TECHNICAL REPORT

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Information technology — Process assessment — Guide for process improvement

Technologies de l'information — Évaluation des procédés — Guide de l'amélioration des procédés

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

In exceptional circumstances, when the joint technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide to publish a Technical Report. A Technical Report is entirely informative in nature and shall be subject to review every five years in the same manner as an International Standard.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC TR 33014 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*.

This first edition technically revises clauses of ISO/IEC TR 15504-4:2004.

Introduction

This Technical Report provides guidance on using process assessment as part of a complete framework and method for performing process improvement as part of a continual improvement activity. The guidance covers:

— invoking a process assessment;

— using the results of a process assessment;

— identifying improvement actions aligned to business goals;

— cultural issues in the context of process improvement;

— dealing with management issues for process improvement.

The overall goal of this Technical Report is to strengthen these needed abilities for continual improvement of processes in organizations. Organizations too often struggle with process improvement because of lack of focus on necessary process improvement abilities. This Technical Report will help an organization ensure benefits are realized from process improvement. It will also help an organization prepare for success with specific process improvement initiatives, programmes or projects. The Technical Report also describes the process improvement basics vital for performing a process improvement programme or project.

ISO/IEC TR 33014 deals with process improvement on three levels:

— Strategic, what goals to achieve, the motivation and direction.

— Tactical, how to achieve the goals of process improvement.

— Operational, how to perform the process improvement.

ISO/IEC TR 33014 has three improvement perspectives:

— Process perspective: Process improvement as a programme or project.

— Organizational perspective: Improvement of organizational improvability in order to ensure success with improvement projects.

— Project perspective: Improve a project´s improvability and reach improvement success.

This Technical Report is part of a set of International Standards designed to provide a consistent and coherent framework for the assessment of process quality characteristics, based on objective evidence resulting from implementation of the processes. The overall aim is to establish a framework for consistent and reliable assessment covering processes employed in the development, maintenance and use of systems across the information technology domain, and to the delivery and management of services employing IT-based systems. The set of standards, as a whole, addresses process quality characteristics of any type. Results of assessment can be applied for improving process performance, or for identifying and addressing risks associated with application of processes.

The set of International Standards ISO/IEC 33001 – ISO/IEC 33099 defines the requirements and resources needed for process assessment. The overall architecture and content of the set is described in ISO/IEC 33001.

Information technology — Process assessment — Guide for process improvement

1 Scope

This Technical Report provides informative guidance on using process assessment as part of a complete framework for performing process improvement as part of a continual improvement activity. It also provides guidance on how to strengthen and maintain the organization's abilities to ensure success with continual process improvement.

This Technical Report does not presume specific organizational structures, management strategies, life cycle models or development methods.

This Technical Report has its focus on continual process improvement, and the support for succeeding in continual process improvement – organizational improvability. Improvability is addressed both at the organizational perspective and at the project perspective. The organizational perspective is for large process improvement programmes and project perspective is for process improvement projects.

In the case of process improvement, the concepts and principles are appropriate for the full range of different business goals, application domains and sizes of organization, so that all types of organizations may use them. It is the same in the case of improvability.

Although the focus for this Technical Report is continual process improvement based on using process assessment as part of a complete framework and method for performing and ensuring success with continual process improvement, this Technical Report can also be used in related areas. One such related area is where continual improvement of processes takes a part in the development of the business. An example of this is when a process improvement initiative is identified in IT Service Management (ISO/IEC 20000). Continual process improvement can also be used to strengthen an organization's ability to carry out the improvement of services.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 9000:2005, *Quality management systems — Fundamentals and vocabulary*

ISO/IEC 33001:—[1], *Information technology — Process assessment — Concepts and terminology*

[1] To be published.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 33001:—, ISO 9000:2005 and the following apply.

3.1
continual process improvement
on-going cycle of process improvement programmes to strengthen and improve the processes supporting business and include one or several improvement projects or initiatives, which can be implemented in series or in parallel

3.2
process improvement support element
way that an organization expresses support for process improvement projects or initiatives

3.3
improvability
inherent ability of an organization to support continual process improvement

4 Introduction and overview of continual process improvement

This Technical Report focuses on process improvement, based on utilising the results of a process assessment. This process improvement may be in the context of an improvement programme, improvement project or improvement initiative perspective.

Process assessment is carried out to characterise the performance of a process with respect to a specific process quality characteristic; this may be done as part of an initiative to improve this aspect of the process, or to determine the risks associated with the level of achievement of the characteristic in a particular context. Process assessment is the basis for the process improvement initiatives or programs supported by this Technical Report.

Improved business goals (or change in goals) are the main driver for improvement initiatives in an organization (clause 6.2). Process improvement programmes or improvement projects are the work carried out to realise the change (see Bibliography [35]). Process improvement also affects the strategies, requirements for competences, processes and sometimes the relation to the customers.

Continual process improvement is a cycle based upon the premise that in order to always meet or exceed customer needs, organizations must continuously improve. Besides providing guidance on process improvement, this Technical Report also focuses on how continual process improvement can be enhanced with organizational support.

The set of elements supporting improvement indicates improvability in this Technical Report. Improvability can be evaluated, strengthened and maintained. Improvability closely links business, people and change. .In order to accelerate improvements, it is important that an organization is aware of the various support elements that can affect improvement. Improvement means change and an organization needs to choose a change strategy that is appropriate to the way the organization works, and it needs to choose appropriate approaches and methods for organizing the improvement activities. During an improvement programme a change of strategy and methods has to be considered.

In relation to this Technical Report, ISO 9004:2009 (see Bibliography [20]) is relevant for the formulation of a business strategy, identification of business goals, performing resource management, learning from and following up on on-going improvement programmes and projects.

Additional knowledge about process improvement can be found in the assessment indicators of any process assessment model conformant with ISO/IEC 33004.

All necessary roles have to be enacted in any improvement initiative to reach success. For that reason a set of roles are defined in this Technical Report, and the roles are related to success with process improvement and organizational improvability.

Because of this broad organizational involvement, the audience and usage of this standard are accordingly broad.

Audience:

— Process assessors

— Process improvement leaders in organizations

— Process improvement leaders in process improvement training

— Consultants (organizational external and internal) supporting in process improvement

— Project managers

— Process experts

— Service managers

— Training practitioners

— Service improvement managers

— Process improvement sponsors (may be the same person as assessment sponsor in ISO/IEC 33002, but not necessarily).

— Process improvement project managers

Usage:

— Advice in relation to improvement following a process assessment

— General advice on how to ensure success with improvement initiatives

— Advice on change methods

— Training interest

— Organizational marketing of improvement initiatives internal and external

— Post improvement review to identify risks

— Determining the organizational improvability

— Improvement of processes in projects

— Consulting to enhance improvability

4.1 Framework

This standard deals with process improvement on three levels:

— Strategic, what goals to achieve, the motivation and direction;

— Tactical, how to achieve the goals of process improvement;

— Operational, how to perform the process improvement.

This standard also has three improvement perspectives:

— Process perspective: Process improvement as a programme or project;

— Organizational perspective: Enhancement of organizational improvability in order to ensure success with improvement projects;

— Project perspective: Enhance a project´s improvability and reach improvement success.

The three levels and three perspectives are combined in Table 1, and illustrate the entire framework.

All three perspectives have a common operational level, including the activities that implement the improvement.

The tactical level describes the support elements which best bolster a process improvement project's success rate, or an organizational success rate with process improvement programs in general. The tactical level differs for the perspectives on how to identify what to improve. For process improvement a process assessment is used.

The strategic level gives the basis for setting up an improvement programme, including definition of scope of change and identification of the overall change strategy.

Table 1 — Framework for process improvement and its support

LEVEL / PERSPECTIVE	PROCESS Process improvement	ORGANIZATIONAL Organizational improvability	PROJECT Project improvability
STRATEGIC		ENHANCE ORGANIZATIONAL IMPROVABILITY **Clause 6 Step 1 to 4**	
TACTICAL	IMPROVE PROCESSES **Clause 5 Step 1 to 3**	ENHANCE ORGANIZATIONAL IMPROVABILITY **Clause 6 Step 5 to 7**	ENHANCE PROJECT IMPROVABILITY **Clause 7 Step 1 to 2**
OPERATIONAL	IMRPOVEMENT PROJECTS **Clause 5 Step 4 to 8**		

This Technical Report can be used in three ways:

1) As a guide to perform process improvement that at the Process perspective includes both the Tactical and Operational levels.

2) As a guide to enhance an organization's improvability, which at the Organizational perspective includes all three levels of the framework: Strategic, Tactical and Operational levels.

3) As a guide to improve a project's improvability, which at the Project perspective includes both the Tactical and Operational levels.

Each improvement perspective has several steps. The steps and their relations are presented in Figure 1. These steps involve many important roles in an organization. This addresses the different types of roles in clause 4.2, and Informative Annex A discusses how their daily problems and solutions can be related to process improvement.

Clause 4.3 highlights the basics in process improvement, and clause 4.4 highlights the basics in enhancement of improvability for continual improvement of processes.

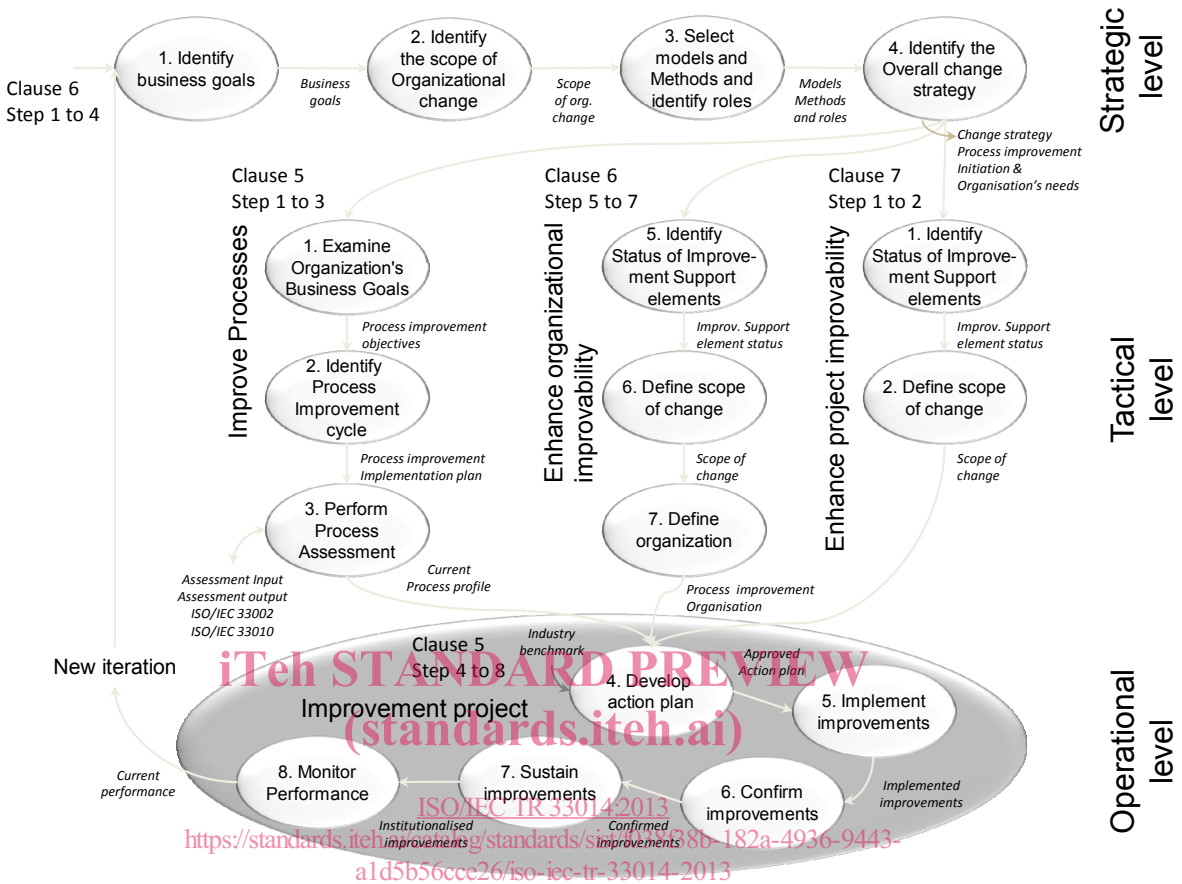

Figure 1 — Improvement framework of activities with steps and relations

4.2 Roles

When aiming for process improvement in an organization the project members, project managers, process owners, project organizers, top managers, users, experts and consultants, all have different roles to play in supporting process improvement and organizational improvability. This variety of perspectives needs to be coordinated and enacted.

There are three main roles: Performer, User, and Supplier, which are seen in at different levels within the organization.

The Performer is responsible for designing and implementing the improvement activities in the organisation. In a typical organization a process improvement unit or department (or the equivalent) or an Engineering Process Group (EPG) is responsible for carrying out the process improvement – thus having the role of Process Improvement (PI) performers at the organizational level. At the project level it could be a PI manager, and at the individual level it could be a PI Team member.

Sometimes the result of performing an activity is something useful for the performer him/herself, but most often another person will use these results — the User. The process improvement user will typically be an internal customer or end-user (e.g. quality or process department), a project manager or an individual practitioner. When it comes to change in an organization, the users (of the change) can be anyone in the organization (customer, project manager, practitioners, suppliers or performers). Only external organizational

experts are not regarded as users. So in this context the users include those who receive the results of the improvement work.

The Performer very often does not act alone. There may be a Sponsor supplying funding, a Champion helping with a technology transfer, and a Manager who makes sure that this specific activity is delegated to the Performer. In general a Supplier role is characterised by distributing resources, knowledge, and power. The PI supplier will be someone from management enacting the role as sponsor and/or champion. It could be a Manager or Sponsor at the organizational level, the project organization at the project level, and internal or external organizational experts at the individual level.

Table 2 (inspired by Bibliography [16]) gives an overview of the roles at the three different levels mentioned. Below, an account of how each role is enacted in the process improvement arena is described.

Table 2 — Three Process Improvement roles at three levels

Role / level	Organization level	Project level	Individual level
Supplier role	Management/ sponsor	Project Organisation	Expert
Performer role	Process Improvement Unit	Process Improvement Manager	PI Team member
User role	Customer	Project Manager	Practitioner

In an organization all these roles must be defined to be successful. They have to work closely together to "push" a process improvement through.

The nature of the problems perceived by each role is also very different. One of the keys to a more successful improvement initiative in an organization is to focus on this difference. If you have a Performer role, for example, then the less you focus on your "own" problems, the more you can help to solve problems for other roles, and thus achieve mutual success. See Informative Annex A for more information on roles, related problems and solutions in process improvement.

It is important to identify the various vital roles on the scene. Doing so makes visible which resources are available, who does what, and most importantly, who must cooperate in these important projects for the organization. Once these conditions are visible, the different roles can be used to create the greatest success.

All these roles must be defined in an organization to be successful in process improvement. All roles have to work closely together to successfully carry an improvement through.

4.2.1 Management / Sponsor

The Sponsor has the overall responsibility for aligning the improvement program according to the actual business goals. The responsibility for initiating and supporting the improvement activities in the organization is located here. The sponsor – typically a person from top management - is the person (or group) that endorses the improvement programs or projects and demands the results. This type of role is found among top managers with responsibility for business, product and process development. Only at such a level of the organization is there enough power and influences to make the necessary impact.

4.2.2 Project Organization

The Project Organization (or Steering Committee) is the body responsible for defining, scoping and controlling projects in the organization. They have to follow the project closely, and if unexpected problems or necessary changes occur they have to make decisions on changes of the basis or direction of the project. An important task is to ensure results – which often require continued contact with, and on-going involvement of, different groups of stakeholders. Normally this group is selected from management. Depending on the situation, this group of people could be supported by external experts.

4.2.3 Experts

Experts can be internal or external experts or consultants. They have the necessary competencies to support Management or the Project Manager.

4.2.4 Process Improvement Unit (Process owners)

The Process Improvement Unit could be the department for Quality Assurance, a department for Methods or a less formal part of the organization such as a process improvement group. This Unit is the owner of the processes in the organization. It has the responsibility – often not clearly defined – to maintain the formal set up of processes in the organization, to develop new processes, and facilitate the deployment of processes. This role is often staffed by employees with strong interests in quality, efficiency and continual process improvement.

4.2.5 Process Improvement Manager

The Process Improvement Manager is the person (or persons) that prepares and carries out the improvement project in practice, sometimes even including the diffusion and adoption of the change in the organization. The manager must perform within the chartered course set by the PI top manager and is the facilitator for the PI effort. An important task is to run the project, including all normal project activities and disciplines such as planning, teaming, managing, monitoring and controlling the project and its risks. This role is often manned with an influential, high status, and knowledgeable project manager from within the organization.

4.2.6 Process Improvement Team Member

A Process Improvement Team Member is the person or group (or groups of persons) that forms the project team together with the Project Manager. The project is manned with people from across the organization, providing they possess the necessary competencies and qualifications.

4.2.7 Customer

Customers are stakeholders who are important to successful process improvement. The customer could be an internal organization like a method, process or quality department. It is important to perform a stakeholder analysis to identify the customers and make them a part of the improvement initiatives.

4.2.8 Project Manager

A Project Manager in every type of project is a typical user of the result of process improvement initiatives. They are users of process descriptions, methods for specific processes, and are usually employees with relevant competences. They need to be heard and involved, and often they are aware of the problems to be solved.

4.2.9 Practitioner

The Practitioner (or practitioners) are part of every project team and are using the results of process improvement initiatives. They use the results in their development of new products, and services. It is important to involve practitioners in identification of problems, and in the solution of the problems.