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Systems and software engineering — Information technology project performance benchmarking framework —

Part 1: Concepts and definitions

*Ingénierie des systèmes et du logiciel — Cadre de conduite de tests de
performance de projet de technologies de l'information —*

Partie 1: Concepts et définitions



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 ISO documents 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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document 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 29155-1:2011), of which it constitutes a minor revision. The changes compared to the previous edition are as follows:

- the introduction was restructured and updated to add descriptions for ISO/IEC 29155-2, -3, and -4, which were published after the publication of the first edition;
- [Clause 2](#) (Normative references) was added following the new requirements of ISO/IEC Directives, Part 2 (Seventh edition);
- definitions were added to include major terms and definitions of other parts of ISO/IEC 29155;
- abbreviations of names of benchmarking activities were added;
- minor editorial improvements were made to increase understandability and readability throughout the document; and
- [Clause 5](#) of the first edition was restructured to [Clauses 5](#) to [9](#).

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Introduction

Benchmarking consists of comparing “objects of interest” to each other, or against a benchmark, to evaluate characteristic(s). In the context of the ISO/IEC 29155 series, the “object of interest” is the performance of information technology (IT) projects, and the characteristic is a particular aspect of an IT project such as productivity.

Benchmarking is one of the fastest-growing techniques in the area of IT project management. Instances of IT project performance benchmarking are initiated and conducted for various reasons. Among the most common reasons are:

- the need to compare project productivity between similar industries;
- the need to compare productivity between different project types and technologies;
- the need to find the most effective targets for IT development process improvement;
- the need to compare productivity between different suppliers;
- the need to improve project management maturity;
- the need to improve project estimation capability.

Much has been written regarding the trials of establishing IT project performance benchmarking, and statistics bear witness to the high failure rate of measurement and benchmarking programs. The most likely causes for failure have been disappointment in the benchmarking outcomes due to a lack of alignment between the selected measurements and business goals, and the misunderstanding of project level measurements in relation to program and portfolio management levels. When there is no alignment between executed measurements and provided outcomes, unnecessary effort is required from the IT project teams collecting the project data. This results in decreased motivation to continue and institutionalize benchmarking.

As is shown in [Figure 1](#), the ISO/IEC 29155 series contains multiple parts:

- Part 1 provides the overall framework model for IT project performance benchmarking. It consists of activities and components that are necessary to successfully identify, define, select, apply, and improve benchmarking. It also provides definitions for IT project performance benchmarking terms;
- Part 2 describes the required tasks in individual benchmarking activities that are necessary to execute various activities to conduct and/or support successful benchmarking in an organization;
- Part 3 provides general requirements and guidance for reporting processes and contents of typical reports;
- Part 4 provides general requirements and guidance for the activities to collect data of IT project to be entered into and maintained in a benchmarking repository.

It is possible that further parts follow in the future.

This document is intended to provide a framework about issues and considerations for data selection and comparison in IT project performance benchmarking.

The starting point for this document and the ISO/IEC 29155 series was the concept outlined by the draft ISBSG (International Software Benchmarking Standards Group) benchmarking standard. IT project performance benchmarking is a combination of several different advanced technologies and practices in the area of quantitative analysis and management. Thus, the framework introduced in this document can be built on the basis of various standardized key technologies such as:

- project management (e.g. PMBOK Guide and ISO 10006);
- systems and software measurements (e.g. ISO/IEC/IEEE 15939);

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- software life cycle process (e.g. ISO/IEC 12207);
- system life cycle process (e.g. ISO/IEC/IEEE 15288);
- functional size measurement (e.g. ISO/IEC 14143 series and related methods);
- systems and software quality evaluations (e.g. the ISO/IEC 25000 family and ISO/IEC 9126 series).

This document is designed to conform to the concepts of ISO/IEC 12207 (Software life cycle processes), ISO/IEC/IEEE 15288 (Systems life cycle processes), the ISO/IEC 14143 series (Functional size measurement), the ISO/IEC 15504 series and the ISO/IEC 33000 family (Process assessment), ISO/IEC/TR 12182 (Categorization of systems and software products), or ISO/IEC 14764 (Software life cycle processes — Maintenance).

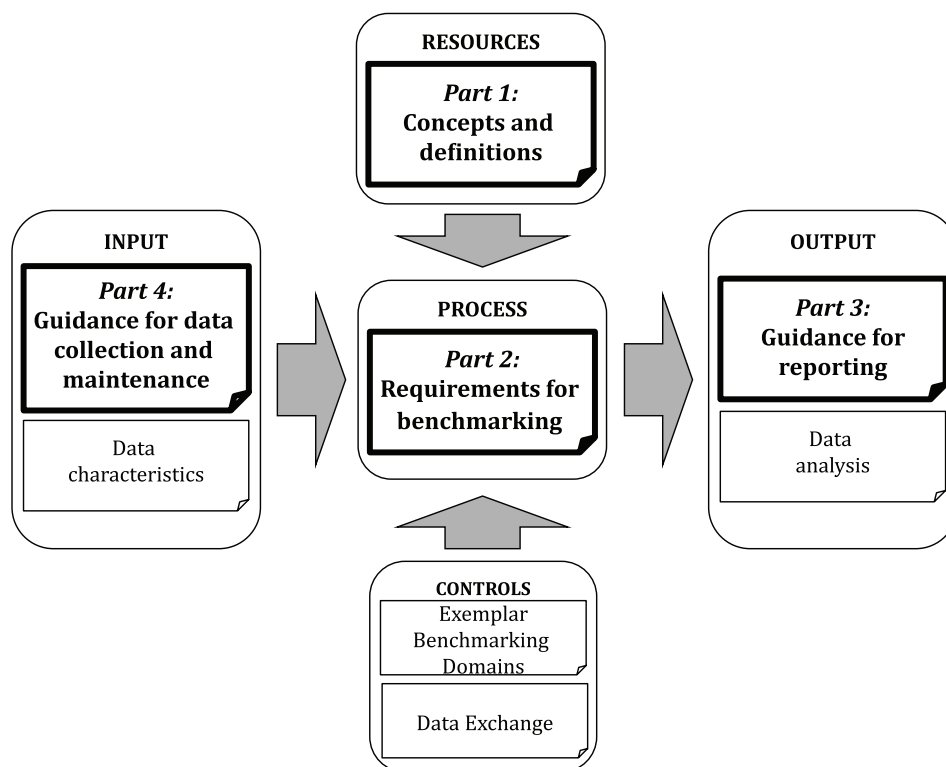


Figure 1 — IT project performance benchmarking framework overview