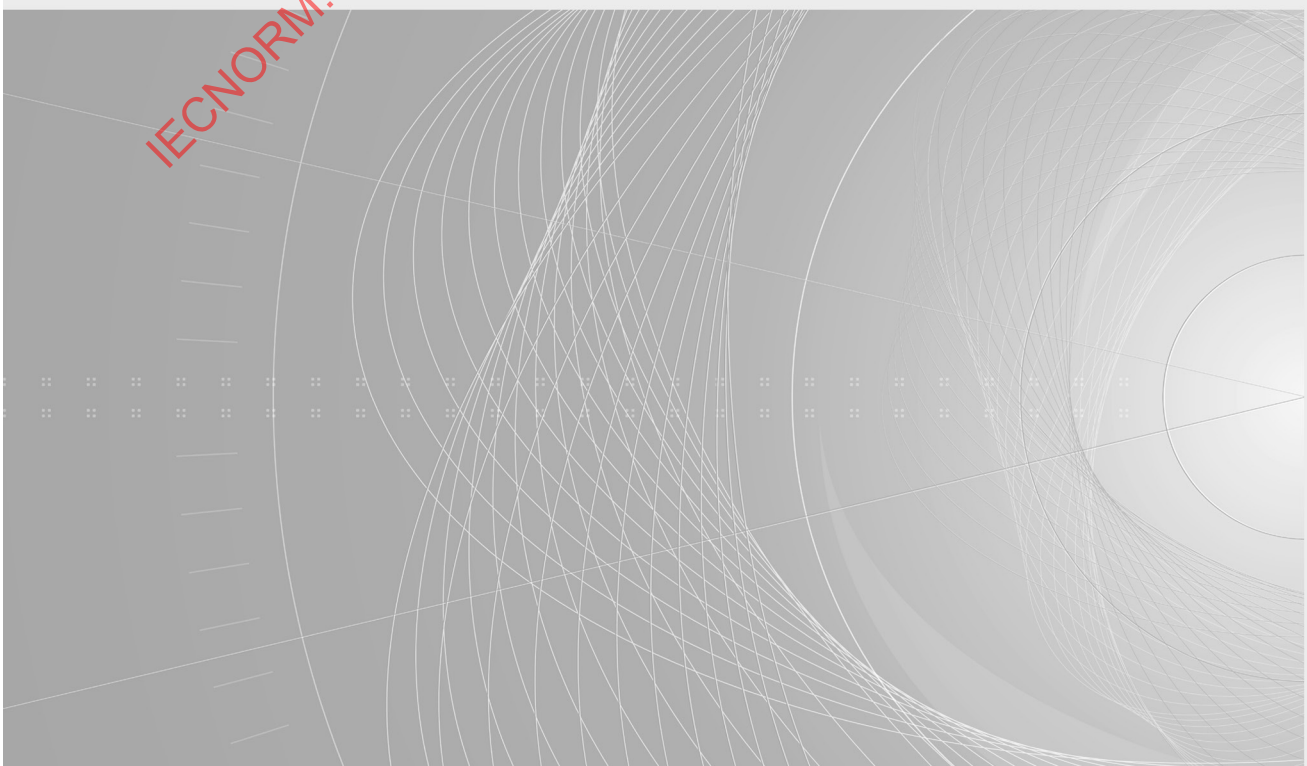
IEC PAS 63485

Edition 1.0 2023-10

PUBLICLY AVAILABLE SPECIFICATION

colour inside

Intelligent Information Request and Delivery – A process model for the exchange of information for use



IEC PAS 63485:2023-10en)

IEC Secretariat
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, …). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch
Discover our powerful search engine and read freely all the publications previews. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org
The world's leading online dictionary on electrotechnology, containing more than 22 300 terminological entries in English and French, with equivalent terms in 19 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC PAS 63485

Edition 1.0 2023-10

PUBLICLY AVAILABLE SPECIFICATION

colour inside

Intelligent Information Request and Delivery – A process model for the exchange of information for use

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 01.040.01; 01.110

ISBN 978-2-8322-7254-1

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

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

INTELLIGENT INFORMATION REQUEST AND DELIVERY – A PROCESS MODEL FOR THE EXCHANGE OF INFORMATION FOR USE

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, access to 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) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

A PAS is an intermediate specification made available to the public and needing a lower level of consensus than an International Standard to be approved by vote (simple majority).

IEC PAS 63485 has been processed by IEC technical committee 3: Documentation, graphical symbols and representations of technical information.

The text of this PAS is based on the following document:	This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document
Draft PAS	**Report on voting**
3/1606/DPAS	3/1612/RVDPAS

Following publication of this PAS, which is a pre-standard publication, the technical committee or subcommittee concerned may transform it into an International Standard.

This PAS shall remain valid for an initial maximum period of 2 years starting from the publication date. The validity may be extended for a single period up to a maximum of 2 years, at the end of which it shall be published as another type of normative document, or shall be withdrawn.

IMPORTANT – The "colour inside" logo on the cover page of this document 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

According to the strategic business plan of IEC TC 3 as of 2019-07-12, standardization in the field of documentation covers rules, principles, and methods focusing on machine-readable representation of information, including ontologies for the definition, co-ordination, and management of the information required during the whole life cycle of a device, system, or plant.

This document approaches information for use that covers the life cycle stages of the use of products in B2C and especially B2B environments, for example for technicians who assemble, mount, operate, maintain, repair, or disassemble technical assets.

In a digitalized world, (printed) documents no longer support the information needs of people who are used to accessing all kinds of information quickly according to their need, either in their private life or in their professional contexts, on the internet, mostly on mobile devices. Especially in the context of smart manufacturing or the industrial internet of things, where any kind of technical objects are mirrored by their digital twins, all information regarding the efficient, effective, and safe use of technical objects or products (compare IEC 82079-1:2019) needs to be connected to these virtual objects in a dynamic way. Users do not want to search for technical information in huge documents. They want information matching their concrete use cases instead, according to their personal requests. Together with real-time descriptive and operational data, they need information at any time that helps them to interpret these data and to take adequate actions to guarantee smooth operation of the assets.

Where the traditional context of linear documents is lost, the metadata ontology of the Intelligent Information Request and Delivery Standard (iiRDS™[1]), maintained by the iiRDS consortium, helps to couple digital twins with the technical information needed in concrete use cases.

Such semantically supported information processes guarantee real-time delivery of the right information, at the right time, on the right place, to the immanent need of the users. It helps avoid huge costs for the operators of any kinds of assets, caused by wrong, outdated, or not easily accessible and understandable information.

To make sure that all information providers and information consumers can benefit from the practical and economic advantages of iiRDS, this specification defines a standard information flow (Clause 6), a metadata model (Clause 7), and a set of core metadata (Annex A) that shall be applied to facilitate this approach.

Within the ecosystem of IEC TC 3, iiRDS uses some administrative metadata according to IEC 82045. All other relevant standards in the field of information management have been evaluated as well to make sure that no unnecessary overlap occurs.

IEC 61355-1:2008 defines a general document classification framework that covers technical documentation at its lowest level but lacks a more granular categorization. iiRDS defines a metadata framework tailored to technical documentation which enables a more granular information access as a basis for intelligent information processes. iiRDS can, therefore, be considered as a domain-specific supplement to IEC 61355-1:2008.

Whereas IEC 62656-8 defines a product ontology, iiRDS sets requirements for information products (compare IEC/IEEE 82079-1:2019), also using a different technology for specifying its requirements. Thus, iiRDS adds new aspects to the representation of technical information with respect to information for use of products.

---

[1] iiRDS is the trade name of a product supplied by the iiRDS consortium. This information is given for the convenience of users of this document and does not constitute an endorsement by IEC of the product named. Equivalent products may be used if they can be shown to lead to the same results.

INTELLIGENT INFORMATION REQUEST AND DELIVERY – A PROCESS MODEL FOR THE EXCHANGE OF INFORMATION FOR USE

1 Scope

This specification addresses creators of information for use of products. Examples of information creators are information architects and technical communicators.

The document defines requirements for electronic request and delivery processes for any kind of information for use. Such processes are needed to bridge the gap between objects in the real world and the information needed by their dedicated users, especially in the context of smart manufacturing, industry 4.0 and the industrial internet of things. This document specifies processes in order to enable n:m relations between information sources and information users when there is no explicit agreement between information provider and information consumer. This document also specifies metadata.

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.

IEC/IEEE 82079-1:2019, *Preparation of information for use (instructions for use) of products – Part 1: Principles and general requirements*

tekom (2020), iiRDS – The International open source standard for Intelligent Information Request and Delivery. Available at https://iirds.org/material-downloads/iirds-version-1-1/

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
creation application
software system which supports the creator in creating intelligent information

Note 1 to entry: Usually the application consists of an editor for structured authoring and managing metadata as well as a repository in which information units are stored and from which units can be retrieved and used for generating information products. A creation application also includes automatically generated content, for example generated texts generated by artificial intelligence or information products generated out of third party systems.

3.2
creator (intelligent information)
person who analyses, conceptualizes, and compiles information requirements and design

3.3
generator
system that processes output according to a defined exchange format

3.4
information for use
information provided by the supplier that provides the target audience with concepts, procedures, and reference material for the safe, effective, and efficient use of a supported product during its life cycle

EXAMPLE Step-by-step instructions, troubleshooting information, service information, operation and maintenance instructions, and assembly instructions.

Note 1 to entry: "Instructions for use, procedures for the safe, effective, and efficient use of a supported product", was the term formerly used to include all the content defined as part of information for use.

Note 2 to entry: Excludes supplementary information, which is outside the scope of information for use.

[SOURCE: IEC/IEEE 82079-1:2019, 3.17]

3.5
information flow model
model to describe the flow of information from the creator to the user and vice versa

3.6
information unit
digital entity containing content for the user and metadata for the management of the conveyed information, e.g. a topic

3.7
intelligent information
structurally and semantically enhanced information that enables interactive and adaptive human-machine or machine-machine communication

3.8
information integrator
system that receives and integrates output from the generators and provides it for user applications

3.9
product knowledge
knowledge needed to identify the product for which information is requested

3.10
semantically rich metadata
data models that deliver contextually rich information, properly tagged and targeted to provide an enjoyable user experience

3.11
technical information creation
process of applying information design to create technical content and assign metadata

Note 1 to entry: Usually the task of information creation can be fulfilled by a human, by systems, or a combination of both.

Note 2 to entry: Information design is the process of developing content that meets the needs of the audience.

[SOURCE: ISO/IEC/IEEE 24765:2017, 3.1947]

3.12
user application
HMI (human-machine interface) or MMI (machine-machine interface) for the presentation of the information

Note 1 to entry: A role which is performed by a system.

3.13
use context
environment that affects the user's ability to understand and apply information

Note 1 to entry: The user context can include the location (geographic region), consumer or worker use, use at various stages of the product life cycle (installation, operation, maintenance), and preferred media for receiving information.

3.14
user
person who interacts with the product

Note 1 to entry: "User" can include persons who install, operate, service, maintain, or dispose of the product.

[SOURCE: IEC/IEEE 82079-1:2019, 3.47]

4 Fulfilment of requirements

A claim of fulfilment of requirements with this document shall only be made if the requirements are fulfilled with respect to the following aspects:

- allocation of processes, tasks, and organizational units as specified in Clause 5.
- information flow and information flow model as specified in Clause 6.
- metadata model as defined in Clause 7.
- match at the interface format as specified in 7.2.

5 Intelligent information

5.1 General

Intelligent information request and delivery shall enable applications to provide users with suitable information at the right time, according to their context and their tasks with the product, in an efficient and natural way. Intelligent information's scope is technical information, like product information, operating, troubleshooting and service information. A piece of intelligent information is always bound to some product or component or function, and some information use context.

5.2 Quality of intelligent information

Regarding the quality of contents of intelligent information, the requirements of IEC/IEEE 82079-1:2019, Clauses 5, 7, 8, 9 shall be fulfilled.

The quality of intelligent information can be assessed with regard to different aspects. Intelligent information shall have the following properties:

1) be structured according to rules and in a topic-oriented way.
   a) Each topic shall focus on answering only one specific question. This enables applications to provide the right minimal information.
   b) Intelligent information topics shall address specific user groups.
   c) Users shall get information that matches their roles and skill levels.

d) Technical information shall be comprehensible to the user or the machine.

2) follow a style guide of content rules.

3) use consistent terminology.

4) be format-neutral, so it can provide a representation on a variety of devices.

5) information units shall be tagged with semantically rich metadata.

6) be related to product and product components and functions as well as information usage scenarios (such as product lifecycle phases, user clearance) and information types (such as task, concept, or reference information).

7) metadata shall apply standardized ontologies and/or taxonomies to enable collection, assembly, delivery and usage of information from different sources.

NOTE A high-level view of an ontology is available in Annex A. A comprehensive ontology is available at the iiRDS website www.iirds.org.

8) all contents should be tagged with specific elements.

6 Information flow model

Intelligent information request and delivery processes shall be designed according to this information flow model.

1) There shall be at least one information creator who creates several information units by means of one or more systems which in this context is defined as the creation application. This is an iterating process that may accumulate a large number of information units in the creation application.

2) The generator shall be a system that stores use-case-oriented information units of different formats that may originate from one or more creation applications. The generator sends packages to the information integrator in the form of a standardised interface. The generator shall be ready to give feedback to the creation application if information requests cannot be answered. The generator shall be ready to negotiate with any information integrator system and respond to its requests.

3) The information integrator shall integrate use-case-oriented information units that are sent by any generator. Furthermore, it shall be able to negotiate with any user application and to respond to requests which are sent by it.

4) The user is in need of information for a certain use case. The user triggers information requests. For this purpose, the user applies a user application that formulates machine-readable code which can be used by the information integrator to receive information for the use of products. For this purpose, the user application shall

a) identify the user, for example by logging in safely into the user application,

b) identify the object with which the user wants to interact,

NOTE 1 Reference designations can be found in IEC 81346-1:2022 and IEC 81364-2:2019.

c) characterize the use case by a set of metadata which the iiRDS ontology provides.

NOTE 2 The ontology describes resources relevant for technical communication and their relationships. The metadata is used to map the model and is available at https://www.iirds.org/material-downloads/. iiRDS is maintained by the iiRDS consortium that manages the database of iiRDS versions and specifications.

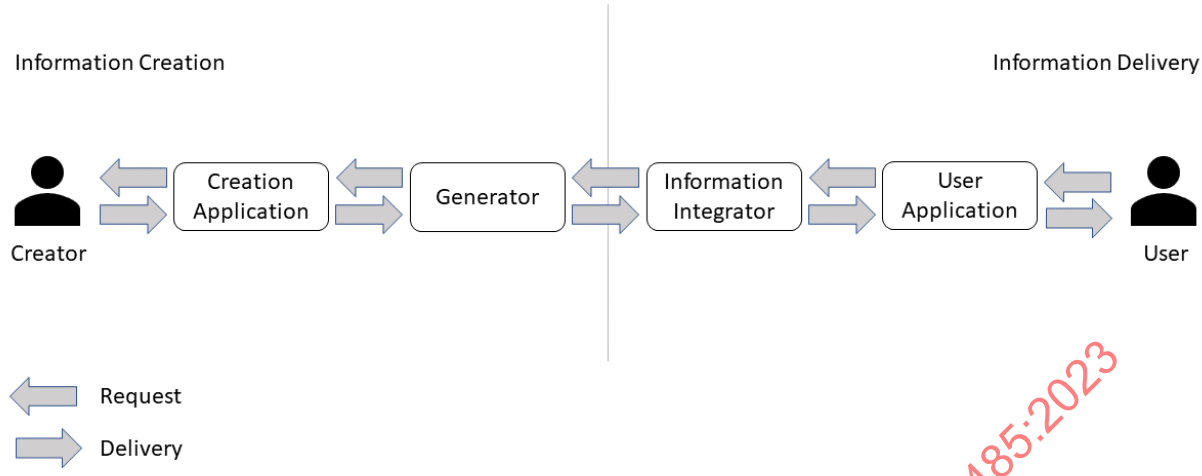


Figure 1 – Visualization of the Information Flow

NOTE 3 In the overall process of the named entities, multiple instances may exist, for example multiple users, creation applications, generators, information integrators, user applications, or users.

Individual information creation, delivery, or request processes shall be designed based on the information flow model. Tasks shall be assigned to systems, persons, and organizational units.

7 Metadata model

7.1 Classification of metadata

At each interface of the Information Flow Model, metadata according to iiRDS shall be used to enable interactions between the different actors.

This metadata is categorized into three different aspects:

- Product metadata (P)
- Functional metadata (F)
- Administrative metadata (A).

Product metadata (P) shall uniquely identify products and components and functions and relate products and product components and functions to information units. Furthermore, product metadata comprise product and component taxonomies, as well as further product information like features and properties.

Functional metadata (F) shall be used to define the circumstances under which the information is relevant to the user, such as the related product life cycle phase, the required skill level and the role of the information user.

Administrative metadata (A) may be used to provide additional content lifecycle metadata of the information units, such as involved parties, information life cycle state, effectivity date range. Unique identifiers may be assigned to all information units. Administrative metadata may also be used to annotate components or other entities.

NOTE 1 iiRDS uses some administrative metadata according to IEC 82045-2:2004.

For intelligent information, a special focus shall be given to product and functional metadata (categories P and F) in order to enhance information exchange between generator and

information integrator. Thus the quality of information which is required by the user is improved in the following aspects: selective and situational.

NOTE 2 Annex A lists examples of such metadata.

7.2 Match at the interface

7.2.1 General

Prior to communicating with each other, generators and information integrators shall negotiate which metadata they want to use without knowing each other. Using a common ontology shall be the basis for the metadata. This has the advantage that no specific agreements need to be made in advance.

Using a common ontology

- enables the coupling of n:m generators to information integrators;
- establishes a consistent protocol for the exchange of intelligent information that should be understood and adopted universally;
- ensures consistency and reliability in development and delivery of intelligent information;
- helps organizations enhance existing information development and delivery practices and better adopt and implement new technologies;
- facilitates interaction and interoperability between new and existing products, services, and processes;
- speeds up the introduction of products to the market.

7.2.2 Coding level (content, descriptive code, packaging)

The generator shall be able to generate a format that matches the information integrator's query.

The format shall comprise the encoding of:

- information units consisting of content in arbitrary formats and their metadata;
- packaging multiple information units for delivery.

NOTE An example on how these requirements are implemented can be found on https://iirds.org.

7.2.3 Shared metadata

Information units shall be identified unambiguously at the interface. Information units shall be related to the product or function.

Additional administrative information may be added, for example versioning, language, property rights, serial number or part number.

7.2.4 Shared semantics

Organizations sharing information for use shall agree on a publicly available semantic domain model.

NOTE An example for a publicly available domain model for the domain of technical communication can be found on https://iirds.org/.

This semantic model shall contain precise definitions for entities and relations to enable information integration across different systems and organizations. The technical implementation of the model shall be machine-readable, in a format consumable by both parties and using standardized resource identifiers to be able to link to other datasets.

Annex A
(informative)

Metadata

A.1 General

This Annex lists the core metadata of iiRDS as an example for the entire iiRDS vocabulary that is open source and is available on https://iirds.org.

iiRDS provides a vocabulary for documentation metadata in RDF Schema. The iiRDS RDF vocabulary contains a set of predefined metadata and docking points for proprietary extensions.

As iiRDS is a domain ontology, metadata concepts can be semantically linked to each other with predefined relations.

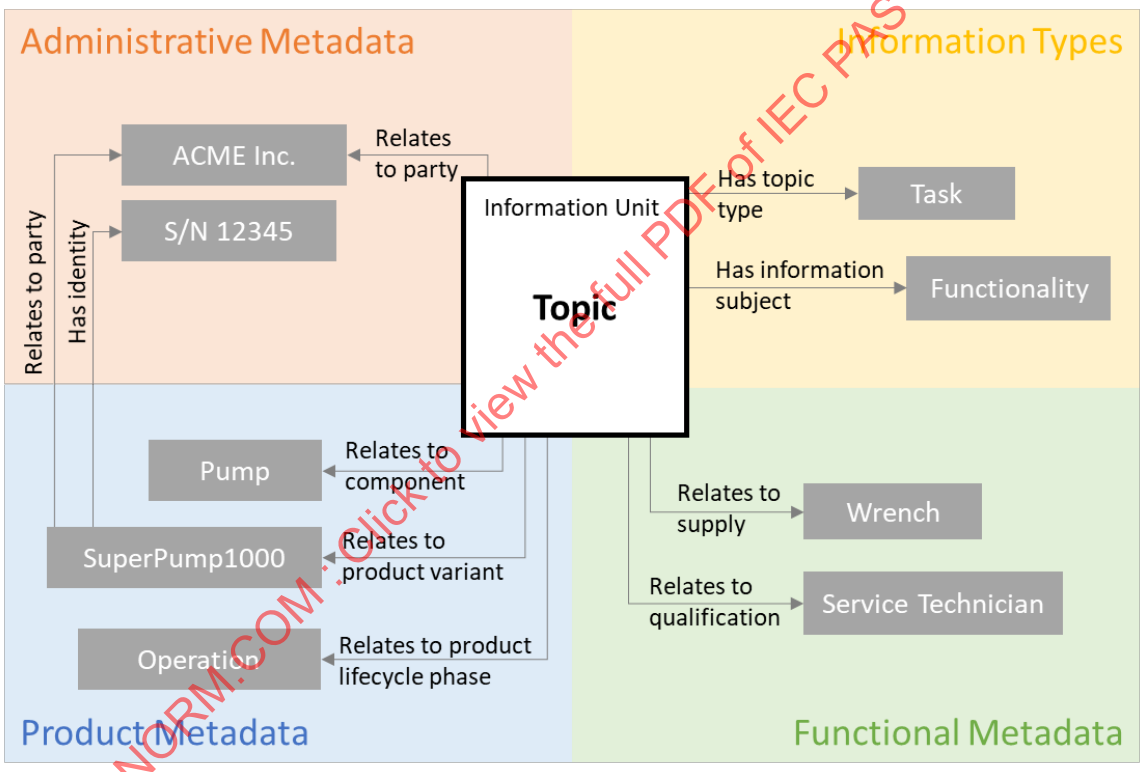


Figure A.1 – High level concept of iiRDS

Figure A.1 shows the high level concept of iiRDS. An information unit subclass, like topic in this example, is linked to instances of classes via relations.

In the following, examples of P- and F- metadata selected from the iiRDS ontology are shown as well as a sample excerpt of the iiRDS metadata (Figure A.2).

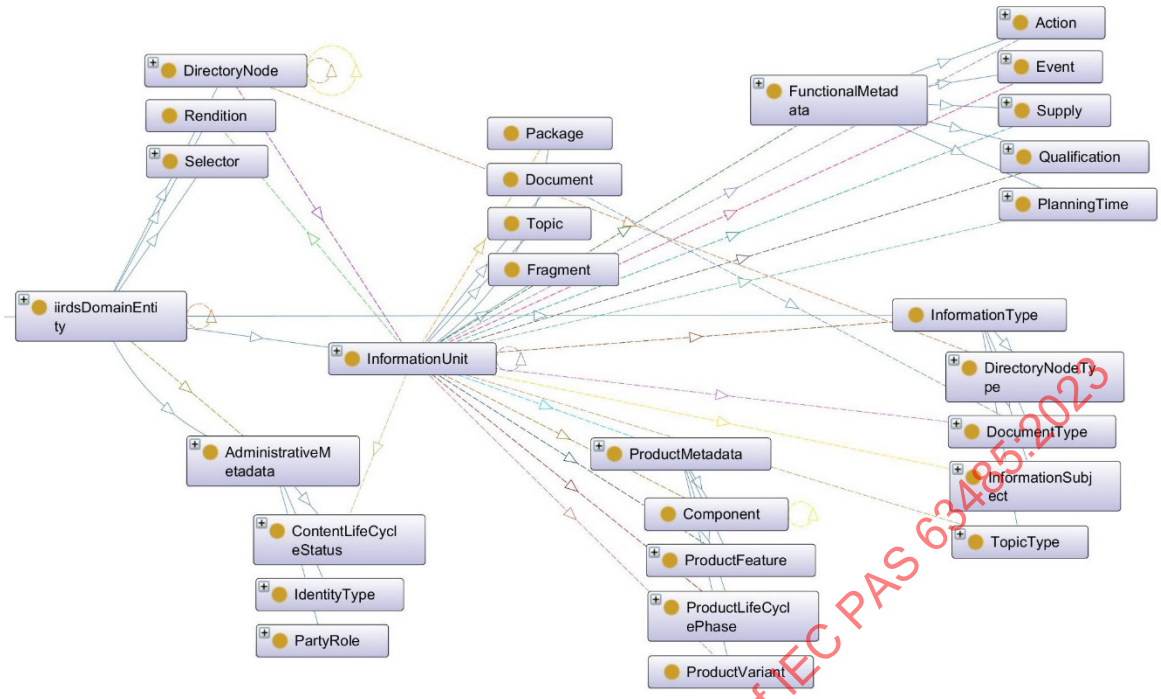


Figure A.2 – Sample excerpt of iiRDS metadata in open source ontology editor Protégé

A.2 Information Units

iirds:InformationUnit	
Label:	Information unit
Definition:	A unit of information. Abstract base class for specific information units.
Examples for Sub-classes	• Document • Fragment • Package • Topic

iirds:InformationObject	
Label:	Information object
Definition:	A version-independent and language-independent equivalent to an information unit.
Description:	Only used if a version/language-independent equivalent to an information unit is REQUIRED. The versioned information unit references the information object.

iirds:Rendition	
Label:	Rendition
Definition:	A physical file with the content of an information unit in a specific format.

A.3 Product Metadata

iirds:ProductLifeCyclePhase	
Label:	Product Lifecycle Phase
Definition:	Parent class for standardized product lifecycle phases that technical documentation MAY refer to.

Examples for Sub-classes and Instances	• DesignAndRealization
	  ○ Acquisition
	  ○ Design
	  ○ Development
	  ○ Production
	  ○ Requirement analysis
	• PuttingToUse
	  ○ Configuration
	  ○ Installation
	• Use
	  ○ Decommissioning
	  ○ Diagnostics
	  ○ Emergency operation
	  ○ Fault
	  ○ Maintenance
	  ○ Operation
	  ○ Repair
	• AfterUse
	  ○ Disposal

iirds:Component	
Label:	Component
Definition:	Describes a component of the technical system that the documentation refers to.
Description:	Components MAY have relations to other components so that iiRDS Generators can build up a simple component hierarchy with iiRDS structures. The iirds#Component MAY also be used as a docking point for external component definitions.

iirds:ProductVariant	
Label:	Product variant
Definition:	A variation of a product with some specific characteristics or features.
Description:	Examples: a specific model in a series or an individually manufactured good.

iirds:ProductFeature	
Label:	Product feature
Definition:	Describes characteristics and functions of a product or component.
Description:	Not intended to be used directly. Use the subclasses instead.
Subclasses	• Product Property (Product Property describes a characteristic of a product or component for example dimensions, voltage, power, weight.) • Product Function (The Product Function class describes a function that a product or component provides or implements.)

A.4 Information Type Metadata

iirds:TopicType	
Label:	Topic type
Subclass Of:	iirds:InformationType
Definition:	Defines the information type of an iiRDS topic.
Description:	Possible types include task, learning, and concept.
Examples for Subclasses and Instances	• Concept (Class of topic types that provide background that helps readers understand essential information about a product, interface, or task.) • Form (Class of topic types that contain information in pre-defined form fields.) • Learning (Class of topic types for learning. Learning content MAY comprise learning plans, learning objectives, learning content details, summaries, and assessments.) • Reference (Class of topic types that contain information that supports users as they perform a task, meaning data that is looked up rather than memorized.) • Task (Class of topic types that contains procedural information for work activities.) • Troubleshooting (Troubleshooting topics contain corrective action information that helps to fix an error or remove a malfunction.)

iirds:InformationSubject	
Label:	Information subject
Definition:	Type of information. Abstract base class of subjects that an information unit covers.

Examples for Sub-classes and Instances	• Collection (information subjects representing collections of specific information, such as list of spare parts or maintenance plan)
	• Conformity (information subjects that describe content related to applicable standards or the conformity of the product)
	  ○ Applicable standard
	  ○ Declaration of conformity
	  ○ Risk assessment
	  ○ Technical report
	  ○ Warranty conditions
	• Formality (Examples of formality subjects are license terms and warranty conditions)
	  ○ Contact information
	  ○ Legal information
	  ○ License terms
	  ○ Manufacturer information
	  ○ Product identification
	  ○ Product name
	  ○ Scope of delivery
	• Functionality (information subjects that describe content related to specific functionalities of the product.)
	• Technical Data (Information that describes the technical characteristics of a product or component in sufficient detail for assembly, integration, operation, and maintenance.)
	• Technical Overview (Parent class for information subjects describing content related to technical plans, diagrams, or the technical architecture of the product.)
	  ○ Control element
	  ○ Symbol
	• Process (Information subject for process-related information)
	• Safety (Abstract base class for safety subjects)
	  ○ Foreseeable misuse
	  ○ Intended use
	  ○ Restriction on use
	  ○ Safety instruction
	  ○ Warning Message
	  ▪ Caution
	  ▪ Danger
	  ▪ Notice
	  ▪ Warning

iirds:DocumentType	
Label:	Document type
Definition:	The type of a document.
Description:	Document types define the intended purpose of a document.
Examples for Sub-classes and Instances	• Administrator guide • Assembly instructions • Bill of materials • CE declaration of conformity • Certificate • Contractual document • Electronic identification plate • Installation instructions • Identification document • Maintenance instructions • Operating instructions • Parts catalog • Plan • Quick reference guide • Repair instructions • Safety instructions • Sales catalog • Specification • Technical drawing/diagram • Transport instructions

A.5 Functional Metadata

iirds:FunctionalMetadata	
Label:	Functional Metadata
Definition:	Parent class for metadata supporting advanced content delivery scenarios and content assemblies for specific purposes.
Examples for Sub-classes and Instances	• Event (Class of functional metadata that represents an event in the technical equipment.) • Planning time (Class of functional metadata that describes intervals or periods of time required for or resulting from specific working tasks.) • Qualification (Class of functional metadata that describes industry- or company-specific vocational qualifications, certificates, training, and roles.) • Supply (Class of functional metadata that describes tools, spare parts and supplies for a task.)

A.6 Administrative Metadata

iirds:AdministrativeMetadata	
Label:	Administrative metadata
Definition:	Parent class for administrative metadata, such as status and identifier.
Description:	Administrative information is often used and stored in document management systems (DMS) or component content management systems (CCMS) for administrative purposes and MAY be added to an iiRDS entity. Administrative metadata in iiRDS MAY be used in compliance with other standards like IEC82045-2 or VDI2770.
Examples for Sub-classes and Instances	• Content Life Cycle Status (Content Life Cycle Status of an information unit.) • Content Life Cycle Status Value (Content Life Cycle Status Value refers to the content status, for example whether it is approved or withdrawn.) • Identity (Identities are used to provide IDs from other systems. Examples: serial numbers for components and module IDs from content management systems for topics. Identity Complex identifiers may be assigned to information objects, information units, product variants, and components.) • Identity Domain (Identity domain relates to a party, meaning a company or organization. The party is the owner or custodian of the domain.) • Identity Type (Type of an identifier that is assigned to an iiRDS domain entity.) • Party (Party, meaning person or organization, related to an iiRDS domain entity.) • Party Role (Role of a party related to an iiRDS domain entity like manufacturer, author, inspector.)

Annex B
(informative)

Scenarios for Information Exchange

B.1 General

In this annex, three different scenarios for information exchange are described. The scenarios regard different complexity levels.

B.2 Self-Service Information

This scenario covers a typical self-service portal for information on products. Many manufacturers run such portals to provide product-related information to the public.

Users who purchased a product from the manufacturer use the portal to access operation and service information. Information users typically look for:

- operating and maintenance instructions
- repair instructions
- troubleshooting instructions
- technical data
- spare parts information

Such portals are likely to offer product information for manufacturers looking for components to purchase:

- field of application
- technical data
- product properties and features
- installation guide
- certificates
- catalogues

Products are organized in a product taxonomy. Products have properties (for example supply voltage, size, weight), defined in some classification system. Information originates from different systems, such as Content Management Systems (CMS), Document Management Systems (DMS), and Product Information Management Systems (PIM).

Users find information units related to their context by faceted search on the product and on the information type via use case taxonomies, or using full text.

Characteristics of this scenario:

- multiple creators (in one organization)
- information is provided as documents or topics with assigned metadata
- product knowledge is maintained in the manufacturer's organization
- information is categorized related to products, components, and use
- improves information push and pull between creation and consumption
- creators provide the information integrator metadata taxonomies

B.3 Automated Integration of OEM Documentation into Operator Information

This scenario takes into account the specifications of VDI 2770.

This scenario covers the delivery of documentation together with equipment from a supplier (OEM) to an operator. Due to legal requirements, suppliers must deliver a complete set of documentation together with the equipment. The scenario covers the lifecycle of the equipment at the operating corporation.

Information includes, for example,

- operating instructions
- maintenance instructions
- certificates.

The information is usually delivered as documents in printable form, namely PDF.

The documentation is split up according to the component hierarchy of the equipment. The components come with their own set of documents. Components may be provided by the supplier or its subcontractors. The supplier integrates components documentation from subcontractors into in the overall documentation for the equipment.

Each document contains metadata unambiguously identifying the product (equipment) or component which it applies to, and at least the document type.

The operator purchases equipment from various suppliers. All equipment and components documentation is managed in a single system under the operator's control.

The operator provides the documentation to its operating staff and service technicians. In their daily work, these persons follow the documentation instructions according to their role and assigned tasks.

Characteristics of this scenario:

- multiple creators and generators
- multiple information integrators of the information
- improves the push of information from the supplier to the operator

The supplier holds the knowledge about the product (equipment) and delivers it to the information integrator. The information type classification uses a standardized taxonomy.

B.4 Utilization of multiple request and delivery sources

This scenario is the most complex one, taking the open-source standard iiRDS into account.

It takes into account multiple information creators and addresses intelligent information. Information creators author intelligent information in form of topics enhanced with rich semantic metadata.

From suppliers, the consumer collects information which may stem from the organization it is based in or from different ones. This information is assembled into one or more content delivery platforms (CDP). The CDP provides information access to users via their online and offline devices, or on control panels of machinery. The CDP knows about the roles of the information users and receives further context information – either manually or automatically, for example by scanning OCR codes or any other means – to satisfy the user's information needs. Context may contain the identification of the product (for example derived from identification plates),