

Situation in Hungary - from organization side

Survey on software quality of software developer companies at Budapest region.

- Software developer organizations
- Official request
- Interview taking 60-90 minutes



The Questionnaire

Questions grouped by 4 categories:

- **Organization** (general questions, structure, resources, personnel, training)
- **Processes** (documented standards, procedures, process metrics, data management and analysis, process control)
- **Tools and technology**
- **Quality related questions**

Some results

Concerning the **ISO 9001:2000** quality standard **90%** of the organizations have certification.

Concerning the **SEI CMM/CMMI**

30% never heard about

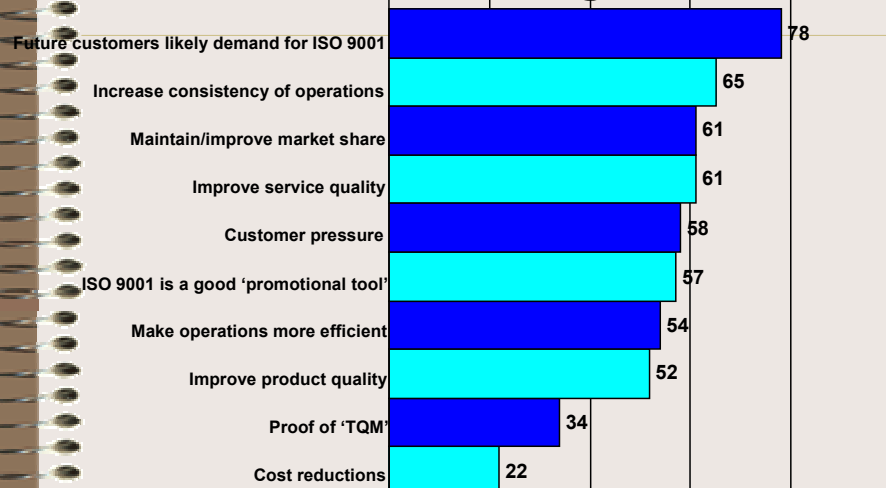
70% heard about

(2 of them have CMM certification, level 2)

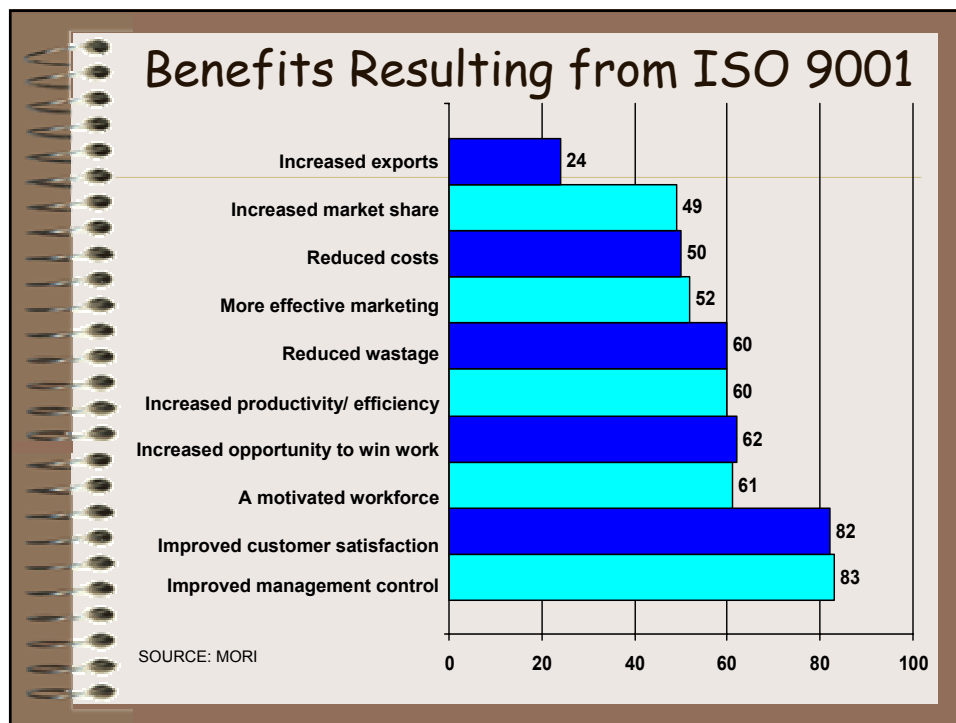
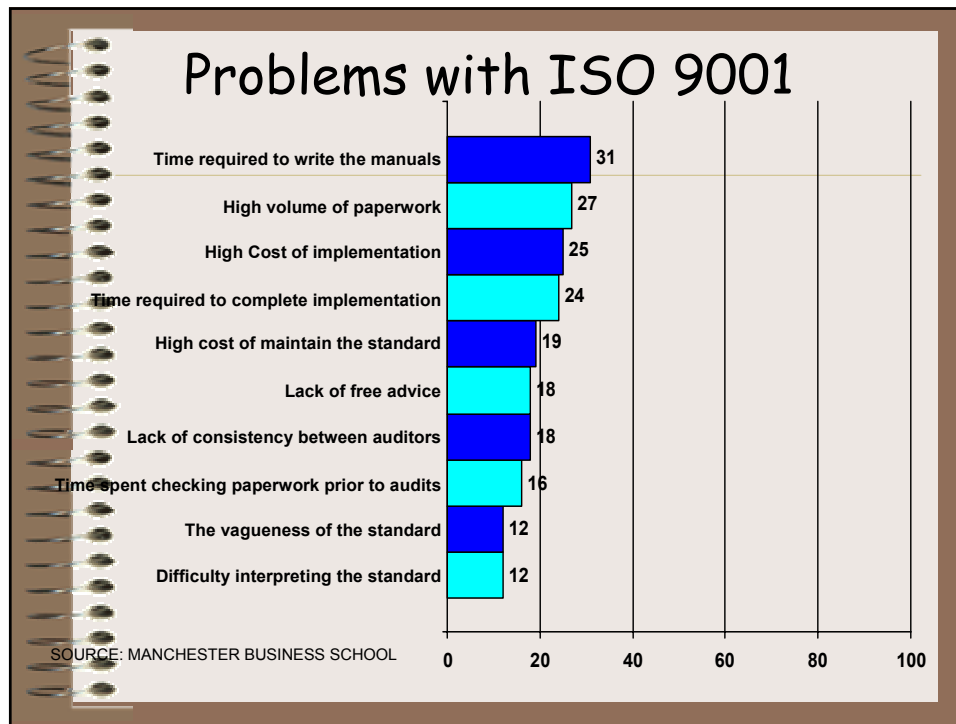
10% analyzed and rejected

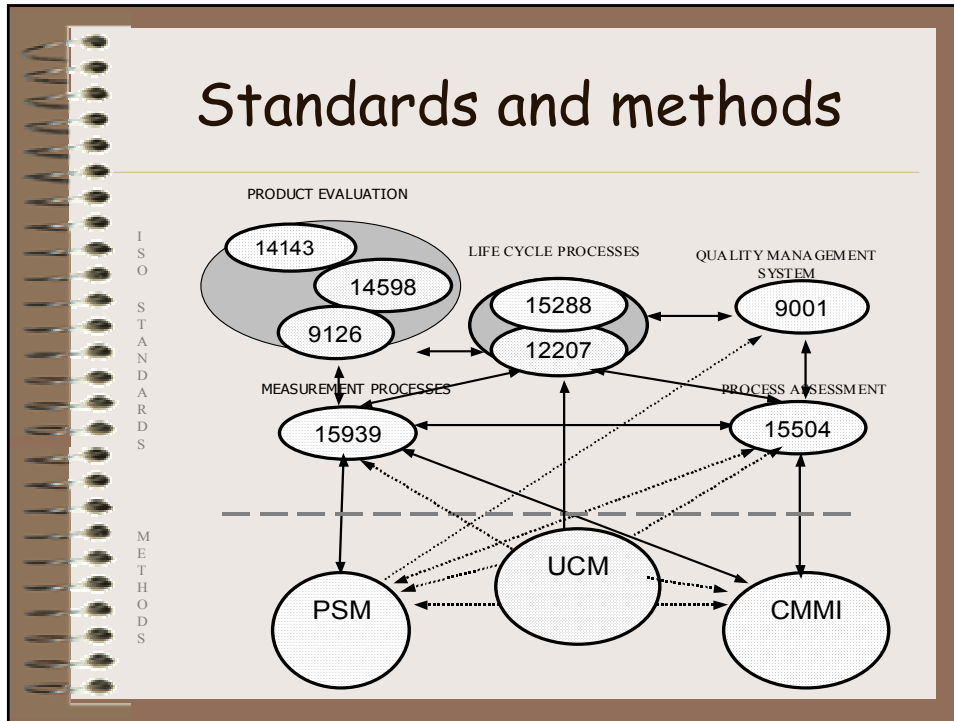


Reasons for Seeking ISO 9001



SOURCE: MANCHESTER BUSINESS SCHOOL





Classes of SQA Standards

Characteristics	Quality management standards	Project process standards
Target Unit	Management of software development and/or maintenance, SQA units	Software development and/or maintenance project team
Focus	Organization of SQA systems, infrastructure and requirements	Methodologies for carrying out software development and maintenance projects
Objective	„What“ to achieve	„How“ to perform
Goal	Assuring software quality and assessing its software process capability	Assuring the quality of a specific software project
Examples	ISO 9000-3 SEI CMMI	ISO/IEC 12207 IEEE 1012-1998

Other results

There exists a group or person in the company dealing with quality questions.

Large companies **100%**

Middle sized companies **53%**

Metrics are in use.

Large companies **76%**

Middle sized companies **14%**



Situation in Hungary - from academic side

BAD:

2005 Scientific Competition of Hungarian Students (OTDK)

Qualify for the finals (informatics): 100 student,
A huge diversity of applications.

Just ONE is on software quality (incl. standards, methodologies, testing, measurements, etc.)

GOOD:

Software quality assurance and regarding questions are part of the curriculum at least in Eötvös Loránd University and Technical University, Budapest.

Partnership?

What can the academic side offer to the companies?

- Technology and knowledge transfer
- Partnership programs
- Common applications (GVOP, EU)



An Example: Research Center at ELTE

Number of consortial partners: 7

One of the 4 subproject is on **Software Quality**

Two research areas:

Decision Analysis and **Risk Management**

Why are they important?

Decision Analysis and Risk Management

ISO 9000-3 new edition. Requirement class 8 - Measurement, analysis and improvement.

ISO/IEC 15504 Level 4. Predictable process - Measurement and process control (collection of data on performance and product measures)

SEI CMMI Level 2

- Project Planning (SG1 establish estimates, SG2 develop a project plan)
- Project Monitoring and Control (SG1 monitor projects against plan, SG2 manage corrective actions)
- Measurement and Analysis



Modeling Risks

There are many type of models to analyze risk in measurements. Software measurement specific problems are:

- based on **limited historical data** of projects,
- must take into account any true **causal relationships** between the entities of the development process,
- must handle **uncertainty**.

Solution: Bayesian Belief Nets

Advantages of using BBN's:

- explicitly **handles uncertainty** and cause-effect relationships
- combination of **diverse types of information** (observed and experienced) is possible
- provides the **visibility** and auditability to the decision making process
- ability to **forecast** with missing data
- helps in answering the typical managerial **'What-if ?'** questions
- **mathematical semantics** for the model



Thank You!

„Quality is not an act. It is a habit.”

Aristoteles

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