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Quality Improvement as Major Process of Quality Management in Projects

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Abstract. Quality improvement in projects is the final major process of quality management in projects. Continuous quality improvement in projects, often referred to as continuous improvement process in projects, is a continuous effort to improve project activities with the aim of increasing the quality of products, services or processes resulting from the project. The major quality improvement process will change continuously during the course of the project and the responsibility for updating the quality improvement process lies with the project manager.

Keywords: *quality control, quality management, projects, major process*

Introduction

Quality is considered a complex and fast moving function including a number of technical, economic, aesthetic, ergonomic and reliability/maintainability conditions. Quality management is the set of activities of the general management function of an organisation, which determines, in the field of quality, the objectives and responsibilities it implements within the quality system, through means such as quality planning, quality assurance, quality control and quality improvement. "*Project quality management is the discipline that is applied to ensure that both the project outcomes and the processes by which the outcomes are delivered meet the needs of stakeholders"*, a definition formulated by the Project Management Association of England [3]. In other words, project management is an area of management that plans, directs and controls resources so that the project goal is achieved within the allocated resources (financial resources, time resources, material resources, information).

The project is defined as a "lot of activities" that contribute to a common goal, with its own management and requiring a significant consumption of resources. [1]

The functions of quality management in projects are carried out within the four major processes of quality management in projects: *Quality Planning; Quality Assurance; Quality Control; Quality Improvement*, Figure 1.

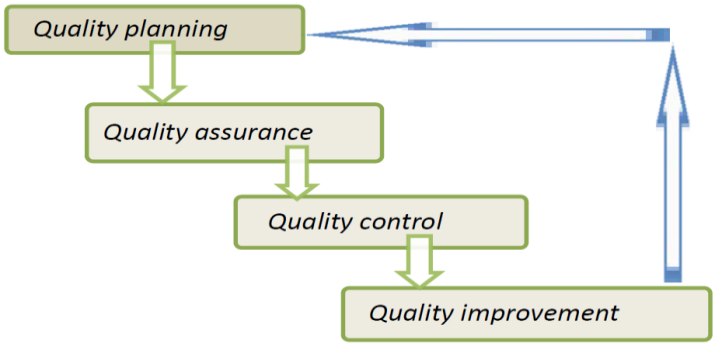

Figure 1. The four major processes of quality management in projects.

Quality improvement in projects is the final major process of quality management in projects. For the project manager, but also for the project implementation team, it will be an objective to be achieved on a continuous (permanent) basis. The *"Project Quality Improvement"* process is an overlapping process on top of all other major processes of project quality management. Quality improvement will be done continuously in all phases of the project management.

Contents

In the late 1990s, the ISO 9001:2000 standard - which covered quality management systems and principles - was debated by those involved in its application regarding the use of the word "continuous" [9]. Representatives from the regulatory authorities decided that the use of the word "continuous" was not applicable because it meant that an organization had to improve minute by minute, whereas continuous improvement meant incremental improvement or improvement by segments" [7]. The concept of "continuous improvement" is essential to the British Standards Institute Publication 2019: BS 8624 Guide to continuous improvement: methods for quantification [11]. BS 8624 describes the requirements for "Continuous improvement" and provides methods and examples of recognised techniques.

Continuous quality improvement in projects, often referred to as continuous improvement process in projects, is a continuous effort to improve project activities with the aim of increasing the quality of products, services or processes resulting from the project. These efforts take the form of incremental "improvement over time" or "breakthrough" improvement at a time [2]. The final project product (deliverable) is evaluated by customers and is constantly meeting their requirements. This allows evaluation and improvement based on collected data, efficiency, effectiveness and even flexibility of processes within a project.

Often, continuous performance improvement is sought. It is believed that better performance leads to better customer satisfaction. Largely true, but this implies additional costs and therefore a higher cost of the product resulting from the project, all to the detriment of the beneficiary. This principle does apply however, and is to involve all staff at all levels and in all entities in activities to improve the distinctive capabilities of the project.

In Japan a new strategy of "continuous improvement", called **KAIZEN** (KAI = change, ZEN = better) in Japanese, was invented and applied by Masaaki Imai (1986) (6). "KAIZEN" means "continuous improvement involving everyone from managers to workers". KAIZEN means a systematic approach to closing the gap between customer expectations and process output characteristics.

Walter Deming devised a continuous improvement process called the **"P-D-C-A cycle"**, which he introduced in Japan in 1950 and which is also called the *Deming cycle*. The four phases of this cycle are: (P) - Planning improvement of the plan activities, (D) - Execution of the improvement plan, (C) - Verification of the work performed, (A) - Action to correct the process. W. Edwards Deming, a pioneer in the field, saw the quality improvement process as part of the "system" by which the feedback from the process and the customer was evaluated against organizational goals. Although

it is called a management process it does not mean that it must be executed by the project ”PM”, but rather only that decisions will be made about project implementation.

Measurement and analysis of project data allow the project manager to draw correct conclusions about errors, deviations, mistakes or changes that influence the project objectives and to decide the necessary actions to achieve the project targets according to the planned budget, allocated time or other resources established in the planning process [7]. Quality improvement will be done continuously in all phases of project management. Measuring and analysing the results of each project activity allows the implementation team, but mainly the project manager, to draw correct conclusions on mistakes, deviations and errors that influence the quality objectives and thus to make decisions to apply corrective or preventive actions in all phases of project implementation.

Quality improvement in projects can be seen as a process superimposed on quality control and will be a permanent objective of the PM and the implementation team. Measuring, analysing and diagnosing project data informs the project manager to draw conclusions on the implementation of project and non-project activities (errors, deviations, mistakes or changes) that influence the project objectives and to decide on the necessary actions to achieve the new project goals according to the planned budget, allocated time or other resources established in the planning process.

If a quality improvement programme is to be implemented within a project, and the project results are to be optimised, a methodology can be applied that includes the following steps E1-E7:

E1. Current status assessment of the project;
E2. Diagnosis based on inputs in the project processes;
E3. Defining new stage for the project and finding differences from the current implementation;
E4. Setting new project targets / adding on existing ones;
E5. Identify new activities and resources, reorganise existing ones;
E6. Planning and implementing new project activities;
E7. Ongoing improvement of the project.

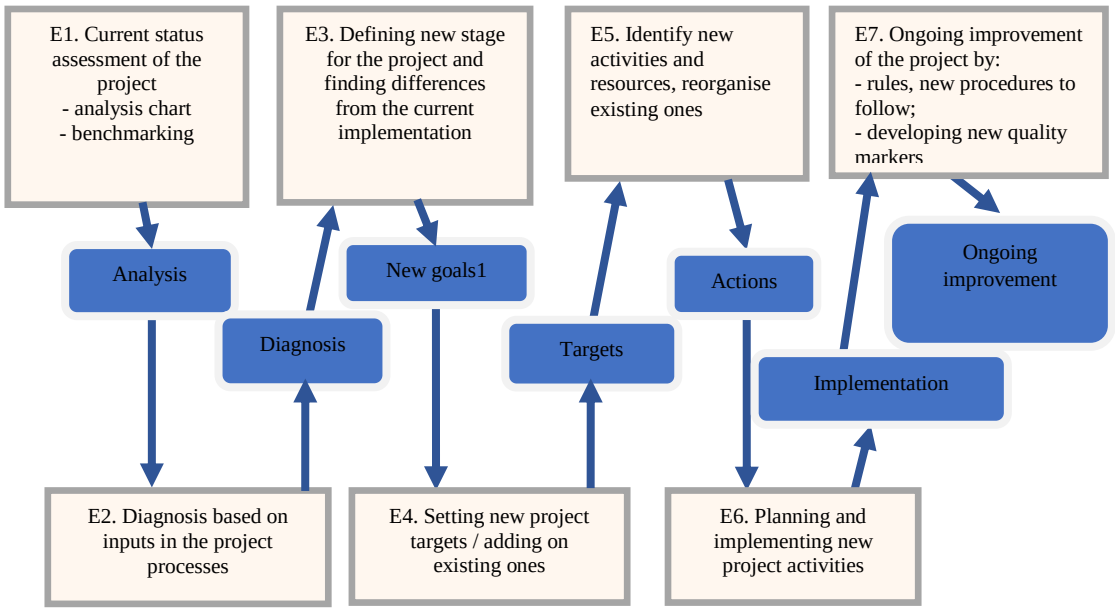

Figure 2. Methodology for continuous quality improvement of projects

The concept of continuous improvement can also be used in projects implemented by organisations with environmental management systems (ISO 14000). The term ”continuous improvement” is used in ISO 14000, and is understood to refer to a continuous series of activities for the purpose of increasing quality, each of which is carried out in a discrete,that means a ”step-by-step” manner. There are several differences between the concept of continuous improvement as

applied to quality management in projects and quality management in environmental projects. Continuous improvement in environmental projects aims to improve the natural impacts of the products and activities resulting from the project. There is also no customer orientation in environmental projects. It can be considered on the basis of the project quality methodology, shown in the figure above, that the continuous improvement process in projects is in fact a meta-process for most project quality management systems. One can thus consider quality management in business, management, social projects etc.

Conclusions

- The major process of quality improvement in projects changes continuously and in real time according to new project quality objectives, which are a moving target. It has been found in practice that no project has evolved according to the initial planning, with the first management plan applied, rules and new procedures to be followed have already been identified;
- The result of current status assessment of the project of the overall quality objective and the lower level objectives in the projects are input data, thus the outcome of the major quality improvement process will change continuously during the course of the project and the responsibility for updating the quality improvement process lies with the project manager.
- Improving quality in projects as a process the major process of quality assurance in projects requires that the project implementation team includes people who have a thorough knowledge of quality and mathematical statistics (graphs, charts, statistical interpretation etc.), which leads to statistical quality improvement in large projects through the application of statistical control while for small projects internal or external quality audits are used.

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