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Role of Standards in Quality Assurance

Rôle des normes pour l'assurance de qualité

Beiträge der Normung zur Qualitätssicherung

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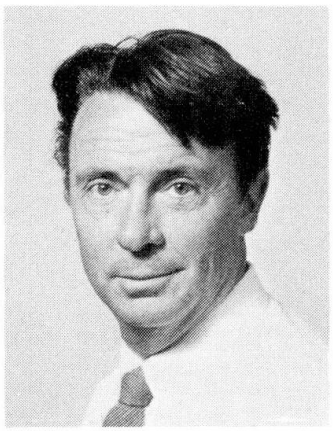

Caspar Reinhart, born 1931, got his civil engineering degree at the Swiss Federal Institute of Technology in Zurich. Since 1972, he heads the Technical Department of the Swiss Society of Engineers and Architects SIA which is in charge of Building Standards of Switzerland.

SUMMARY
Standards play an important role in Quality Assurance. They are existing "tools" well known to professionals. The paper describes how they can contribute efficiently and in many ways to the different systems conceived to define and assure quality.

RESUME
Les normes jouent un rôle important pour l'assurance de qualité. Ce sont des "outils" existants, bien connus des professionnels. L'article décrit leur contribution à la définition et l'assurance de qualité.

ZUSAMMENFASSUNG
Normen bilden eine wichtige Grundlage für die Qualitätssicherung. Sie sind bestehende und dem Fachmann bekannte "Werkzeuge". Der Artikel beschreibt deren Beitrag zur Definition und Sicherung der Qualität.

1. PHILOSOPHY

Man himself with his qualities is crucial for the attainment of qualities desired in any manmade product. Standards can be valuable tools in helping to assure quality.

2. STANDARDS AS TOOLS FOR QUALITY ASSURANCE

There are many ways in which the existing national and international building standards can be used for QA.

They can:

- standardize the information flow

  We can minimize errors in the information flow by using standardized terminology. Chances are better that each partner understands what the other wants to communicate.

- define the standardized frames of reference

  With the standards we can define frames of reference, the SI "international system of units" being an example. With standardized performance levels - together with standardized testing methods - it is easier to define the quality required in practice and to check the result of the operation.

- define standardized operations

  In addition to the standardized terminology and performance levels we can standardize whole operations. The object is to commit fewer errors by using them, since these operations have been tested in advance as to their possible susceptibility to errors, since these operations will be used automatically and since results can be compared with empirical data.

  In technical regulations: we can standardize dimensioning methods, measuring methods (e.g. heat transfer or acoustical measuring) and testing methods.

  In organizational regulations: we can standardize conditions of contract such as the specification of services, contract documents, measuring and warranty regulations. We can allocate tasks for the standardized operations.

- define standardized rules of conduct

  Standardized rules of conduct can contribute to assure quality. The definition of for example a level of safety (which does not necessarily describe the actual safety) prevents dangerous decisions from being made during the design phase in order to obtain economic advantages.

3. REQUIREMENTS

In order that standards serve their purpose and can be used for QA, the following requirements have to be met:

- Clear distinction between technical and organizational regulations [3]

  Technical standards regulate what is to be done in which manner in order to be technically and ethically correct. They are binding by virtue of their factual correctness even when they are not mentioned in the contract.

  Organizational standards regulate competence, duties and mode of operation. They are only valid if they are part of the contract.

- Standards shall not restrain inadequately

  Standards shall restrain neither creativity nor progress. They shall not prevent that everyone carries the responsability for his actions by himself. The blind belief in standards and affidavits is a source of numerous errors and the negative side of standardization.

  To avoid this negative side two proven measures can be taken: a) An exception clause should be included in every technical standard which allows for substantiated deviations from the fixed regulations and b) it should be avoided that standards are declared compulsory by the Government.

- Limitation of standards

  Using standards one should never forget that they are but tools and no substitute for professional know-how, dialogue with the partner and thinking.

4. OPEN QUESTIONS

I have not yet found answers to the following questions:

- Should standards sensitize the user to particular problems?
- Should standards give reasons and explain contexts?

  or should this information be left to professional teaching and training?

The information mentioned above would contribute considerably to greater Quality Assurance since it is conducive to "the right thought at the right moment". This is why I as a pragmatician would advocate the judicious inclusion of these references in standards.

5. SYNOPSIS

The following Synopsis shows for which tasks standards can be used in the different systems conceived to assure quality:

Technical rules	Organizational rules	Rules of conduct
Standardized information flow Terminology Symbols .... Standardized frames of reference Performance levels Standardized operations Dimensioning methods Testing methods	Standard conditions of contract Services Fees and payments Contract documents Measuring regulations Accounting Warranty Allocation of tasks for standard operations	Standardized level of security

4. BIBLIOGRAPHY

[1] M. Portmann: "Normen: Regeln der Baukunde, Mittel der Vertragsgestaltung und des Abbaues von Handelshemmnissen", Schweizer Ingenieur und Architekt, 101(1983) No 7

The paper describes the bases and structure of the technical and organizational standards of SIA (Swiss Society of Engineers and Architects) and cites past experience which lead to today's standards.

[2] Weisung SIA 260: "Sicherheit und Gebrauchsfähigkeit von Tragwerken", bereinigte Fassung vom September 1982

Basic document for the coordination of SIA standards for safety and serviceability of structures

[3] M. Lendi: "SIA-Normen - Struktur und Geltung", Schweizer Ingenieur und Architekt, 101(1983) No 7

Contains an analysis of SIA standards from the legal point of view: Structuring, validity, liabilities and responsabilities

[4] SN 029100: "Anforderungen an Qualitätssicherungs-Systeme", aufgestellt aufgrund der Arbeit der Schweizerischen Arbeitsgemeinschaft für Qualitätsförderung

Describes the requirements for Quality Assurance Systems and proposes three different levels. It is coordinated with the work of EOQC, the European Organization for Quality Control.