

# JSQC STANDARD

## Guideline for New Product and Service Development Management

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## **Preference**

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## Guidelines for New Product and Service Development Management

(Note: This document is an official English translation of JSQC-Std 22-001:2019 written in Japanese)

### Introduction

For an organization to maintain its *raison d'être* in a rapidly changing business environment, it is important to understand the needs of customers and society, and to continue to create new value for customers and society by linking these needs with the seeds (technologies, etc.) of the organization itself, and its affiliates and partners. New product and service development management is a “series of activities to define, maintain, improve, and/or innovate processes and/or systems to effectively and efficiently carry out activities related to new products and services, and to utilize them in the development of the next new products and services,” and together with Quality Assurance by Process, it forms the core of quality assurance (a set of systematic activities undertaken by organizations to ensure, verify, and demonstrate that it meets the needs of customers and society). Its content includes many elements that characterize Japanese quality management, such as grasping the latent needs, identifying bottleneck technologies and achieving breakthrough in them, design review and failure prevention, initial flow control and monitoring of market information, and review of new product and service development processes.

However, with the diffusion of ISO 9001, assurance is often seen in a narrower sense as “activities that clearly state what needs are to be met as a promise to customers and society, and provide evidence that these needs are being met to give a sense of trust and security,” and there are many organizations that are working from the wrong perspective without a sufficient understanding of the purpose and content of new product and service development management. Moreover, as the needs of customers and society diversify and the division of labor advances, it tends to become more and more difficult to manage the development of new products and services.

With a view to ensure a better understanding of quality assurance in society and to contribute to the improvement of the quality of products and services, this standard sums up in a single package the fundamentals of new product and service development management, recommendations for major activities to be undertaken, and explanations of useful methods in practice. It can be applied to any organization. Clause 4 of this standard describes the fundamentals of new product and service development management, i.e., the role of new product and service development management in TQM, the basic concept of customer value creation, and important management activities in new product and service development management. In addition, Clause 5 discusses 10 key management activities in new product and service development management and provides specific recommendations. The last clause, Clause 6, discusses tools that are expected to be used in important management activities in new product and service development management, including Quality Function Deployment, the Seven Tools of Product Planning, Design of Experiments and Robust Parameter Design, FMEA, FTA, Weibull Analysis, and CS Portfolio and T-type Matrix.

Here, it is not effective to manage the development of new products and services in a single department or company. The scope of application should be expanded to include all the departments, affiliates and partners, and further customers and society, and these should be closely coordinated. Therefore, in this standard, the term “the organization” is used to include all the departments and companies involved in the provision of products and services. It is also good to understand that even as advanced technologies such as AI and IoT emerge, these technologies can be effectively utilized by properly implementing new product and service development management.

## 1. Scope

This standard specifies the recommendations of the Japan Society for Quality Control (JSQC) regarding new product and service development management, which is one of the major activities of quality management.

## 2. Normative references

The following standard constitutes a part of the provisions of this standard, as it is cited here. Only the version of the stated year is applicable and no revised versions or amendments are applicable.

**JSQC-Std 00-001: 2018 Quality management terms**

## 3. Terms and definitions

The terms and definitions specified in JSQC-Std 00-001 and the following terms and definitions apply to this standard. The following terms and definitions include those quoted or reprinted from other standards.

### 3.1 Quality assurance

A set of systematic activities undertaken by organizations to ensure, verify, and demonstrate that they meet the needs of customers and society.

Note 1 “Ensuring” refers to activities of establishing a process to understand the needs of customers and society, to plan and design products and services that meet those needs, and to provide them.

Note 2 “Verify” refers to activities to continuously evaluate and understand whether the needs of customers and society are being met, and to take immediate remedy and/or recurrence prevention measures if they are not.

Note 3 “Demonstrate” refers to activities that provide a sense of trust and security by clearly stating what needs are being met as a promise to customers and society, and showing evidence that these needs are being met.

Note 4 The purpose part of the above definition, “meeting the needs of customers and society,” may be called quality assurance.

(Same as JSQC-Std 00-001)

### 3.2 New product and service development management

A series of activities to establish, maintain, improve, and/or innovate processes and/or systems to effectively and efficiently carry out activities related to new products and services, and to utilize them in the development of a next new product and/or service.

Note 1 The purpose of new product and service development management is to simultaneously satisfy the needs of customers and society and to develop and utilize the seeds (technology, etc.) that the organization possesses.

Note 2 Activities related to new products and services include marketing, planning, design, planning and design of the provision process, implementation of the provision process, initial flow control, and review of the new product and service development process and/or system after development.

(Partial revision of JSQC-Std 00-001)

### 3.3 Customer

Organization or person receiving the product and/or service.

- Note 1 It does not mean the person who actually purchases the product and/or service in a narrow sense, but includes potential and target purchasers.
- Note 2 It includes not only purchasers but also users, and consumers. Includes not only external organizations and people, but also internal departments and people (subsequent processes) within the organization.  
(Same as JSQC-Std 00-001, partly omitted)

### **3.4 Needs**

Necessity of the customer or society in the course of life or activity.

- Note 1 Needs include those that are explicitly stated as requirements, those that are implicit and not stated as a matter of course such as safety and security, and those that are latent and not recognized by customers and society itself.
- Note 2 Needs can also be expressed as demands, requests, desires, or expectations.

### **3.5 Customer value creation**

To create value through the provision of products and services by linking the needs of customers with the seeds of the organization itself, its affiliates and partners, etc.

### **3.6 Customer satisfaction**

Customers' perceptions of the extent to which their expressed, implicit, or latent needs are being met.

- Note 1 Customer complaints are a common indicator of low customer satisfaction, but the absence of customer complaints does not necessarily imply high customer satisfaction.
- Note 2 Even when customer requirements have been agreed with by the customer and have been met, this does not necessarily guarantee high customer satisfaction.
- Note 3 When products and services are provided that exceed customer expectations and meet their latent needs, very high levels of satisfaction are achieved.

(Same as JSQC-Std 00-001)

## **4. Fundamentals of new product and service development management**

### **4.1 Role of new product and service development management in TQM**

#### **4.1.1 What is Total Quality Management (TQM)?**

Total Quality Management is “activities with quality at the core, whose aim is a long-term success of the organization through provision of products and services that meet the needs of customers and society as well as the satisfaction of the people working in that organization, for maintaining, improving, and innovating processes and systems using diverse methods by all the departments and all the layers of the organization, to achieve effective and efficient organizational management matching changes in the business environment” (JSQC-Std 00-001). Total Quality Management is often referred to as TQM, based on its acronym.

Quality in TQM refers to the degree to which the objects of interest such as products, services, processes, systems, business, organizational culture, etc. meet the needs of customers and society. Needs may be explicit, implicit, or latent.

The relationship between the key elements involved in TQM is shown in Fig. 1. For an organization to achieve a long-term success in ever-changing business environment, it is necessary to simultaneously achieve the three satisfactions surrounding quality: customer satisfaction, social satisfaction, and satisfaction of working people. In

order to achieve this, the following three elements are important: “maintenance-plus-enhancement, improvement, and innovation of processes and systems,” “participation by all the departments and all the layers of the organization,” and “utilization of diverse methods.”

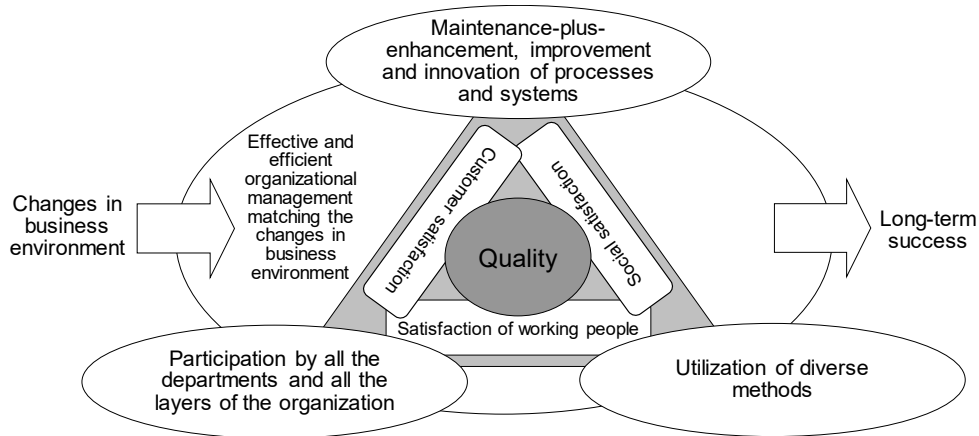


Fig. 1 Relationship among the key elements involved in TQM

#### 4.1.2 Quality assurance

Quality assurance is “a set of systematic activities undertaken by organizations to ensure, verify, and demonstrate that they meet the needs of customers and society” (JSQC-Std 00-001). In this context, (1) “ensure” means to understand the needs of customers and society, to plan and design products and services that meet those needs, and to establish a process that can provide those products and services, and (2) “verify” means to continuously evaluate and understand whether the needs of customers and society are being met, and to take immediate remedies and recurrence prevention measures if they are not being met. In addition, (3) “demonstrate” means to clearly state what needs are to be met as a promise to customers and society, and to provide evidence that these needs are being met in order to give a sense of trust and security. Below, (1), (2), and (3) are collectively referred to as “assurance”.

For quality assurance, it is necessary to understand the needs of customers and society and reflect them in the design of products and services, and to realize products and services as intended. The degree to which the design of products and services satisfies the needs of customers and society is called “quality of design,” and the degree to which products and services conform to the design is called “quality of conformance.”

In order to assure the quality of design, it is first necessary to understand the needs of customers and society. However, in a mature society, responding to explicit and implicit needs alone is not enough and it is important to satisfy the latent needs. Latent needs here refer to needs that customers and society themselves do not recognize or are not aware of, and in general, there are many cases where no products and services that can satisfy them exist yet. Therefore, satisfying these latent needs can create new value for customers and society. In the development of new products and services, activities to identify and satisfy latent needs are called customer value creation.

On the other hand, in order to assure the quality of conformance, it is necessary to establish a process that has the ability to continuously produce products and services that conform to the design. This process establishment includes not only the preparation of processes, but also the securing of resources such as people, goods, money, technology, and information.

### 4.1.3 Quality Assurance by Process

In order to ensure effective and efficient quality assurance, it is important to establish processes that enable the provision of products and services that meet the needs of customers and society. Quality assurance by Process is “a set of activities to ensure, verify and demonstrate that the outputs of the process meet the required criteria” (JSQC-Std 00-001).

As shown in Fig. 2, the basic principle of Quality Assurance by Process is to clarify the output to be achieved for each process, and then to specify the requirements for (1) inputs such as parts, materials, and information, (2) management resources such as people, equipment, and technical know-how, and (3) operation procedures and implement as described to ensure that the output satisfies the specified criteria and confirm the obtained output and take action as necessary. In order to make Quality Assurance by Process work effectively, the organization should break down the process into smaller parts and apply the above basics to each process to realize a chain of Quality Assurance by Process.

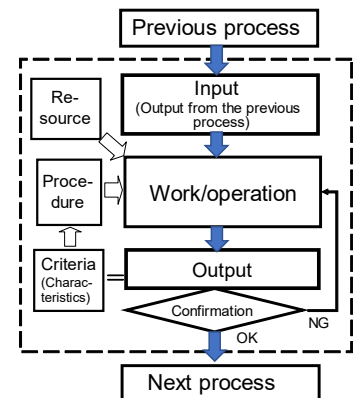


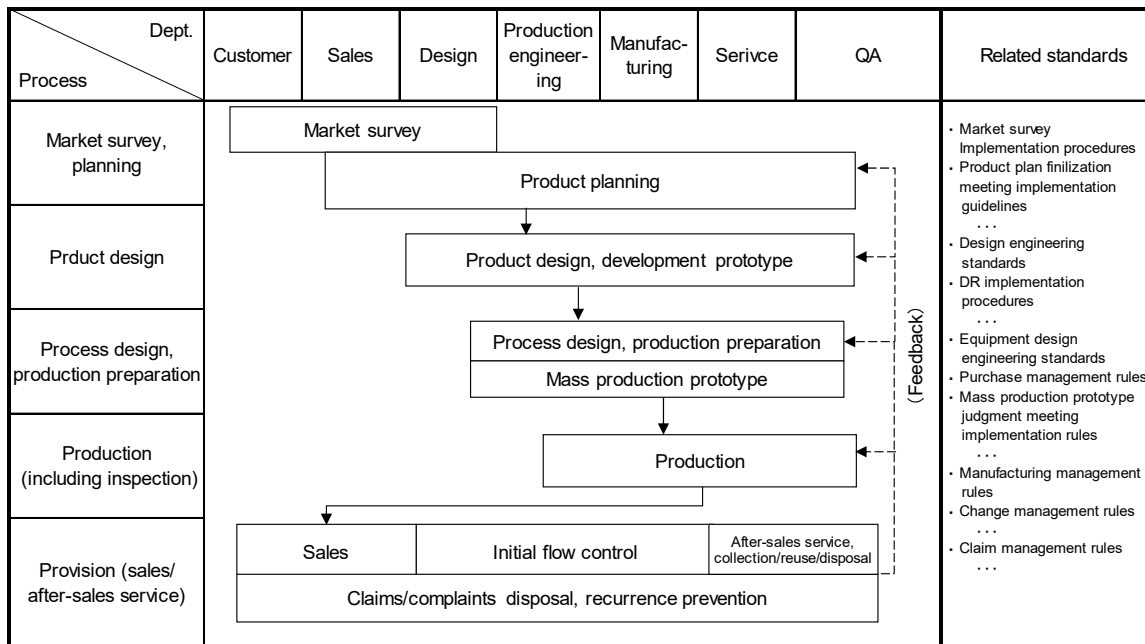
Fig. 2 Quality Assurance by Process

### 4.1.4 Quality assurance system

In order to develop and provide new products and services that meet the needs of customers and society, it is important to ensure that Quality Assurance by Process is practiced in a series of activities from planning, design, production, provision, sales, after-sales service, and collection/reuse/disposal. This requires a system that clarifies the interrelationship among various processes, the responsible departments and their roles, the order of implementation, and the decision-making bodies at milestones, and ensures that activities can be carried out in accordance with them. This is the “quality assurance system” and the graphical representation of the same is “quality assurance system chart.” A simplified example of a quality assurance system chart is shown in Fig. 3.

A quality assurance system chart generally shows the individual processes and their linkages for developing products and services, with the chronological flow of development on the vertical axis and the related departments on the horizontal axis. This will make clear when (at which stage), where (for which component), who (which department), what (which activity), for what (why, what purpose), and how (by which criteria and procedures). As for criteria and procedures, the organization should clarify the methods and tools (forms, detailed criteria and standards) to be utilized for each component. The quality assurance system chart can be used to verify and improve excesses and deficiencies of components, proper sequencing, clarification of inputs and outputs, and proper involvement of related departments.





Note: Source: Created based on Japan Society for Quality Control Ed. (2009): *Quality assurance guidebook, New edition*, JUSE Press, Inc., p.27

Fig. 3 An example of quality assurance system chart (concept diagram)

#### 4.1.5 Role and positioning of new product and service development management

New product and service development management is the management for effectively and efficiently implementing the Quality Assurance by Process related to new products and services based on the quality assurance system. As shown in Fig. 4, the areas to be addressed are (a) the development axis and (b) the production and provision axis, and in addition (c) the review of the new product and service development management process (establishment and improvement of the quality assurance system), with the areas related to (a) and (c) being particularly important.

### 4.2 Basic concepts of customer value creation

#### 4.2.1 What is customer value creation?

Customer value creation is the creation of value by linking needs and seeds. There are two types of needs: manifest needs and latent needs for customers. It is natural to create customer value by focusing on the manifest needs, but it is also important to focus on the latent needs. This is because, by anticipating the latent needs of the customer, it is possible to provide value that exceeds the customers' expectations, and if this situation can be continued, it is possible to gain the trust of a large number of customers for the products and services and achieve sustainable growth of the organization.

Since latent needs are the needs that are not visible on the surface but are hidden somewhere, the organization should construct a hypothesis about needs systematically (structurally) and test the hypothesis qualitatively and quantitatively, rather than search for needs in the dark. In addition, latent needs are the needs that customers are not also aware of, and they can be unearthed and concretized by linking them with seeds, i.e., by presenting concrete means of realization. Therefore, in the process of searching for needs, the organization should grasp the needs by

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