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Industrial automation systems and integration — Industrial manufacturing management data —

Part 1:
General overview

Systèmes d'automatisation industrielle et intégration — Données de gestion de fabrication industrielle —

Partie 1: Aperçu général

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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 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 15531-1 was prepared by Technical Committee ISO/TC 184, *Industrial automation systems and integration*, Subcommittee SC 4, *Industrial data*.

A complete list of parts of ISO 15531 is available from the Internet:

http://www.tc184-sc4.org/titles/Mandate_titles.rtf

Introduction

The information generated about the manufacturing process of an industrial product is very important for the life cycle of this product, notably in a context of sustainable development. Manufacturing may be defined as the transformation of raw material or semi-finished components leading to goods production. Manufacturing management is the function of directing or regulating the flows of goods through the entire production cycle from requisitioning of raw materials to the delivery of the finished product, including the impact on resources management.

A manufacturing management system manages the flow of materials and products through the whole production chain, from suppliers, through manufacturers, assemblers, to distributors and sometimes customers.

The relations among those partners may be identified and structured in an electronic form with a view to facilitate electronic exchanges. Then, information handled during these exchanges have to be identified, modelled and represented in such a way that they may be shared by a maximum of partners through the usage of standards for product and manufacturing data modelling.

The production planning functions within the supplier plants are assumed to have strong relationships with the master production scheduling people of the main plant, who share with them information on the likely pattern of the future demands to allow suppliers to plan in turn their production. On a day-to-day basis, the operational planning system of the main plant sends orders to the suppliers to ensure the availability of components, subassemblies and others such as resources needed to its manufacturing and assembly process.

From this approach, three main categories of data related to manufacturing management may be distinguished as follows:

— information related to the external exchanges, e.g., between main plant and suppliers;

— information related to the management of the resources used during the manufacturing processes;

— information related to the management of the manufacturing flows.

NOTE This information is usually provided within the main plant, and exchanged among the different machine tools, or production cells.

ISO 15531 is an International Standard for the computer-interpretable representation and exchange of industrial manufacturing management data. The objective is to provide a neutral mechanism capable of describing industrial manufacturing management data throughout the production process within the same industrial company and with its external environment, independent from any particular system. The nature of this description makes it suitable not only for neutral file exchange, but also as a basis for implementing and sharing manufacturing management databases and archiving.

The standard is focused on discrete manufacturing, but not limited to it. Then any modification or extensions to industrial that do not belong to discrete part manufacturing have always been under consideration when they did not imply any contradiction or inconsistency with the initial objective of the standard.

ISO 15531 addresses the three types of data described above. It does not standardise the model of the manufacturing process. The aim of ISO 15531 is to provide standardised data models for those three types of manufacturing management data. The purpose of that standard development is to facilitate the integration between the numerous industrial applications by means of common, standardised software that are able to represent these three sets of data.

This International Standard is organised as a series of parts, each published separately. The parts of ISO 15531 fall into the following series: production data for external exchange, manufacturing resources usage management data, manufacturing flow management data.

This part of ISO 15531 provides a general overview. It specifies the functions of the various series of parts of ISO 15531 and the relationships among them. It also specifies the relations between ISO 15531 and other related standards in its Annex B.