SLOVENSKI STANDARD
SIST-TS CEN/TS 16931-3-1:2017

01-oktober-2017

Elektronsko izdajanje računov - 3-1. del: Metodologija za sintakso povezav ključnih elementov elektronskega računa

Electronic invoicing - Part 3-1: Methodology for syntax bindings of the core elements of an electronic invoice

Elektronische Rechnungsstellung - Teil 3-1: Methodik für die Umsetzung der Kernelemente einer elektronischen Rechnung in eine Syntax

Facturation électronique - Partie 3-1 : Méthodologie applicable aux correspondances syntaxiques des éléments essentiels d'un facture électronique

Ta slovenski standard je istoveten z: **CEN/TS 16931-3-1:2017**

ICS:

03.100.20	Trgovina. Komercialna dejavnost. Trženje	Trade. Commercial function. Marketing
35.240.63	Uporabniške rešitve IT v trgovini	IT applications in trade

SIST-TS CEN/TS 16931-3-1:2017 **en,fr,de**

TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 16931-3-1

July 2017

ICS 35.240.20; 35.240.63

English Version

Electronic invoicing - Part 3-1: Methodology for syntax bindings of the core elements of an electronic invoice

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. CEN/TS 16931-3-1:2017 E

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European foreword

This document (CEN/TS 16931-3-1:2017) has been prepared by Technical Committee CEN/TC 434 "Electronic invoicing", the secretariat of which is held by NEN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

This document is part of a set of documents, consisting of:

— EN 16931-1:2017, *Electronic invoicing — Part 1: Semantic data model of the core elements of an electronic invoice*;

— CEN/TS 16931-2:2017, *Electronic invoicing — Part 2: List of syntaxes that comply with EN 16931-1*;

— CEN/TS 16931-3-1:2017, *Electronic invoicing — Part 3-1: Methodology for syntax bindings of the core elements of an electronic invoice*;

— CEN/TS 16931-3-2:2017, *Electronic invoicing — Part 3-2: Syntax binding for ISO/IEC 19845 (UBL 2.1) invoice and credit note*;

— CEN/TS 16931-3-3:2017, *Electronic invoicing — Part 3-3: Syntax binding for UN/CEFACT XML Industry Invoice D16B*;

— CEN/TS 16931-3-4:2017, *Electronic invoicing — Part 3-4: Syntax binding for UN/EDIFACT INVOIC D16B*;

— CEN/TR 16931-4:2017, *Electronic invoicing — Part 4: Guidelines on interoperability of electronic invoices at the transmission level*;

— CEN/TR 16931-5:2017, *Electronic invoicing — Part 5: Guidelines on the use of sector or country extensions in conjunction with EN 16931-1, methodology to be applied in the real environment*;

— FprCEN/TR 16931-6:2017, *Electronic invoicing — Part 6: Result of the test of EN 16931-1 with respect to its practical application for an end user*.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

The European Commission estimates that "The mass adoption of e-invoicing within the EU would lead to significant economic benefits and it is estimated that moving from paper to e-invoices will generate savings of around EUR 240 billion over a six-year period"[1]. Based on this recognition "The Commission wants to see e-invoicing become the predominant method of invoicing by 2020 in Europe."

As a means to achieve this goal, Directive 2014/55/EU [5] on electronic invoicing in public procurement aims at facilitating the use of electronic invoices by economic operators when supplying goods, works and services to the public administration. In particular, it sets out the legal framework for the establishment of a European Standard (EN 16931-1) for the semantic data model of the core elements of an electronic invoice.

The semantic data model of the core elements of an electronic invoice – the core invoice model – as described in EN 16931-1 is based on the proposition that a limited, but sufficient set of information elements can be defined that supports generally applicable invoice-related functionalities.

In line with Directive 2014/55/EU [5], all contracting authorities and contracting entities in the EU will be obliged to receive and process an e-invoice as long as it contains all of the core elements of an invoice defined in EN 16931-1 and provided that it is represented in any of the syntaxes identified in the related Technical Specification CEN/TS 16931-2 "List of syntaxes that comply with EN 16931-1". This CEN Technical Specification CEN/TS 16931-3-1:2017 defines the method by which the core elements of the invoice should be mapped to a syntax. Subsequent CEN Technical Specifications apply this method and map the core invoice model to syntaxes such as UBL (CEN/TS 16931-3-2), UN/CEFACT XML (CEN/TS 16931-3-3) and the ISO 9735 series (UN/EDIFACT) (CEN/TS 16931-3-4).

By ensuring interoperability of electronic invoices, the European standard and its ancillary European standardization deliverables will serve to remove market barriers and obstacles to trade deriving from the existence of different national rules and standards – and thus contribute to the goals set by the European Commission.

1) http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0712:FIN:en:PDF.

1 Scope

This Technical Specification (TS) specifies the methodology of the mapping between the semantic model of an electronic invoice, included in EN 16931-1 and a syntax. For each element in the semantic model (including sub-elements or supplementary components such as Identification scheme identifiers) it should be defined which element in the syntax is to be used to contain its information contents. Any mismatches between semantics, format, cardinality or structure are indicated.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 16931-1, *Electronic invoicing — Semantic data model of the core elements of an electronic invoice*

CEN/TS 16931-3-2:2017, *Electronic invoicing — Part 3-2: Syntax binding for ISO/IEC 19845 (UBL 2.1) invoice and credit note*

CEN/TS 16931-3-3:2017, *Electronic invoicing — Part 3-3: Syntax binding for UN/CEFACT XML Industry Invoice D16B*

CEN/TS 16931-3-4:2017, *Electronic invoicing — Part 3-4: Syntax binding for UN/EDIFACT INVOIC D16B*

ISO 15000-5:2014, *Electronic Business Extensible Markup Language (ebXML) — Part 5: Core Components Specification (CCS)*

3 Terms and definitions

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

3.1
electronic invoice
invoice that has been issued, transmitted and received in a structured electronic format which allows for its automatic and electronic processing

[SOURCE Directive 2014/55/EU [5]]

3.2
semantic data model
structured set of logically interrelated information elements

3.3
information element
semantic concept that can be defined independent of any particular representation in a syntax

3.4
syntax
machine-readable language or dialect used to represent the information elements contained in an electronic document (e.g. an electronic invoice)

3.5
business term
label assigned to a given information element which is used as a primary reference

3.6
core invoice model
semantic data model of the Core elements of an electronic invoice

3.7
core elements of an electronic invoice
set of essential information elements that an electronic invoice may contain in order to enable cross-border interoperability, including the necessary information to ensure legal compliance

3.8
identifier
character string used to establish the identity of, and distinguish uniquely, one instance of an object within an identification scheme from all other objects within the same scheme

Note 1 to entry: An identifier may be a word, number, letter, symbol, or any combination of those.

3.9
identification scheme
collection of identifiers applicable for a given type of object governed under a common set of rules

4 Methodology

4.1 Introduction

EN 16931-1 defines a standardized semantic model of the core elements of an electronic invoice. The purpose of the core semantic invoice model is to facilitate computer applications generate electronic invoices and then for other applications receive and process those invoices automatically. These electronic invoices are electronically transmitted and received, without the need for prior bilateral agreement on the content or elements of the invoice. However, in order to exchange electronic invoices, the model elements need to be represented in a “syntax”. A syntax specification allows the computer systems to identify the content (element values) as part of a data stream.

Syntax specifications imply a semantic model. The syntax specification defines how elements are organized (structured and serialized) in a predefined way in a data stream. Each element can be identified by means of its position or sequence, or by means of tags or labels. A syntax specification also defines the semantics of the elements, by naming and/or defining them. As such each syntax, by its own rules and methods, defines a standardized semantic model of an electronic invoice.

A syntax specification also defines the grouping, hierarchy, data types, formats and cardinality of the elements. In order to represent a standardized semantic model, such as the EN 16931-1 model, in a syntax, it is defined as a subset of a given syntax specification. The elements of the syntax specification may be more precisely defined, their cardinality may be restricted and their data types may be narrowed.

A syntax binding specification (this document), or mapping, describes how a semantic model, such as the model defined in EN 16931-1 is mapped to a selection of syntax specifications.

Creating a syntax binding specification requires aligning the semantic model and the syntax specification at various levels (semantic, structural, etc.). At each level, specific alignment issues can occur that need to be resolved. The remainder of this chapter will address the alignment of each of these levels in more detail. When creating a syntax binding specification, it is advised to address each of the levels in the following order:

— semantic alignment;

— structural alignment;

— cardinality assessment;

— data type formatting;

— code definition;

— business rules.

One should keep in mind that syntax binding binds two existing specifications. 'Aligning' in this context means restricting the usage of (an element within) one of the specifications, rather than extending the use of (an element in) the other specification. The subparts of the CEN/TS 16931-3 series map the semantic model of EN 16931-1 to several syntax specifications, not the other way around. This means that the elements in the semantic model can be represented in the syntax, but not all elements in the syntax are present in the semantic model. If in practice more elements are needed, first the semantic model should be extended according to the extension methodology as specified in CEN/TR 16931-5. Then the extended model can be mapped to one or more syntaxes using the methodology described here.

4.2 Semantic alignment

The first step in mapping a semantic model to a syntax is to determine if each element in the semantic model has a corresponding element in the syntax. The corresponding element in the syntax shall have a similar or wider semantic definition with respect to the definition of the semantic model element. The definition of the syntax element may be implied by the name of that element. For example: an element named "VAT Amount" in the semantic model may be mapped to an element named "Tax Amount" in the syntax specification. As VAT is a type of tax, the element "Tax Amount" is a wider concept than VAT Amount. The semantic relation between elements from the semantic model and elements from the syntax specification can be specified using SKOS[2)] relation types.

At the semantic level the following types of semantic mismatches between individual elements may occur:

2) https://www.w3.org/2004/02/skos/