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FOREWORD

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International Standard IEC 61970-404 has been prepared by IEC Technical Committee 57: Power systems management and associated information exchange.

The text of this standard is based on the following documents:

FDIS	Report on voting
57/887/FDIS	57/906/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

A list of all parts of the IEC 61970 series, under the general title *Energy Management System Application Program Interface (EMS-API)*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

This part of IEC 61970 is part of the IEC 61970 series that defines Application Program Interfaces (APIs) for an Energy Management System (EMS). The IEC 61970-4XX and IEC 61970-5XX series documents comprise Component Interface Specifications (CISs). The IEC 61970-4XX series CIS are specified as Platform Independent Models (PIMs), which means they are independent of the underlying technology used to implement them. PIM specifications are also referred to as Level 1 specifications. The IEC 61970-5XX series CIS, on the other hand, are specified as Platform Specific Models (PSMs). PSM specifications are also referred to as Level 2 specifications.

IEC 61970-4XX CISs specify the functional requirements for interfaces that a component (or application) should implement to exchange information with other components (or applications) and/or to access publicly available data in a standard way. The component interfaces describe the specific event types and message contents that can be used by applications for this purpose.

IEC 61970-404 specifies an interface for the efficient transfer of data in a distributed environment. Small amounts of data are transferred with short delay but also large amounts of data are transferred in short time but with possibly longer delay. This is a typical requirement for a SCADA system that acts as a real time data provider to other sub-systems. Other systems than SCADA may also benefit from the characteristics of HSDA. When short delay times as well as bulk data transfer is required, HSDA is a good fit.

These component interface specifications refer to entity objects for the power system domain that is defined in the IEC 61970-3XX series, including IEC 61970-301.

ENERGY MANAGEMENT SYSTEM APPLICATION PROGRAM INTERFACE (EMS-API) –

Part 404: High Speed Data Access (HSDA)

1 Scope

The IEC 61970-404 High Speed Data Access (HSDA) specification specifies a generalized interface for efficient exchange of data. The specification takes into account the latencies caused by a Local Area Network (LAN) providing efficient data exchange also over Local Area Networks.

IEC 61970-404 is derived from the Object Management Group (OMG) Data Acquisition from Industrial Systems section Data Access (DAIS DA) specification. OMG DAIS DA relies on the OMG Data Access Facility (DAF) and OPC Data Access (DA) specifications. OMG DAIS DA is a Platform Specific Model (PSM) with CORBA as the platform and OPC DA is a PSM with Microsoft COM as the platform. IEC 61970-404 describes the functionality of these PSMs in a technology independent way (i.e., as a Platform Independent Model (PIM)). Hence it explains the functionality to a level that can be used to create additional PSMs or act as an introduction to existing PSMs, i.e. DAIS DA and OPC DA. Implementers wanting an introduction to OMG DAIS DA and OPC DA shall read these documents.

The HSDA interface is intended to interoperate with other IEC 61970 based interfaces. Hence, it is possible to use information retrieved from an other interface to access the same information using this interface, for example:

- object identifiers,
- attribute names or identifiers,
- class names or identifiers.

Subclause 4.6 provides a generic mapping for the CIM classes and attributes.

The way data is organized in a server implementing the HSDA interface can be seen by using the browse interfaces for data and meta data. It is also possible to use the data access interface directly without using the browse interfaces if the client has an *a priori* knowledge of object, class and attribute identifiers. Object identifiers may be retrieved using data from other interfaces, for example a CIMXML file or the IEC 61970-403 interface. Information on what classes and attributes are available will be described in IEC 61970-45X documents, for example SCADA data, State Estimator results etc.

IEC 61970-1 provides the EMS-API reference model upon which this standard is based. In that reference model, the terminology used in This part of IEC 61970 is introduced and the role of the CIS is explained.

IEC 61970-401 provides an overview and framework for the CIS (IEC 61970-4XX) standards.

The mapping of IEC 61970-404 to implementation specific technologies or PSMs is further described in a separate series of documents, i.e. the future IEC 61970-5XX. For actual implementations, the future IEC 61970-5XX, OMG DAIS DA, OMG DAF or OPC DA are used.

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:

IEC 61970-1, *Energy management system application program interface (EMS-API) – Part 1: Guidelines and general requirements*.

IEC/TS 61970-2, *Energy management system application program interface (EMS-API) – Part 2: Glossary*

IEC 61970-301:2005, *Energy management system application program interface (EMS-API) – Part 301: Common Information Model (CIM) base*

IEC 61970-401, *Energy management system application program interface (EMS-API) – Part 401: Component Interface Specification (CIS) Framework*

IEC 61970-402, *Energy management system application program interface (EMS-API) – Part 402: Component Interface Specification (CIS) – Common Services*

Data Acquisition from Industrial Systems section Data Access (DAIS DA), OMG Adopted Specification Version 1.1, formal/05-06-01 June 2005 (Referred herein as 'OMG DAIS DA')

Utility Management System (UMS) Data Access Facility (DAF), OMG Adopted Specification, Version 2.0.1, formal/05-06-03, July 2005 (Referred to herein as ‘OMG DAF’)

OPC Data Access Custom Interface Specification, Version 2.05, OPC file: opcda205_cust.doc, OPC Foundation, December 17, 2000 (Referred to herein as ‘OPC DA’)