TECHNICAL REPORT

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Systems and software engineering — Life cycle management — Guidelines for process description

Ingénierie du logiciel et des systèmes — Gestion du cycle de vie — Lignes directrices pour la description des processus

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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, the joint technical committee may propose the publication of a Technical Report of one of the following types:

— type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;

— type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;

— type 3, 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).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

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 24774, which is a Technical Report of type [1/2/3], was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*.

This second edition cancels and replaces the first edition (ISO/IEC TR 24774:2007), which has been technically revised.

Introduction

For an organization to function effectively, it has to determine and manage numerous linked activities. An activity or set of activities using resources, and managed in order to enable the transformation of inputs into outputs, can be considered a process. Often the output from one process forms the input to the next.

A number of international, national and industry standards describe process reference models. The process descriptions used in such models vary in format, content and level of prescription. The purpose of this Technical Report is to encourage uniformity in the description of processes. Uniform description of processes across process reference models allows the combination of processes from different reference models, eases the development of new models and facilitates comparison of models.

In order for future standards and revisions of current standards to select the appropriate forms of process description and apply them in a consistent fashion, it is desirable to develop a common characterization of all of these forms of process description. This Technical Report presents guidelines for the description of processes in terms of their format, content and level of prescription.

Within the International Standards arena the definition of life cycle processes for systems and software falls within the scope of ISO/IEC JTC 1/SC 7/WG 7. The existing International Standards in this area are ISO/IEC 12207, *Software life cycle processes*, and ISO/IEC 15288, *System life cycle processes*. The information items associated with these process definitions are given in ISO/IEC 15289, *Content of systems and software life cycle process information products (Documentation)*. Other International Standards, such as ISO/IEC 15939, *Measurement process*, and ISO/IEC 16085, *Risk management*, provide further characterization of a single life cycle process by elaborating the process elements and levying specific requirements on the execution of the process. The decomposition is described by use of the activity element. When instantiated for an organization or project, other details are added (entrance/exit criteria, actors, artefacts).

The assessment of process capability falls within the scope of ISO/IEC JTC 1/SC 7/WG 10. The existing International Standard in this area is ISO/IEC 15504-2, *Process assessment – Performing an assessment*. It provides requirements for assessing the capability of processes defined in external process models; processes can be assessed providing there is a description of them in terms of Title, Purpose, and Outcomes and the description satisfies the criteria for a “process reference model” as stated in ISO/IEC 15504-2. In addition to the elements described in this Technical Report, ISO/IEC 15504 defines and uses the element Assessment Indicator. An assessment indicator is a source of objective evidence used to support an assessor's judgement in rating process elements. Examples include work products, practices and resources.

ISO/IEC JTC 1/SC 7/WG 19 covers the fields of Open Distributed Processing and Modelling Languages. The International Standards developed in that working group provide notations that might be useful in detailed process description for other purposes.

The guidelines in this Technical Report are those applied in ISO/IEC JTC 1/SC 7. They align with those used in ISO/TC 176 (the committee responsible for ISO 9001). The guidelines can be applied to any process model developed for any purpose. The guidelines have been made publicly available as a Technical Report with the intention of establishing a uniform description of processes across all process models, from all sources, for all purposes.

The intended audience for this Technical Report is the editors, working group members, reviewers and other participants in the development of process standards and technical reports. It is intended that they will select the process description elements suitable for their project from those described in this Technical Report. It is further intended that, having selected the appropriate elements, users of this Technical Report will apply them in a manner consistent with the guidance provided by this Technical Report.

This Technical Report is also intended for use by all parties that define process models, for example other international standards groups, national standards, sector or special interest groups, professional standards groups, researchers, process assessors. These process models can be for the purpose of process definition, implementation or assessment.

Systems and software engineering — Life cycle management — Guidelines for process description

1 Scope

This Technical Report provides guidelines for the description of processes by identifying descriptive elements and rules for their formulation. It characterizes the following elements of process description:

— Title;

— Purpose;

— Outcomes;

— Activities;

— Tasks;

— Information items.

In addition process views are described.

It does not describe how processes are composed or otherwise aggregated into larger frameworks or architectures.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1
activity
set of cohesive tasks of a process

[ISO/IEC 15288:2008]

2.2
information item
separately identifiable body of information that is produced and stored for human use during a system or software life cycle

[ISO/IEC 15289:2006]

2.3
life cycle
evolution of a system, product, service, project or other human-made entity from conception through retirement

[ISO/IEC 15288:2008]