

# Improving Project Quality through Third-Party Quality Verification

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**Fujitsu Advanced Quality Ltd. currently conducts third-party quality verification for production processes on system integration projects. The main characteristics of this verification mechanism are that it focuses on people (quality of work) rather than products and on front-line workers rather than leaders. The third-party goes to the actual location, checks the items in question, and interviews the front-line workers to verify the facts. The verification results are then provided to the project team as feedback, along with suggestions for improvements. As a result of putting this quality verification mechanism into practice, Fujitsu Advanced Quality has identified many issues related to work quality and has demonstrated effects in terms of increased project quality. This paper describes the mechanism of third-party quality verification that has been implemented at Fujitsu Advanced Quality and presents an actual case study.**

## 1. Introduction

Third-party quality verification is a tool that can contribute to improved quality in projects such as computer system construction projects, so it is important that this tool is created in such a way as to reasonably achieve these goals. First of all, the requirements and specifications must be clearly defined in the design process. It is therefore reasonable for the design process to have a mechanism for verifying whether the things that need to be decided for the project have actually been decided (described). Meanwhile, in the production process, the product must be made exactly according to those specifications. In this case, it is reasonable to have mechanisms for verifying not only the product itself, but also the work processes. Fujitsu Advanced Quality currently uses third-party quality verification to verify work processes with a focus on the quality of work conducted by the front-line workers. In this paper, we describe these mechanisms and present a case study.

## 2. Mechanism of third-party quality verification

Products are created as a result of executing work processes. It is the front-line workers, not the leaders, who actually execute the work processes and create the products. Over the course of providing support on many projects, we have seen situations in which product quality decreased measurably because things that should have been included in the work process were not done. That is why we focused on the “work quality of the front-line workers” as the target of third-party quality verification.

### 2.1 Elements to be verified

Verification emphasizes two elements, which have a dramatic effect on the work quality of the front-line workers:

- 1) Do the front-line workers have sufficient work experience and work skills?
- 2) Are the stipulated work processes being followed?

The specific items being verified are described in section 3.2. In the verification of work processes, particular emphasis is placed on the review process, which is the most important process in terms of ensuring quality.

## 2.2 Verification methods

Verification is conducted in the following way: The third-party goes to the actual location, checks the items in question, and interviews the front-line workers to verify the facts. The verification results (facts, issues, and improvement proposals) are then provided to the project team as feedback in the form of a Third-Party Quality Verification Result Report. An outline of how the interviews are conducted is shown in **Figure 1**. The key points are as follows.

- 1) As a rule, all front-line workers participating in the project are interviewed to ensure that confirmations cover all aspects of work quality.
- 2) Interviews are conducted using a one-on-one format, so that interviewees feel comfortable about speaking frankly.
- 3) Each interview lasts less than one hour to minimize the burden on the project workers. Moreover, interviewees are not required to create any documents.
- 4) Interview sheets are prepared to enable

efficient verification.

- 5) The third-party quality verifiers are selected from among experienced veteran systems engineers, such as retired managers.

Out of consideration for relevant laws and regulations, when the interviewees are front-line workers at a contractor, appropriate agreement is obtained before the interviews are conducted. Moreover, the interviewer does not give the interviewee any advice or instructions about current working procedures.

## 2.3 Timing of verification

It is important to identify issues related to work quality quickly, in order to minimize their effects. Third-party quality verification is therefore conducted while the processes are underway. Because each front-line worker is normally in charge of developing two or more programs, the front-line workers are generally interviewed after the first program has been completed. Each front-line worker in each process is interviewed only once as part of the third-party quality verification. This is based on the empirical rule that the work quality of a front-line worker does not differ significantly from one program to the next.

## 3. Example of third-party quality verification

Fujitsu Advanced Quality conducted third-party quality verification on 21 projects during fiscal year 2008. From among those projects, I describe one example of third-party quality verification aimed at system structure design tasks in the production process and I give my impressions of the risks related to work quality in production processes and the effectiveness of third-party quality verification on the basis of my past field experience.

- 1) The truth about work rules (They are not always followed.)

Work rules are essential because many different people are doing the work. Just

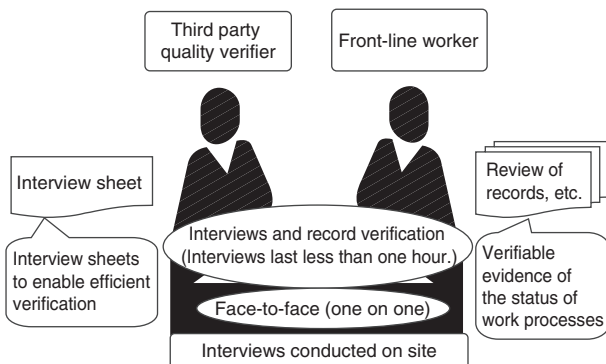


Figure 1  
Outline of interview.

because there are work rules, however, this does not necessarily mean that work is conducted according to those rules. We have seen many cases in which work rules have not penetrated to the level of the front-line workers. For this reason, it is essential to check whether or not work is being conducted according to work rules.

2) Multilayer contractor structure (It is difficult to see actual working conditions.)

Many systems for development in production processes (Figure 2) have a multilayer structure of contractors, so it can be difficult for the project manager to see the actual working conditions of the front-line workers. A variety of risks related to work quality lie hidden in workplaces where the actual work conditions are difficult to see. For example, work reviews by leaders (or experts) are extremely important because the quality of these reviews has a significant effect on product quality. As a result of busy schedules, however, there is a tendency for them to be omitted or simplified (which reduces their accuracy). If third-party quality verification can help to make the actual working conditions of the front-line workers more visible, then it will be extremely

effective because it will be possible to implement effective measures for increasing quality.

### 3.1 Implementation

We conducted third-party quality verification for a new development project with a development scale of 600 000 steps. The targeted work involved system structure design, and 43 workers were interviewed (from five first-level contractors with six bases of operation). The quality verification conditions were as follows.

- 1) The third-party quality verification was conducted by two people, who each conducted half the interviews.
- 2) Interviews were conducted on site at the six bases of operation.
- 3) Each interview lasted between 30 and 60 minutes. A cumulative total of 8 days was spent doing these interviews, and a total of 25 days was spent on the actual verification, from preparation to completion of the result report.
- 4) The interview sheet had a total of 23 items.

To minimize the effects of the interviewers' individual attributes, the interview items were

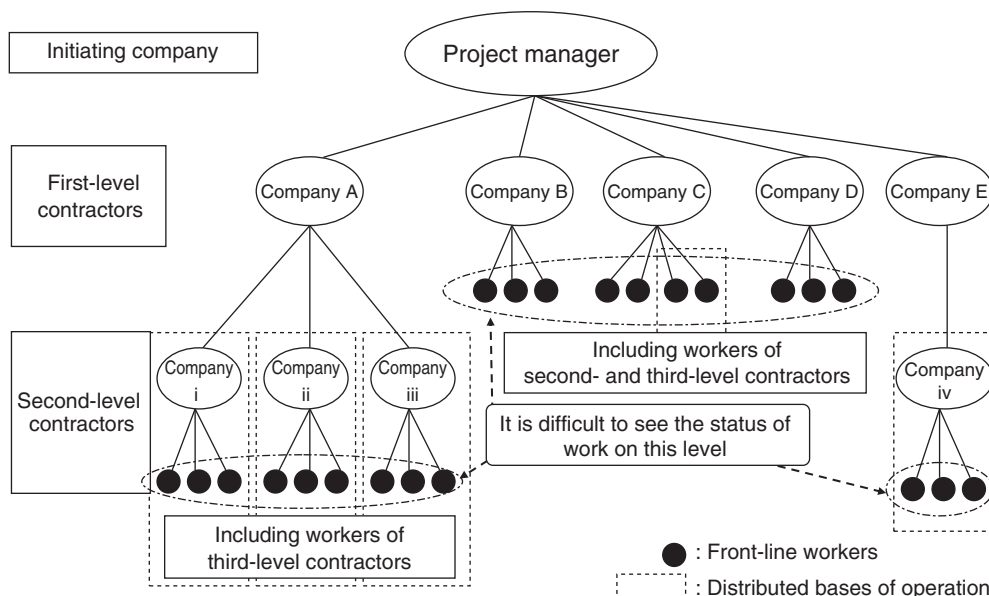


Figure 2 System for development in production process.

set in advance so as to reflect the risks related to work processes involved in system construction design, and the evaluation factors and evaluation standards were made clear at the outset.

### 3.2 Results

From the results of the third-party quality verification, we identified many issues related to work quality. The results for the main verification items are summarized below.

- 1) Do the front-line workers have sufficient experience and skills? Insufficient = 20%.

The interviews revealed that in 20% of cases, the workers did not have experience in system construction design tasks and that there was no systematic follow-up.

- 2) Are the stipulated work processes being followed? Not followed: 30%

An examination of review records and system construction design documents that reflected items pointed out in reviews revealed that in 30% of cases, no leader reviews were conducted or that the items pointed out in the leader reviews were not reflected in the tasks.

- 3) Were reviews recorded? No = 4%

An examination of existing review records revealed that reviews were not recorded in 4% of cases.

- 4) Were the reviewers qualified? Not qualified = 20%

An examination of quality plan documents and review records revealed that in 20% of cases, leader reviews were conducted by reviewers other than those stipulated for the project.

The verification results were then provided to the project team as feedback along with suggestions for improvements.

### 3.3 Effects

From the perspective of evaluating the effects of third-party quality verification, it is important to determine what actions were taken by the project workers on the basis of the feedback provided. In the case of this project, the project

manager mainly passed on the feedback from the third-party quality verifiers directly to each leader as it was originally received. This feedback acted as a trigger for the full-scale startup of activities aimed at quality improvements. In this case study, the project manager gave the following evaluation of the third-party quality verification.

- 1) Some direct effects on project quality improvement were difficult to see, for example, the identification of bugs.
- 2) The quality verification brought about increased awareness that work processes were being checked, and this meant that an awareness of the need to work according to the rules penetrated through to the front-line workers. This penetration of quality awareness also had an effect on work quality in subsequent processes, so I felt that the quality verification was very effective.

As indicated in item 1) above, in the case of third-party quality verification aimed at work processes, it is difficult to grasp the direct effects on increased quality because bugs are not identified during the quality verification itself. As indicated in item 2), however, the penetration of quality awareness to the level of the front-line workers is an important element of project quality improvement. If we also take into account the fact that this quality verification triggered quality improvement activities on the project, then we can safely say that in this case the third-party quality verification was effective in increasing the level of quality.

## 4. Current issues and future directions

There is still considerable room for improvement in the mechanisms of third-party quality verification, for example in terms of the quantification of effects, and we will continue our efforts to make improvements in these areas. The next challenge is to create environments that will further increase the effects of third-party quality verification. The attitude and stance of both the

parties conducting and the parties receiving the third-party quality verification are important in increasing the effects of such verification. The project workers on the receiving side must eliminate negative thinking like “we are being tested” and convert this into positive thinking like “we are increasing project quality”. Meanwhile, the verifiers must give the impression that their actions are directly contributing to increased project quality. It is important to keep in mind the need to create environments that will cultivate a positive attitude toward third-party quality verification.



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Mr. Nakamura graduated from Saiki Hounan High School in Oita Prefecture and joined Fujitsu in 1971. He worked as a project manager mainly for large-scale systems integration projects for carrier systems from 1971 to 2004. After that, he was involved in setting up the mechanisms for activities related to systems integration quality assurance

and front-end practical work. He moved to Fujitsu Advanced Quality in 2008. He is currently engaged in activities related to SI quality assurance.

## 5. Conclusion

Without doubt, there are many projects that require third-party quality verification. Fujitsu Advanced Quality, however, can handle verification for only a small number of projects, partly because of staff limitations. The third-party quality verifiers also face the fact that they are not always able to contribute to project quality as much as they had hoped. In the future, we will gather even more extensive input from the project workers and related divisions, so that we can create mechanisms that will contribute to improved quality on an even greater number of projects and put those mechanisms into practice.