

Fujitsu's Quality Improvement Model: Qfinity

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We launched a High Reliability Program back in 1966 to enhance the reliability and functions of Fujitsu products, using the watchwords of “reliability” and “creativity.” This was followed in 1997 by Value Engineering (VE) activities intended to reduce product costs and rationalize work procedures. Then in April 2001, Fujitsu launched its Qfinity program that builds on the results of previous programs to meet today's needs for quality. The Qfinity program follows the Plan, Do, Check, Act (PDCA) cycle not only in the exhaustive pursuit of functionality and enhanced reliability, but also in improving quality in many aspects of work, including customer response, product delivery, and costs. This paper gives an overview of the quality improvement activities under Qfinity.

1. Introduction

In 1966, we launched a High Reliability Program using the watchwords of “reliability” and “creativity” to enhance the functions and reliability of Fujitsu products. In 1997, we initiated Value Engineering (VE) activities to reduce product costs and rationalize work procedures. Then in April 2001, Fujitsu launched its Qfinity program that builds on the results of previous programs to meet today's needs for quality. Qfinity is Fujitsu's model for quality improvement and based on this model, we thoroughly pursue improved quality in all areas of our business.

By striving towards product quality that will meet customer expectations through Qfinity, we intend to be viewed by the public as a dependable partner. The quality we are pursuing in achieving this goal is not just related to product functions and reliability; it also encompasses many more aspects of our work including customer response, delivery dates, and costs.

The name Qfinity combines the “Q” of quali-

ty with the “finity” of infinity, and thus expresses the idea of pursuing quality to infinity (**Figure 1**).

This paper gives an overview of Qfinity and describes some of the quality improvement activities conducted under this program.

2. Objectives and features of Qfinity

This section explains the objectives and features of Qfinity.

2.1 Objectives

Under Qfinity, each employee establishes their own customer base and strives toward creating Customer Value (CV) to achieve a level of quality for fulfilling customer expectations, so that the employee can be viewed as a dependable partner.

In this way, the objectives were defined as follows:

- 1) To be No.1 in offering quality relative to products, services, and customer response
- Qfinity interprets quality in the broadest



Figure 1
Qfinity emblem.

sense, meaning quality as viewed by the customer and the level of quality expected by the customer (and not in the narrow sense of product quality). We also strive towards a level of quality prompting customers to say, "Fujitsu's products, services, and customer response are all excellent."

- 2) To have all employees pursue improvements so that the quality of their individual work is top class worldwide.

Fujitsu feels that, without exception, all employees should participate in Qfinity activities for focusing on CV elements appropriate to their individual jobs. CV represents an aggregate of the elements of value that customers desire from Fujitsu, as expressed in Qfinity by the formula below. As shown in the formula, maximizing the numerator elements ("Function", "Quality" and "Service") and minimizing the denominator elements ("Time" and "Cost") allow Fujitsu to achieve overall and infinite CV.

$$CV = (F \cdot Q \cdot S) / (T \cdot C)$$

where, F = Function (Function/Performance), Q = Quality (in the narrow sense), S = Service, T = Time, and C = Cost.

2.2 Features

A principal feature of Qfinity is that it

involves two types of activities conducted in all divisions: individual activities under the major policies of each division, and activities to solve everyday problems in the workplace.

Qfinity is also intended to facilitate the sharing of information and knowledge through the extensive use of IT. The introduction of Web-based Qfinity systems has publicized all in-house activities to enable the sharing of targets, process benchmarking, technologies, and know-how. By facilitating the sharing of individual skills companywide, we intend to raise the quality of each employee's work.

3. Units of organization to promote Qfinity use and basic means of implementation

This section discusses the parts of Fujitsu's organization responsible for promoting the use of Qfinity and the basic procedure for implementation, as well as the operational rules and awards system.

3.1 Units of organization promoting Qfinity

The units of Fujitsu's organization responsible for promoting Qfinity are the Meeting for Promoting Qfinity Use, attended by members from each division, and the Qfinity Promotion Office, which studies and puts companywide Qfinity activities into practice. We also appoint personnel responsible for promoting Qfinity activities at each business unit, business division, and coordinating division.

At affiliated companies, the use of Qfinity is promoted beginning with activities conducted jointly by a business unit and the affiliates, with the business unit deciding with which affiliates to collaborate. However, many affiliated companies now have their own organizations and operational styles for conducting Qfinity activities.

3.2 Basic means of promoting Qfinity

Qfinity consists of project activities (mainly top-down) and innovation/improvement

proposals (bottom-up). As a rule, all employees participate in either project activities or innovation/improvement proposals, with both being registered in the Qfinity system and then conducted.

- 1) How project activities are conducted
 - The important policies of each division are broken down into individual projects within the division and implemented to achieve policy goals.
 - Activities are linked with those of other divisions.
 - Workplace problems are taken up as improvement projects to be conducted systematically.
- 2) How innovation/improvement proposals are made
 - Innovation/improvement proposals are made with respect to problems and put into practice by the person making the proposal or together with other team members of the workplace.
 - Employees should develop a mindset to solve problems and make improvements, and propose innovations and improvements to other divisions.

3.3 Operational rules and awards system

1) Operational rules

A Qfinity operating manual that prescribes operational rules has been prepared. It covers Qfinity's main features, procedures for its promotion, organization and roles, evaluation standards, and awards system. The manual is available on the Qfinity Website for putting the program into practice at each workplace.

2) Awards system

Awards are given at a central presentation event held annually on the June 20th anniversary of Fujitsu's foundation, and at business-unit presentations held quarterly.

4. Overview of Qfinity system

The Qfinity system serves as a support tool

for conducting Qfinity activities according to one's plan (**Figure 2**). Among the tasks performed by the Qfinity system are the registration of project activity themes and innovation/improvement proposals, the management of progress, and evaluation of results and award applications.

The project themes and innovation/improvement proposals registered in the Qfinity system are stored as knowledge to be publicized in-house. All Fujitsu employees can use the Qfinity system without submitting a usage application, and affiliated companies can use the system by simply registering the names of authorized users.

The following describes the visualization of progress status.

- 1) As a general rule, the progress status of individual projects registered in project activities is entered once a month.
- 2) If the progress status is not entered, the system is set up to prevent delays in project activities by automatically sending a reminder E-mail to those responsible for approving individual projects or progress.
- 3) The progress status of project activities enables the progress of overall and individual activities to be checked at a glance, thus facilitating the systematic implementation of all activities.

5. Conducting Qfinity activities according to PDCA cycle

Fujitsu has designated Qfinity as a model for improvement through which to pursue quality to infinity. Based on the PDCA (Plan, Do, Check, Act) cycle, activities are conducted through a continuous repetition of this cycle in an effective and agile manner. The PDCA cycle is a key concept featured in all improvement activities.

Because the PDCA cycle is not always followed precisely in the workplace, however, conscious efforts are made to remedy this situation. In Qfinity, great emphasis is placed on agility in the problem-solving cycle based on

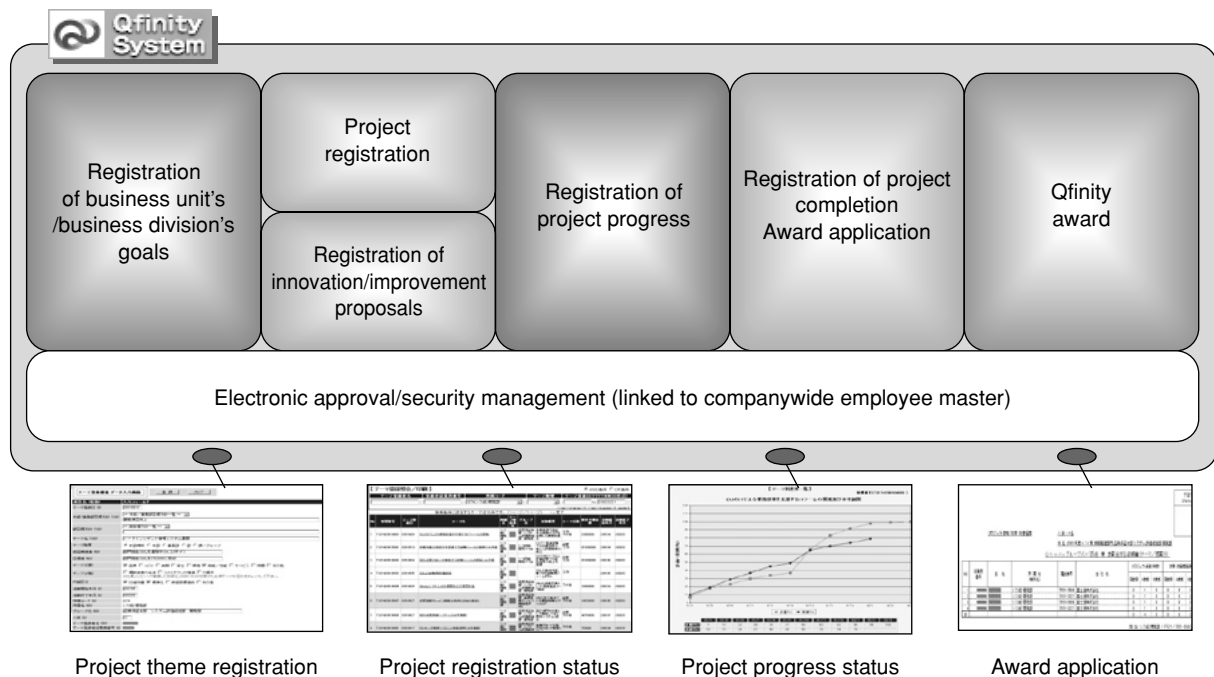


Figure 2
Overview of Qfinity system.

PDCA, with concrete targets added so as to follow a “Target-PDCA cycle”. To clarify implementation of the Target-PDCA cycle, we have drawn up and made employees aware of ten basic principles (**Figure 3**) through companywide assemblies and by distributing leaflets.

The following explains the procedures for conducting the Target-PDCA cycle.

1) Targets

Targets were originally the elements of plans and have been added to PDCA to further clarify such aspects as issues to be addressed and the purpose of doing so. Targets also clarify the improvement goals to be achieved for realizing an ideal situation through analysis that determines whether activities up until now have been customer-centric, compares the present situation with the ideal one, and analyzes the key success factors.

2) Plan

Under Plan, we examine how a task may be done (under necessary conditions) and any

reasons (factors) why it cannot be done. As a team, we then look for ways of accomplishing a task based on whether we can proceed to the next task if no progress is made upon carefully considering the reasons why the current task cannot be accomplished, determine individual project activities without delay and register the activities in the Qfinity system, and then conduct those activities in a highly effective manner.

3) Do

Do involves thinking about what needs to be done for achieving some progress, and then promptly embarking on activities, since perfection need not be achieved straightaway. We then check the results, sort out any problems, and continue the activities to quickly achieve a degree of perfection as we proceed.

In the overall plan, we follow the PDCA cycle while concurrently checking the status of implementation by setting goals for which achievement is checked at each milestone reached in the activities.

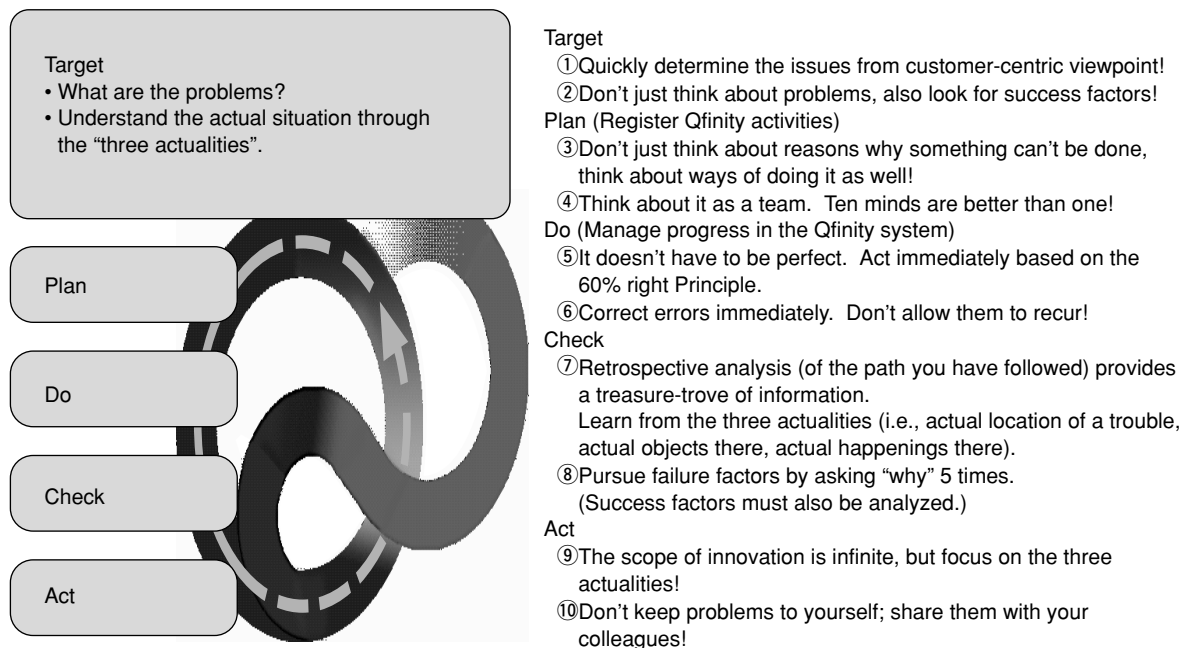


Figure 3
Ten basic improvement principles in target-PDCA.

4) Check

The results of activities are analyzed retrospectively, looking back on what has been achieved according to three actualities: the actual location of a trouble, actual objects at that location, and actual happenings at that location. We pursue the root cause of a trouble by asking "why" 5 times. We also analyze success factors with respect to the plan, processes, teamwork, and human resources, and then link everything to subsequent activities.

5) Act

After completing retrospective analysis, we focus on the top three priority issues and determine subsequent activities. Prioritizing issues allows results to be obtained quicker as the energy generated speeds up improvements. The solution to a given problem should not be left to one person; it should be addressed together with other team members so that the best possible solution may be devised.

6. Solution to problems in other activities using Qfinity

We have discussed how problems are determined and activities conducted to devise a solution by each division, based on the basic procedures for conducting Qfinity and the PDCA cycle. Qfinity is also used, however, to devise solutions to problems uncovered in other activities. This section considers the connection between Qfinity and these other activities. The activities in question pertain to the Japan Quality Award (JQA), Quality Management System (ISO9001), Environment Management System (ISO14001), Toyota Production System (TPS), Capability Maturity Model Integration (CMMI), and Information Security Management System (ISMS), and reveal many other problems. The manner in which Qfinity is applied to these activities and individual situations varies by division.

Should improvements be made independently with respect to problems, however, employees

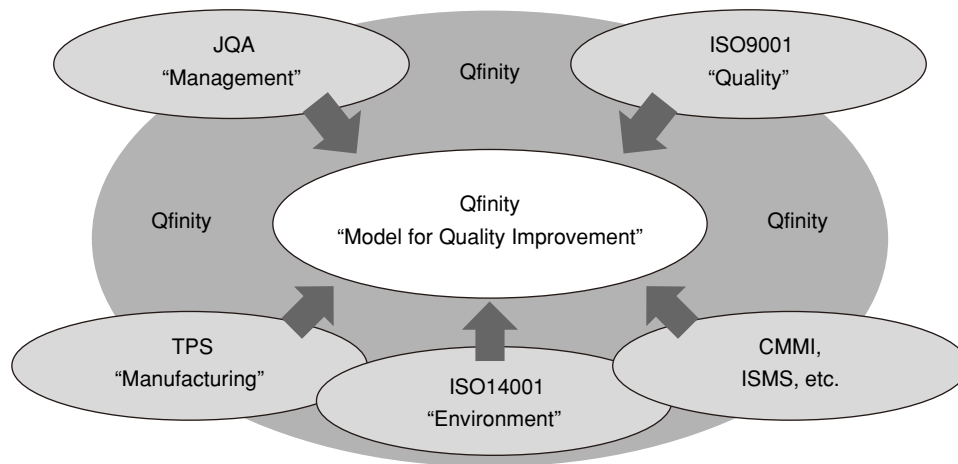


Figure 4
Connection between Qfinity and other activities.

in the workplace will soon feel as if various activities are being forced upon them, resulting in a situation where improvements may come to a standstill. Therefore, improvements are made within a single, simple framework under which all activities are conducted via Qfinity to prevent such a situation from occurring.

Figure 4 shows the connection between Qfinity and these other activities.

The following examines the degree of improvement achieved via Qfinity activities for problems uncovered in various activities connected with the above, and cites some concrete examples.

1) JQA

Among the problems noted in JQA self-assessment, improvements are made for those relating to work quality via Qfinity.

Example: In the absence of a means of measuring employee satisfaction (ES), an ES survey system was developed and utilized by all business groups.

2) ISO9001

Goals are achieved through the implementation of quality policy via Qfinity.

Example: The quality goals of “enhancing the quality of package products and preventing

post-shipping problems” were achieved.

3) ISO14001

Environmental goals are achieved through the implementation of environmental policy via Qfinity.

Example: Numerical green procurement goals are quickly achieved through green procurement activities in which the purchasing division plays a central role in coordination with the other divisions concerned.

4) TPS

Improvements in “productivity”, “unreasonableness”, “inconsistency”, and “waste” were achieved through Qfinity.

Example: Productivity at a production facility that manufactures electronic devices was improved by introducing a fixed-course, pick-up (Mizu-sumashi^{note 1)}) version of TPS.

5) CMMI

The CMMI software development process was improved via Qfinity.

Example: The improved CMMI software

note 1) A method of collecting and transporting parts that circulate in multiple preprocessing stages in the specified order and in the number specified for the production orders of local processes.

development process reduced corrective modifications made to the program due to process defects, as well total development person-hours.

7. Educational activities to enhance knowledge about Qfinity

This section describes some activities to enhance knowledge about Qfinity.

7.1 Qfinity educational programs

We have been conducting educational programs in stages to enhance knowledge about Qfinity and further promote its use. Since the launch of Qfinity, Fujitsu has organized the Hatamura Seminar given by Prof. Hatamura, an authority on failureology from Kogakuin University's Global Engineering department. The purpose of this seminar is to raise awareness about how new technology is created, describe cases of failure, and explain the application of failureology in studying failures. In cooperation with JMA Consultants Inc., Fujitsu has also been offering educational courses on the utilization of Qfinity based on the customer-centric viewpoint and the ideas of TPS,^{note 2)} "Quick-Do" (a Qfinity problem-solving procedure following the Target-PDCA cycle), and process analysis/improvements based on TPS ideas since the second half of 2004.

7.2 Activities to enhance awareness about Qfinity

We have been conducting the following activities to enhance awareness about Qfinity.

- 1) Activities to publicize the launch of Qfinity
 - Offering press releases and articles featured in in-house publications
 - Creating logos, artwork, posters, flyers, and

note 2) TPS is not merely considered a factory production system, but also a practical means of thinking about and implementing improvements, and a way of thinking about innovation in management.

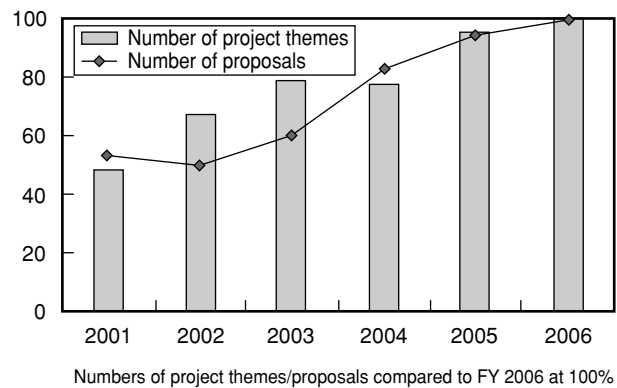


Figure 5
Changes in numbers of project themes/proposals over the years.

Qfinity goods

- 2) Ongoing activities to publicize Qfinity
 - Providing information via the Qfinity Website and "Qfinity square"
 - Conveying information to all employees via Qfinity News, Qfinity Mail (E-mail magazine)
 - Publicizing highly successful Qfinity activities on the Qfinity Website under the title, "Why were they so successful?" (123 activities as of March 2007)
 - Holding the annual All-Fujitsu Qfinity Congress to inform all employees of policies for activities and discuss successful activities

8. Status of activities

Qfinity activities began in April 2001. Since then, neither the basic procedures nor the operational rules have been changed, but important goals have been set in stages. In the 2nd half of 2004, we established the important goal of "being No.1 in offering quality relative to products, services, and customer response", and have engaged in Qfinity activities based on a customer-centric viewpoint and the ideas of TPS in order to achieve that goal.

Figure 5 shows changes in the number of project themes and proposals from 2001 to 2006.

The number of project themes has increased since fiscal 2005 due to the implementation of Qfinity activities based on the ideas of TPS in non-manufacturing divisions; the number of project proposals has increased since fiscal 2004 due to the introduction of TPS at factories.

9. Conclusion

Qfinity involves activities where individual employees apply the PDCA cycle in various jobs in order to achieve continuous improvements in job quality. Very few companies in the world conduct quality improvement activities

in marketing, SE, CE, research, development, design, manufacturing, and management for all divisions under a single banner like Qfinity, with its two key elements of breaking down important policy into individual activities and activities to solve everyday problems in the workplace. Fiscal 2007 marks the 7th year of Qfinity activities. Fujitsu intends to create a corporate culture where all employees can continuously conduct quality improvement activities in the broadest sense of “quality” on their own initiative under our original model for quality improvement.



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