



BSI Standards Publication

Mapping rules and exchange methods for heterogeneous electronic parts libraries

Part 1: Building an integrated
search system

National foreword

This Published Document is the UK implementation of IEC/TR 62699-1:2014.

The UK participation in its preparation was entrusted to Technical Committee EPL/501, Electronic Assembly Technology.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2015.
Published by BSI Standards Limited 2015

ISBN 978 0 580 86988 4
ICS 25.040.01

Compliance with a British Standard cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 31 January 2015.

Amendments/corrigenda issued since publication

Date	Text affected
------	---------------



TECHNICAL REPORT



**Mapping rules and exchange methods for heterogeneous electronic parts
libraries –
Part 1: Building an integrated search system**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

PRICE CODE

V

ICS 25.040

ISBN 978-2-8322-1978-2

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD	4
INTRODUCTION	6
1 Scope	7
2 Application architecture	7
2.1 General	7
2.2 Interoperability system	7
2.3 Architecture	9
2.4 Data flow diagram	10
2.5 Sequence diagram	11
2.6 Message block	11
3 Format of the utilized dictionary	17
3.1 General	17
3.2 Format configuration of utilized dictionary	17
3.3 Rules for description of utilized dictionary	17
3.4 UD_Class format	17
3.4.1 General	17
3.4.2 Utilized class dictionary column	18
3.4.3 Standard dictionary column	19
3.5 Root property format	20
3.5.1 General	20
3.5.2 Utilized root property dictionary column	20
3.6 Property format	22
3.6.1 General	22
3.6.2 Utilized property dictionary column	22
4 Mapping types	24
4.1 General	24
4.2 Identification of mapping types	25
4.3 Classification of mapping types	27
5 Mapping rules	27
5.1 General mapping model	27
5.2 Mapping rules for mapping types	28
5.2.1 Mapping rule for the 1:1 type	28
5.2.2 Mapping rule for a 1:N, N:1 type	28
5.2.3 Mapping rule for a 1:0, 0:1 type	29
6 Interfaces and information processing	29
6.1 Information exchange	29
6.2 Message types	30
6.2.1 General	30
6.2.2 Message for exchange of parts list information	30
6.2.3 Message for detailed parts information exchange	31
6.2.4 Message for indicating an error or a warning state	31
Figure 1 – Interoperability system status	8
Figure 2 – Application architecture	9
Figure 3 – Data flow diagram	10

Figure 4 – Sequence diagram	11
Figure 5 – Message block	11
Figure 6 – Message control block.....	12
Figure 7 – Message contents block.....	12
Figure 8 – Message contents block (query request)	13
Figure 9 – Message contents block (detail request)	14
Figure 10 – Message contents block (query response).....	15
Figure 11 – Message contents block (detail response).....	16
Figure 12 – Message contents block (error response).....	17
Figure 13 – Example of UD_Class format.....	18
Figure 14 – Example of root property format	20
Figure 15 – Example of property formats	22
Figure 16 – Example of a case of integration of two parts libraries.....	25
Figure 17 – Example of mapping table between SD1 and SD2	26
Figure 18 – Example of mapping the properties of the classes	26
Figure 19 – Example of cases of each mapping type on the utilized dictionary.....	27
Figure 20 – Example of a case of user interface through a utilized dictionary.....	30
Figure 21 – Example of request and response on information exchange	30
Table 1 – Example of a case of a 1:1 mapping type	28
Table 2 – Example of a case of a 1:N, N:1 mapping type	28
Table 3 – Example of a case of a 1:0 mapping type	29
Table 4 – Types of message	31

currently in preview, click buy full version

INTERNATIONAL ELECTROTECHNICAL COMMISSION

MAPPING RULES AND EXCHANGE METHODS FOR HETEROGENEOUS ELECTRONIC PARTS LIBRARIES –

Part 1: Building an integrated search system

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, accept IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example, the "state of the art".

IEC TR 62699-1, which is a technical report, has been prepared by IEC technical committee SC 67: Electronics assembly technology.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
91/1187/DTR	91/1200/RVC

Full information on the voting for the approval of this technical report can be found in the report on voting indicated in the above table.

A list of all parts in the IEC 62699 series, published under the general title *Mapping rules and exchange methods for heterogeneous parts libraries*, can be found on the IEC website.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.

INTRODUCTION

This technical report describes the methodology for integrated use of heterogeneous libraries of electric and electronic product parts to provide integrated services utilizing existing heterogeneous libraries. Integrated search of electronic parts information, for example, requires to integrate the electronic parts classification systems and the property classification systems that are possibly maintained by different nations in incompatible ways, in that not all the electronic parts information has one-to-one correspondence between parts libraries. Recently, Korea, China, and Japan jointly built an integrated search system to enable search of parts information across parts libraries that are independently operated by each country. The biggest challenge in this project was bridging the gap between these heterogeneous parts libraries by providing rules to integrate related parts information. The integration of information that has one-to-one (1:1) relation between different parts libraries is straightforward. However, integration of information that has one-to-many (1:N), or many-to-one (N:1) relation demands a standard rule of integration to provide a determinant search result, or service in general.

The integration rules specified in this technical report provide a foundation for utilization of the electronic parts libraries, possibly heterogeneously constructed by different organizations. The information systems constructed by the application of these integration rules can be the basis for constructing an integrated electronic parts e-sourcing system enabling real-time search of multinational electronic part databases with minimized loss of information.

MAPPING RULES AND EXCHANGE METHODS FOR HETEROGENEOUS ELECTRONIC PARTS LIBRARIES –

Part 1: Building an integrated search system

1 Scope

This part of IEC 62699 describes mapping rules and exchange methods for the development of general and extendable integrated services utilizing heterogeneous multi-national or multi-enterprise electronic parts library data. The scope of this technical report is as follows:

- a) identification and classification of mapping types for mapping heterogeneous electronic parts libraries;
- b) definition of general mapping rules and specific mapping rules commonly applying to various mapping types.

The following aspects are out of the scope of this technical report:

- schematic definition and management of the electronic parts libraries to be mapped;
- maintenance process for the parts libraries during change.

2 Application architecture

2.1 General

This clause illustrates the application architecture on which the mapping rules and methods are based. The information exchange methodology and interoperability are required for performing an integrated search by linkage of heterogeneous electronic parts libraries on the basis of the mapping dictionary.

2.2 Interoperability system

Figure 1 shows an interoperability system (IOS). It is constructed with common exchange rules and a mapping dictionary that apply between parties A, B and C. Each system, connected with the Internet, provides the communications environment that enables data exchange.