INTERNATIONAL STANDARD

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Industrial automation systems and integration — Product data representation and exchange —

Part 41: Integrated generic resources: Fundamentals of product description and support

Systèmes d'automatisation industrielle et intégration — Représentation et échange de données de produits —

Partie 41: Ressources génériques intégrées: Principes de description et de support de produits

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Foreword

The International Organization for Standardization (ISO) 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.

Draft International Standards adopted by 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.

International Standard ISO 10303-41 was prepared by Technical Committee ISO/TC 184, *Industrial automation systems and integration*, Subcommittee SC4, *Industrial data and global manufacturing programming languages.*

ISO 10303 consists of the following parts under the general title *Industrial automation systems and integration – Product data representation and exchange:*

– Part 1, Overview and fundamental principles;

– Part 11, Description methods: The *EXPRESS* language reference manual;

– Part 21, Implementation methods: Clear text encoding of the exchange structure;

– Part 22, Implementation methods: Standard data access interface specification;

– Part 31, Conformance testing methodology and framework: General concepts;

– Part 32, Conformance testing methodology and framework: Requirements on testing laboratories and clients;

– Part 41, Integrated generic resources: Fundamentals of product description and support;

– Part 42, Integrated generic resources: Geometric and topological representation;

– Part 43, Integrated generic resources: Representation structures;

– Part 44, Integrated generic resources: Product structure configuration;

– Part 45, Integrated generic resources: Materials;

– Part 46, Integrated generic resources: Visual presentation;

– Part 47, Integrated generic resources: Shape variation tolerances;

– Part 49, Integrated generic resources: Process structure and properties;

- Part 101, Integrated application resources: Draughting;
- Part 104, Integrated application resources: Finite element analysis;
- Part 105, Integrated application resources: Kinematics;
- Part 201, Application protocol: Explicit draughting;
- Part 202, Application protocol: Associative draughting;
- Part 203, Application protocol: Configuration controlled design;
- Part 207, Application protocol: Sheet metal die planning and design;
- Part 210, Application protocol: Printed circuit assembly product design data;
- Part 213, Application protocol: Numerical control process plans for machined parts.

The structure of this International Standard is described in ISO 10303-1. The numbering of the parts of this International Standard reflects its structure:

- Part 11 specifies the description methods;
- Parts 21 and 22 specify the implementation methods;

- Parts 31 and 32 specify the conformance testing methodology and framework;
- Parts 41 to 49 specify the integrated generic resources;
- Parts 101 to 105 specify the integrated application resources;
- Parts 201 to 213 specify the application protocols.

Should further parts be published, they will follow the same numbering pattern.

Annexes A and B form an integral part of this part of ISO 10303. Annexes C, D, E and F are for information only.

Diskette

Users should note that this part of ISO 10303 comprises a diskette:
— the short names of entities given in annex A are also included on the diskette;
— the EXPRESS listings (annex C) are provided on the diskette only;
— a method to enable users to report errors in the documentation is given. Full details are provided in the file.

Introduction

ISO 10303 is an International Standard for the computer-interpretable representation and exchange of product data. The objective is to provide a neutral mechanism capable of describing product data throughout the life cycle of a product 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 product databases and archiving.

This International Standard is organized as a series of parts, each published separately. The parts of ISO 10303 fall into one of the following series: description methods, integrated resources, application protocols, abstract test suites, implementation methods, and conformance testing. The series are described in ISO 10303–1. This part of ISO 10303 is a member of the integrated resources series. Major subdivisions of this International Standard are:

- generic product description resources;
- generic management resources;
- support resources.

The groupings of resource schemas into these major subdivisions are shown in figure 1.

The generic product description resources provide an overall organization for the integrated resources that are documented in other parts of ISO 10303. They support the description of application-independent facts that are common to all products. In this part the combination of the generic product description resources and the ISO 10303 integrated resources that are defined in the other parts that belong to the integrated resources class is referred to as the "integrated product description resources".

The generic management resources support the description of information that is used to manage and control product data. Together, the integrated product description resources and the generic management resources are the foundations upon which application interpreted models, the normative conceptual schemas of application protocols, are built. Application interpreted models apply selected generic management resources to elements of the integrated product description resources to satisfy the requirements that are specified in the appropriate application reference model.

The support resources are a set of shared resource constructs that are used by the ISO 10303 integrated resources. They provide an underlying consistency across the resources of ISO 10303.

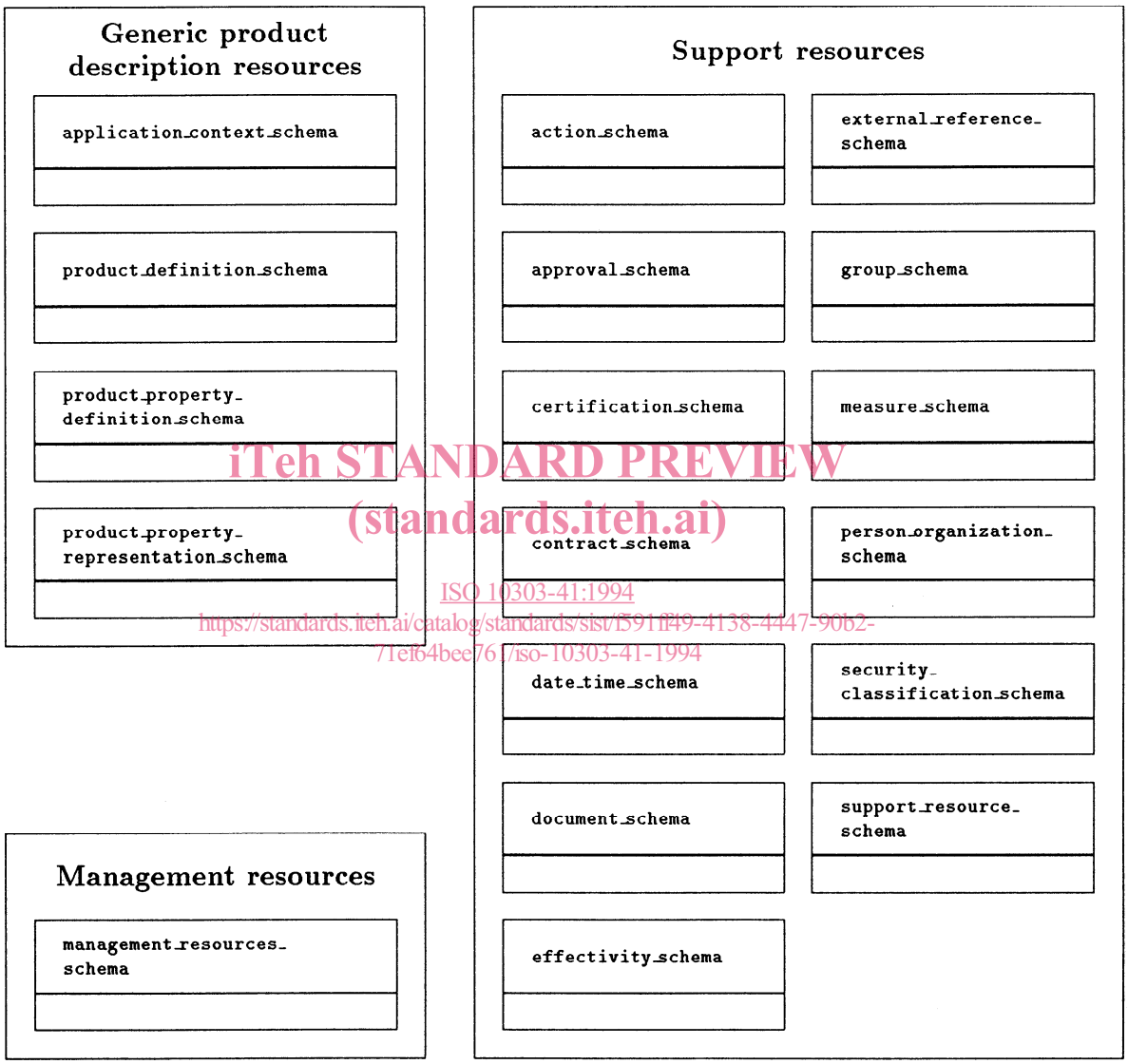

Figure 1 – The groupings of resource schemas into generic product description resources, generic management resources, and support resources