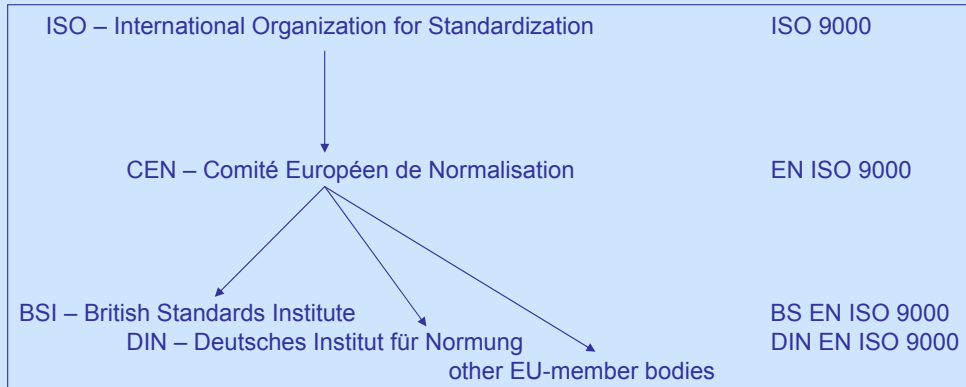


Industry use of Standards and how PPM fits with those Standards

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What is the legal status of a standard?



Statutory Instrument 2006 No. 5

The Public Contracts Regulations 2006

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Example from the UK

(ii) a certificate—

(i) attesting conformity to quality assurance standards based on the relevant European standard; and

How is a new standard developed?



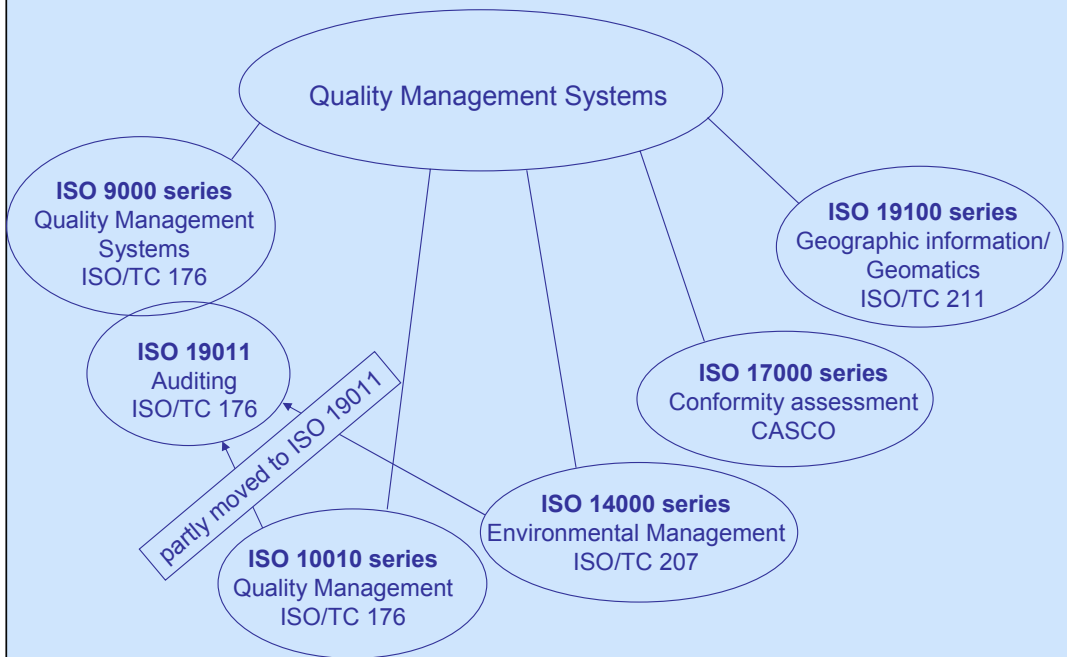
Other deliverables:

- Technical Specification (TS)
- Technical Report (TR)
- International Workshop Agreement (IWA)
- Publicly Available Specification (PAS)

Which terms should we know to understand the ISO 9000 series?

Definitions	
quality	degree to which a set of inherent characteristics fulfils requirements
certification	refers to the issuing of written assurance (the certificate) by an external body that it has audited a management system and verified that it conforms to the requirements specified in the standard
audit	systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which the audit criteria are fulfilled

Which standards apply for quality management of geographic information?



Which are the characteristics of the involved Technical Committees?

Number	ISO/TC 176	ISO/TC 207	ISO/TC 211	CASCO
Title	Quality management and quality assurance	Environmental management	Geographic information /Geomatics	Committee on conformity assessment
Chairman	Trevor Smith, Canada	Daniel Gagnier, Canada	Olaf Østensen, Norway	Olivier Peyrat, France
History	UK: BS 5750 "Quality systems" Canada: CSA Z299 "Quality Assurance series" Japan military: NATO AQAP (Allied Quality Assurance Publications)		CEN/TC 287 "Geographic information"	

What is the contents and the history of the ISO 9000 series?

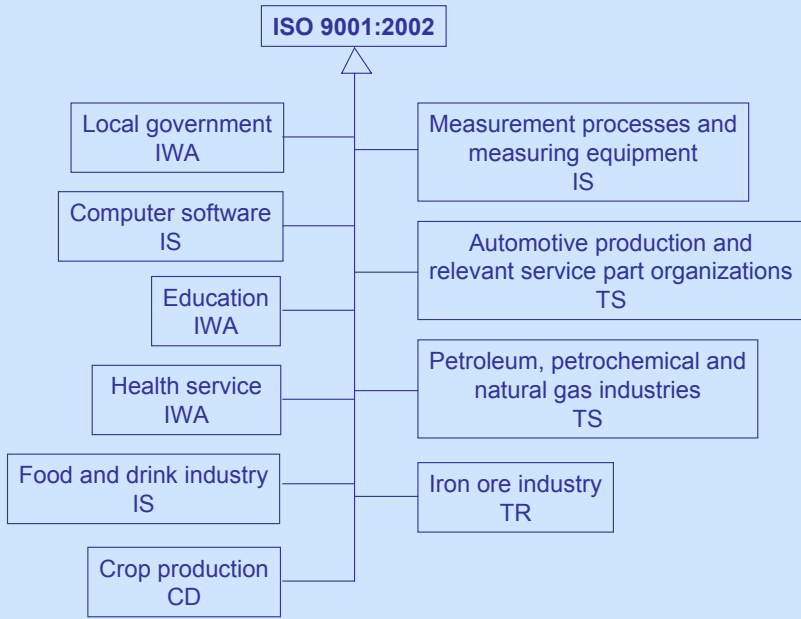
ISO-Number	ISO 9000:2005	ISO 9001:2002	ISO 9004:2000	ISO 19011:2002
Title	Fundamentals and vocabulary	Requirements	Guidelines for performance improvements	Guidelines for quality and/or environmental management systems auditing
Contents	Eight quality management principles Fundamentals of QMS process-based QMS Terms and definitions	Requirements for a QMS internal application Certification Contractual purposes Focus in effectiveness of the QMS	Wider range of objectives than ISO 9001 Continual improvement of organization's overall performance and efficiency, and effectiveness	Principles of auditing practical helps Competence and evaluation of auditors
Earlier ISO standards	ISO 9002:1994 "Model for quality assurance in production, installation and servicing" ISO 9003:1994 "Model for quality assurance in final inspection and test"			ISO 10011-1/2/3: 1992 "Guidelines for auditing quality systems" ISO 14010/11/12: 1996 "Guidelines for environmental auditing"

What are the Quality Management principles according to ISO 9000?

ISO 9000:2005

- **Customer focus**
- **Leadership**
- **Involvement of people**
- **Process approach**
- **System approach to management**
- **Continual improvement**
- **Factual approach to decision making**
- **Mutually beneficial supplier relationship**

What are the “children” of ISO 9001?



What are the sources of information related to certification?

Most relevant documents for certification

ISO 9001:2002 “Certification of quality management systems”

ISO 14001:1996 “Certification of environmental management systems”

ISO 17021:2006 “General requirements for bodies operating assessment and certification of management systems”

ISO/IEC 65:1996 “General requirements for bodies operating product certification systems”
(revision will become ISO 17065)

What is the difference between ISO 9001:2000 and ISO 9004:2000?

	ISO 9001	ISO 9004
Characterization	specifies requirements for a QMS	provides guidelines that consider both the effectiveness and efficiency of the QMS improvement of the performance of the organization
Example for text given in both standards	<p>5. Management responsibilities</p> <p>5.1 General guidance</p> <p>5.1.1 Introduction</p> <p>Leadership, commitment and the active involvement of the top management are essential for developing and maintaining an effective and efficient quality management system to achieve benefits for interested parties. To achieve these benefits ...</p>	<p>5. Management responsibilities</p> <p>5.1 Management commitment</p> <p>Top management shall provide evidence of its commitment to the development and implementation of the quality management system and continually improving its effectiveness by</p> <p>a) ...</p>
Remark		The ISO 9004 quotes the complete text of ISO 9001 in separate text-boxes.

What does ISO 19011 tell about auditing?

Important contents of ISO 19011

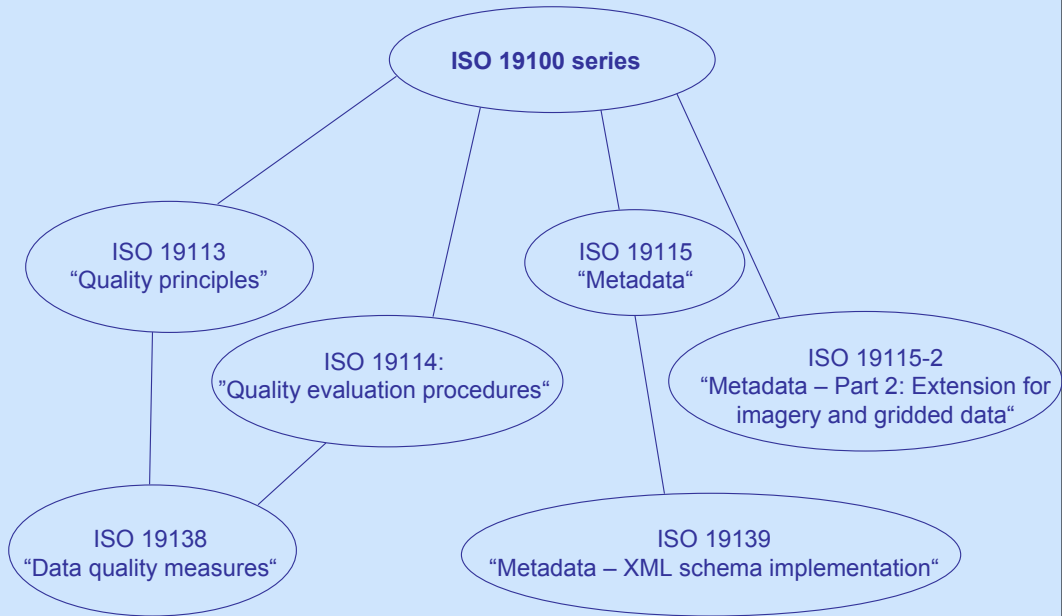
Principles of auditing

- Ethical conduct
- Fair presentation
- Due professional care
- Independence
- Evidence-based approach

Practical helps

- Opening the meeting
- Sources of information
- Conducting interviews
- Audit conclusions

Which quality standards apply for geographic information?



What are examples for quality elements in the geographic information standards?

ISO 19113 “Quality principles“

- Completeness
- Logical consistency
- Positional accuracy
- Temporal accuracy
- Thematic accuracy

ISO/TS 19138: “Data quality measure“

Example: uncertainty ellipse

Line	Component	Description
1	Name	uncertainty ellipse
2	Alias	standard point error ellipse
3	Data quality element	positional accuracy
4	Data quality subelement	absolute or external accuracy
5	Data quality basic measure	not applicable
6	Definition	2D ellipse with the two main axes indicating the direction and magnitude of the highest and the lowest uncertainty of a 2D point
7	Description	<p>From a given covariance matrix (data quality measure Table D.33) of 2D point coordinates the elements describing the uncertainty ellipse can be determined by its eigenvalues.</p> <p>For a single point k, the covariance matrix is given by</p> $\Sigma_k = \begin{bmatrix} \sigma_{kk}^2 & \sigma_{dkk} \\ \sigma_{dkk} & \sigma_{kk}^2 \end{bmatrix}, \text{ with } \sigma_{dkk} = \sigma_{kdk}$ <p>The direction α (bearing) of the major semi-axis of the uncertainty ellipse can be computed by</p> $\alpha = \frac{1}{2} \arctan \frac{2\sigma_{dkk}}{\sigma_{kk}^2 - \sigma_{kk}^2}$ <p>and</p> $a = \sqrt{\frac{1}{2} \left(\sigma_{kk}^2 + \sigma_{kk}^2 + \sqrt{(\sigma_{kk}^2 - \sigma_{kk}^2)^2 + 4\sigma_{dkk}^2} \right)}$ $b = \sqrt{\frac{1}{2} \left(\sigma_{kk}^2 + \sigma_{kk}^2 - \sqrt{(\sigma_{kk}^2 - \sigma_{kk}^2)^2 + 4\sigma_{dkk}^2} \right)}$
8	Parameter	–
9	Data quality value type	measures
10	Data quality value structure	list (a, b, α)
11	Source reference	–
12	Example	–
13	Identifier	S2

Where can I get more information?

Books

ISO Standards Compendium: ISO 9000 – Quality management

ISO 9001:2000 – A workbook for service organizations

Publicizing your ISO 9001:2000 or ISO 14001:2004 certification

ISO 9000 – ISO 9001

CD

New toolbox of 26 standards by ISO/CASCO (Committee on conformity assessment)

ISO/IEC Pack Conformity Assessment – Certification and inspection bodies: 874 SFr.

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Thank you