INTERNATIONAL STANDARD

ISO/IEC 29155-4

First edition
2016-10-15

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

Part 4: Guidance for data collection and maintenance

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

Partie 4: Directives pour la collecte de données et la maintenance

Reference number
ISO/IEC 29155-4:2016(E)

© ISO/IEC 2016



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2016, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword ... **iv**

Introduction ... **v**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms and definitions ... **1**

4 Abbreviated terms ... **2**

5 Requirements and guidance for data definition ... **2**
5.1 IT project data structure overview ... 2
5.2 Attribute ... 4
5.3 Data element ... 4
5.4 Data record ... 4
5.5 IT project dataset ... 5
5.6 Requirements for defining data elements ... 5
5.6.1 Overview of definitive properties ... 5
5.6.2 Identifier ... 6
5.6.3 Short name ... 6
5.6.4 Name ... 6
5.6.5 Description ... 7
5.6.6 Priority ... 7
5.6.7 Confidentiality ... 7
5.6.8 Reproducibility ... 7
5.6.9 Scalability ... 7
5.6.10 Data type ... 7
5.6.11 Measurement unit ... 8
5.6.12 Precision ... 8
5.6.13 Timing ... 8
5.6.14 Procedure ... 10
5.6.15 Source data elements ... 10
5.6.16 Dependency ... 10
5.7 Requirements for defining data records ... 10
5.8 Requirements for defining IT project datasets ... 11

6 Functions for data collection ... **11**
6.1 Overview ... 11
6.2 Data collection functions of “Measure IT project” ... 11
6.3 Data collection functions of “Submit data” ... 12
6.4 Data collection functions of “Maintain repository” ... 12

7 Requirements and guidance for data collection ... **13**
7.1 Requirements and guidance for data source ... 13
7.2 Guidance for timing ... 13
7.3 Guidance for data validation ... 14
7.4 Requirements and guidance for privacy protection ... 14

8 Functions for maintenance and support ... **15**

9 Requirements and guidance for maintenance and support ... **15**
9.1 Requirements and guidance for data maintenance ... 15
9.2 Requirements and guidance for repository maintenance ... 16
9.3 Requirements and guidance for delivery of benchmarking repository product ... 16
9.4 Requirements and guidance for delivery of issued benchmarks ... 16
9.5 Requirements and guidance for support for benchmarking products ... 17
9.6 Requirements and guidance for support for benchmarking experience base ... 17

Annex A (informative) **The benchmarking information model** ... **18**

© ISO/IEC 2016 – All rights reserved

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 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).

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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/IEC JTC1, *Information technology*, Subcommittee SC 7, *Software and systems engineering*.

A list of all parts in the ISO/IEC 29155 series can be found on the ISO website.

© ISO/IEC 2016 – All rights reserved

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.

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 following:

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 is shown in Figure 1, the ISO/IEC 29155 series consists of multiple parts.

— ISO/IEC 29155-1 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.

— ISO/IEC 29155-2 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.

— ISO/IEC 29155-3 prescribes the guidance for reporting processes and contents of typical reports.

— ISO/IEC 29155-4 provides guidance for the activities to collect data of IT projects to be entered into and maintained in a benchmarking repository.

Further parts might follow.

© ISO/IEC 2016 – All rights reserved

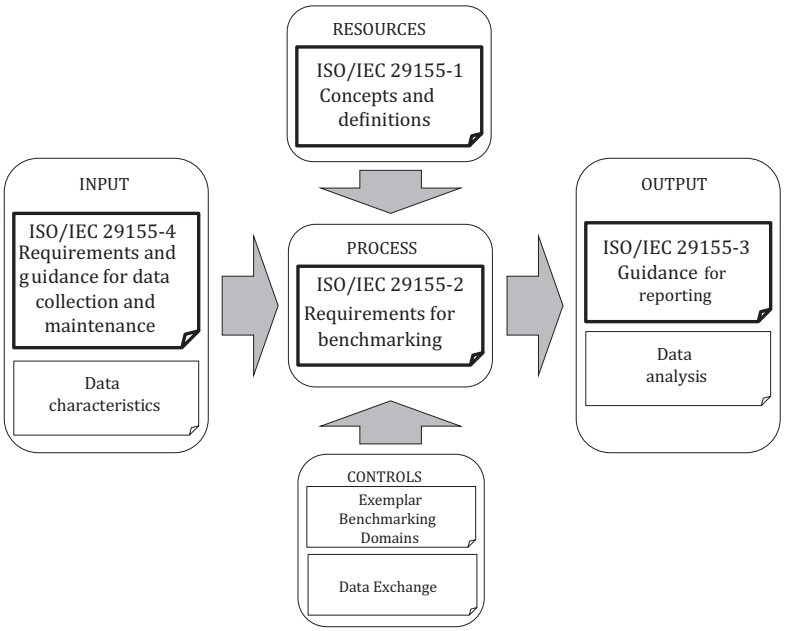


Figure 1 — IT project performance benchmarking standards overview

© ISO/IEC 2016 – All rights reserved

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

Part 4: Guidance for data collection and maintenance

1 Scope

This document provides general requirements and guidance for collecting and maintaining data of information technology (IT) projects and for delivering the benchmarking repository within benchmarking activities of "the IT project performance benchmarking framework" by prescribing the following:

a) requirements and guidance for data element definitions;

b) requirements and guidance for the data collection and maintenance processes within the benchmarking framework;

c) requirements and guidance for maintaining benchmarking repository product and issued benchmarks.

This document mainly focuses on three major activities, which are "maintain repository", "submit IT project data", and "measure IT project" activities.

This document is intended for use by stakeholder(s) of IT project performance benchmarking (e.g. benchmarking user, benchmark provider, benchmarking service provider, and IT project team).

NOTE The following are examples of how this document can be used:

— by a benchmark provider, to define data elements, collect and maintain IT project data, and provide benchmarking repository product or issued benchmarks;

— by a benchmarking analyst, to use benchmarking repository product and/or benchmarks for executing an instance of benchmarking;

— by a benchmarking service provider, to utilize benchmarking repository product and/or benchmarks for providing benchmarking services;

— by an IT service provider, to define data elements to be measured and/or to be submitted to repository owner.

It is out of the scope of this document to prescribe a particular set of data element definitions, formats or contents of the benchmarking repository.

2 Normative references

There are no normative references in this document.

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.

© ISO/IEC 2016 – All rights reserved

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp/

3.1
attribute
property or characteristic of an entity that can be distinguished quantitatively or qualitatively by human or automated means

[SOURCE: ISO/IEC 15939:2007, 2.2]

3.2
data element
smallest unit of data of IT project

Note 1 to entry: Data element is usually implemented to be a data cell in a benchmarking repository and/or an "IT project data".

Note 2 to entry: Data element is defined by a responsible person who plans data collection or benchmarking.

3.3
data record
defined group of related *data elements* (3.2), in which all the necessary data elements are included to represent *attributes* (3.1) of interest

Note 1 to entry: One data record usually corresponds to a specific IT project within IT project performance benchmarking framework.

3.4
IT project dataset
classified group of *data records* (3.3), into which collected data records are selected by pre-defined criteria

Note 1 to entry: Classification criteria for an IT project dataset might be based on the information needs of the owner and/or users of data.

4 Abbreviated terms

IT information technology

5 Requirements and guidance for data definition

5.1 IT project data structure overview

In the framework of IT project performance benchmarking in the ISO/IEC 29155 series, there are two major data stores, which are "benchmarking repository" and "IT project data" (see Figure C.1). Figure 2 illustrates the overall data structure of these data stores.

© ISO/IEC 2016 – All rights reserved