

Appendix 1

**to Business Terms of OTE, a.s.
for the Power Sector**

Revision 22 – July 2016

XML MESSAGING FORMATS

CONTENTS

1. USED ACRONYMS	3
2. INTRODUCTION	4
3. RULES OF COMMUNICATION.....	6
4. EDI MESSAGING FORMATS	10
5. XML MESSAGING FORMATS	11
5.1. XML-based format standard under ETSO specification	11
5.2. XML-based format standard under OTE specification	12

LIST OF SCHEMES

Scheme – Basic principle of messaging	8
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1. USED ACRONYMS

Acronyms and definitions used in Business Terms of OTE, a.s. for the Power Sector apply for this document. In addition, the following acronyms are used:

<i>Acronym</i>	<i>Definition</i>
ČEPS	ČEPS, a.s., Operator of the Transmission System of the Czech Republic
ČHMÚ	Czech Hydrometeorologic Institute
DUF	Supplementary data for invoicing power distribution
BA	Bilateral Agreement, a tool for execution of bilateral transactions under the Market Rules; bilateral agreements are filed in CS OTE through registered realization diagrams
EAN	International Article Number, a global system of barcoding and identification of goods, services and organizations
EMO	External Market Organizer (such as Power Exchange Central Europe, a.s.)
RRD	Registered Realization Diagram in CS OTE (bilateral agreements, Exchange trade, supply according to fixed diagrams, cross-border trade)
GLN	Global Location Number – used for identification of physical locations or legal entities within logistical chain
GMT	Greenwich Mean Time
IS OTE	Information System of the Market Operator, part of CS OTE (without CDS)
ISO	International Organization for Standardization
IS-U	Industry Specific Solution of the SAP Information System for Utilities Industry
ST/WT	Summer / Winter Time
MC	Monthly Settlement / Monthly Clearing
OKTE	OKTE, a.s., Short-Term Electricity Market Organizer in Slovakia
PKI	Public Key Infrastructure
SEPS	SEPS, a.s., Operator of the Transmission System in Slovakia
SFVOT	CS OTE module used for financial security and settlement/clearing of electricity and gas market participants
UI	User Interface
IMR	Intra-Day Electricity Market and Balancing Market in Regulating Energy
XSD	XML Schema Definition
FMC/FC	Final Monthly Settlement / Final Monthly Clearing

2. INTRODUCTION

This document aims to describe the governing rules for all CS OTE users. The rules are binding for all CS OTE users.

The CS OTE communication server ensures centrally communication with the other parts of the central system and provides support for processes related to the electricity market in the following fields:

- registration of electricity market participants
- registration of PDT (core records)
- registration of imbalance responsibility
- change of supplier
- registration/recording of realization diagrams
- short-term markets (BM, DM, IM) and provision of trading results
- balancing market in regulating energy (RE)
- gathering preliminary and metered data and data aggregation
- calculation of substitute values using LP
- calculation of imbalances (daily, monthly and final monthly)
- financial security
- financial settlement (daily, monthly and final monthly)
- data collection and provision for billing traders for electricity supply and distribution, including transfer of electronic invoices between DSO and electricity suppliers
- claims and provision of information
- registration and provision of trade data

trade data reporting

The principles of secure access to data using PKI technology and electronic signature have been applied across the entire CS OTE infrastructure.

Documents describing in detail communication between electricity market participants and CS OTE are posted on OTE's public website as follows:

- “D1.4.1 EDI Messaging Formats”
The document specifies the structure of particular messages in EDINE format modified for the electricity market as defined by OTE, including examples of messages, description of specific segments, description of permissibility of codes of profile roles in the particular element in specific messages (according to msg_code), and codes of other attributes in the element in specific messages (according to msg_code).
- “D1.4.2 XML Messaging Formats - Electricity” and “XSD Templates“ and “ETSO Templates”

The first document specifies the structure of XML messages (schemas) and defines particular services or transactions directly in relation to the nature of transferred data; it comprises complete files in .xsd / schema (*.XSD), including references to specific examples; the XSD and ETSO templates are schemas describing permissible contents of the document, e.g. a document in a “XSD template comprises global XSD templates (data types common for all or most formats), including message schemas OTE_GLOBALS (comprising data types common for all or most formats) and XMLDSIG-CORE-SCHEMA (comprising electronic signature definition).

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- “D1.4.3 CS OTE Web Services Interface” and “WSDL Templates”
The first document is a manual for using the interface of CS OTE web services for the power sector. It comprises, among others, description of communication channels; WSDL template is the standard template for description of web services interface ensuring communication between CS OTE and external market participants’ platforms.
 - “D1.4.4 CS OTE Automatic Communication Interface”
The document is a manual for using automatic communication interface, describing the concept of CS OTE security and the methods of automated exchange of information between external entities and CS OTE. In addition, the document comprises description of the application of XML-based format standards under ETSO specification and modified messages for communication in the field of realization diagram records, including description of scenarios of such messages.

The aforementioned documents may change on the basis of amendments to applicable legislation and on the basis of immediate needs of markets participants. If any of the foregoing documents is updated, OTE shall post the updates on OTE’s website at least one month before the relevant updates come into effect for a minimum of 10 business days so that market participants’ can contribute their comments, whereas all market participants and ERO are notified about the changes. The final version of the document is also posted for market participants for 10 business days prior to implementing the changes in the OTE system.

3. RULES OF COMMUNICATION

OTE, a.s. in its role of electricity market operator maintains communication with market participants in the following fields:

Market participant	Information provided
Transmission system operator	<ul style="list-style-type: none"> • PDT registration • Metered data on electricity consumption and production in TS • Data on PpS (RE), incl. data on electricity acquired abroad and electricity for the needs of re-dispatching • Inputs (approval) in the change of supplier process • Records of realization diagrams – cross-border trade • Sending cross-border profile capacity for DM
Distribution system operator	<ul style="list-style-type: none"> • Metered data on electricity consumption and production in DS • PDT registration • Inputs (approval) in the change of supplier process
Balance Responsible Party	<ul style="list-style-type: none"> • Records of realization diagrams • Gathering information on settlement results • Inputs (approval) in the change of supplier process • Registration of imbalance responsibility • Obtaining documentation for OTE's financial settlement
Short-term market participant	<ul style="list-style-type: none"> • Bids on organized short-term markets • Gathering information on results of trading on organized short-term markets • Registration and provision of trade data • Trade data reporting
Registered market participant – electricity supplier (with SS's consent)	<ul style="list-style-type: none"> • Initiation and inputs in the change of supplier process • Gathering data for billing customers for electricity • Registration of imbalance responsibility • Records of realization diagrams – supply based on fixed diagram
Registered market participant – RE provider (with BRP's consent)	<ul style="list-style-type: none"> • Access to metered data on RE • Trading on BMR

In addition, CS OTE communicates with the following entities:

LP administrator	<ul style="list-style-type: none"> • Submission of updated LP values • Collection of statistical data on LP application
ČHMU	<ul style="list-style-type: none"> • Submission of weather data (for LP application)
PXE (Power Exchange Central Europe, a.s.)	<ul style="list-style-type: none"> • Records of realization diagrams – exchange trading • Instructions for DM on behalf of BRP for the purpose of physical settlement of futures contracts with financial settlement

SEPS	<ul style="list-style-type: none"> • Cooperation in coordination of day-ahead markets in the CR and the SR
OKTE	<ul style="list-style-type: none"> • Cooperation in coordination of day-ahead markets in the CR and the SR
ACER Agency	<ul style="list-style-type: none"> • Trade data reporting

Data between OTE and market participants are transferred via:

- **Web interactive interface,**
where participants access OTE’s secure website through which they can send data and obtain the results of processes supported by CS OTE, and
- **Automatic communication,**
where participants submit and receive data through the automatic communication system allowing for connecting the market participant with the CS OTE communication server; all data is transferred in agreed upon standardized formats using two-way HTTPS connection, or through the SMTP channel for two-way transfer of messages via electronic mail.

For any communication with CS OTE, communication scenarios are defined.

The CS OTE communication server uses for secure communication uniform PKI infrastructures across the entire CS OTE system to centrally control access of all users regardless of whether they are CDS users or IS OTE users. Both systems require an identical access certificate for user authentication and signature certificate for electronic signing of transactions. The use of electronic signature for sending a message comprising documents for invoicing partially differs from other messages sent via CDS as the key requirement is preserving the electronic signature of the original sender (distribution system operator). A more detailed description of the security concept, including description of the process of transferring messages with electronic invoices, is included in the document “D1.4.3 CS OTE Web Services Interface”.

Each type of message is uniquely identified by an identifier (`msg_code`), which determines the nature of the message and the method of processing it. For all messages of the given format sent via external interface of the CS OTE system, the transferring and receiving system is defined, in addition to the allocated `msg_code`. The list of all messages is included in documents “D1.4.1 EDI Messaging Formats” and “D1.4.2 XML Messaging Formats – Electricity”.

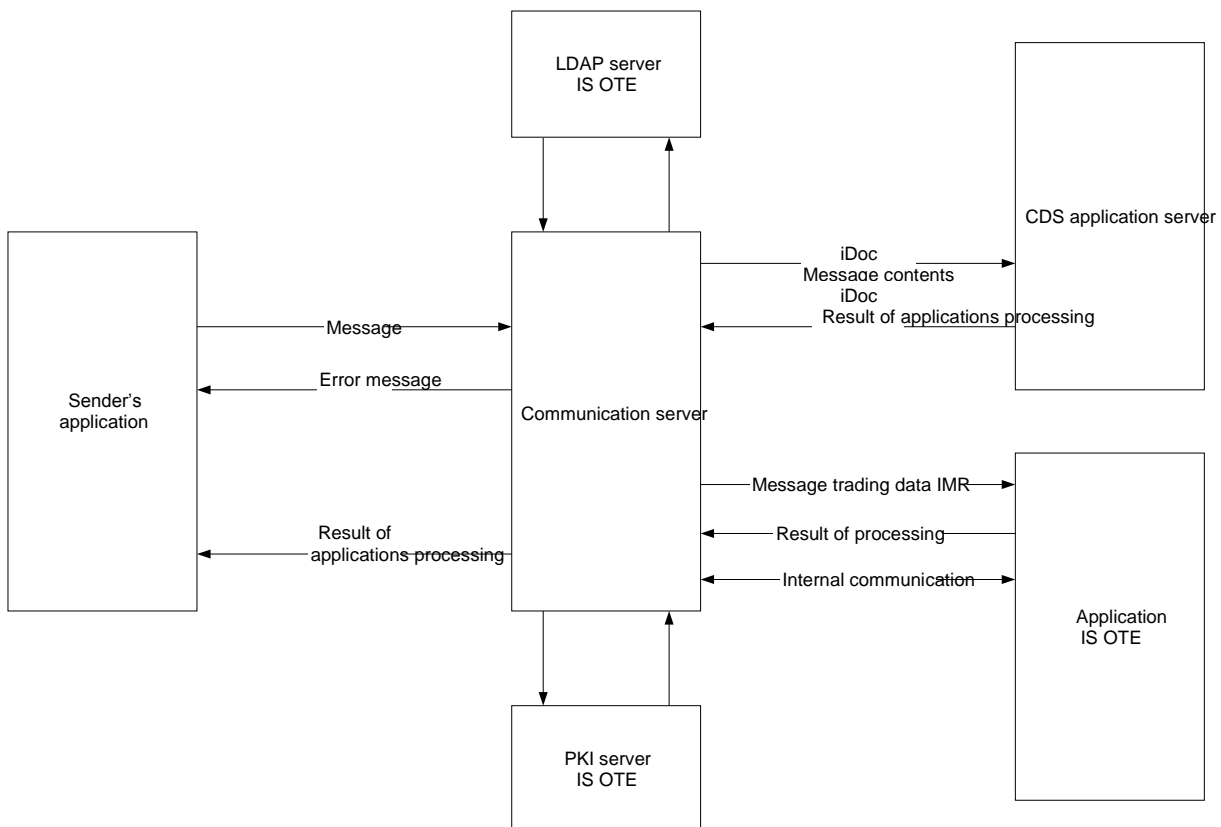
The CS OTE uses for communication the following messaging formats:

- **EDINE** – this format is based on the UN/EDIFACT D.97A standard while using codes from the D.96A standard; for implementation in CDS The Netherlands’ local standards EDINE were used and further modified to meet the requirements of covering electricity market processes in the CR
 - APERAK - EDINE APERAK version 1.12
 - CONTRL - EDINE CONTRL version 1.01
 - MSCONS - EDINE MSCONS version 1.02
- **XML** – includes standards as follows:
 - Standard under ETSO specification – standard defined by the ENTSOE organization
 - Standard under OTE specification – standard defined by OTE

Messaging between market participants’ systems is automated and takes place in line with the principal rule in the following steps:

1. the market participant sends a message to CS OTE; the message may contain either particular data for processing in CS OTE or, conversely, a request to receive data from CS OTE;

2. the message is received through the CS OTE communication server; the sender's electronic signature is verified against CS OTE LDAP server and PKI server decodes the message;
3. the CS OTE communication server checks the message syntax; in the event an error is detected in the previous steps a system error report is sent;
4. in the event the check finds no errors, the CS OTE communication server passes the message on to the respective application server of CS OTE for additional processing;
5. the application server processes the data and returns the result of such processing;
6. the CS OTE communication server encodes the response and signs and sends it back through the selected channel to the defined address.



Scheme – Basic principle of messaging

For transferring XML documents (XML-structured data) the SOAP Document-type is used. Upon receipt of data in CS OTE, the message sender is verified to match the currently authenticated user. XML structures serve as the basis for WSDL documents used for particular services related to communication through SOAP v 1.1 protocol of the SOAP Document type. Complete definitions of services are available on the communication server. In responding to a SOAP request comprising the respective XML structure, a return_code is transmitted with the following meaning:

- 0 – data received without error and internal document filed
- 1 – signature verification error
- 2 – transformation error
- 3 – internal document filing error

The S/MIME SMTP protocol can be used as a back-up method of communication with CS OTE. Data must be attached as an e-mail message attachment secured according to S/MIME. The procedure of creating a S/MIME message for CS OTE is also described in document “D1.4.2 XML Messaging Formats – Electricity”.

For DATA format it applies that

- date and time are entered in local time
- periods are marked with the time of the beginning and end of the particular period

The header of an XML message in DATA format always contains in the *date-time* attribute the date and time of the message in YYYY-MM-DDTHH:MM:SS format, or YYYY-MM-DDTHH:MM:SS+HH:MM format, including an off-set showing the difference between the message date and time and GMT (for data filed in ST it applies that the time-offset=+02:00, for data filed in WT it applies that the time-offset=+01:00); if no off-set is entered, the input value is interpreted as GMT time.

For interval data, the beginning of the day is defined as 00:00:00 hours, the end of the day as 00:00 hours of the following day.

The last hour of the day is defined in the following format: 2011-10-27T23:00/2011-10-28T00:00.

For non-interval data, date attributes have the following meaning:

- data from – date from incl. (YYY-MM-DDT00:00)
- data to – date to incl. (YYY-MM-DDT23:59)
- all day 2011-10-27T00:00/2011-10-27T23:59

For numerical data it applies that

- it is entered without spaces and separators of thousands, e.g.: 25000000
- the separator of decimals is comma (.), e.g.: 3.14
- incomplete notation is not permitted, e.g.: .5 or 2.
- initial zeros are not permitted, e.g.: 02
- positive values carry no sign, e.g.: 112
- negative values always carry the minus (-) sign immediately before the first numeral, e.g.: -112
- zero value may not carry any sign, e.g.: 0

4. EDI MESSAGE FORMATS

For communication with CS OTE the following EDINE message formats, modified to support electricity market processes in the CR, are used:

- **MSCONS** - serves for exchanges of actual metered values between market participants (data gathered from interval metering and data for distribution invoicing).
- **CONTRL** - serves for confirmation or rejection of the entire data exchange (transferred file) between market participants (delivery confirmation or error code and reference to the original message).
- **APERAK** – serves for confirmation / rejection of messages sent between market participants and CDS on the basis of verification of the message contents within particular application.

The structure and use of messages is described in document “D1.4.1 EDI Messaging Formats” posted on OTE’s website.

5. XML MESSAGING FORMATS

The communication server uses for communication the following XML messaging formats

- Standard under ETSO specification – standard defined by the ENTSO-E organization for communication in respect of recording realization diagrams and for communication between OTE – ČEPS - SEPS - OKTE within the scope of coordination of the day-ahead markets in the Czech and Slovak Republics
- Standard under OTE specification – standard defined by OTE

For the use of messaging in formats specified in document “D1.4.2 XML Messaging Formats – Electricity” rules apply as follows:

- Registered electricity market participants are marked by means of EAN-13 (GLN) coding; codes are allocated by OTE with the exception of identifiers under the ETSO EIC standard for the needs of data exchange between OTE – ČEPS - SEPS - OKTE within the scope of coordination of the day-ahead markets in the Czech and Slovak Republics
- Points of delivery and transfer are marked by means of EAN-18 (GSRN) encoding; the codes are usually allocated by distribution system operators
- messages containing interval data must cover an entire day (24 hours – except for the switch from ST to WT and back)
- should any adjusted data need to be resent, the new message must contain all data of the original message; when processing the data, the previous message as a whole is not taken into account
- one data exchange (a data file with a message) must contain only one message
- all input messages serving to distribute instructions via the WAS portal for handling trading data are allocated a time identifier against which request validity assessment is performed (time of allocating the WAS server time depends on the type of channel through which the message was sent - HTTPs or SMTP or web interface for interactive work via user interface and the web browser)

5.1. XML-based format standard under ETSO specification

ETSO formats are supported exactly in compliance with the standard posted by ENTSO-E on its website (<http://www.entsoe.eu>). The only exception is Status Request, which was modified to meet the needs of the electricity market in the Czech Republic. Files containing ESTO messages, examples of particular message formats, used code lists and global components are included in documents “D1.4.2 XML Messaging Formats - Electricity” and “D1.4.4 CS OTE Automatic Communication Interface”.

For communication within the scope of coordination of day-ahead markets in the Czech and Slovak Republics XML-based messaging standards are used under the following ETSO specification:

- **ETSO Status Request Document (ESR)** in version 1.1 – for inquiry about MCC/determining MCC capacity
- **ETSO Scheduling System (ESS)** in version 3.1
 - ETSO ESS Schedule Message – for sending reports of daily diagrams of cross-border transmissions carried out on DM to ČEPS, SEPS and OKTE
 - ETSO ESS Anomaly Report – for notification of the sender about discrepancies during processing of the relevant ETSO document

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- ETSO ESS Confirmation Report – for notification of the sender about confirmed values during processing of the relevant ETSO document
 - **ETSO Capacity Allocation and Nomination** (ECAN) in version 4.0
 - ETSO ECAN Capacity Dokument – for input of the current profile scope to meet the need for coordination of the day-ahead market or as a copy when inquiring about MCC capacity
 - ETSO ECAN Implicit Auction Result Document - for sending the results of the implicit auction to SEPS and ČEPS
 - **ETSO Acknowledgement Document** (EAD) in version 5.0 – for notification of the sender about the outcome of processing the relevant ETSO document

For communication within the scope of recording realization diagrams XML-based messaging standards are used under the following ETSO specification:

- **ETSO Scheduling System** (ESS) in version 3.1 – e.g for input of bilateral agreements (BA) through realization diagrams
- **ETSO Acknowledgement Process** in version 5.0
- **ETSO Status Request (Report)** Document (ESR) in version 1.1 – e.g. for determining the realization diagram status

5.2. XML-based format standard under OTE specification

For communication with CS OTE the following XML messaging formats are used:

- **CDSCLAIM** – serves for sending a request for filing / updating a claim, request for sending a copy of the claim, publishing information for market participants by the market operator,
- **CDSDATA** – serves for exchange of actual metered values and agreed upon values between market participants and CDS,
- **CDSIDIS** - serves for exchange of documentation for invoicing of distribution services between market participants and CDS,
- **CDSINVOICE**- serves for sending electronic invoices for DSO's distribution services to electricity trader, including advance payments,
- **CDSREQ**– serves for communication with CDS when submitting a request for data registered in CS OTE,
- **COMMONREQ** - serves for requesting data of asynchronously processed messages, for verification of connection with CDS (server-server) and for sending a request for transfer of unsent messages in IS OTE,
- **ISOTEDATA** – serves for exchange of data related to transactions in IS OTE ((intra-day electricity market and balancing market in regulating energy, DM, BM) between market participants (BRP) and CS OTE,

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- **ISOTEREQ** – for requesting document / message related to IS OTE transactions (intra-day electricity market and balancing market in regulating energy, DM, BM, BA) between market participants (BRP) and CS OTE,
 - **MASTERDATA** – serves for exchange of information about points of delivery between market participants and CDS; this message is used universally for separate steps of processing change of supplier; it has various functions defined by the functionality code in the message head,
 - **ISOTEMASTERDATA** – serves for sending the core data structure of IS OTE locations (core data of BM product),
 - **RESPONSE** – serves for confirmation of data exchange between market participants and CDS,
 - **TDD (Load Profile)** – serves for sending standardized LP from LP administrator to CDS,
 - **TEMPERATURE** – serves for sending average daily temperatures and standard average daily temperatures from ČHMU to CDS,
 - **SFVOTBILLING** – serves for sending financial reports / documents for invoicing from the SFVOT module,
 - **SFVOTBILLINGEMO** – serves for sending reports for settlement between OTE and EOT,
 - **SFVOTBILLINGSUM** – serves for sending financial reports / documents for invoicing with summary information for the inquired period (MC summary) from the SFVOT module,
 - **SFVOTCLAIM** – serves for sending financial reports / overview of payments and claims from the SFVOT module,
 - **SFVOTCLAIMSUM** – serves for sending financial reports from the SFVOT module – part Overview of payments and claims with summary information about final monthly settlement (FMC) for the inquired period,
 - **SFVOTTDD** – serves for sending financial reports / clearing of LP differences from the SFVOT module – part LP Clearing,
 - **SFVOTDTEXPIMP** – serves for sending daily deposits in the form of debit, credit and netting payment / report of offset receivables and liabilities,
 - **SFVOTCONFDATA** – serves for sending an overview of daily deposits, both paid and due / report of confirmation of daily payments to OTE,
 - **SFVOTEXCHRATE** – serves for sending OTE’s settlement rate,
 - **SFVOTLIMITS** – serves for sending information about SS’s overall financial limit,
 - **SFVOTTDDNETT** – serves for sending financial reports (netting LP) from the SFVOT module,
 - **SFVOTREQ** – serves for requests for sending financial reports from SFVOT modules.

An overview of reports complete with their description and format, including the particular format structure, is part of documentation “D1.4.2 XML MessagingFormats – Electricity”.