TECHNICAL REPORT

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Systems and software engineering — Framework for categorization of IT systems and software, and guide for applying it

Ingénierie des systèmes et du logiciel — Cadre pour la catégorisation des systèmes et du logiciel de la technologie de l'information et guide pour son application

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: Foreword — Supplementary information.

The committee responsible for this document is 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 12182:1998), which has been technically revised.

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Introduction

This Technical Report has several purposes which are directed to its various intended audiences in the systems and software engineering community, including the developers and users of systems and software engineering standards.

Since ISO/IEC TR 12182:1998 was published, more than 15 years passed with various changes in Information Technology (IT) arena. Those changes include the following:

— IT evolution by hardware advancement, operating systems growth, and communication network changes;

— advent of new type of applications such as entire enterprise applications including ERP (Enterprise Resource Planning), SCM (Supply Chain Management); social systems including online financial systems, healthcare systems, traffic management systems; embedded systems including car electronics; and highly interactive systems handling multi-media and using mobile technologies such as smart phones and tablet computers;

— Internet becoming one of important lifelines;

— emergence of SaaS (software as a service), big data systems and cloud computing services;

— growing impact of the quality of systems and software, in particular safe and secure manner.

By taking these important situational changes, the role and contribution expected for IT industry becomes dramatically increasing, and in order to respond to these expectation, several improvements to the ISO/IEC TR 12182:1998 are made in this revision as follows:

— the scope is enhanced from software to systems and software;

— a framework for describing categorizations is provided in place of a specific set of categorizations;

— relationship to other International Standards available in systems and software engineering area is added.

The categorization of systems and software itself should evolve over time because systems and software engineering is a fast growing field, and therefore this Technical Report does not provide a specific set of categorizations but a framework for categorizations in contrast to the previous one.

For developers and providers of systems and software technologies such as software products, techniques and tools, and research results, this Technical Report will provide the way to define categories of systems and software to which a particular technology can apply. This will help the technology users sort out a right set of technologies, which are applicable (and effective) in the context of their use.

For developers of systems and software engineering standards, this Technical Report will provide ability to position and prioritize specific usage of standards and clauses within the structure of systems and software engineering standards. It is also intended that, wherever applicable, new or on-going projects can identify and use the target categories to provide guidelines on how to apply the standards in different contexts of use. Addressing target categories will not only ease the coordination among projects but also increase the value of standards for their users.

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Systems and software engineering — Framework for categorization of IT systems and software, and guide for applying it

1 Scope

This Technical Report specifies the manner in which categorizations of IT systems and software are organized and expressed. It provides the framework for categorizations, and a guide for applying it. This allows any community to clarify their scope of the systems by using their own definition of categories.

The scope of application of the framework is intended to IT systems and software, including services provided by IT systems, where they can be of main targets but not limited to.

The purpose of this Technical Report includes the following:

a) developers of systems and software engineering standards can define their applicability to different categories of target systems and software using annexes or guidelines, so that their users can easily identify relevant standards and clauses that they can apply;

b) suppliers of systems and software engineering tools and methods can clarify the types of target systems and software to which their technologies are applicable or limited so that their users can easily choose the right tools and methods among many candidates for their use;

c) providers of services can define characteristics of their services using classification axes so that they can specify the quality of their services;

d) developers and evaluators of the systems and software can categorize systems and software of similar characteristics by using classification axes so that they can obtain a better estimation and quality evaluation of their target systems and software to be developed;

e) the systems and software engineering community can exchange their research ideas and best practices with defined scope of application.

This Technical Report does not provide a specific set of categorizations but the framework for categorizations and a guide for applying it to achieve the above purposes.

It is important that standards on systems and software engineering are properly applied to the procurement or development of certain kinds of systems. This Technical Report provides a categorization framework and a guide for applying it to assist in (1) defining the area of application of standards, and (2) positioning new standards. The annex of this Technical Report provides descriptive examples for relevant standards, each of which describes the area of application of the standard by using defined categorization.

NOTE Giving guidance on applicability might not be relevant to all standards.

2 Normative references

No normative references are made for the application of this document.

3 Terms and definitions

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

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