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

**Part 3:  
Guidance for reporting**

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

*Partie 3: Directives de rapport*

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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](http://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 and IEC 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](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 JTC1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*.

ISO/IEC 29155 consists of the following parts, under the general title *Systems and software engineering — Information technology project performance benchmarking framework*:

- *Part 1: Concepts and definitions*
- *Part 2: Requirements for benchmarking*
- *Part 3: Guidance for reporting*
- *Part 4: Guidance for data collection and maintenance*

Further parts might follow.

[Annex A](#) of this part of ISO/IEC 29155 is for information only.

## Introduction

Benchmarking is an activity 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) project, and the characteristic is a particular aspect of an IT project such as productivity.

The 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

- a) the need to compare project productivity between similar industries,
- b) the need to compare productivity between different project types and technologies,
- c) the need to find the most effective targets for IT development process improvement,
- d) the need to compare productivity between different suppliers,
- e) the need to improve project management maturity,
- f) the need to improve project estimation capability.

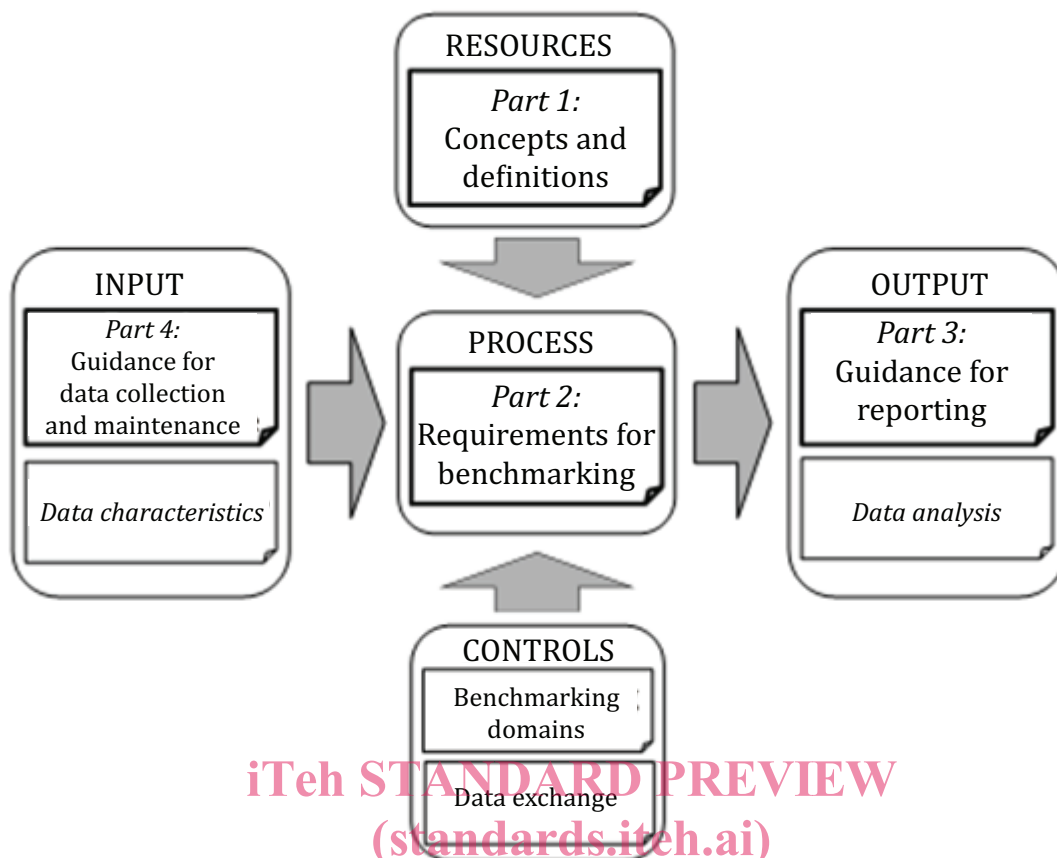
Much has been written regarding the trials of establishing IT project performance benchmarking, and statistics bear witness to the high failure rate of measurement and benchmarking programs. The most probable causes for failure have been disappointment in the benchmarking outcomes due to a lack of alignment 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. The result is decreased motivation to continue and institutionalize benchmarking.

As shown in [Figure 1](#), ISO/IEC 29155 series consists of 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;
- Part 2 prescribes 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 prescribes the guidance for reporting processes and contents of typical reports;
- Part 4 provides guidance for the activities to collect IT project data to be entered into and maintained in a benchmarking repository.

Further parts might follow.

This part of ISO/IEC 29155 is intended to provide guidance for reporting process and contents of typical reports in IT project performance benchmarking to produce high-quality deliverables (e.g. the benchmarking report of an instance of benchmarking, the explanatory report for issued benchmarks, and the explanatory report for released benchmarking repository) which include sufficient information to avoid misunderstanding or inappropriate usage.



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**Figure 1 — IT project performance benchmarking standards overview**

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

## Part 3: Guidance for reporting

### 1 Scope

This part of ISO/IEC 29155 provides general requirements and guidance for reporting processes and contents of typical reports within benchmarking activities of “the information technology (IT) project performance benchmarking framework” by prescribing:

- requirements and guidance for the reporting processes within the benchmarking framework;
- requirements and guidance for the contents of reports.

This part of ISO/IEC 29155 focuses on three major activities, i.e. “conduct benchmarking”, “maintain repository”, and “issue benchmarks” activities.

NOTE 1 These activities are selected, not only because of the importance of the outcomes of these activities, but also the outcomes of these activities are the direct input for benchmarking users who execute “core benchmarking” activities. In addition, benchmarking users are not usually so deeply involved to these activities even though they need in-deep information to understand the benchmarking results or to select appropriate data (i.e. benchmarking repository and benchmarks).

This part of ISO/IEC 29155 also focuses on two types of reports in the benchmarking framework:

- a) the benchmarking report, that describes the results of an instance of benchmarking;
- b) the explanatory report, that provides complementary information about the released benchmarking repository or benchmark(s).

This part of ISO/IEC 29155 is intended for use by stakeholder(s) of IT project performance benchmarking (e.g. benchmarking user, benchmark provider, and benchmarking service provider).

NOTE 2 The following are examples of how this part of ISO/IEC 29155 can be used:

- by a systems and software acquirer (or a third-party agent), to define, order, obtain and evaluate an acceptable and creditable benchmarking report;
- by a benchmarking service provider, to produce a high-quality benchmarking report;
- by a benchmark provider, to provide complementary information about the released benchmarking repository or issued benchmarks.

It is out of the scope of this part of ISO/IEC 29115 to prescribe the particular names, formats, or explicit contents of the reports of the benchmarking activities.

### 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/IEC 29155-3:2015(E)

ISO/IEC 29155-1, *Systems and software engineering — Information technology project performance benchmarking framework — Part 1: Concepts and definitions*

ISO/IEC 29155-2, *Systems and software engineering — Information technology project performance benchmarking framework — Part 2: Requirements for benchmarking*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 29155-1, ISO/IEC 29155-2, and the following apply.

#### 3.1 benchmarking analyst

person or organization that executes “conduct benchmarking” activity

#### 3.2 benchmarking report

document of the results of an instance of benchmarking

Note 1 to entry: Document usually consists of various formats (e.g. textual descriptions, numeric values, statistical charts and tables), and is exchanged via various media (e.g. electronic documents, electronic data set, printed documents, and embedded data within specific computer software).

#### 3.3 core report

document for providing descriptions of the process and outcomes of the benchmarking activity

Note 1 to entry: Two kinds of core reports (i.e. executive summary and detailed report) are often produced for reporting results of an instance of benchmarking activity.

#### 3.4 explanatory report

document attached to a product for providing complementary information in order to assist understanding and to avoid inappropriate usage of the product

Note 1 to entry: Examples of an explanatory report are data element definitions, data demographics, data source information which are attached to benchmarking repositories or benchmarks.

Note 2 to entry: Examples of the product are benchmarking repository, benchmark(s), or software tools to support benchmarking activities.

### 4 Abbreviated terms

IT Information Technology

### 5 Roles of reports in the IT project performance benchmarking framework

#### 5.1 General quality requirements for the benchmarking reports

As shown in [Figure A.1](#), IT project performance benchmarking framework in ISO/IEC 29155 series consists of two categories of benchmarking activities:

- core benchmarking activities (i.e. “conduct benchmarking” and “utilize benchmarking results”);
- supporting activities (i.e. “maintain repository”, “issue benchmarks”, “measure IT project”, “submit data”, and “provide instruments”).

NOTE 1 See ISO/IEC 29155-1 and ISO/IEC 29155-2 for more information about activities, processes and tasks in the benchmarking framework.



Since individual benchmarking activities require different expertise, these activities are usually role-shared by multiple stakeholders (e.g. benchmarking user, benchmark provider, benchmarking service provider, IT project team). In addition, same activity is often assigned to multiple persons or divisions, and those are executed in parallel within and/or across organization(s).

In these circumstances, various data and documents are exchanged as the outputs and inputs of activities. Therefore, high-quality reports are pre-requisite (necessary) to ensure and facilitate effective communication between stakeholders to drive whole activities successfully.

To minimize misunderstanding, a benchmarking report should be specific and consistent with terminology and definitions.

NOTE 2 When comparing a user data element with a benchmark, misunderstanding might occur, if

- the names are similar to each other, but the definitions are significantly different (e.g. scale, measurement unit, measurement timing),
- the names and the definitions are similar to each other, but the nature of the user software is significantly different (e.g. business domain, technical complexity, degree of quality requirements),
- the names and the definitions are similar to each other, but the nature of the user project is significantly different (e.g. skills and experience of IT project teams, scale of IT projects, resource constraints of IT projects).

## 5.2 Identification of reports within benchmarking framework

### 5.2.1 Benchmarking outcomes and types of reports

The outcomes of a benchmarking activity result in a set of deliverables which usually include:

- a) core reports, which provide descriptions of the process and outcomes of the benchmarking activity;
- b) data products, which provide the data resulting from the benchmarking activity;
- c) explanatory reports, which provide complementary information for assisting the audience to understand the outcomes of the benchmarking activity or to avoid inappropriate use of deliverables.

Core reports and explanatory reports represent the two types of benchmarking reports.

NOTE 1 Two kinds of core reports (i.e. executive summary and detailed report) are often produced for reporting results of an instance of benchmarking activity.

NOTE 2 Core reports and explanatory reports are usually presented in the form of textual descriptions together with statistics (e.g. numeric values, charts, and tables).

### 5.2.2 Reporting related benchmarking activities

This part of ISO/IEC 29155 focuses on three major benchmarking activities, i.e. “conduct benchmarking”, “maintain repository”, and “issue benchmarks” activities in the benchmarking framework.

These activities are selected because

- the outcomes of “conduct benchmarking” activity (i.e. benchmarking report) become the direct input for benchmarking users who execute “utilize benchmarking results” activity,
- deliverables of “maintain repository” activity (i.e. benchmarking repository) and “issue benchmarks” activity (i.e. benchmarks) are the data source for benchmarking analyst who executes “conduct benchmarking”,
- benchmarking users and benchmarking analysts are usually not involved to the execution of the activities to produce their inputs so deeply, even though they need more detailed information to

properly understand the benchmarking results or to select appropriate data (i.e. benchmarking repository and benchmark(s)).

### 5.3 Relationships between benchmarking activities and reports

The relationships between activities, deliverables, and reports are summarized in [Table 1](#).

**Table 1 — Relationships between activities, deliverables, and reports**

Activity	“Conduct benchmarking”	“Maintain repository”	“Issue benchmarks”
Main goal of the activity	— Report the results of an instance of benchmarking	— Provide a benchmarking repository (in the form of a data set of IT projects)	— Provide benchmark(s) (in the forms of reference value(s), or reference data set(s) of IT projects)
Responsible person(s)	— Benchmarking analyst	— Repository owner	— Benchmarking analyst — Repository owner
Inputs to the activity	— Benchmarking repository — Benchmark(s)	— IT project data (output of “submit IT data”)	— Benchmarking repository
Outputs from the activity	— Benchmarking report	— Benchmarking repository	— Benchmark(s)
Deliverables included in outputs from the activity	— Core reports (Mandatory) — Data products (Optional) — Explanatory report (Optional)	— Core reports (Optional) — Data products (Mandatory) — Explanatory report (Mandatory)	— Core reports (Optional) — Data products (Mandatory) — Explanatory report (Mandatory)
Typical contents of core report	— Descriptions, interpretation, and observations of the comparison results — Judgment and evaluation statements of the comparison results — Recommendations for benchmarking user — Background and context information of the instance of benchmarking — Demographics of input data (e.g. benchmarking repository, benchmarks, and IT project data) — Description of the analysis process and methods — Lessons learned — Information about the applicability of the results and limitation of their use	(Usually included in the explanatory reports)	— Descriptions, interpretation, and observations of the analysis results — Judgment and evaluation statements of the analysis results — Guide and recommendations for benchmarking analyst and user — Background and context information of the instance of issuing benchmark(s) — Demographics of input data (e.g. benchmarking repository, benchmarks) — Description of the analysis process and methods — Lessons learned — Information about the applicability of the benchmark(s) and limitation of their use

Table 1 (continued)

Activity	“Conduct benchmarking”	“Maintain repository”	“Issue benchmarks”
Typical content of data products	— Derived values (in the forms of numerical statistics, statistical charts, statistical tables, and so on)	— Benchmarking repository (in the form of a data set of IT project data)	— Derived values (in the forms of numerical statistics, statistical charts, statistical tables, and so on) — Derived data set (in the forms of a data set of IT project data)
Typical content of explanatory report	(Usually included in core report)	— Data element definitions — Data demographics — Data source information — Information about the applicability, limitations and remarks of benchmarking repository	— Data element definitions — Data demographics — Data source information — Information about the applicability, limitations and remarks of benchmark(s)
Subsequent activities	— “Utilize benchmarking result”	— “Conduct benchmarking” — “Issue benchmarks”	— “Conduct benchmarking”
Responsible person(s) for subsequent activities	— Benchmarking user	— Benchmarking analyst — Benchmarking user	— Benchmarking analyst — Benchmarking user

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## 6 General requirements and guidance for reporting process

### 6.1 Planning phase

The expertise of the responsible person, together with the quality of the information collected during the activity, determines the quality of the report and deliverables. It is very difficult to answer the information need of users if information is only collected after the process is finished or halfway progressed.

NOTE 1 The responsible person varies depending on the activities. For example, see [Table 1](#).

To produce useful reports, the reporting process should start from the beginning of the particular/specific benchmarking activity.

In the planning phase of a report-related benchmarking activity, stakeholders of the activity should consult or communicate with each other to build consensus on

- a) major contents to be included in the reports,
- b) acceptance criteria for the reports,
- c) procedures to record and report necessary information to ensure traceability and reproducibility of the reports.

NOTE 2 Acceptance criteria are a set of specifications that define the judgment conditions to accept outcomes (i.e. reports and deliverables). Examples of specifications in acceptance criteria include, but are not limited to

- list of mandatory and optional deliverables
- competence of the benchmarking analyst(s)
- minimum number of data (i.e. IT projects) to be analysed to build the benchmark,