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Supply chain applications of RFID — Product tagging

Applications de chaîne d'approvisionnements de RFID — Étiquetage de produit

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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 documents 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).

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

For an explanation of 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 www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/IEC JTC 1/SC 31*, Automatic Identification and Data Capture Techniques,* Subcommittee WG 8, *Applications in AIDC*.

This third edition cancels and replaces the second edition (ISO/IEC 17367:2013), which has been technically revised.

The main changes compared to the previous edition are as follows:

— 8-bit encoding and decoding using the UTF-8 encoding set added.

— Outdated processes and information updated.

A list of all parts of the ISO/IEC 1736x series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

The 'Supply Chain' is a multi-level concept that covers all aspects of taking a product from raw materials to a final product, including shipping to a final place of sale, use and maintenance and, potentially, disposal. Each of these levels covers many aspects of dealing with products, and the business process for each level is both unique and overlaps other levels.

This document has been created in order to ensure compatibility at the physical, command and data levels with the four other documents, under the general title *Supply chain applications of RFID*. Where possible, this compatibility takes the form of interchangeability. Where interchangeability is not feasible, the documents within this suite are interoperable and non-interfering. The documents within the complete series of Supply chain applications of RFID include:

— ISO/IEC 17363, *Supply chain applications of RFID — Freight containers*

— ISO/IEC 17364, *Supply chain applications of RFID — Returnable transport items (RTIs) and returnable packaging items (RPIs)*

— ISO/IEC 17365, *Supply chain applications of RFID — Transport units*

— ISO/IEC 17366, *Supply chain applications of RFID — Product packaging*

— ISO/IEC 17367, *Supply chain applications of RFID — Product tagging*

These documents define the technical aspects and data hierarchy of information required in each layer of the supply chain. The air-interface and communications protocol standards supported within the supply chain applications of RFID documents are ISO/IEC 18000. Commands and messages are specified by ISO/IEC 15961 and ISO/IEC 15962. Semantics are defined in ISO/IEC 15418 and syntax is defined in ISO/IEC 15434.

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Supply chain applications of RFID — Product tagging

1 Scope

This document defines the basic features of RFID for use in the supply chain when applied to product tagging. In particular it:

— Provides specific recommendations about the encoded identification of the product.

— Makes recommendations about additional information about the product on the RF tag.

— Makes recommendations about the semantics and data syntax to be used.

— Makes recommendations about the data protocol to be used to interface with business applications and the RFID system.

— Makes recommendations about the air interface standards between the RF interrogator and RF tag.

This document only covers the tagging of products and does not address a products packaging.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ANS MH10.8.2, *Data Identifiers*

GS1 *EPC Tag Data Standard (TDS)*

ISO 8601, *Data elements and interchange formats — Information interchange — Representation of dates and times*

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

ISO/IEC 15418, *Information technology — Automatic identification and data capture techniques — GS1 Application Identifiers and ASC MH10 Data Identifiers and maintenance*

ISO/IEC 15434, *Information technology — Automatic identification and data capture techniques — Syntax for high-capacity ADC media*

ISO/IEC 15459 (all parts), *Information technology — Automatic identification and data capture techniques — Unique identification*

ISO/IEC 15961, *Information technology — Radio frequency identification (RFID) for item management — Data protocol: application interface*

ISO/IEC 15962, *Information technology — Radio frequency identification (RFID) for item management — Data protocol: data encoding rules and logical memory functions*

ISO/IEC 17364, *Supply chain applications of RFID — Returnable transport items (RTIs) and returnable packaging items (RPIs)*

ISO/IEC 18000-3, *Information technology — Radio frequency identification for item management — Part 3: Parameters for air interface communications at 13,56 MHz*

ISO/IEC 18000-63, *Information technology — Radio frequency identification for item management — Part 63: Parameters for air interface communications at 860 MHz to 960 MHz Type C*

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ISO/IEC 19762, *Information technology — Automatic identification and data capture (AIDC) techniques — Harmonized vocabulary*

ISO/IEC 20248, *Information technology — Automatic identification and data capture techniques — Data structures — Digital signature meta structure*

ISO 21067, *Packaging — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 17364, ISO/IEC 19762 and the following apply.

For the purposes of this document, hexadecimal characters are represented as 0xnn, where "0x" is the hexadecimal indicator and "nn" is the hexadecimal value.

For the purposes of this document, the representation of the tags Memory Banks (MB) 00_2, $MB01_2$, $MB10_2$ and $MB11_2$ shall be represented as MB00, MB01, MB10, and MB11.

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

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

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

4 Concepts

Figures 1 and 2 give a graphical representation of supply chain layers. They show a conceptual model of possible supply chain relationships - not a one-for-one representation of physical things. Although several layers in Figure 2 have clear physical counterparts, some common supply chain physical items fit in several layers depending on the use case. For example, as shown in Figure 2, a repetitively used pallet under constant ownership would be covered by ISO/IEC 17364 as an RTI; a pallet that is part of a consolidated unit load would be covered by this document as a transport unit; and a pallet that is integral to a single item would be covered as product packaging by ISO/IEC 17366.

The term "supply chain layers" or levels, is a multi-level concept that covers all aspects of taking a product from raw materials to:

— A final product

— To shipping

— To a final place of sale, use, maintenance

— Potentially, returned goods and disposal

Each of these levels covers many aspects of dealing with products and the business process for each level is both unique and overlaps other levels.

The Item Level through Freight Container Level layers are addressed within the suite of standards for "supply chain applications of RFID" and are intended to enhance supply chain visibility. The Movement Vehicle Level is the purview of ISO/TC 204/WG 7, and is not a part of this series of standards.

Layer 0, the Product level layer in Figure 2, is the subject of this document.

Product Level tags can be distinguished from following, or preceding, layer tags by the use of a Group-Select methodology contained in the RFID interrogator/reader. This Group-Select function allows the interrogator, and supporting automated information systems (AIS), to quickly identify Product Level tags.

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