center, Hamburg
- VDE inspection and certification authority, Offenbach
- RWTÜV, Essen

b) What is an audit?

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- Evaluation of a person, organization, system, process, enterprise, project or product
- Performed to ascertain the validity and reliability of information
- To provide an assessment of a system's internal control

Goal: To express an opinion on the person / organization / system (etc.) in question. Under evaluation based on work done on a test basis.

c) How long is a certificate valid?

- 3 years or sometimes 2 years. But the authorities always re-evaluate after 6-month interval.

Problem 4: ISO 9000 vs. Software Assessments *Exam: summarize and explain in your own words*

Please explain the main differences between ISO 9000 and software process assessments.

	DIN EN ISO 9001	Software Process Assessment
Subject	Multitude of industrial organizations, products and procedures	At the moment intended for pure software development processes
Goal	Proof of qualification for the generation of quality-compatible results	Detailed objectives and priority specifications for the improvement of the process
Status	Fixed de facto standard	Useful means for problem analysis and process improvement
Basis	Fixed standard text	Flexible Capability Maturity Model
Requirements	Minimal requirements (have to be met without exception)	Hierarchy of demands/requirements depending on the level
Result	Accepted certificate	Actual state, strengths and weaknesses profile
Costs vs. benefit	Benefit is founded by the given certificate	Savings due to process improvements vs. costs for the assessments and the improvement activities

Note: Don't copy from table. Write sentence by sentence with own explanation.

Problem 5: Application of ISO 9000 in the industry *** Not needed.