



## COMPUTER AIDED LABORATORY ACCREDITATION PROCESS - SERVICE TO THE CUSTOMER AS A REQUIREMENT OF ISO/IEC 17025 STANDARD – INITIAL DISCUSSION PAPER

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### *Abstract*

*The problem of quality of laboratory test results is essential in the context of their future application for example in machine design. Usually quality of test results means their reliability. To achieve it laboratories often tend to accredit their tests in national accreditation bodies in accordance with ISO/IEC 17025 standard. To fulfill the requirements means to introduce a lot of effort in technical and organizational areas of activity. In order to help and support such activities the attempt of elaboration of computer aided accreditation software is being developed. One of the key issues of the problem is to fulfill the mentioned requirements from the range of the clause 4.7 „Service to the Customer” but also from the point of view of an organization trying to achieve the highest level of the customer's satisfaction. The paper discusses the problem focusing on basic assumptions that need to be viewed. On the base of developed works and own experience suggestions for application are added.*

**Keywords:** quality, laboratory, accreditation, reliability of tests, service to the customer

### **1. Introduction**

A laboratory is a place where tests are performed in order to gather data needed in various processes i.e. scientific, production, design ones. In such a case a matter of reliability of test results seems to be an essential issue. The laboratory has to prove its competency in performance of different test methods (the standard or own ones). In practice many problems may occur. They can be related among others with reliability of an applied testing method, order processing etc. Discussion on reliability leads to quality problems. In relation to laboratory processes there are doubts on quality of service [7, 8]. As a consequence of experience in the discussed field there were elaborated and issued international standards of ISO 9000 series. They are based on ideas and assumptions of total quality management (abbrev. TQM). The edited standards caused essential changes in approach to management processes. These standards show a producer can design, develop and present a quality management system. The goal of these standards is to define the base for such a system. The structure of mentioned standards is universal and can be applied in various conditions [6, 8].

In case of testing laboratories ISO 9000 standards can be applied as well. The next step to reach a customer's satisfaction in laboratory services is the implementation of requirements included in ISO/IEC 17025 standard [1]. Gaining an accreditation certificate in accordance with the standard confirms testing competencies of the laboratory. The standard widens requirements of ISO 9000 standards with technical competencies referring to essential activities of individual laboratories [5].

As it was mentioned above the problem of accreditation based on the consists of two parts: technical and management. While the second one is usually referred to well known ISO/IEC 9000 standard series and it is possible to find a lot of information on the issue so the first one has not been described sufficiently enough. As a result an author of the paper, supported by scientists working in the environment of strength and fatigue testing laboratories, decided to elaborate and develop software tools to implement, maintain and manage the quality system in accredited testing laboratories with a special reference to strength laboratories. The aim of works is to develop the methodology of implementation of quality system with accordance to ISO/IEC 17025:2005 standard on the base of propose software. Additionally, the aim of software is to face the most often problems connected usually with documentation, both traditional and electronic. Moreover the system will help in exchanging experience of laboratory specialists by communication with authors. Some developments of works can be found in various scientific papers i.e. [2] , [3] and [4].

What is more important in the context that modern generations communicate and work usually with usage of IT tools. While in the 1960s computers started to be implemented step by step in industry systems of files started to remove traditionally gathered and processed data. Since then database systems have started to become a standard tool [3, 4].

Service to the customer is an essential issue of most quality standards including ISO/IEC 17025. The aim of this paper is to present a role and basic assumptions for including the good customer service in the designed software in accordance with the standard [1].

## **2. Service to the customer as a requirement of ISO/17025 standard and an element of the designed software**

Designed software consists of 7 modules that are able to work independently. They can be a part of the management system (8th application – as in the algorithm) built in a different way what can increase the number of potential users. On the other hand the efficient working of individual modules can lead to implementation of all modules that support the system in the whole. System based on the proposed software can eliminate present problems, especially in the area of traditional and electronic documentation, facilitate the fulfilling of accreditation requirements, and enhance exchange of experience [2, 3].

Software, referring to requirements of ISO/IEC 17025:2005 standard, was divided into two groups:

- a) requirements referring to management system (documentation, internal audits, corrective and preventive actions, management system reviews),
- b) requirements referring to technical area (testing method, measurement database, personnel).

To facilitate the programming process (especially in the context of application of object-oriented programming) the above division was presented in fig. 1 [2, 3].

At the moment it is essential to compare the above described design with specific requirements of the standard [1] on the service to the customer. The clause 4.7 of the standard states:

*„4.7.1. The laboratory shall be willing to cooperate with customers or their representatives in clarifying the customer's request and in monitoring the laboratory's performance in relation to the work performed, provided that the laboratory ensures confidentiality to other customers.*

*NOTE 1. Such cooperation may include:*

- a) providing the customer or the customer's representative reasonable access to relevant areas of the laboratory for the witnessing of tests and/or calibrations performed for the customer;*
- b) preparation, packaging, and dispatch of test and/or calibration items needed by the customer for verification purposes.*

*NOTE 2. Customers value the maintenance of good communication, advice and guidance in technical matters, and opinions and interpretations based on results. Communication with the customer, especially in large assignments, should be maintained throughout the work. The*

laboratory should inform the customer of any delays or major deviations in the performance of the tests and/or calibrations.

4.7.2. The laboratory shall seek feedback, both positive and negative, from its customers. The feedback shall be used and analyzed to improve the management system, testing and calibration activities and customer service.

NOTE. Examples of the types of feedback include customer satisfaction surveys and review of test or calibration reports with customers.”

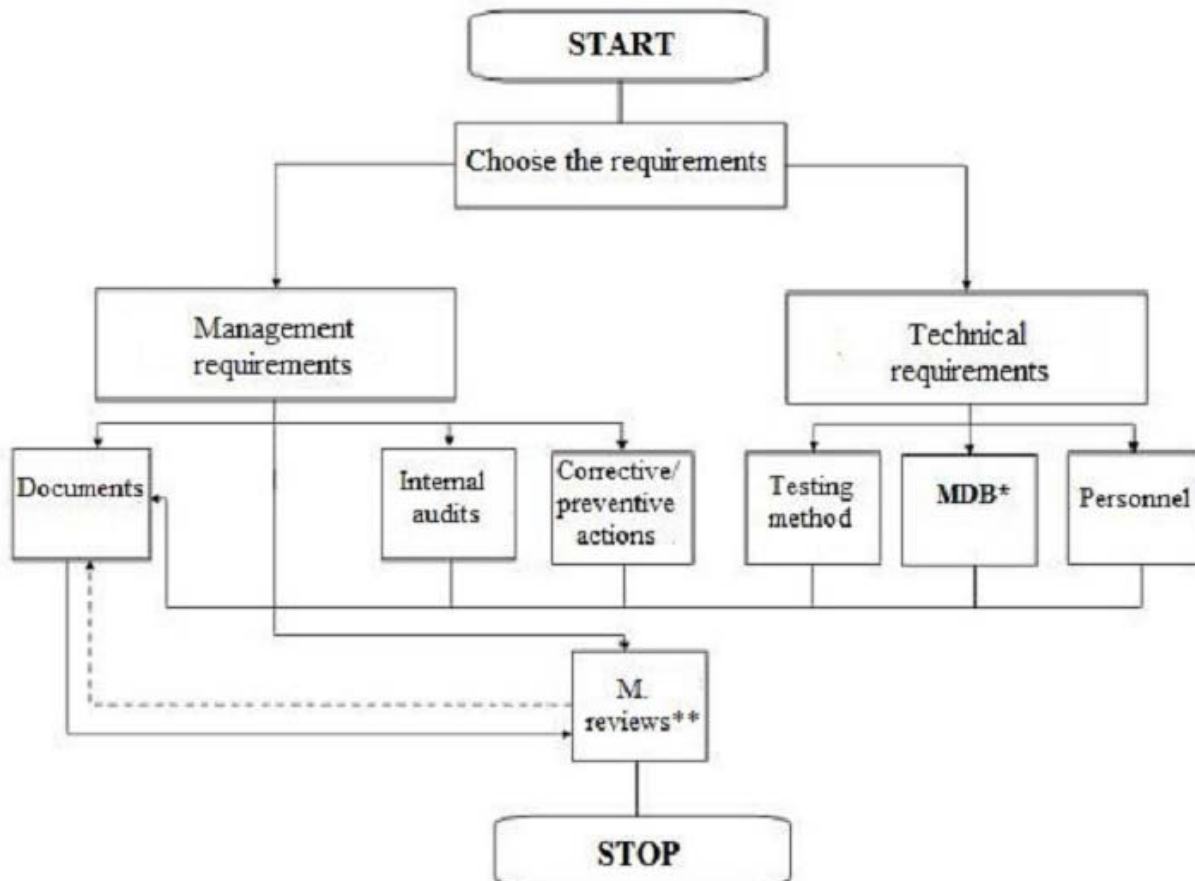


Fig. 1. Algorithm of computer aided accreditation software in testing laboratories, \*MDB – measurement database, \*\* M. reviews – management reviews [2, 3]

From the above it results that issues on the customer service are related with documents. But on the other hand, analysing fig. 1, it can be noticed that documents are connected with all technical requirements. So the question is what kind of assumptions should be considered in order to fulfill the requirements efficiently? How to fit service to the customer issues in the range of the designed software? Should it be a separate module or a part of one of the presented in fig. 1?

### 3. Basic assumptions for implementation of the customer service requirement

The first assumption is obviously connected with fulfillment of the above mentioned requirement. The standard [1] is the base for implementation of the quality management system in the laboratory and, as a next stage, gaining an accreditation certificate in accordance with the standard confirms testing competencies of the laboratory the propose software has to obey the requirements. But, from the different point of view, the customer service is a business process. Considering as a goal earning money, gathering funds for future investments most of laboratory managers base on their own experience building relationships with customers. From this point of

view an attempt to formulate assumptions, as input data for the customer service implementation as the element of the software, was undertaken. Following assumptions are suggested:

- a) computer aided service to the customer tool has to use present resources and facilities including the ones connected with hardware, software and knowledge of workers. Such an attitude will improve, accelerate the implementation as well as decrease associated costs also from the point of view of personnel trainings,
- b) computer aided service to the customer tool has to control the work of a servicing crew. In such a context the essential value should be connected with qualifications, education and personal skill of members of the servicing crew. computer aided service to the customer tool has to reflect such a situation so probably differences on mentioned features should be applied in various editions of the software focusing on relation software - user,
- c) computer aided service to the customer tool has to bring a result in possibility of customer's access to current information on the realized service. Such an attitude may result in increase of customer's confidence, trust and safety in the context of planning of own activities regarding the service and as a consequence increase of customer's satisfaction. It is trivial to state that today information is the most valuable good. Constant monitoring of test services can be another proof, for potential customer, that laboratory is a reliable testing unit and at the same time the customer can plan his/her activities in accordance with the stage of works,
- d) computer aided service to the customer tool has to enable the communication on the line customer – service provider (laboratory) not only in the aspect of deadlines but also technical details or organizational issues connected with the service process,
- e) computer aided service to the customer tool has to result in feedback that stands for the base of analysis and decision making processes on input data (related to hardware, software, personnel or global decisions in the context of the customer service) .

#### **4. Summary**

The general idea of computer aided service to the customer is to fulfill the requirements of ISO/IEC 17025 standard and what is more to provide the customer service in a new, modernized form. Thanks to the form the customer receives the possibility of up-to-date service monitoring and new platform for communication with a service provider (laboratory) in more efficient way both in the time context as well as in the test technical context. Finally such approach may result in different innovations in the field of laboratory management. Implementing such a solution laboratories should consider different assumptions presented in the paper.

What is more the final goal of different activities (organizational, technical, promotional, scientific etc.) should result in efficiency increase and reliability of test results. Increase in confidence, trust and safety of current customers and gaining new clients may result in constant improvement of the laboratory.

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