AS ISO 15143.2:2020
ISO 15143-2:2010

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Earth-moving machinery and mobile road construction machinery — Worksite data exchange

Part 2: Data dictionary



AS ISO 15143.2:2020

This Australian Standard® was prepared by ME-063, Earthmoving Equipment. It was approved on behalf of the Council of Standards Australia on 27 October 2020.

This Standard was published on 13 November 2020.

The following are represented on Committee ME-063:

Australian Industry Group
Better Regulation Division — SafeWork NSW
Construction and Mining Equipment Industry Group
Department of Natural Resources, Mines and Energy, Qld
Department of Regional NSW
Engineers Australia / Mining Electrical and Mining Mechanical Engineering Society
Institute of Instrumentation, Control & Automation Australia
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This Standard was issued in draft form for comment as DR AS ISO 15143.2:2020.

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ISBN 978 1 76113 032 8

AS ISO 15143.2:2020
ISO 15143-2:2010

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First published as AS ISO 15143.2:2020.

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Preface

This Standard was prepared by the Standards Australia Committee ME-063, Earthmoving Equipment.

The objective of this document is to specify a data dictionary for the exchange of data in worksite data-controlled construction operations as specified in AS ISO 15143.1. It applies to worksite data exchange for the purpose of services related to machine use and gives definitions of terms used in relation to the data dictionary.

For the purposes of data exchange between different systems, the data dictionary includes —

(a) identification, definition and specification of common items of data to be exchanged on typical earthmoving construction worksites;

(b) definition of application schema;

(c) metadata describing the attributes of each data element; and

(d) basic normative data elements with their attributes (in tabular format).

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Contents

Preface ii
Foreword iv
Introduction v
1 Scope 1
2 Normative references 1
3 Terms and definitions 1
3.1 General 2
3.2 Metadata 3
3.2.1 Data elements 3
3.2.2 Value domain 7
3.3 Elements (see Annex A for data element concept names and definitions) 10
3.3.1 Frequency, forces, pressures and related dimensions 10
3.3.2 Machine masses 11
3.3.3 Machine dimensions 12
4 Data dictionary 15
4.1 General 15
4.2 Composition of data dictionary 15
4.3 Metadata 16
4.3.1 General 16
4.3.2 Data element metadata 16
4.3.3 Metadata of value domain table 16
4.4 Classification of the data dictionary 17
4.4.1 Classification for data element 17
4.4.2 Classification for value domain 18
4.5 Description method of data dictionary contents 19
4.5.1 General 19
4.5.2 Description of data dictionary contents 19
5 Application schema for worksite data exchange 19
Annex A (normative) **Basic data dictionary tables** 21
Annex B (normative) **Structure of data dictionary** 50
Annex C (informative) **Application example of machine management using ISO 15143** 52
Bibliography 56

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 15143-2 was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*, Subcommittee SC 3, *Machine characteristics, electrical and electronic systems, operation and maintenance*.

ISO 15143 consists of the following parts, under the general title *Earth-moving machinery and mobile road construction machinery — Worksite data exchange*:

— *Part 1: System architecture*

— *Part 2: Data dictionary*

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Introduction

Electronic data exchange on the construction worksite is rapidly becoming a key technology enabling a number of advances in the construction industry. Moving from predominantly manual data collection methods to more automated data collection and communication will improve worksite quality control. Electronic data exchange will further aid in the scheduling of maintenance, the provision of supervisory functions to be conducted remotely from the worksite and the enhancement of the coordination between engineering tasks, construction management and day-to-day operations on the worksite.

The implementation of an electronic data communication system requires an *a-priori* definition and specification of the elements of data to be communicated. Specification of unique data elements for worksite communication involves the use of an application schema to diagrammatically identify the scenario in which each item of data is to be used. After the scenario has been described, data elements are assigned metadata attributes to fully define and describe the individual data element. The list of data elements with attributes are compiled in tabular form in a data dictionary, which forms the subject of this part of ISO 15143.

Generally, the purpose of data dictionaries is recognized to be the following:

a) to improve the ability to share data elements in a particular domain or among different domains;

b) to provide a base for better understanding of the semantic meaning and syntax of data elements;

c) to manage a data resource so as to maintain the correctness and consistency of the resource;

d) to provide a basis for the development of consistent databases and software that use databases.

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NOTES

Australian Standard®

Earth-moving machinery and mobile road construction machinery — Worksite data exchange

Part 2: Data dictionary

1 Scope

This part of ISO 15143 specifies a data dictionary for the exchange of data in worksite data-controlled construction operations as specified in ISO 15143-1. It also applies to worksite data exchange for the purpose of services related to machine use (see ISO 15143-1:2010, Clause 4), and gives definitions of terms used in relation to the data dictionary.

For the purposes of data exchange between different systems, it includes

— identification, definition and specification of common items of data to be exchanged on typical earth-moving construction worksites,

— definition of application schema,

— metadata describing the attributes of each data element, and

— basic normative data elements with their attributes (in tabular format).

NOTE ISO 15143-1:2010, Annex A, describes the means to extend the data element table presented in Annex A of this part of ISO 15143.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 5353:1995, *Earth-moving machinery, and tractors and machinery for agriculture and forestry — Seat index point*

ISO 15143-1:2010, *Earth-moving machinery and mobile road construction machinery — Worksite data exchange — Part 1: System architecture*

ISO 19107:2003, *Geographic information — Spatial schema*

ISO/IEC 10646, *Information technology — Universal Multiple-Octet Coded Character Set (UCS)*

ISO 16754, *Earth-moving machinery — Determination of average ground contact pressure for crawler machines*

ISO/IEC 11179-1:2004, *Information technology — Metadata registries (MDR) — Part 1: Framework*

ISO/IEC 11179-3:2003, *Information technology — Metadata registries (MDR) — Part 3: Registry metamodel and basic attributes*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 15143-1 and ISO/IEC 11179-1, and the following apply.

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