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Framework for energy market communications –

Part 502:
Profile of ebXML

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FOREWORD

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- the required support cannot be obtained for the publication of an International Standard, despite repeated efforts, or
- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards. [1]

IEC 62325-502, which is a technical specification, has been prepared by IEC technical committee 57: Power systems management and associated information exchange.

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[1] This would also include the specification of some options/parameters not yet specified in the profile, Annex A.

The IEC 62325 series cancels and replaces IEC 62195 (2000) and its amendment (2002). It constitutes a technical revision.

IEC 62195 (2000) dealt with deregulated energy market communications at an early stage. Its amendment 1 (2002) points out important technological advancements which make it possible to use modern internet technologies based on XML for e-business in energy markets as an alternative to traditional EDI with EDIFACT and X12. The new IEC 62325 framework series for energy market communications currently consisting of IEC 62325-101, IEC 62325-102, IEC 62325-501, and IEC 62325-502 follows this direction and replaces IEC 62195 together with its amendment.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
57/707/DTS	57/724/RVC

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

IEC 62325 consists of the following parts, under the general title *Framework for energy market communications*:

Part 101: General guidelines

Part 102: Energy market model example

Part 201: Glossary [2]

Part 3XX: (Titles are still to be determined) [3]

Part 401: Abstract service model [4]

Part 501: General guidelines for use of ebXML

Part 502: Profile of ebXML

Part 503: Abstract service mapping to ebXML [4]

Part 601: General guidelines for use of web services [4]

Part 602: Profile of Web Services [4]

Part 603: Abstract service mapping to web services [4]

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2 Under consideration. Because the technologies have an inherent own glossary within their standard definitions, this glossary is a placeholder for a glossary for future parts indicated with [2)] including energy market specific terms and definitions.

3 Under consideration. These parts for business content are mentioned for completeness only with a number space as placeholder. They extend the original scope and require an agreed new work item proposal for further work based on an overall strategy how to proceed.

4 Under consideration. These technical parts are mentioned for completeness with provisional title. They extend the original scope and require an agreed new work item proposal for further work.

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

- transformed into an International standard,
- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual edition of this document may be issued at a later date.

INTRODUCTION

With the transition of monopoly energy supply structures to deregulated energy markets, the function of the markets depends heavily on seamless e-business communication between market participants. Compared with global e-business, e-business in the energy market is only a small niche. Today EDIFACT or X12 messages, or propriety HTML and XML solutions based on Internet technologies are being used.

The 'electronic business Extensible Markup Language' (ebXML) specification and architecture stems from UN/CEFACT and OASIS and these are now partly standards within the ISO 15000 series being complemented in future to cover all aspects of ebXML. ebXML is a complete set of specifications and standards to enable secure electronic business using proven, open standards such as TCP/IP, HTTP, SOAP, XML, and SOAP signature and encryptation. ebXML is also evolutionary in nature, built on 25 years of EDI experience, designed to work with existing EDI solutions, or be used to develop an emerging class of internet based electronic business applications based on XML. This means that with ebXML existing EDI messages (EDIFACT, X.12) as well as XML messages can be exchanged.

Profiles of ebXML allow the re-use of proven core components and communication platforms across markets, thus saving cost and implementation time.

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FRAMEWORK FOR ENERGY MARKET COMMUNICATIONS –

Part 502: Profile of ebXML

1 Scope

This part of IEC 62325 specifies an energy market specific messaging profile based on the ISO 15000 series. The profile is intended to provide the basis for system configuration.

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.

ISO/TS 15000-1:2004, *Electronic business eXtensible Markup Language (ebXML) – Part 1: Collaboration-protocol profile and agreement specification (ebCPP)*

ISO/TS 15000-2:2004, *Electronic business eXtensible Markup Language (ebXML) – Part 2: Message service specification (ebMS)*

UN/CEFACT, *ebXML Business Process Specification Schema*, v1.10 or higher

UN/CEFACT, *ebXML Technical Architecture Specification*, v1.04 or higher

In this part of IEC 62325, RFCs (Request for comments) from the Internet Engineering Task Force (IETF) and recommendations from other Organisations such as the Word Wide Web Consortium (W3C) and the Organization for the Advancement of Structured Information Standards (OASIS) are mentioned which are not included here because these documents are referenced in the references above.

3 Terms, definitions and abbreviations

3.1 Terms and definitions

None.

3.2 Abbreviations

A2A	Application-to-Application
AES	Advanced Encryption Standard
B2B	Business-to-Business
BDS	Business Document Specification (instance)
BDSS	Business Document Specification Schema
BIE	Business Information Entity
BOV	Business Operational View
BPMS	Business Process Management System
BPSS	Business Process Specification Schema (or instance)
BSI	Business Service Interface

CC	Core Component (based on BIE)
CIM	Common Information Model
CPA	Collaboration Protocol Agreement
CPP	Collaboration Protocol Profile
DSO	Distribution System Operator (of power system
DUNS	Data Universal Numbering System (North America)
EAN	European Article Number (Europe)
ebMS	ebXML Messaging Service
ebXML	electronic business XML
EDI	Electronic Data Exchange
EIA	Enterprise Application Integration
EMS	Energy Management Systems
ERP	Enterprise Resource Planning
FOV	Functional Service View
FTP	File Transfer Protocol
HTTP	Hypertext Transport Protocol
ICT	Information and Communication Technology
ISO	Independent System Operator
IT	Information Technology
MIME	Secure/Multipurpose Internet Mail Extensions
MIS	Market Identification Schema
MOM	Message-oriented middleware
MSH	Message Service Handler
PKI	Public Key Infrastructure
QoS	Quality of Service
RPC	Remote Procedure Call
RR	Registry / Repository
SAML	Security Assertion Mark-up Language
SCADA	Supervision, Control, and Data Acquisition
SMTP	Simple Mail Transfer Protocol
SO	System Operator (of power system)
SOAP	Simple Object Access Protocol
TLS	Transport Layer Security
TSO	Transmission System Operator (of power system)
UML	Unified Modelling Language
UMM	UN/CEFACT Modelling Methodology
VPN	Virtual Private Network
WS	Web Services
WSDL	Web Services Definition Language
XML	eXtensible Markup Language
XKMS	XML Key Management Specification

4 Guideline of how to use the architecture

4.1 Profile of the architecture

Within the ebXML specification framework, two business partners agree on how to perform e-business using machine-readable Trading Partner Agreements based on XML syntax and named Collaboration Profile Agreements (CPA). In the general case of global e-business, the CPA is negotiated as the intersection of the Collaboration Protocol Profiles (CPP) of these two partners, who may have discovered each other using the registry partner-discovering feature.

Energy markets normally exist in a specific geographical area or geopolitical region with known business partners, agreed market rules and communication infrastructure. In this environment, a simplification may be possible where alternatively pre-negotiated CPA's of each business process are stored pre-defined in the registry/repository and can be downloaded for use.

Within each market, a profile or a limited set of profiles of the ebXML architecture should be used to harmonise and simplify e-business. Since the ebXML specification framework does not define any market specific profiles, the profile for energy markets has to be specified. In the following business process driven BPSS "security profiles", CPP/CPA "technical profiles" and "messaging profiles" are specified.

For better understanding of the profiles defined below 4.2 to 4.4, Figure 1 shows the configuration files used with its content structure.

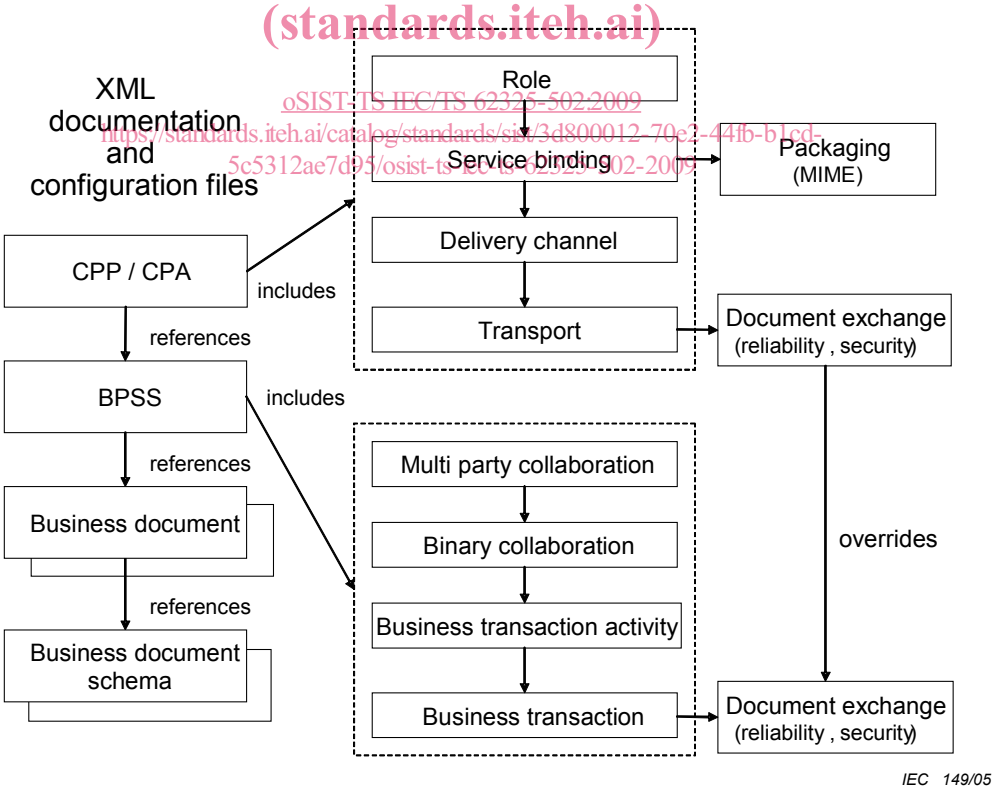

Figure 1 – References and content of ebXML documents

4.2 Security profile of the BPSS

The ebXML BPSS instance provides the possibility for a collaboration to specify message reliability and message security, including non-repudiation with legally binding at the business level.

The BPSS is used for more than one collaboration between market participants. Note that the CPA for a specific collaboration may therefore override the reliability, non-repudiation and security attribute values of a BPSS.

Table 1 shows the *recommended profiles*. Reliability is included in all profiles. Profile #1 only provides reliability. Profile #2 adds *non-persistent* (transient) confidentiality and *non-persistent* (transient) authentication (on transport or network level, for example TLS, IPsec). Profile #3 adds *persistent* confidentiality, *persistent* authentication, and tamper-proof messages (signed messages with keyed digest). The latter is sometimes also called non-repudiation of origin. Profile #4 is for full *persistent* security including *persistent* non-repudiation and invoked authorisation. The profiles #3 and #4 should be preferred because only these profiles guarantee end-to-end persistent security and non-repudiation within a market with established relationships.

The table also includes the mapping of the BPSS profiles to the MSH profiles 0, 3, 16, and 21. The MSH profiles 16 and 21 can be optional, used with a *trusted* time stamp if this service is available and needed.

For the sake of compatibility within a project or market, choices have to be made about:

- the location of the persistent security services. *Persistent* end-to-end security should be implemented on application level by default. The optional use of MSH security services, if supported, is a project or market decision;
- a single BPSS profile for each process. Different processes can have different BPSS profiles, depending of the need for security.

In the following subclauses, the BBSS attribute options which have to be chosen according to the recommended profiles in Table 1 are shown. The signature should apply to the whole message, including the envelope where the Signature element is contained. The partial signing of XML documents should not be used for sake of simplicity, because there is no known requirement.