eInvoicing Workshop

4th May, Helsinki, Finland

Connecting Europe Facility

DIGIT
Directorate-General
for Informatics

DG Connect
Directorate-General for Communications
Networks, Content and Technology

Christian Vindinge Rasmussen

Martin Forsberg

slı.do

https://sli.do

Enter #4999

Today's speakers

Christian Rasmussen

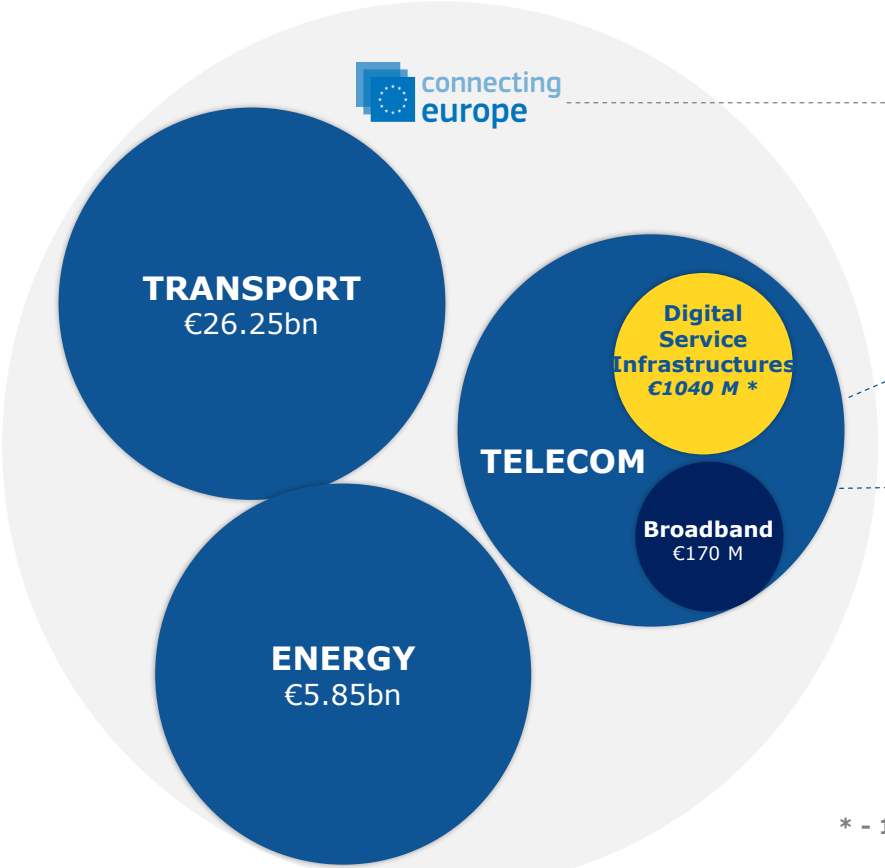
Christian is an experienced eProcurement Expert specialized in the execution of large scale ICT projects with past experience from the Nordic region. Christian has been involved in the past EU-funded large scale pilots PEPPOL.eu and eSENS.eu as Work packager leader with focus on new eProcurement and eDelivery development. Christian works as a business development manager for e-Boks, Denmark.

Martin Forsberg

Martin Forsberg works as an subject matter expert in the area of electronic business, customs and financial processes. Martin was involved in the PEPPOL and eSENS Large Scale Pilots. He is active in standardization committees such as CEN TC434 and OASIS UBL. Martin works as a consultant for ECRU, Sweden across EU.

What are
the CEF building blocks?

What is CEF?



HOW IS IT REGULATED?

CEF Regulation
The Connecting Europe Facility (CEF) is a regulation that defines how the Commission can finance support for the establishment of trans-European networks to reinforce an interconnected Europe.

CEF Telecom Guidelines
The CEF Telecom guidelines cover the specific objectives and priorities as well as eligibility criteria for funding of broadband networks and Digital Service Infrastructures (DSIs).

CEF Work Programmes
Translates the CEF Telecom Guidelines in general objectives and actions planned on a yearly basis.

CEF Funding
From 2014-2020 1.040M Euro will be re-invested into adoption of the core building blocks in the DSIs.

Budget indications from 2020-2024 gives additional 1.600M Euro for further funding of implementation

*** - 100 M Juncker Package**

European Commission

CEF Building Blocks

The **building blocks of the Connecting Europe Facility** promote the adoption of the same **open standards and technical specifications**, by the **different sectors** of the Union, for the most basic & common functionalities of any sectorial project/ platform.

These core commonalities will enable interoperability across borders and sectors.

IDENTIFY *with*
eID

SIGN *with*
eSignature

EXCHANGE *with*
eDelivery

INVOICE *with*
eInvoicing

TRANSLATE *with*
eTranslation

More building blocks are coming…

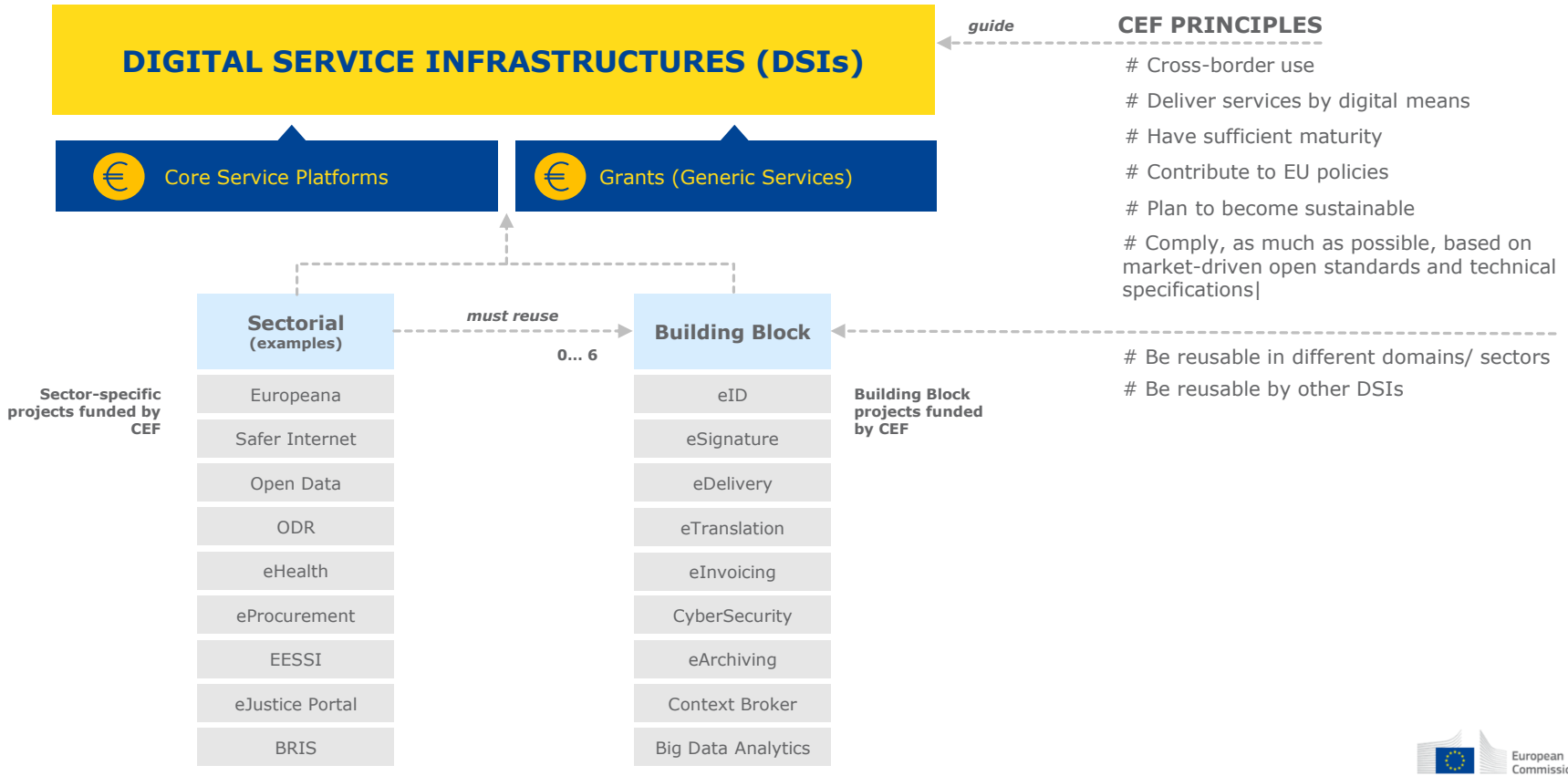
ANALYSE and TEST *with*

Big Data analytics

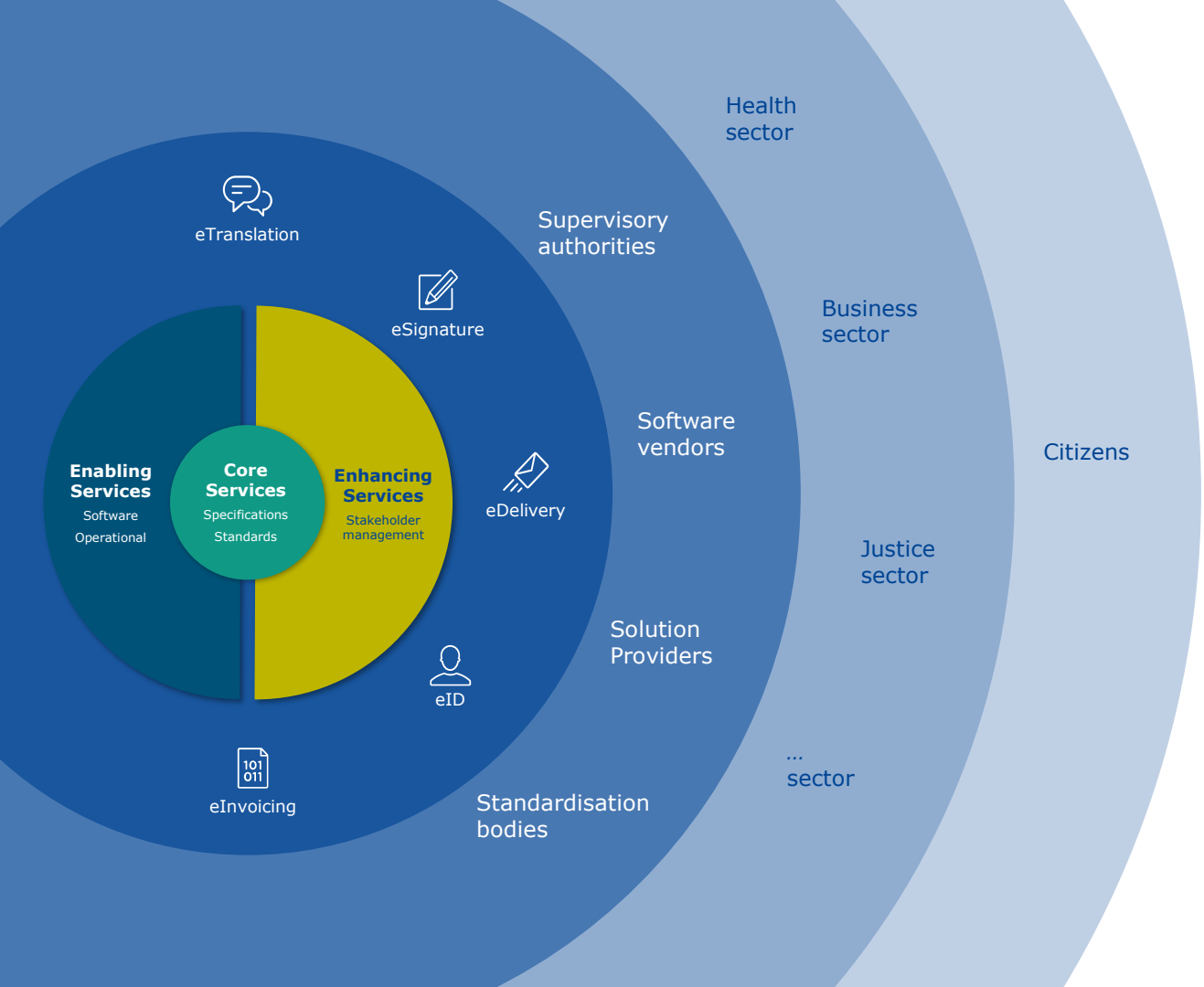
ARCHIVE *with*

eArchiving

What are the fundamental characteristics of a Building Block / DSI?



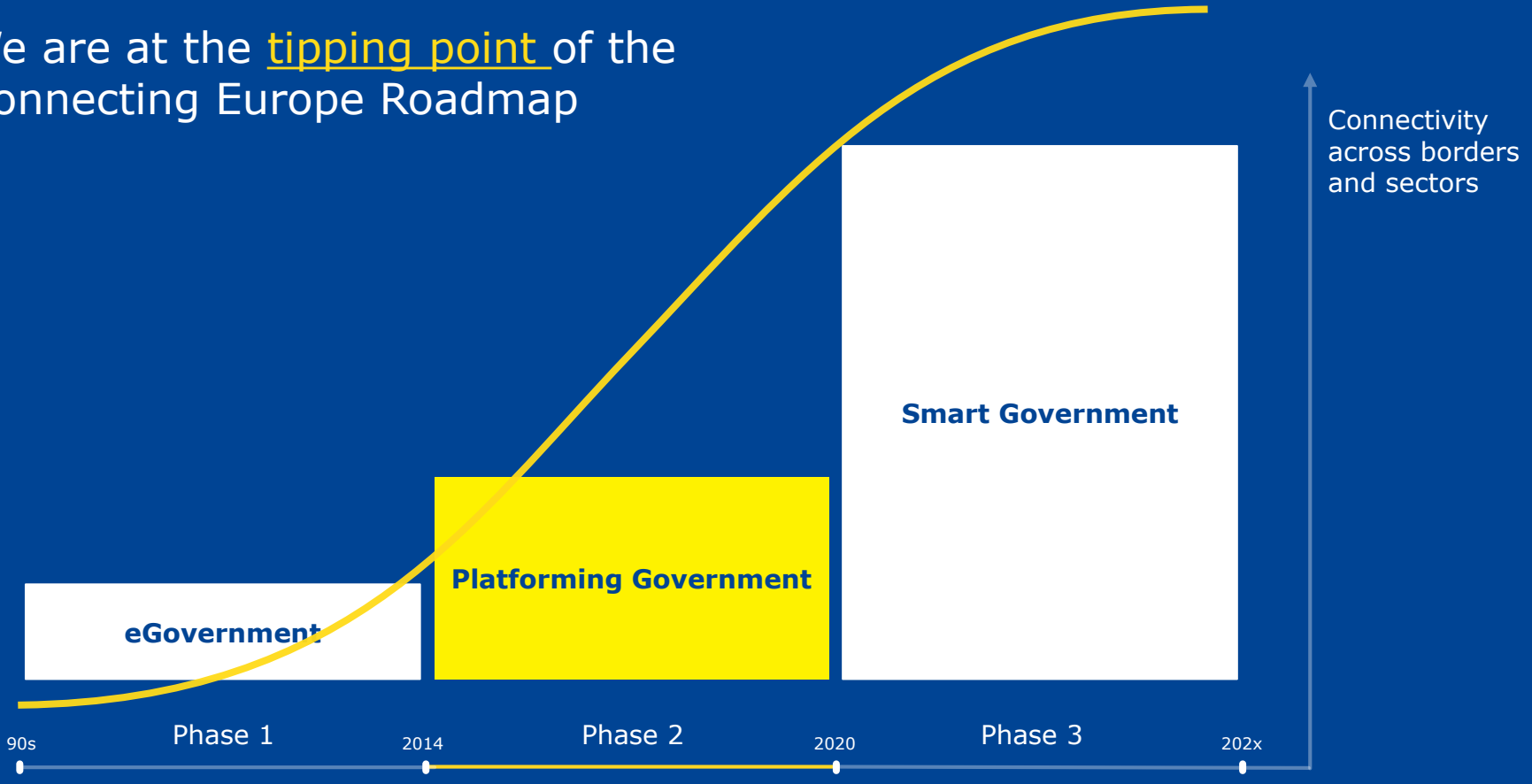
(*) A Building Block is a package of technical specifications, services and sample software that can be reused in different policy domains:



The CEF Building Blocks are creating a common digital platform across Europe

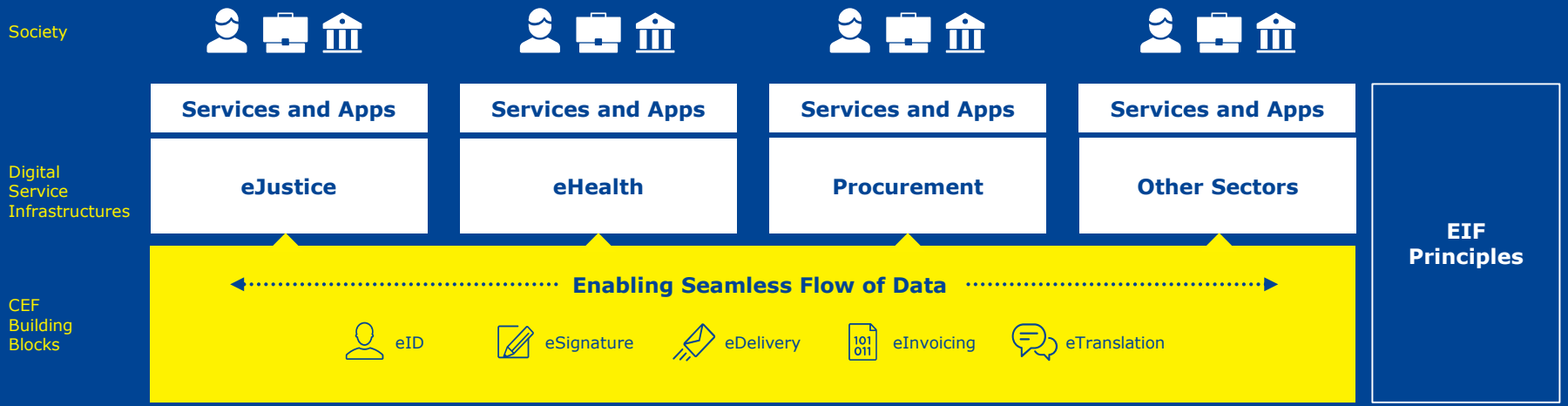
European Commission

We are at the tipping point of the Connecting Europe Roadmap



Phase 3: Smart Government. This is how we will ensure high quality, user-centric digital public services for citizens and seamless cross-border public services for businesses.

Key Challenge: Exploitation of the Digital Platform i.e. Once Only, Digital by Default, …

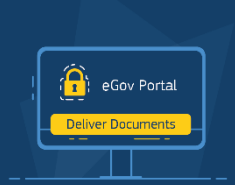


Citizens Businesses Public Administrations

The CEF Building Blocks

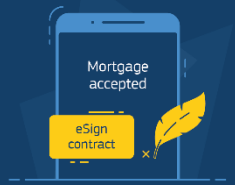
eID

Extending the use of online services to citizens of other EU member states



eDelivery

Supporting electronic registered delivery of data and documents



eSignature

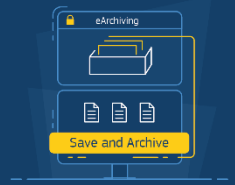
Creating and verifying electronic signatures

eInvoicing

Supporting Public Entities in the uptake of the EU Standard for eInvoicing

eTranslation

Exchanging information across languages in the EU Member States



eArchiving

Tackling the challenge of short, medium and long-term data management and reuse

EU Login

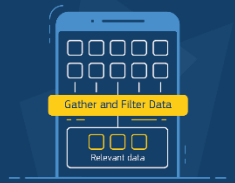
EU Send

EU Sign

f.k.a. ESSI

*Available **as-a-service** to the European Commission*

Data Value Chain



Context Broker

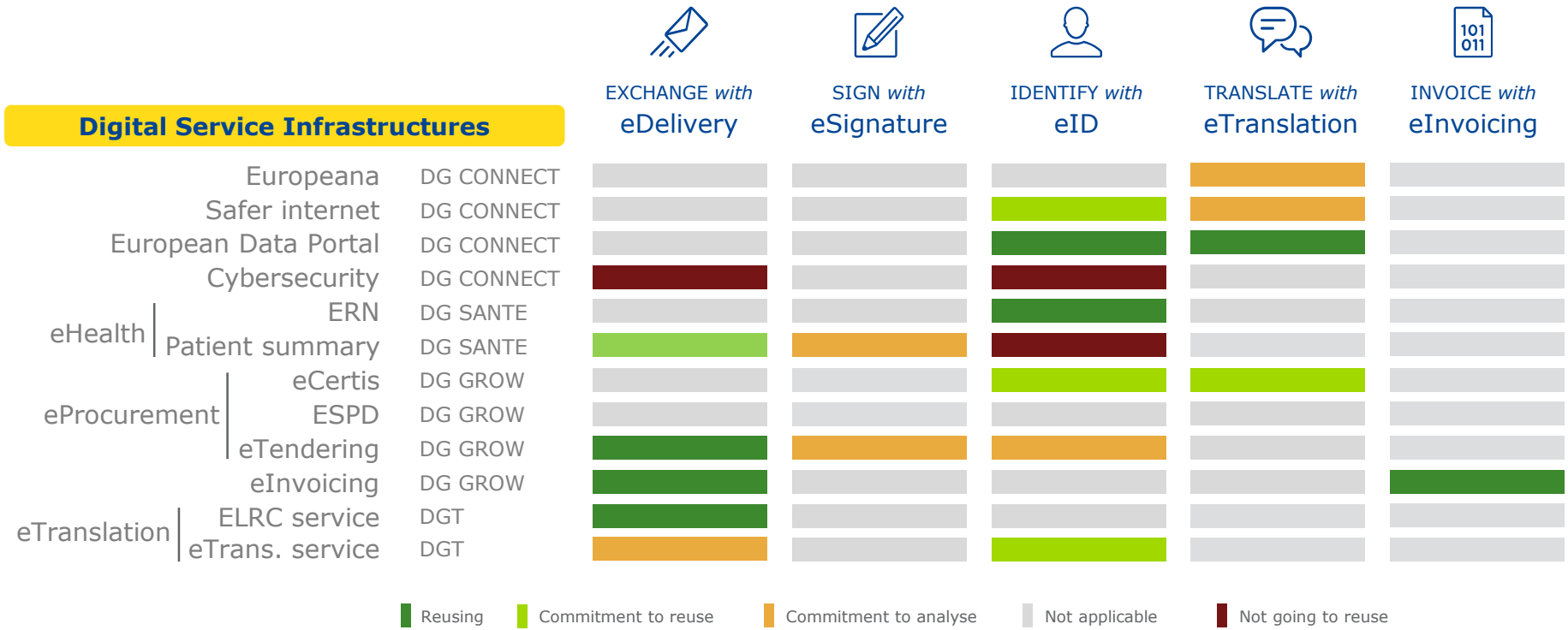
Managing and sharing real time data (context information) via a central hub

Big Data Test Infrastructure

Data and analytics services from infrastructure to tools for experimenting with Big Data technologies

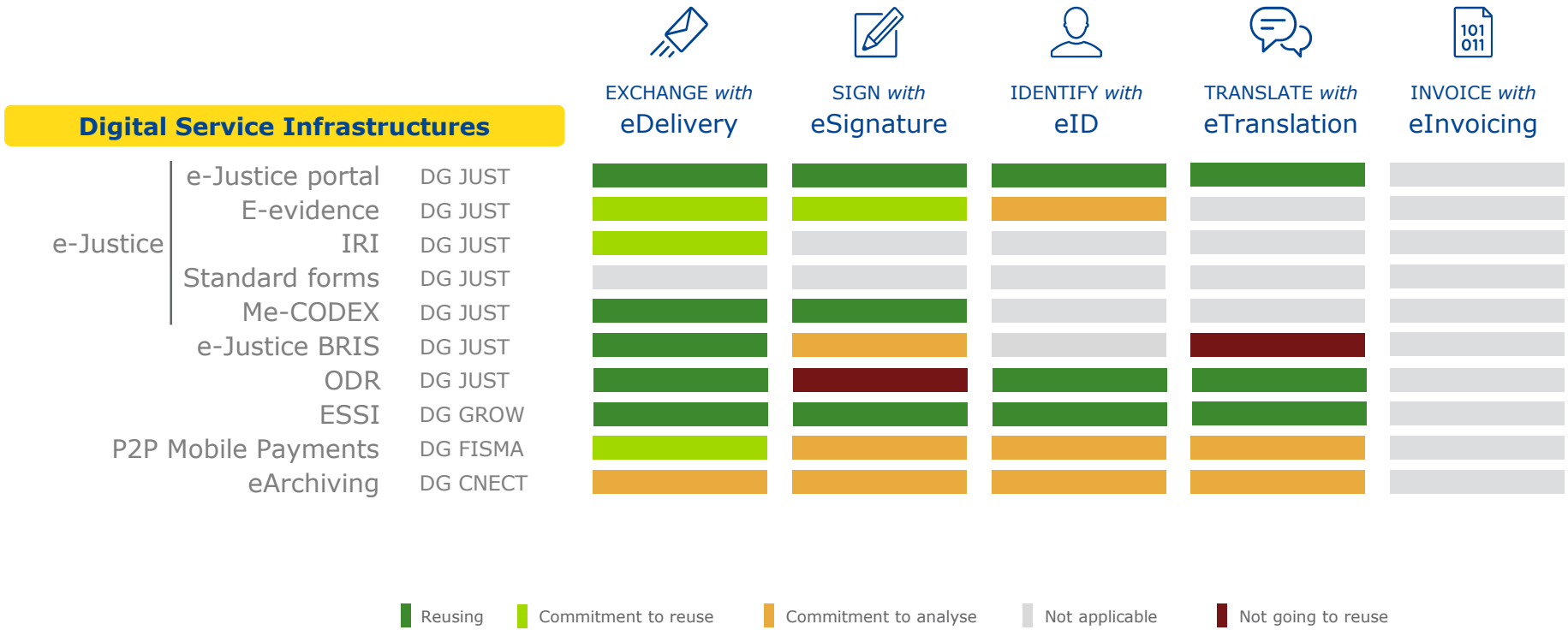
Uptake of the CEF building blocks

Deployment in the CEF Digital Programme



European Commission

Deployment in the CEF Digital Programme



European Commission

Significant growth in the last year. Since November 2017…

Reuse

+ 128 %

41 more projects at the EC are **reusing** the CEF Building Blocks

32
EC projects reusing BBs

Nov. 2017

73
EC projects reusing BBs

Nov. 2018

Success Stories

+ 350%

21 more teams told us how they have successfully re-used the CEF Building Blocks

6
Success Stories

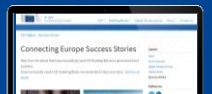
Nov. 2017

27
Success Stories

Nov. 2018

Monitoring dashboard on CEF Digital

View Success Stories on CEF Digital



How does CEF support projects to use the building blocks?

In two ways:

- **One**, it provides services to help you implement them in your system. There are a range of services across the building blocks but services typically include training, sample software, testing services.

Free Services

Training sessions

Sample software

Testing services

How does CEF support projects to use the building blocks?

In two ways:

- **One**, it provides services to help you implement them in your system. There are a range of services across the building blocks but services typically include training, sample software, testing services.
- **Two**, CEF provides grant funding. You can apply for grant funding to pay for the implementation of a building block in you system. More information on how you can apply, grant winners and on-going projects is available via INEA's website.

Visit INEA Website

Funding opportunities

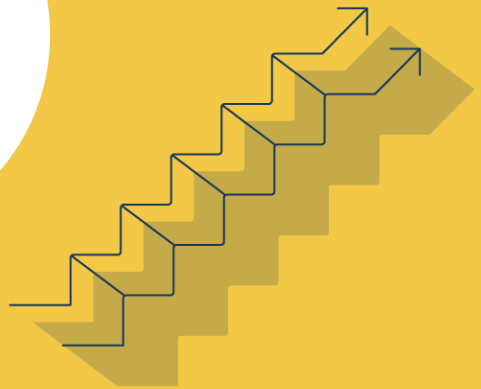
Call	Open Calls	Deadline for submissions
CEF-TC-2019-1 **Automated Translation** (indicative budget: €4M)	14 February 2019	14 May 2019
CEF-TC-2019-1 **eID & eSignature** (indicative budget: €5M)	14 February 2019	14 May 2019
CEF-TC-2019-1 **eDelivery** (indicative budget: €1M)	14 February 2019	14 May 2019
CEF-TC-2019-1 **eInvoicing** (indicative budget: €6.2M)	14 February 2019	14 May 2019

How many projects have used the building block?

118
projects

View Dashboard

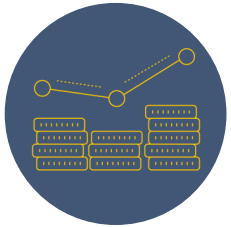
Growing potential cases
are bringing us closer to fulfilling the dream.



Connected Europe

Vision

Great experience for citizens and businesses



Building a data-economy

Promoting cross-border interoperability

Main Benefits

1

The building blocks are mature, ready to deploy solutions that will save projects time and money.

2

The building blocks are based on open European standards so you avoid vendor lock-in.

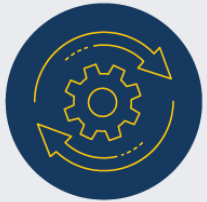
3

They help public administrations connect to collaborate to deliver a great European experience for citizens and businesses.

How do we support you?

1

Apply for grant funding to pay for the implementation of a building block



2

The CEF Digital website has details of a a range of services across to support your implementation

3

Our service desk is available for you to provide answers to any questions you may have

Join us, we’re Connecting Europe!

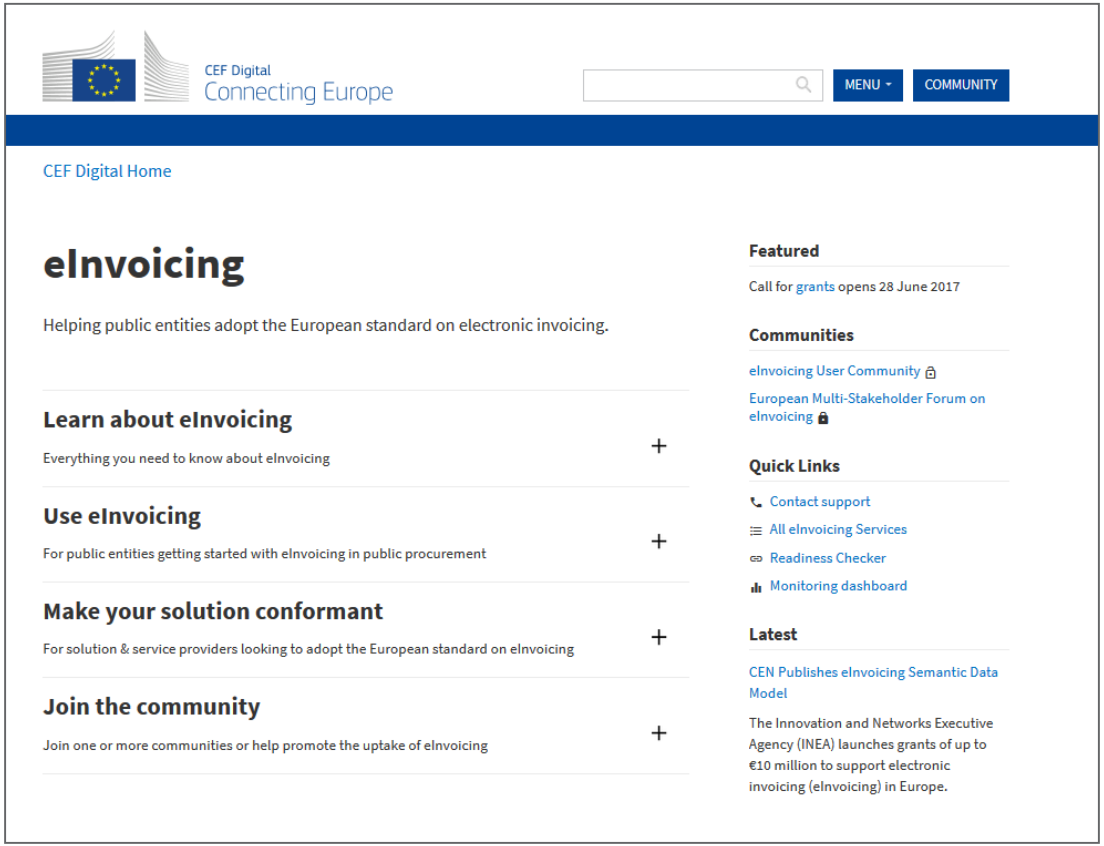
The vision is to deliver user-centric digital public services for citizens and seamless cross-border public services for businesses.

Public administrations must exchange data securely across borders in order to collaborate effectively and deliver a great experience to citizens and businesses.

Projects using the building blocks are supporting the digital transformation of Europe by implementing eIDAS and contributing to the digital single market.

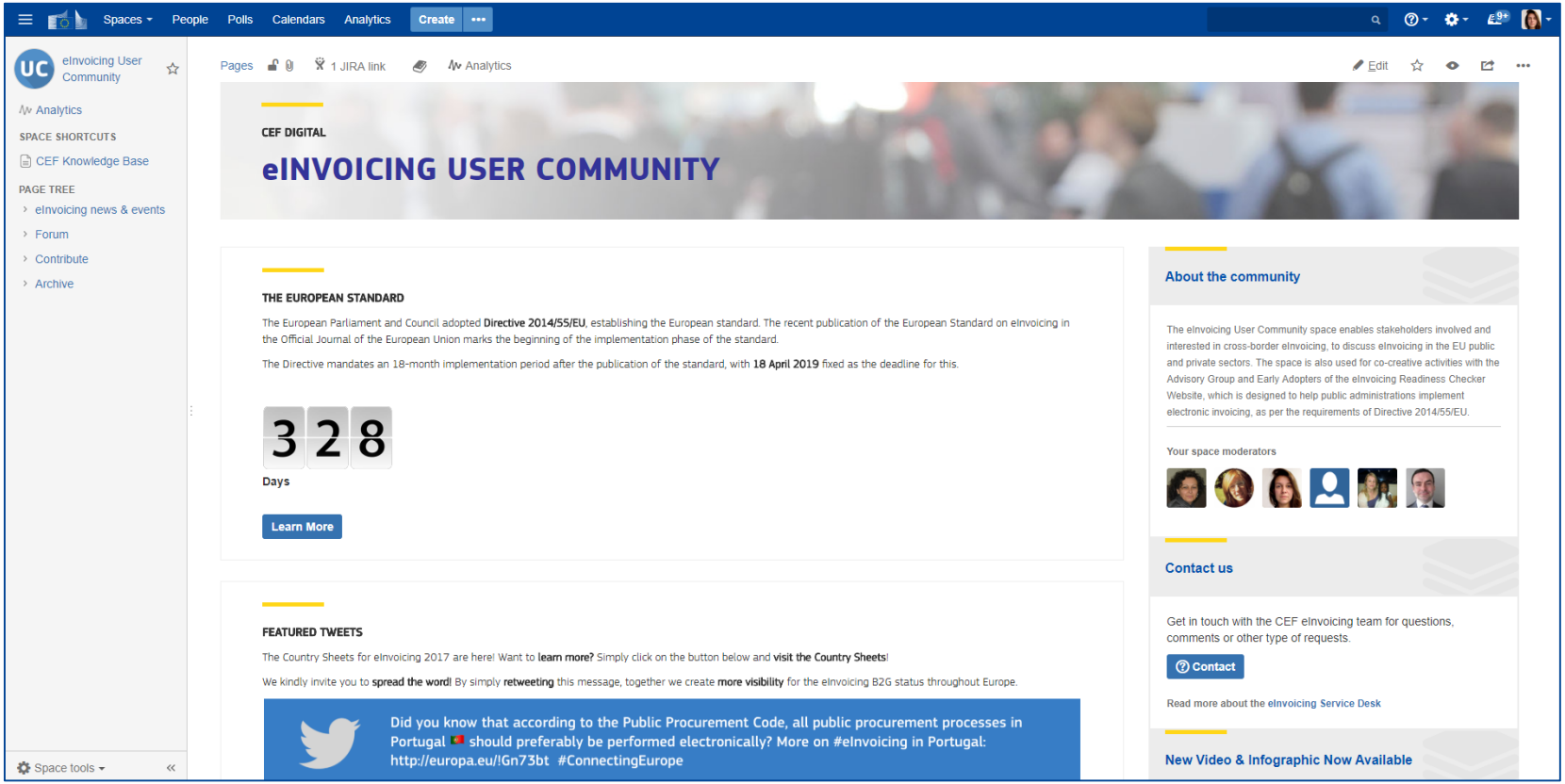
CEF Digital

CEF Digital



European Commission

CEF eInvoicing User Community



Stakeholder management services

Knowledge base

OBJECTIVE OF THE SERVICE

This service provides public entities and solution & service providers an easy reference repository for eInvoicing related information.

It includes information about access to the different code lists, codes used and their meaning, and a glossary of elements used in the European eInvoicing standard.

The Knowledge base provides information on EU and country specific levels.

BENEFITS

- This service provides a useful and reliable information repository that helps users to find, consult and interpret information resources about eInvoicing in Europe.
- It provides useful information that public administrations can use to plan, initiate and execute eInvoicing implementation plans and strategies.

USERS

Public entities
Policy makers
Economic operators & suppliers
Solution & service providers

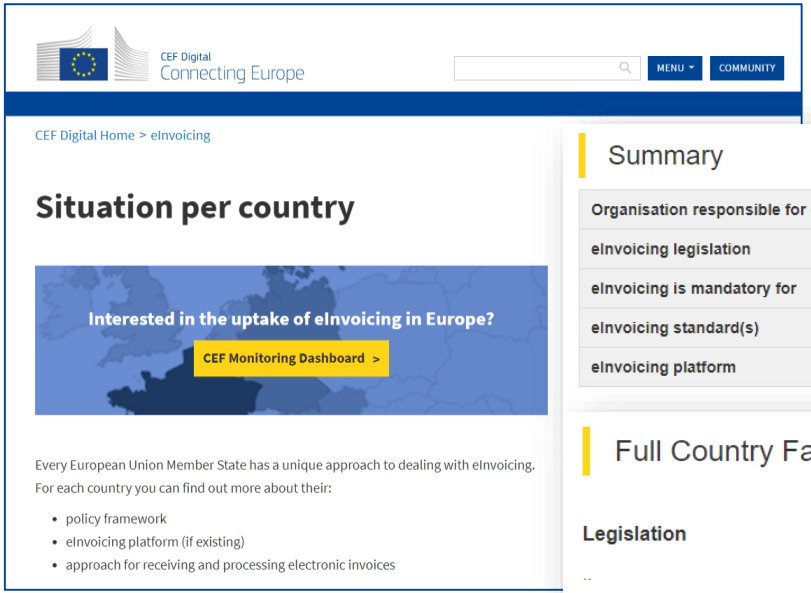
More info

CEF Digital >

Get started

Contact us >

2018 Country Factsheets



Country factsheets

EU Member States

Austria
Belgium
Bulgaria
Croatia
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Latvia
Lithuania
Luxembourg
Malta
The Netherlands
Poland
Portugal
Romania
Slovakia
Slovenia
Spain
Sweden
United Kingdom

ADDITIONAL EEA (European Economic Area) COUNTRIES

Iceland
Norway
Liechtenstein

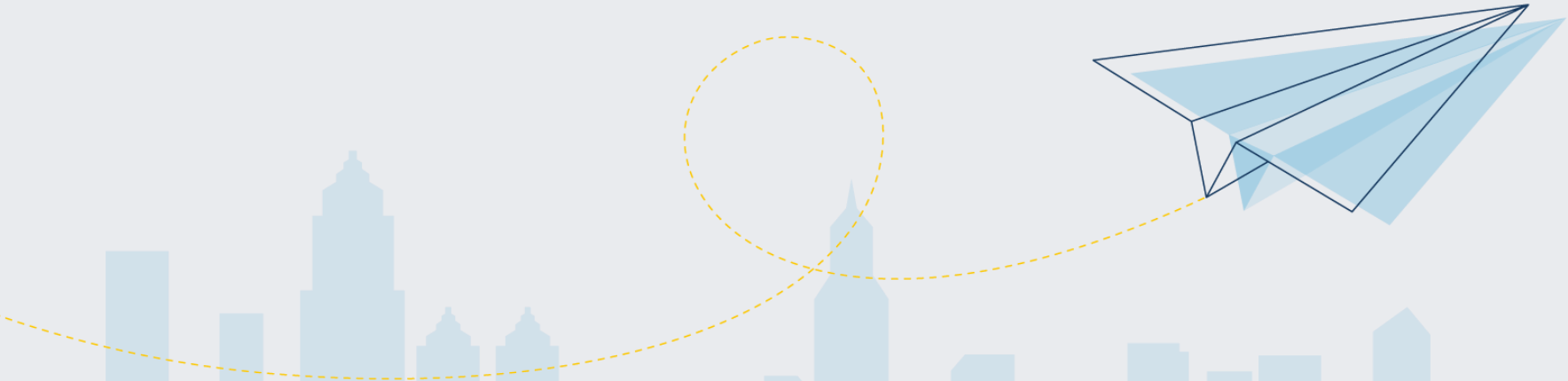
* https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Success+Stories

Read all the Connecting Europe success stories on CEF Digital

View ›

Ready to get started?

Reach out to us to learn more!
Or visit our website www.ec.europa.eu/cefdigital



Introduction from a European Point of View

Martin Forsberg

DIGIT

Background

- Problems with **many standards**
- **Lack of normative contextualised standards** (only workshop agreements)
- **Different approaches and ambitions** in Member States to implementing eInvoicing and eProcurement
- The Directive on electronic invoicing in public procurement (Directive 2014/55/EU) was developed, setting a **minimum requirement** for the public sector
- The Directive can in the transposition add further requirements

> **From the Directive**
>
> *The benefits of electronic invoicing are maximised when the generation, sending, transmission, reception and processing of an invoice can be fully automated.*
>
> *…*
>
> *A mere image file should not be considered to be an electronic invoice for the purpose of this Directive.*

Requirements for the contracting authorities/entities

From article 7

Receipt and processing of electronic invoices

*Member States shall ensure that contracting authorities and contracting entities **receive and process electronic invoices** which comply with the **European standard on electronic invoicing** whose reference has been published pursuant to Article 3(2) and with **any of the syntaxes on the list** published pursuant to Article 3(2).*

a list with a limited number of syntaxes which comply with the European standard on electronic invoicing

Semantic data model of the core elements of an electronic invoice

Definitions

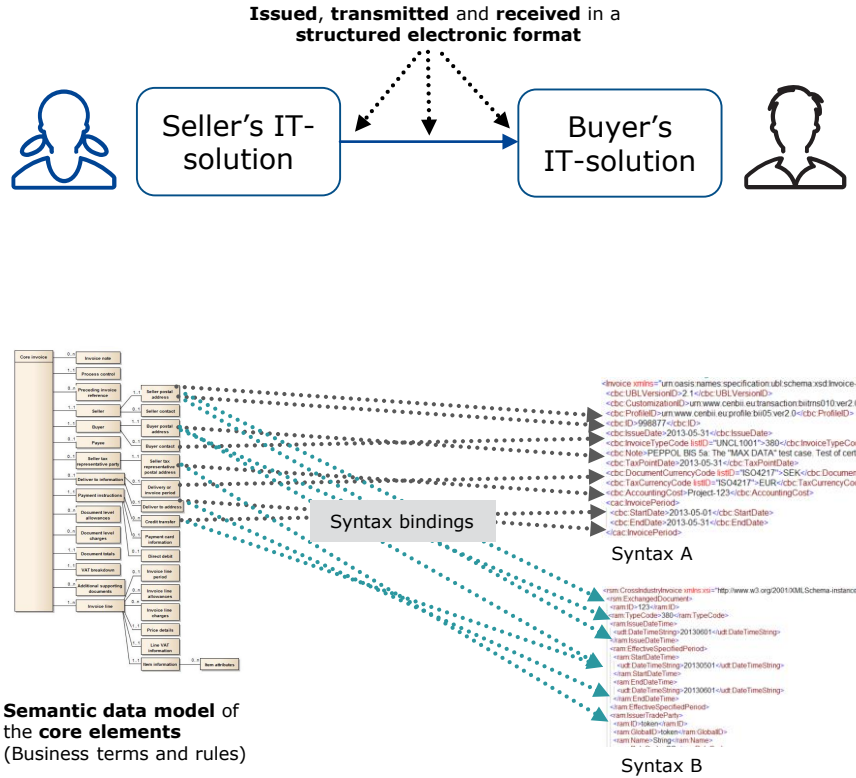
(1) **'electronic invoice**' means an invoice that has been issued, transmitted and received in a structured electronic format which allows for its automatic and electronic processing;

(2) '**core elements of an electronic invoice**' means a set of essential information components which an electronic invoice must contain in order to enable cross-border interoperability, including the necessary information to ensure legal compliance;

(3) '**semantic data model**' means a structured and logically interrelated set of terms and their meanings that specify the core elements of an electronic invoice;

(4) '**syntax**' means the machine readable language or dialect used to represent the data elements contained in an electronic invoice;

(5) '**syntax bindings**' means guidelines on how a semantic data model for an electronic invoice could be represented in the various syntaxes;



Semantic data model of the **core elements** (Business terms and rules)

European Commission

Key dates

16 April 2014
Directive 2014/55/EU

17 October 2017
Publication of the reference to the European Standard on eInvoicing in the Official Journa

18 April 2019

Deadline for Member States to transpose into national law

18 April 2020
Extended deadline (upon request) for contracting authorities and entities which are not central government authorities

So eInvoicing, in the context of the Directive, is

- Formatted in a structured way so that it can be processed efficiently
- Issued, transmitted and received electronically

This rules out:

- Paper invoices which are scanned by the receiver but managed in an electronic workflow system
- PDF-invoices created by the issuer and sent to the receiver

Implementation of the Directive – requirements on public entities and suppliers

1. As is – no additional restrictions
2. As 1 but with policy that requirement for eInvoice must be part of contracts/call for tenders
3. Requirement for suppliers to also send

The European Norm and its content

Martin Forsberg
DIGIT

Initiation of the standardisation

From article 3

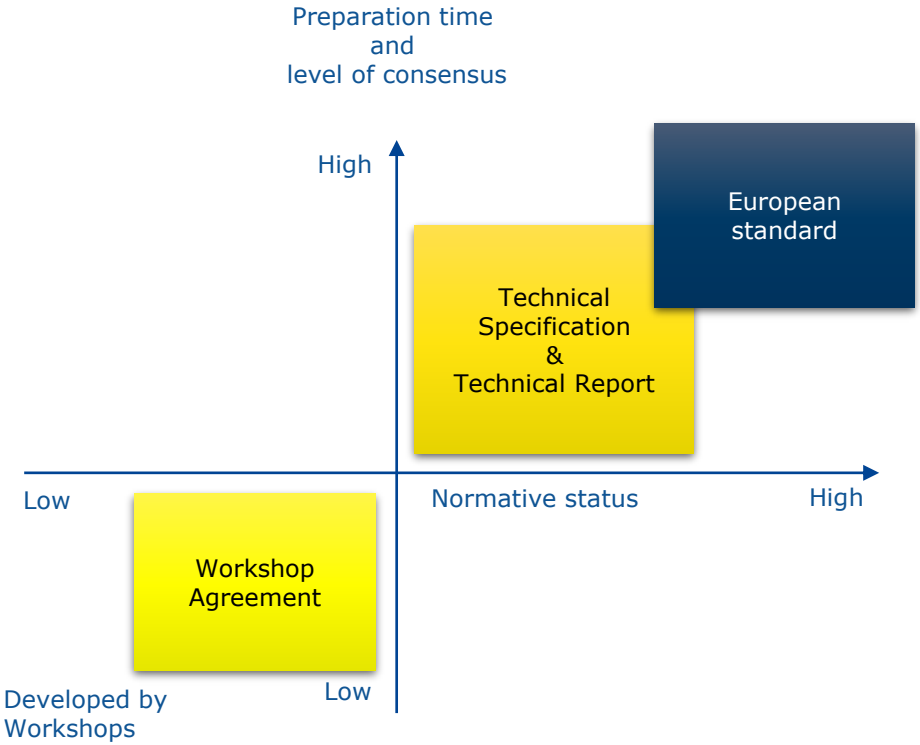
*The Commission shall request that the relevant **European standardisation organisation** draft a European standard for the semantic data model of the core elements of an electronic invoice (the 'European standard on electronic invoicing').*

…

The Commission shall request that the relevant European standardisation organisation provide a list with a limited number of syntaxes which comply with the European standard on electronic invoicing, the appropriate syntax bindings and guidelines on transmission interoperability, in order to facilitate the use of such standard.

CEN/TC 434 was established

- CEN - European Committee for Standardisation
- The work started in a project committee (PC434) but was later changed into a technical committee (TC434)
- TC434 has over 100 committee members from 31 countries
- Participation in the work must go through the national standardisation committees.
- The committee is about to finalize all deliverables defined in the standardisation request



Current status

Number	Title	Status
EN 16931-1	Semantic data model of the core elements of an electronic invoice	Approved!
CEN/TS 16931-2	List of syntaxes that comply with EN 16931-1	Approved!
CEN/TS 16931-3-1	Methodology for syntax bindings of the core elements of an electronic invoice	Approved!
CEN/TS 16931-3-2	Syntax binding for ISO/IEC 19845 (UBL2.1) invoice and credit note	Approved!
CEN/TS 16931-3-3	Syntax binding for UN/CEFACT XML Cross Industry Invoice D16B	Approved!
CEN/TS 16931-3-4	Syntax binding for UN/EDIFACT D16B	Approved!
CEN/TR 16931-4	Guidelines on interoperability of electronic invoices at the transmission level	Approved!
CEN/TR 16931-5	Guidelines on the use of sector or country extensions in conjunction with EN 16931-1, methodology to be applied in the real environment	Approved!
CEN/TR 16931-6	Result of the test of EN 16931-1 with respect to its practical application for an end user	Approved!

Introduction to key concepts of the standard

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 16931-1

June 2017

ICS 35.240.20; 35.240.63

English Version

Electronic invoicing - Part 1: Semantic data model of the core elements of an electronic invoice

Facturation électronique - Partie 1: Modèle sémantique de données des éléments essentiels d'une facture électronique

Elektronische Rechnungsstellung - Teil 1: Semantisches Datenmodell der Kernelemente einer elektronischen Rechnung

This European Standard was approved by CEN on 17 April 2017.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 16931-1:2017 E

Section 1-3 - Scope, references, terms & definitions

Section 4 – The concept of a core invoice

Section 5 – Business process to support

Section 6 – The semantic model, rules and data types

Section 7 – Core Invoice Usage Specification (and compliance)

Annex A – Examples (Informative)

Annex B – Assessment of the EN towards the Standardization request (Informative)

Annex C – How does the EN meet legal requirements (Informative)

Annex D – BPMN symbols (informative)

European Commission

Areas covered by the standard

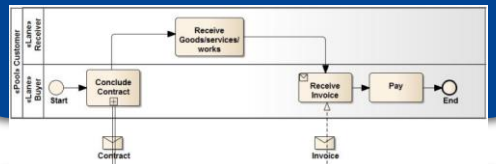
The European Standard

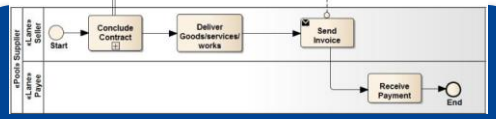
Steps in the process

Information to exchange

Technical format

System/service of the customer





System/service of the supplier

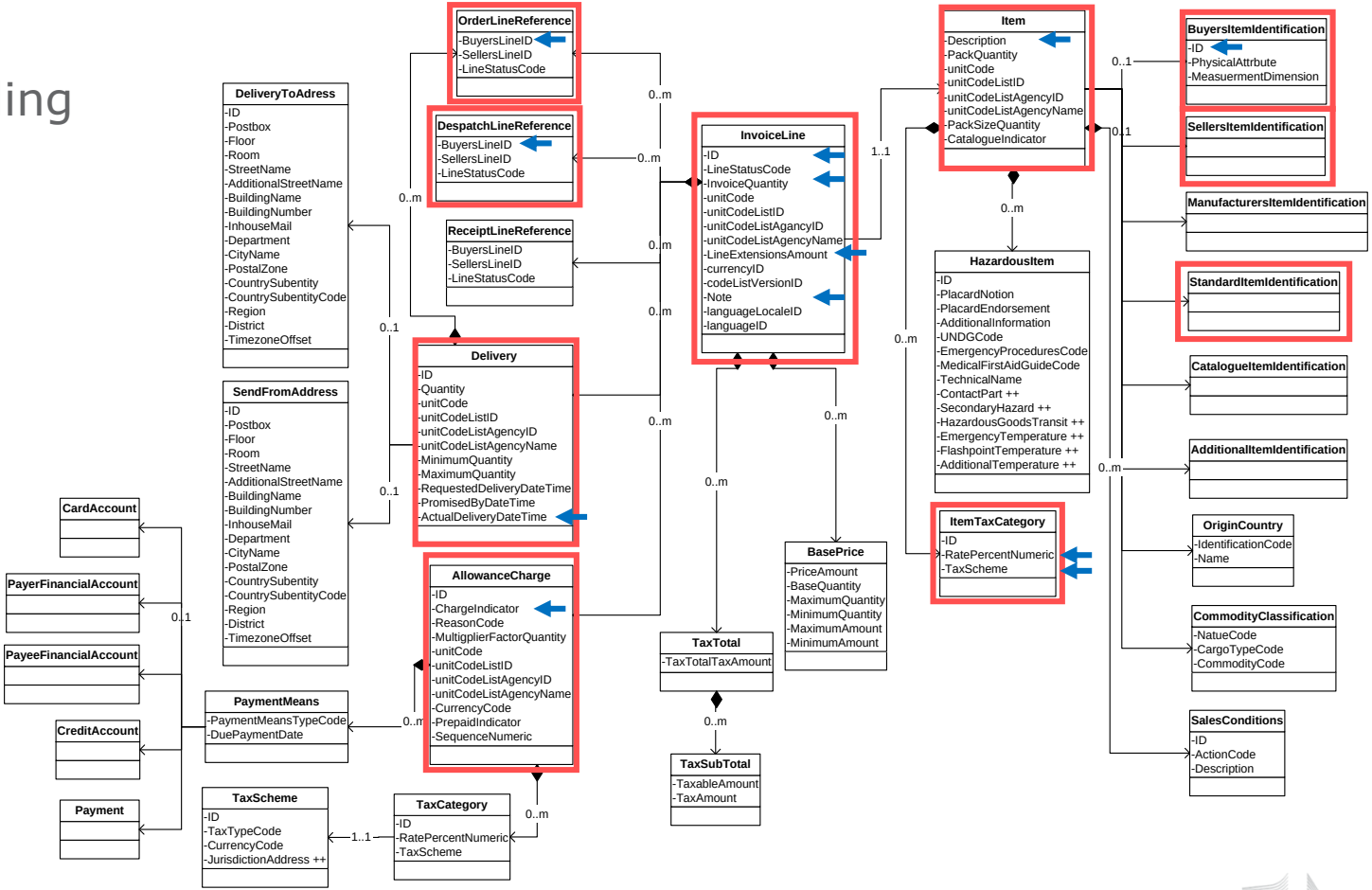
European Commission

Reasons for a core invoice

The European standard recognises the following reasons:

- Business environment is diverse – also the need for information exchange
- Invoices from different situations may potentially contain many information elements – a complete model becomes very large and complex
- Even if it would technically be possible to have a large model, it would be challenging and costly
- When different countries/industries use subset of large standards, interoperability is hampered and silo-implementations are created

Common understanding



European Commission

The concept of a core invoice – How?

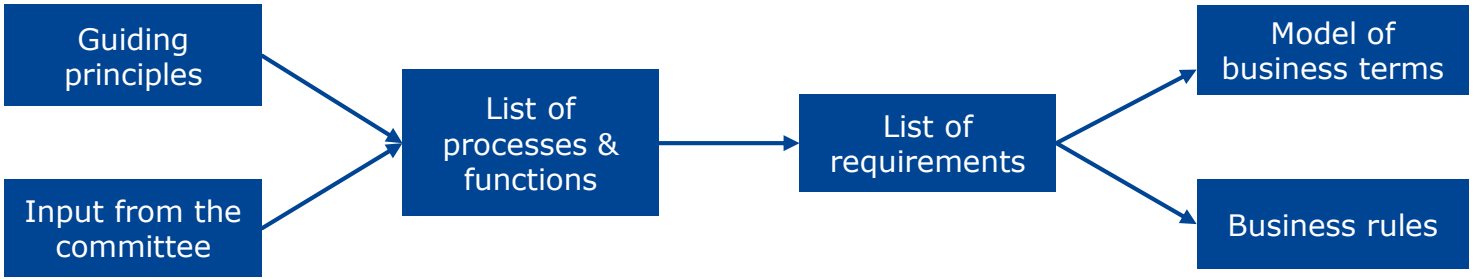
The norm identifies a few **guiding principles**:

- It should be easier to use than paper invoicing
- Standardised information elements makes processing more efficient (than paper invoices)
- It should be possible to use without prior consultation or bilateral agreements
- It should contain information to enable efficient and automatic processing
- Software should be able to present all information, and automatically process structured data
- Structured data should result in optimised business processes
- The core invoice model should not make assumptions on the method of creation, delivery or processing
- The core invoice model should not make assumptions on the syntax or transmission technology

EN 16931-1:2017 Chapter 4

Requirement driven approach on defining the model

- Each business term in the model comes from one or more documented (and numbered) requirement
- The requirements give a good understanding of the background



Business processes to support

The invoice model contains information elements to support the following processes

— P1: Invoicing of deliveries of goods and services against purchase orders, based on a contract

— P2: Invoicing deliveries of goods and services based on a contract

— P3: Invoicing the delivery of an incidental purchase order

— P4: Pre-payment

— P5: Spot payment

— P6: Payment in advance of delivery

— P7: Invoices with references to a despatch advice

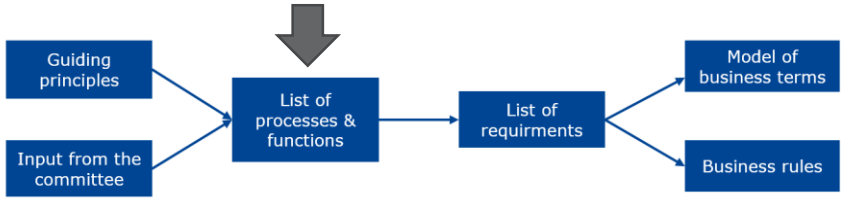
— P8: Invoices with references to a despatch advice and a receiving advice

— P9: Credit notes or invoices with negative amounts, issued for a variety of reasons including the return of empty packaging

— P10: Corrective invoicing (cancellation/correction of an invoice)

— P11: Partial and final invoicing

— P12: Self billing



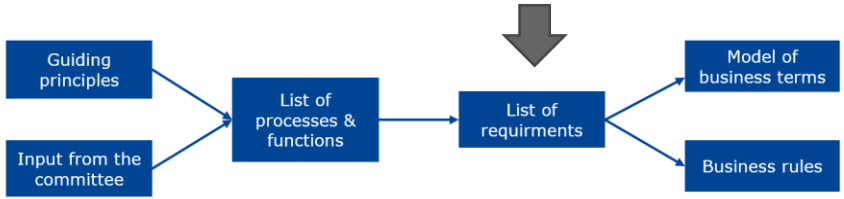
EN 16931-1:2017 Chapter 5.2.1

European Commission

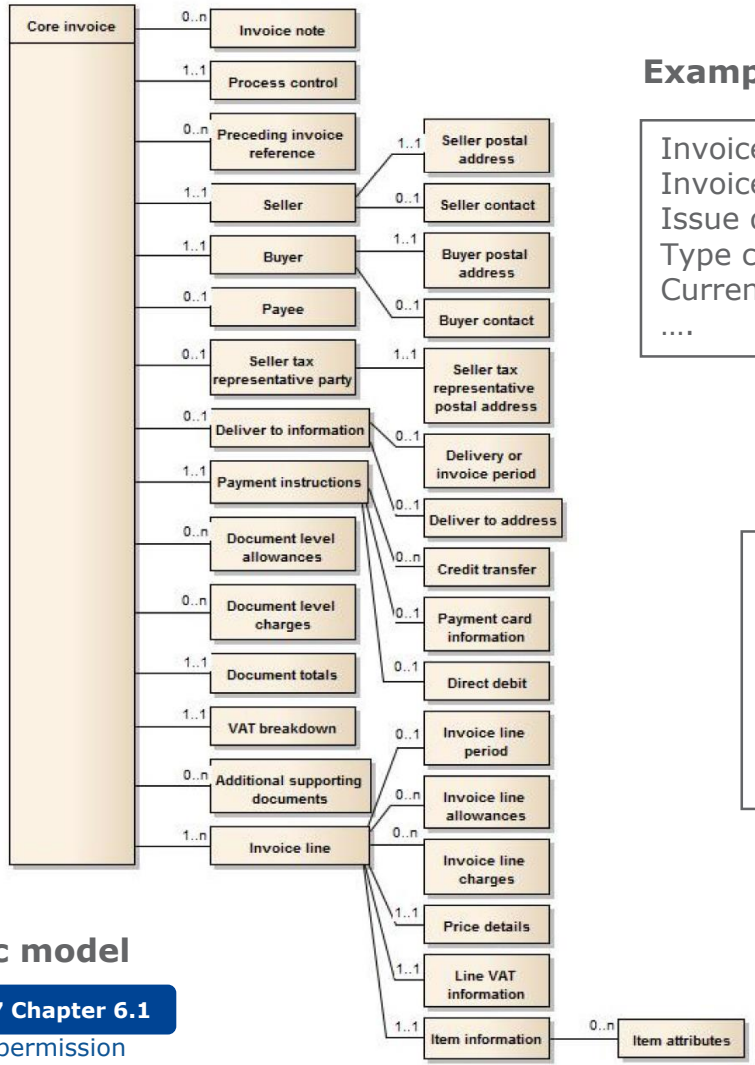
Business requirements derived from the processes

- Based on the identified processes and listed invoice functions, requirements are defined
- Each requirement has an assigned identifier

R5	information to trace to a single related purchase order from the document level (all processes, except P2 and P5);
R6	information to trace to a single related purchase order line from the invoice line (all processes, except P2 and P5);
R7	information to trace to a single contract and the underlying call for tenders from the document level (all processes, except P3 and P5);



EN 16931-1:2017 Chapter 5.3



Examples of key components

Invoice (header)
Invoice number (1..1)
Issue date (1.1)
Type code (1
Currency cod
….

Seller information
Name (1..1)
Trading name (0..1)
Identifier (0..n)
Legal registration identifier (0..1)
VAT num
Additiona
…

Payment instructions
Payment means type code (1..1)
text (0..1)
(0..1)

VAT Breakdown
Category taxable amount (1..1)
Category tax amount (1..1)
Category code
Category rate
Exemption text
Exemption cod

Item information
Name (1..1)
Description (0..1)
Sellers identifier (0..1)
Buyers identifier (0..1)
Standard identifier (0..1)
Item classification (0..n)
Country of origin (0..1)

The semantic model

EN 16931-1:2017 Chapter 6.1

European Commission

Examples of business terms

ID	Level	Cardinality	Business Term	Description	Usage Note	Req. ID	Semantic data type [2]
BT-1	+	1..1	Invoice number	A unique identification of the Invoice.	The sequential number required in Article 226(2) of the directive 2006/112/EC [2], to uniquely identify the Invoice within the business context, time-frame, operating systems and records of the Seller. It may be based on one or more series of numbers, which may include alphanumeric characters. No identification scheme is to be used.	R56	Identifier
BT-2	+	1..1	Invoice issue date	The date when the Invoice was issued.		R56	Date
BT-3	+	1..1	Invoice type code	A code specifying the functional type of the Invoice.	Commercial invoices and credit notes are defined according the entries in UNTDID 1001 [6]. Other entries of UNTDID 1001 [6] with specific invoices or credit notes may be used if applicable.	R44	Code

ID – Unique id for each business term

Level – indicates depth in model (+, ++, +++, ++++)

Cardinality – Indicates optionality, repetitions allowed

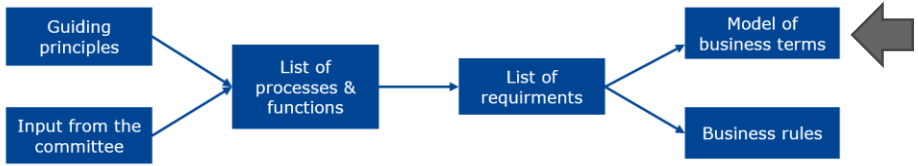
Business term – name of the business term

Description – short description/definition

Usage note – guiding/explanatory information

Req id – reference to underlying requirement

Data type – the type of



EN 16931-1:2017 Chapter 6.3

European Commission

Business rules

- Conditions – dependencies between terms
- Integrity constraints (In many cases, the data model cardinality indicates the same thing)

ID	Description	Target / context	Business term / group
BR-CO-8	Invoice line charge reason code and Invoice line charge reason shall indicate the same type of charge reason.	Invoice line Charges	BT-144, BT-145
BR-CO-9	The Seller VAT identifier, Seller tax representative VAT identifier, Buyer VAT identifier shall have a prefix in accordance with ISO code ISO 3166-1 alpha-2 by which the country of issue may be identified. Nevertheless, Greece may use the prefix 'EL'.	VAT identifiers	BT-31, BT-48, BT-63
BR-CO-10	Sum of Invoice line net amount = ∑ Invoice line net amount.	Document totals	BT-106

ID – Unique id for each business rule

Description – textual description of the rule

Target/Context – the cgroup/class for where the rule applies

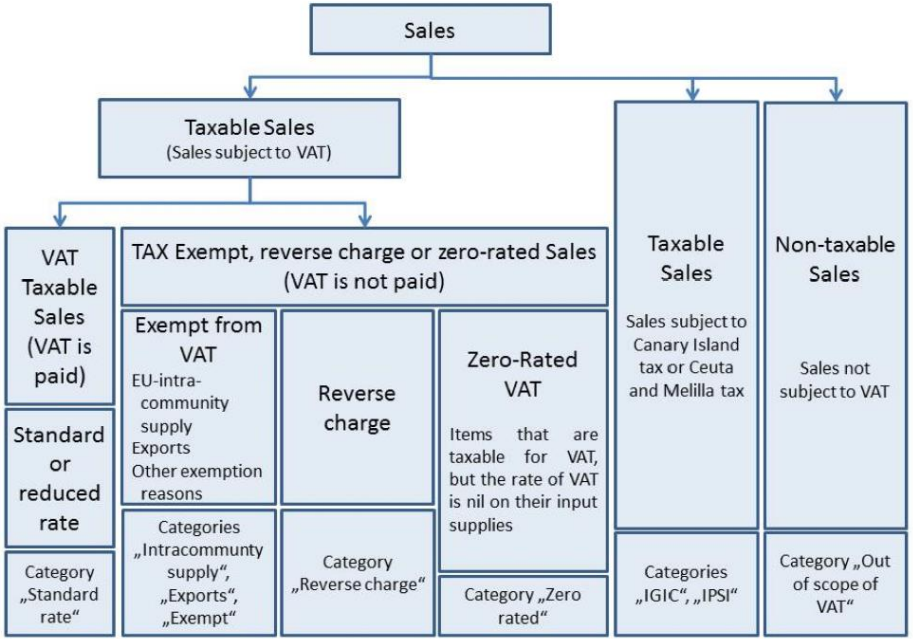
Business term/group – reference to the term for which the rule applies

EN 16931-1:2017 Chapter 6.4.2

European Commission

Business rules – VAT Rules

- VAT Rules – Rules for each VAT category



ID	Description
BR-Z-1	An Invoice that contains a line, a document level allowanc where the Invoiced item VAT category code (BT-151, BT- shall contain in the VAT breakdown (BG-23) exactly one equal with “Zero rated”.
BR-Z-2	An Invoice that contains a line where the Invoiced item VAT category code (BT-151) is “Zero rated” shall contain the Sellers VAT Identifier (BT-31), the Seller Tax registration identifier (BT-32) or the Seller tax representative VAT identifier (BT-63).
BR-Z-3	An Invoice that contains a document level allowance where the Invoiced item VAT category code (BT-95) is “Zero rated” shall contain the Sellers VAT Identifier (BT-31), the Seller Tax registration identifier (BT-32) or the Seller tax representative VAT identifier (BT-63).

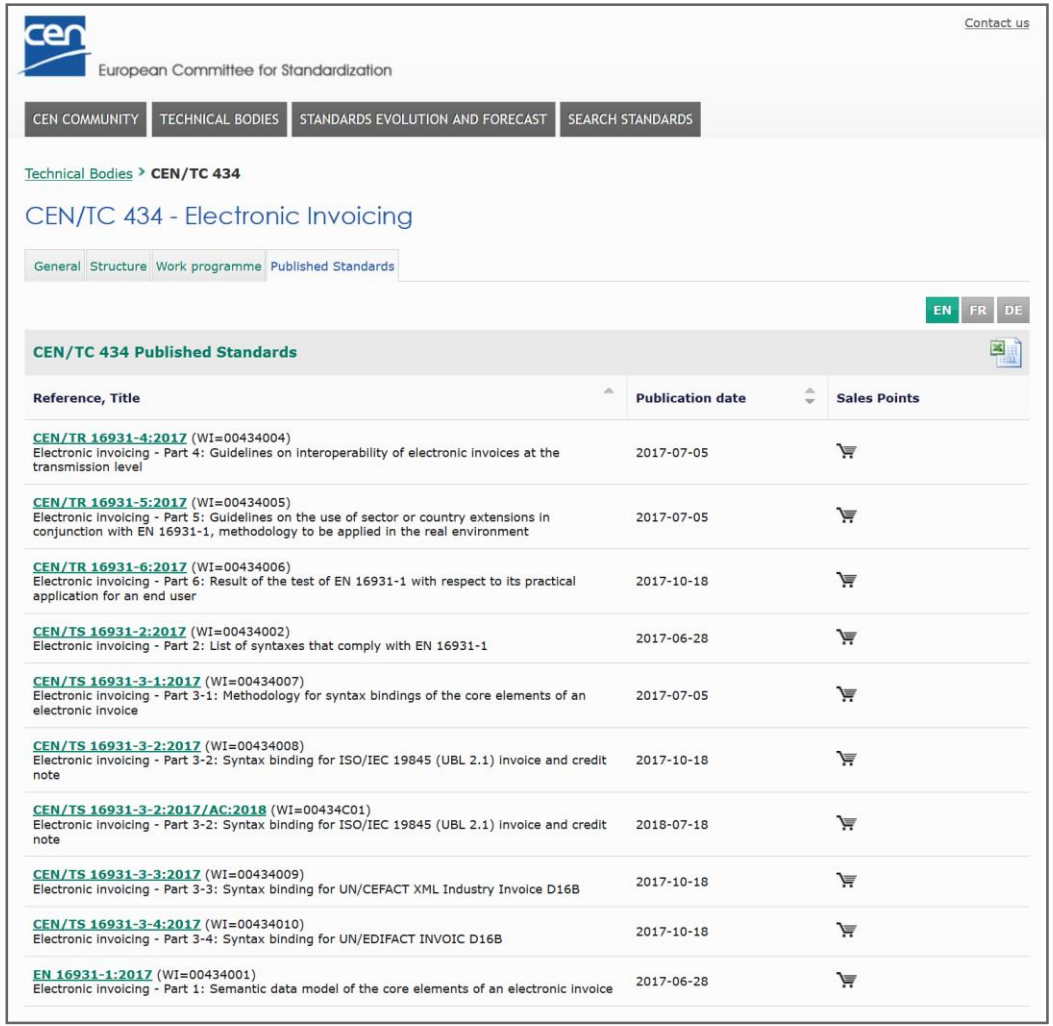
EN 16931-1:2017 Chapter 6.4.3

European Commission

Access to the specifications

EC is sponsoring access – to the EN and the list of syntaxes. These specifications are available for free download

The other specifications must still be purchased



Contact us

European Committee for Standardization

CEN COMMUNITY | TECHNICAL BODIES | STANDARDS EVOLUTION AND FORECAST | SEARCH STANDARDS

Technical Bodies > **CEN/TC 434**

CEN/TC 434 - Electronic Invoicing

General | Structure | Work programme | Published Standards

EN | FR | DE

CEN/TC 434 Published Standards

Reference, Title	Publication date	Sales Points
CEN/TR 16931-4:2017 (WI=00434004) Electronic invoicing - Part 4: Guidelines on interoperability of electronic invoices at the transmission level	2017-07-05	
CEN/TR 16931-5:2017 (WI=00434005) 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	2017-07-05	
CEN/TR 16931-6:2017 (WI=00434006) Electronic invoicing - Part 6: Result of the test of EN 16931-1 with respect to its practical application for an end user	2017-10-18	
CEN/TS 16931-2:2017 (WI=00434002) Electronic invoicing - Part 2: List of syntaxes that comply with EN 16931-1	2017-06-28	
CEN/TS 16931-3-1:2017 (WI=00434007) Electronic invoicing - Part 3-1: Methodology for syntax bindings of the core elements of an electronic invoice	2017-07-05	
CEN/TS 16931-3-2:2017 (WI=00434008) Electronic invoicing - Part 3-2: Syntax binding for ISO/IEC 19845 (UBL 2.1) invoice and credit note	2017-10-18	
CEN/TS 16931-3-2:2017/AC:2018 (WI=00434C01) Electronic invoicing - Part 3-2: Syntax binding for ISO/IEC 19845 (UBL 2.1) invoice and credit note	2018-07-18	
CEN/TS 16931-3-3:2017 (WI=00434009) Electronic invoicing - Part 3-3: Syntax binding for UN/CEFACT XML Industry Invoice D16B	2017-10-18	
CEN/TS 16931-3-4:2017 (WI=00434010) Electronic invoicing - Part 3-4: Syntax binding for UN/EDIFACT INVOIC D16B	2017-10-18	
EN 16931-1:2017 (WI=00434001) Electronic invoicing - Part 1: Semantic data model of the core elements of an electronic invoice	2017-06-28	

Syntaxes which comply with the European standard on eInvoicing

Martin Forsberg

DIGIT

Many syntaxes – a problem?

- There are a large number of syntaxes in use
- Many communities are already using e-invoicing since a long time
- Use of many syntaxes result in interoperability problems

(9)
In order to further simplify the use of electronic invoicing and to reduce costs, one of the long-term objectives should be to **limit the number of syntaxes used**, preferably by concentrating on those most commonly used.

Article 3
Establishment of a European standard
…
The Commission shall request that the relevant European standardisation organisation **provide a list with a limited number of syntaxes** which comply with the European standard on electronic invoicing, the appropriate syntax bindings and guidelines on transmission interoperability, in order to facilitate the use of such standard.

Article 7
Receipt and processing of electronic invoices
Member States shall ensure that contracting authorities and contracting entities receive and process electronic invoices which comply with the European standard on electronic invoicing whose reference has been published pursuant to Article 3(2) and with **any of the syntaxes on the list** published pursuant to Article 3(2).

The standardization request from EC defined a number of criteria

Req ID	Requirement of sub-requirement
1	Comply with the core invoice semantic data model specified in the EN
2	Be international, open and free to use
3	Have a governance and sustainability model
3.1	There is an established organisation maintaining the syntax (format)
3.2	There is a maintenance process that is: - documented with defined participation and voting rules; - governed; - open to participation for stakeholders.
3.3	There is a funding model allowing further development and maintenance.
3.4	Support can be provided (consulting, educating, training) to solution providers (implementers) or users (companies, PAs etc.).
4	Be part of a coherent set of standards and technical specifications to support the broader e-procurement process or the broader e-invoicing supply chain
5	Be widely used in the EU or worldwide
6	Be used in production environments (and not just test) by both the public and the private sector
7	Reflect well-accepted technology and aim to incorporate the latest technological developments considered to be state of the art
8	Have guidelines, code lists, validating tools freely available to ease implementation by ICT vendors and suppliers
9	Have a set of official, freely available syntax-dependent artefacts for validation (the XML Schema or Schematron) to support tool independent validation
10	Have an official updating and versioning strategy that takes due account of backward compatibility, as well as appropriate guidelines for customisation that explain how to extend and restrict the syntax

Specifications from CEN/TC434

Reference	WG	Title
EN 16931-1	WG1	Electronic invoicing - Part 1: Semantic data model of the core elements of an electronic invoice
TS 16931-2	WG2	Electronic invoicing - Part 2: List of syntaxes that comply with EN 16931-1
TS 16931-3-1	WG3	Electronic invoicing - Part 3-1: Methodology for syntax bindings of the core elements of an electronic invoice
TS 16931-3-2	WG3	Electronic invoicing - Part 3-2: Syntax binding for ISO/IEC 19845 (UBL 2.1) invoice and credit note
TS 16931-3-3	WG3	Electronic invoicing - Part 3-3: Syntax binding for UN/CEFACT XML Cross Industry Invoice D16B
TS 16931-3-4	WG3	Electronic invoicing - Part 3-4: Syntax binding for UN/EDIFACT INVOIC D16B
~~TS 16931-3-5~~	~~WG3~~	~~Electronic invoicing - Part 3-5: Syntax binding for the Financial Invoice based on ISO 20022~~
TR 16931-4	WG4	Electronic invoicing - Part 4: Guidelines on interoperability of electronic invoices at the transmission guideline
TR 16931-5	WG5	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
TR 16931-6	WG6	Electronic invoicing - Part 6: result of the test of EN 16931-1 with respect to its practical application for an end user

Specifications from CEN/TC434

Reference	WG	Title
EN 16931-1	WG1	Electronic invoicing - Part 1: Semantic data model of the core elements of an electronic invoice
TS 16931-2	WG2	Electronic invoicing - Part 2: List of syntaxes that comply with EN 16931-1
TS 16931-3-1	WG3	Electronic invoicing - Part 3-1: Methodology for syntax bindings of the core elements of an electronic invoice
TS 16931-3-2	WG3	Electronic invoicing - Part 3-2: Syntax binding for ISO/IEC 19845 (UBL 2.1) invoice and credit note
TS 16931-3-3	WG3	Electronic invoicing - Part 3-3: Syntax binding for UN/CEFACT XML Cross Industry Invoice D16B
TS 16931-3-4	WG3	Electronic invoicing - Part 3-4: Syntax binding for UN/EDIFACT INVOIC D16B
~~TS 16931-3-5~~	~~WG3~~	~~Electronic invoicing - Part 3-5: Syntax binding for the Financial Invoice based on ISO 20022~~
TR 16931-4	WG4	Electronic invoicing - Part 4: Guidelines on interoperability of electronic invoices at the transmission guideline
TR 16931-5	WG5	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
TR 16931-6	WG6	Electronic invoicing - Part 6: result of the test of EN 16931-1 with respect to its practical application for an end user

Specifications from CEN/TC434

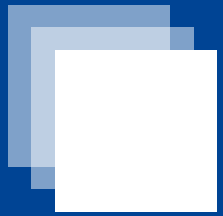
Reference	WG	Title
EN 16931-1	WG1	Electronic invoicing - Part 1: Semantic data model of the core elements of an electronic invoice
TS 16931-2	WG2	Electronic invoicing - Part 2: List of syntaxes that comply with EN 16931-1
TS 16931-3-1	WG3	Electronic invoicing - Part 3-1: Methodology for syntax bindings of the core elements of an electronic invoice
TS 16931-3-2	WG3	Electronic invoicing - Part 3-2: Syntax binding for ISO/IEC 19845 (UBL 2.1) invoice and credit note
TS 16931-3-3	WG3	Electronic invoicing - Part 3-3: Syntax binding for UN/CEFACT XML Cross Industry Invoice D16B
TS 16931-3-4	WG3	Electronic invoicing - Part 3-4: Syntax binding for UN/EDIFACT INVOIC D16B
~~TS 16931-3-5~~	~~WG3~~	~~Electronic invoicing - Part 3-5: Syntax binding for the Financial Invoice based on ISO 20022~~
TR 16931-4	WG4	Electronic invoicing - Part 4: Guidelines on interoperability of electronic invoices at the transmission guideline
TR 16931-5	WG5	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
TR 16931-6	WG6	Electronic invoicing - Part 6: result of the test of EN 16931-1 with respect to its practical application for an end user

Which syntaxes are predominant in your work?

A closer look at UBL and CII

For both UBL 2.1 and UN/CEFACT Cross Industry Invoice

- Overview of the Specifications, XML-schemas and other resources
- Use of namespaces, versioning and document types
- Handling of code lists
- Typical message design and key syntactical features



UBL Version 2.1 – ISO/IEC 19845:2015

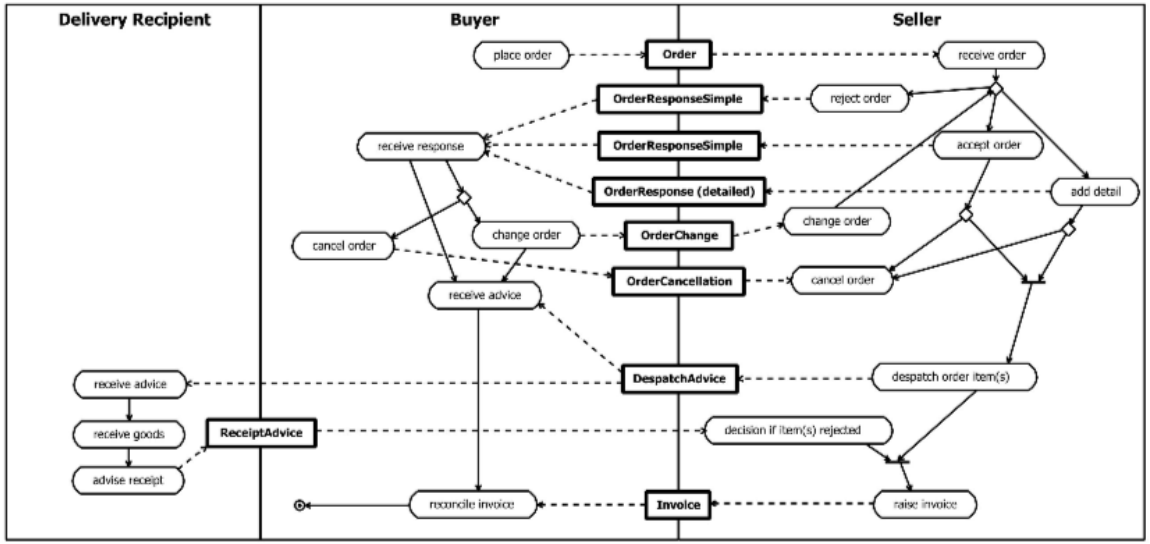
Overview of the standard

- UBL stands for Universal Business Language
- OASIS UBL 2.1 is developed and maintained by the UBL Technical Committee within OASIS
- UBL is an ISO-standard (ISO/IEC 19845-2015)

- UBL was developed with starting point in the CBL/xCBL format
- Sweden and Denmark early adopters around 2003-2004

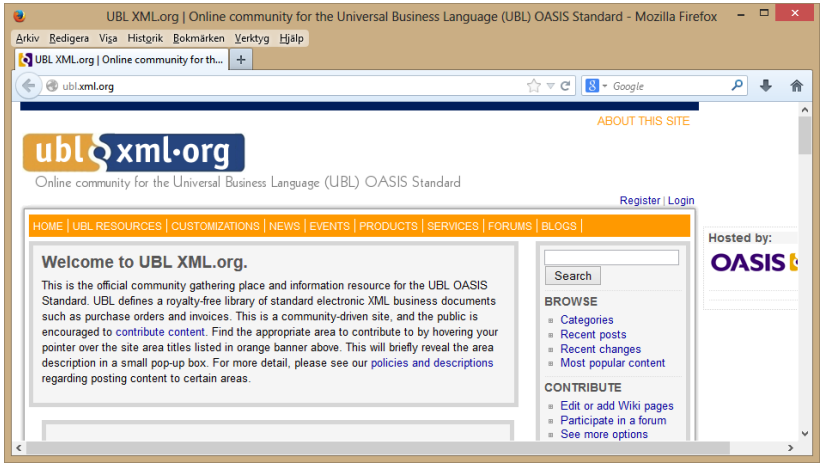
UBL 1.0

- Published 2004
- Order To Invoice (8 Documents)
- >600 elements in common library



UBL 2.0

- 31 business documents
- >1900 elements in common library
- Input from European projects
- Published 2006



Sourcing (product and price synchronization)

- Catalogue Request, Catalogue, Catalogue Item Specification Update,
- Catalogue Pricing Update, Catalogue Deletion, Request For Quotation, Quotation

Fulfilment (shipping)

- Forwarding Instructions, Packing List, Bill Of Lading, Waybill, Certificate Of Origin
- Transportation Status

Billing

- Credit Note, Debit Note, Self Billed Invoice, Self Billed Credit Note, Freight
- Invoice, Reminder

Payment

- Remittance Advice, Statement

Additional document types

- Application Response, Attached Document

UBL 2.1

- 62 business documents
- Library of >2300 elements
- Built based on input from projects like CEN/BII, PEPPOL, ePRIOR and freight management projects
- Backward compatible with UBL 2.0.
  - Any XML-instance produced based on UBL 2.0 will validate using UBL 2.1

Additional guidelines

- Customization Methodology
- Genericode Code list support
- Digital signature extension (XAdES)

Sourcing (product and price synchronization)
- Catalogue Request, Catalogue, Catalogue Item Specification Update,
- Catalogue Pricing Update, Catalogue Deletion, Request For Quotation, Quotation

Fulfilment (shipping)
- Forwarding Instructions, Packing List, Bill Of Lading, Waybill, Certificate Of Origin
- Transportation Status ,Fulfilment Cancellation

Billing
- Invoice, Credit Note, Debit Note, Self Billed Invoice, Self Billed Credit Note, Freight Invoice, Reminder

Payment
- Remittance Advice, Statement

Tendering
- Awarded Notification, Call for Tenders, Contract Award Notice, Contract Notice
- Guarantee Certificate, Prior Information Notice, Tender, Tender Receipt
- Tenderer Qualification, Tenderer Qualification Response, Unawarded Notification

VICS Collaborative Planning, Forecasting, and Replenishment
- Exception Criteria, Exception Notification, Forecast, Forecast Revision
- Item Information Request, Product Activity

Vendor Managed Inventory
- Instruction for Returns, Inventory Report, Retail Event, Stock Availability Report
- Trade Item Location Profile

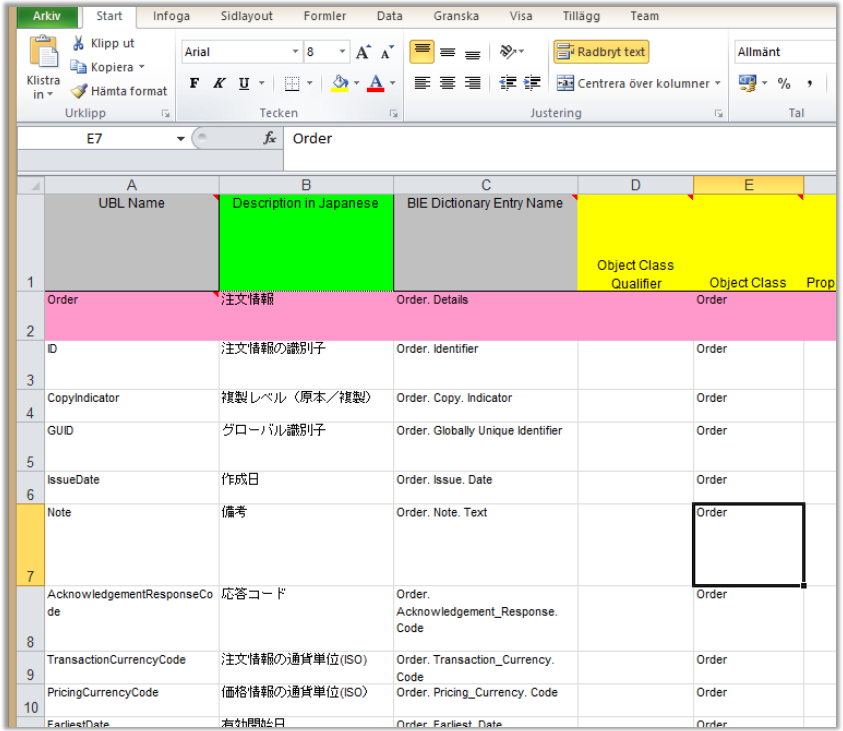
Intermodal Freight Management
- Goods Item Itinerary, Packing List, Transport Execution Plan, Transport Execution Plan Request
- Transport Progress Status, Transport Progress Status Request, Transport Service Description
- Transport Service Description Request, Transportation Status, Transportation Status Request

Utility Billing
- Utility Statement

Additional Documents
- Application Response, Attached Document
- Document Status, Document Status Request

Localization

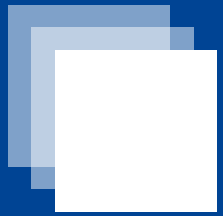
- UBL TC has a number of localization subcommittees
- Translated business term names and definitions
- UBL 1 is translated into
  - Chinese (traditional and simplified)
  - Japanese
  - Korean
  - Spanish
  - Italian
- UBL 2 is translated into
  - Italian
  - Spanish
  - German
  - Slovak
- And partially to
  - Danish
  - Turkish
  - Hungarian
  - Lithuanian



	A	B	C	D	E
1	UBL Name	Description in Japanese	BIE Dictionary Entry Name	Object Class Qualifier	Object Class Prop
2	Order	注文情報	Order. Details		Order
3	ID	注文情報の識別子	Order. Identifier		Order
4	CopyIndicator	複製レベル（原本／複製）	Order. Copy. Indicator		Order
5	GUID	グローバル識別子	Order. Globally Unique Identifier		Order
6	IssueDate	作成日	Order. Issue. Date		Order
7	Note	備考	Order. Note. Text		Order
8	AcknowledgementResponseCode	応答コード	Order. Acknowledgement_Response. Code		Order
9	TransactionCurrencyCode	注文情報の通貨単位(ISO)	Order. Transaction_Currency. Code		Order
10	PricingCurrencyCode	価格情報の通貨単位(ISO)	Order. Pricing_Currency. Code		Order
	EarliestDate	有効開始日	Order. Earliest. Date		Order

Use of namespaces, versioning and document types

- Each document type has its unique Namespace
  - **Invoice**: urn:oasis:names:specification:ubl:schema:xsd:Invoice-2
  - **CreditNote**: urn:oasis:names:specification:ubl:schema:xsd:CreditNote-2
- Only major version of UBL is ”visible” in namespace
- Minor version number is stated in the message: <cbc:UBLVersionID>2.1</cbc:UBLVersionID>



UN/CEFACT Cross Industry Invoice D16B

Overview of the standard

- CII stands for Cross Industry Invoice
- CII is developed and maintained by UN/CEFACT
- UN/CEFACT serves as the focal point for trade facilitation recommendations and electronic business standards, covering both commercial and government business processes that can foster growth in international trade and related services.
- UN/CEFACT develops and maintains UN/EDIFACT, XML Schemas, Code lists and a number of UNECE Recommendations (such as Recommendation N°. 20 - Codes for Units of Measure)

Cross Industry messages

- Version 1 published 2009 (as part of D09A)
- In D09B, Cross Industry Order, Catalogue and DespatchAdvice were added
- New schemas are normally published 2 times a year
- Since 2016, UN/CEFACT publishes two branches of the Cross Industry Invoice XML Schemas
- One branch following the same method as before. Currently it contains 16 different Cross Industry (messages) XML schemas
- One branch called the Supply Chain Reference Data Model (SCRDM) which are process-driven schemas derived from the model. Currently it only contains the Cross Industry Invoice-message

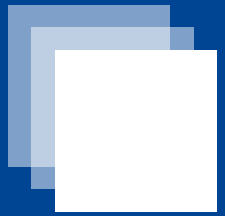
XML Schemas

Issued	Document Title	Download
2017	XML Schemas version 17B	ZIP
	Validation Report	PDF
2017	XML Schemas version 17A	ZIP
	Validation Report	PDF
2016	XML Schemas 16B (SCRDM - CII)	ZIP
	XML Schemas version 16B	ZIP
	Validation Report	PDF
	Release notes	PDF
2016	XML Schemas update 16A.1 (SCRDM - CII)	ZIP
	XML Schemas version 16A	ZIP
	Validation Report	PDF
	Release notes	PDF
2015	XML Schemas version 15B	ZIP
	Validation Report	PDF
	Release notes	PDF
2015	XML Schemas version 15A	ZIP
	Validation Report	PDF
	Release notes	PDF
2015	XML Schemas version 14B	ZIP
	Validation report	PDF
	Release notes	PDF
2014	XML Schemas version 13B	ZIP
	Validation report	PDF

Use of namespaces, versioning and document types

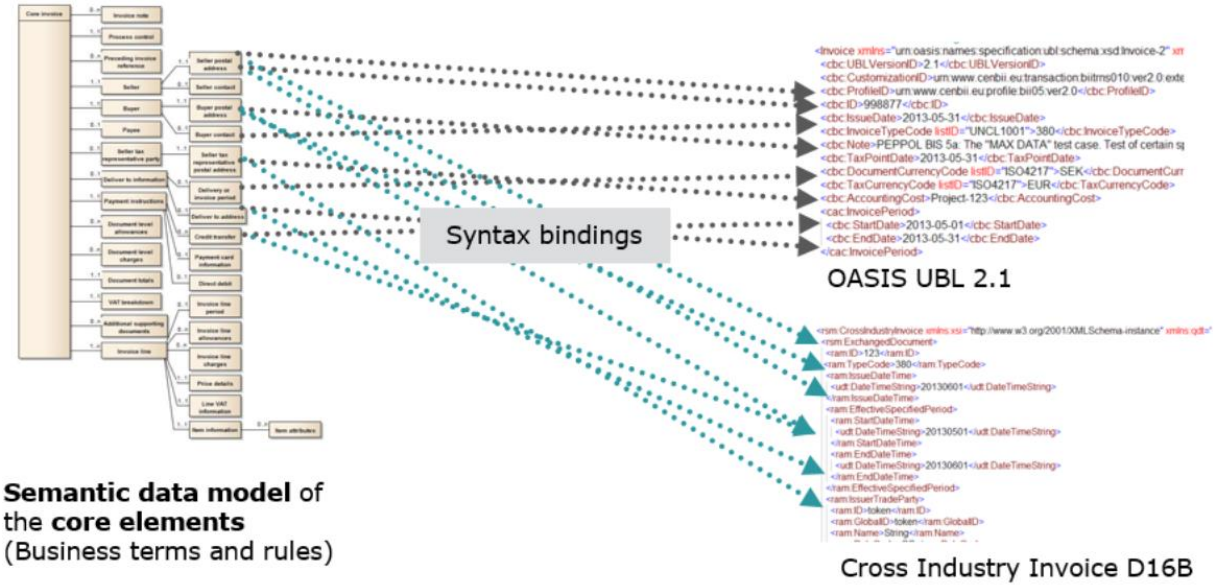
- Each document type has its unique Namespace (Invoice and CreditNote use the same schema)
  - **SCRDM branch CrossIndustryInvoice**: urn:un:unece:uncefact:data:standard:CrossIndustryInvoice:100
  - **”Old” branch CrossIndustryInvoice**: urn:un:unece:uncefact:data:standard:CrossIndustryInvoice:13

- The List of syntaxes that comply with EN 16931-1 has evaluated and includes the SCRDM-version



Syntax bindings

Syntax binding specifications



Syntax binding – Semantic model → Syntax

ID	Level	Card.	BT	Desc.	DT	Path	Type	Card.	Match	Rules
BT-1	1	1..1	Invoice number	A unique identification of the Invoice.	I	/Invoice/cbc:ID	I	1..1		
BT-2	1	1..1	Invoice issue date	The date when the Invoice was issued.	D	/Invoice/cbc:IssueDate	D	1..1		
BT-3	1	1..1	Invoice type code	A code specifying the functional type of the Invoice.	C	/Invoice/cbc:InvoiceTypeCode	C	0..1	CAR-2	
BT-5	1	1..1	Invoice currency code	The currency in which all Invoice amounts are given, except for the Total VAT amount in accounting currency.	C	/Invoice/cbc:DocumentCurrencyCode	C	0..1	CAR-2	
BT-6	1	0..1	VAT accounting currency code	The currency used for VAT accounting and reporting purposes as accepted or required in the country of the Seller.	C	/Invoice/cbc:TaxCurrencyCode	C	0..1	SEM-2	

Syntax binding – Syntax → Semantic model

Path	Card.	ID	Level	Card.	BT	Desc.	DT
/Invoice							
/Invoice/cbc:CustomizationID	0..1	BT-24	2	1..1	Specification identifier	An identification of the specification containing the total set of rules regarding semantic content, cardinalities and business rules to which the data contained in the instance document conforms.	I
/Invoice/cbc:ProfileID	0..1	BT-23	2	0..1	Business process type	Identifies the business process context in which the transaction appears, to enable the Buyer to process the Invoice in an appropriate way.	T
/Invoice/cbc:ID	1..1	BT-1	1	1..1	Invoice number	A unique identification of the Invoice.	I
/Invoice/cbc:IssueDate	1..1	BT-2	1	1..1	Invoice issue date	The date when the Invoice was issued.	D
/Invoice/cbc:DueDate	0..1	BT-9	1	0..1	Payment due date	The date when the payment is due.	D
/Invoice/cbc:InvoiceTypeCode	0..1	BT-3	1	1..1	Invoice type code	A code specifying the functional type of the Invoice.	C

Not a simple pair matching game

- Not all business terms can be mapped to a single element, often qualifiers are necessary
- The syntaxes have different structures and order of elements
- The syntaxes may have different cardinalities or even datatypes

- The syntax mappings have additional and separate validation rules

Usage specifications and compliance

Martin Forsberg
DIGIT

Compliance and conformance - The European standard defines these concepts

Compliant
some or all features of the core invoice model are used and all rules of the core invoice model are respected

Conformant
all rules of the core invoice model are respected and some additional features not defined in the core invoice model are also used

Core Invoice Usage Specifications

Extensions

From article 7 in the directive

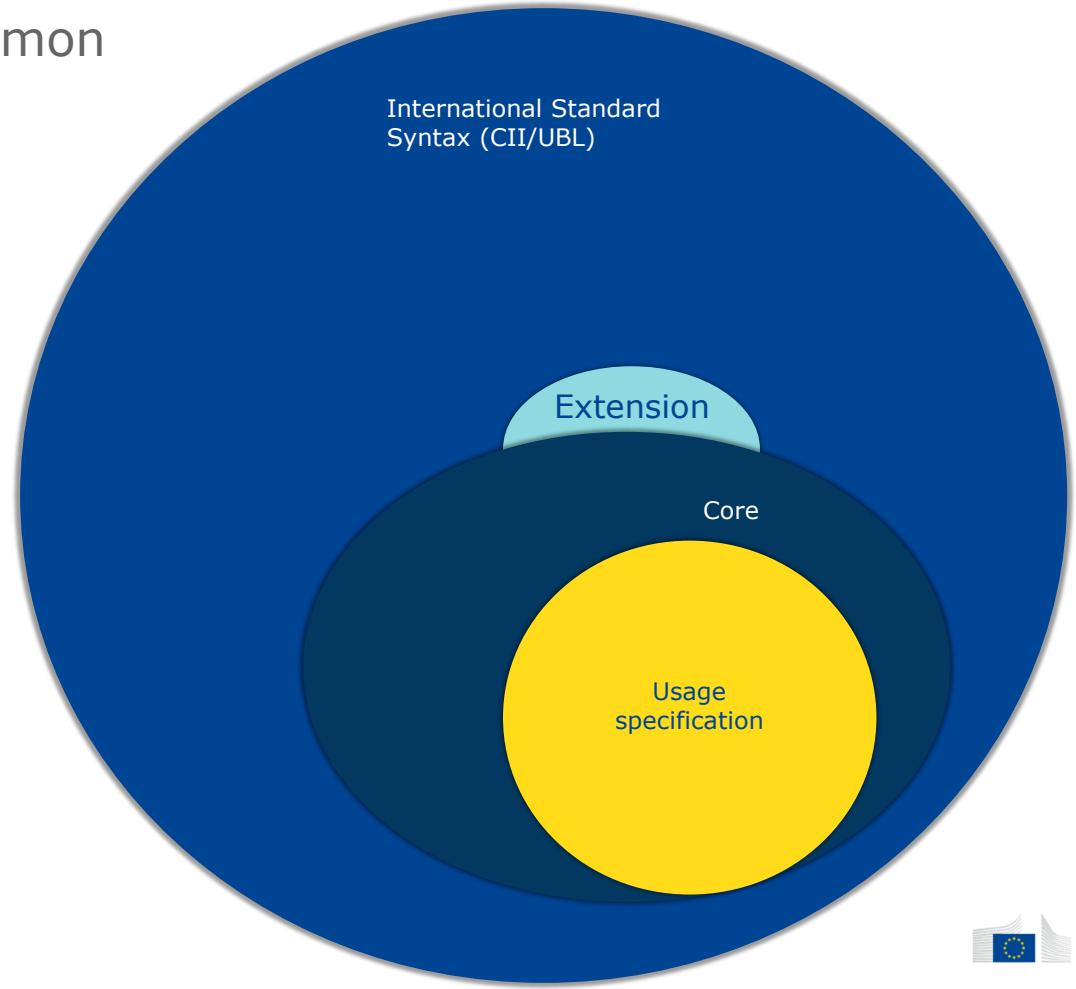
Receipt and processing of electronic invoices

*Member States shall ensure that contracting authorities and contracting entities receive and process electronic invoices which **comply** with the European standard on electronic invoicing whose reference has been published pursuant to Article 3(2) and with any of the syntaxes on the list published pursuant to Article 3(2).*

Core – something in common

IMPORTANT

An invoice which follows a CIUS MUST ALWAYS also be compliant towards the (non-restricted) norm.



Requirements for the contracting authorities/entities

From article 7

Receipt and processing of electronic invoices

Member States shall ensure that contracting authorities and contracting entities ***receive and process electronic invoices which comply with the European standard on electronic invoicing*** *whose reference has been published pursuant to Article 3(2) and with any of the syntaxes on the list published pursuant to Article 3(2).*

Claiming compliance towards the norm

Compliance of sending or receiving party

*A receiving party may only claim compliance to the core invoice model if he accepts invoices that comply with the core invoice model in general**, or with a CIUS**, that is itself compliant with the core invoice model.*

EN 16931-1:2017 Chapter 7

What is allowed to restrict in a Core Invoice Usage Specification

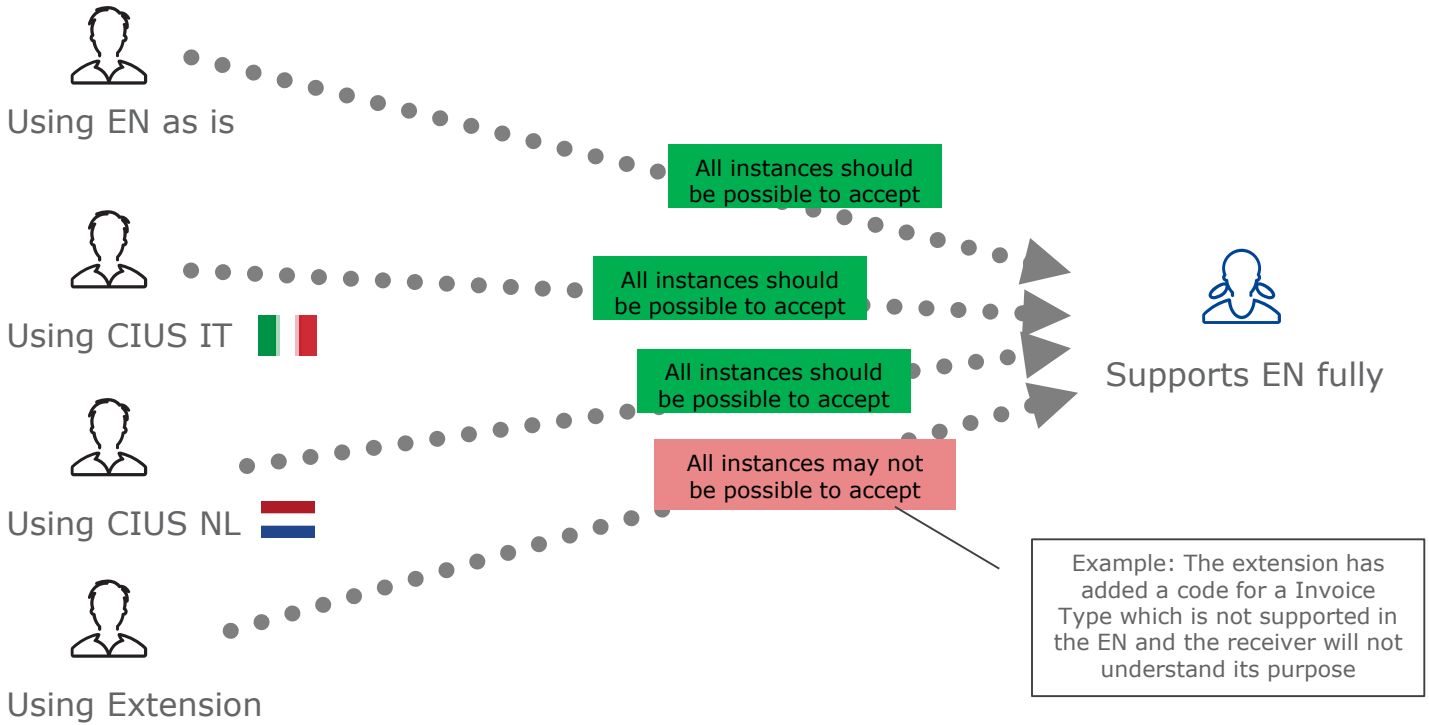
- ”Forbid” optional elements 0..n/0..1 ➔ 0..0
- Make definition narrower
- Add synonyms or explanatory text
- Make optional element mandatory
- Limit allowed number of repetitions
- Change data type to narrower representation (alphanumeric ➔ numeric)
- Limited allowed code values
- Add additional business rules or make existing more restrictive
- Restrict field lengths
- Require certain formatting on values
- Restrict number of decimals/fractions

IMPORTANT

An invoice which follows a CIUS MUST ALWAYS also be compliant towards the (non-restricted) norm.

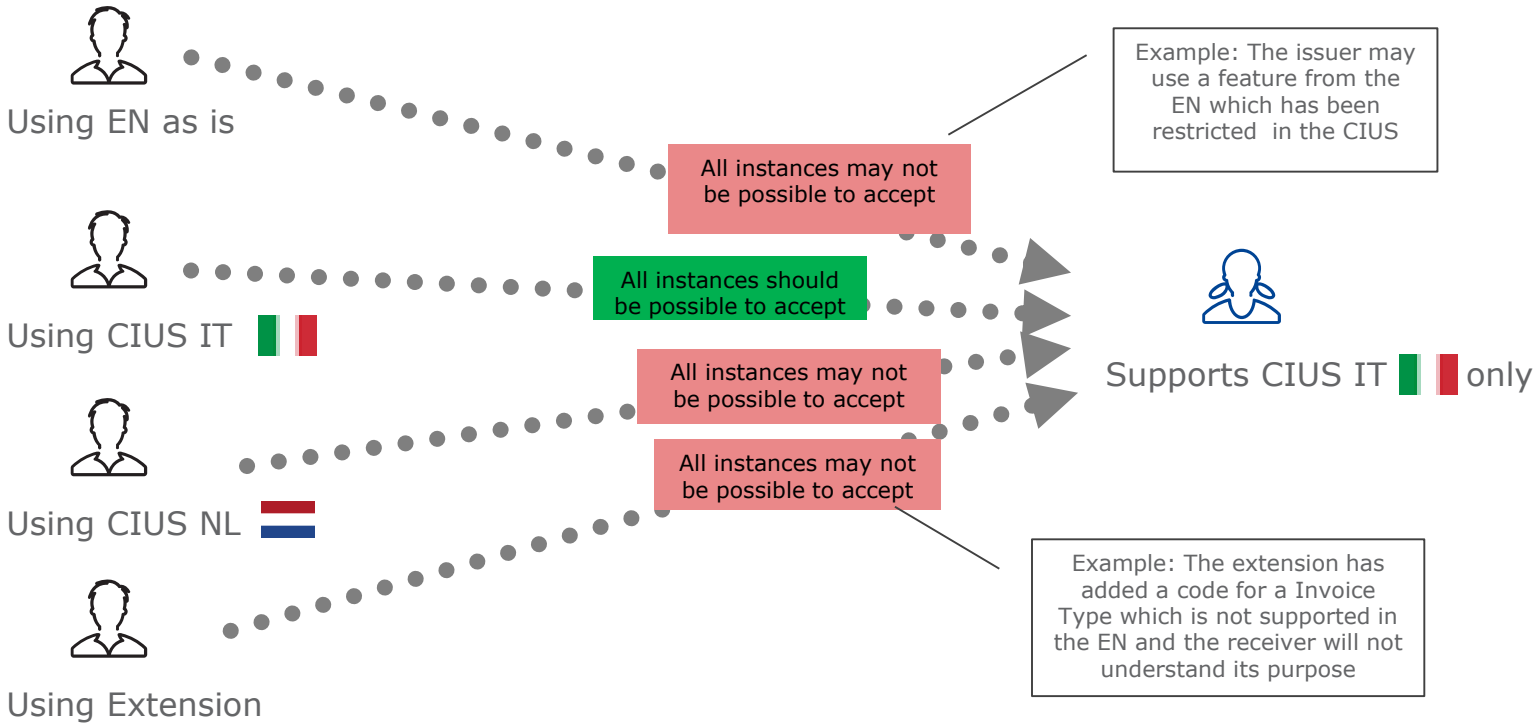
EN 16931-1:2017 Chapter 7

A few scenarios



Assuming the invoices are conformant against its specifcation (EN/CIUS/Extension)

A few more scenarios



Assuming the invoices are conformant against its specifcation (EN/CIUS/Extension)

UC eInvoicing User Community

SPACE SHORTCUTS
CEF Knowledge Base

PAGE TREE
- eInvoicing news & events
- Forum
- Contribute
  - CEF eInvoicing Implementation Work
  - Guidance Paper for EU public admini
  - eInvoicing Pioneer Group
  - **Community-driven Registry of CIU**
  - Catalogue of Good Practices to supp
  - Older posts (CONTRIBUTE)
  - Follow-up actions after the CEF eInvc
- Archive
- Meta
- Links

Pages > eInvoicing User Community > Contribute

Community-driven Registry of CIUS (Core Invoice Usage Specifications) and Extensions

Created by Ines COSTA, last modified by Philip HELGER on Oct 29, 2018

Topic	Registry of CIUS (Core Invoice Usage Specifications) and Extensions
Excerpt	This page aims to give the eInvoicing community the opportunity to share the ongoing and planned initiatives across Member States and sectors to create CIUS and Extensions on the European standard on eInvoicing.
Status	OPEN
Deadline	Ongoing

Provide information on CIUS and Extensions

The table below aims to give the eInvoicing community the opportunity to share the ongoing and planned initiatives across Member States and sectors to create CIUS and Extensions on the European standard on eInvoicing. The content is community-driven and the contributors take the sole responsibility of the information shared. Please note that the information available does not have an authoritative character.

We invite you to contribute to build on the information available about the CIUS and Extensions on the European standard on eInvoicing by filling the table below:

Name	Type	Country	Sector	Purpose of the CIUS or Extension	Publisher	Governor	Underlying specification	Further info	Status	Contact
OpenPEPPOL BIS 3.0 5A	CIUS	Any	Any	Restricts the business process scope of the EN with reference to BIS2 business processes.	OpenPEPPOL	OpenPEPPOL	EN16931	http://docs.peppol.eu/poacc/billing/3.0/	ACTIVE	@Olav Astad KRISTIANSEN
Icelandic national CIUS	CIUS	IS	Any	Applies national regulations and imposes data format to payment instructions when using national payment clearing services.	IST	ISgov	PEPPOL BIS 3.0 5A	http://www.stadlar.is/stadlastarf/fagstadlarad-i-upplysingataekni.aspx	DEVELOPMENT	@Georg BIRGISSON
Austrian national CIUS	CIUS	AT	Any	Apply national regulations	BRZ	BRZ	EN16931	Publication on eRechnung.gv.at asap	ACTIVE	@Philip HELGER
Austrian government CIUS	CIUS	AT	Any	Additional regulations only applying to the mandatory government interface. This CIUS builds on top of the Austrian national CIUS!	BRZ	BRZ	AT national CIUS	Publication on eRechnung.gv.at asap	ACTIVE	@Philip HELGER
Energy eInvoice	Extension	NL	Energy	Enables the addition of information concerning: 1) Measured energy use, including meter info, meter readings, fuel type etc. 2) VAT specification for more than one party, which is a consequence of the so called supplier-centered model.	Energy eInvoice steering committee	Energy eInvoice steering committee	Simplerinvoicing (SI-UBL)	https://energie-efactuur.nl/en/	DEVELOPMENT	Wouter van den Berg (TNO)
Italian national CIUS	CIUS	IT	Any	Applies national regulations and restricts data format in compliance with eInvoice national format (FatturaPA)	AgID, AdE	AgID, AdE	EN16931	http://www.agid.gov.it/agenda-digitale/pubblica-amministrazione/cef-telecom-einvoicing-eigor	DEVELOPMENT	Fabio MASSIMI
NLCIUS	CIUS	NL	Any	Applies national regulations and conventions. The purpose of the NLCIUS is to prevent the need for any other NL	NEN / SMeF	NEN / SMeF	EN16931	NLCIUS is a joint initiative of government, industry and	ACTIVE	Michiel Stornebrink (TNO)

General rules and country-qualified rules

- A **general rule** applies for all invoices
  - The rule is triggered by the existence of a spefic business term

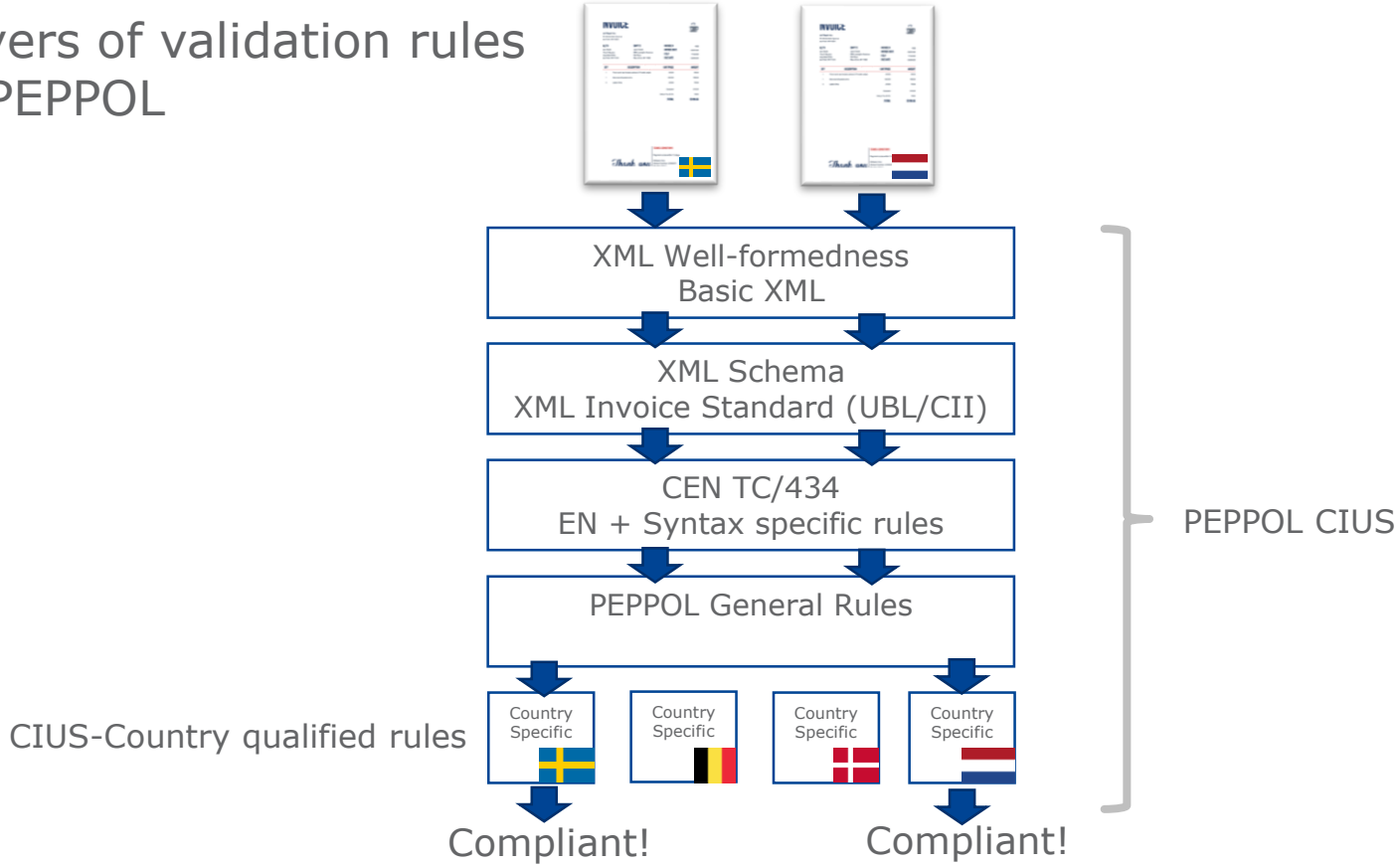
Rule text from the standard
In an Invoice line where the Invoice item VAT category code (BT-151) is "Export outside the EU" the Invoiced item VAT rate (BT-152) shall be 0 (zero).
Context (what triggers the rule)
Existence of
InvoiceLine/Item/ClassifiedTax/CategoryCode='XYZ'

Example rule text from a CIUS
The Seller Name must not have more than 50 characters
Context (what triggers the rule)
Existence of
Seller/Name

- A **country-qualified rule** applies only for invoices issued in a specific country
  - The rule is triggered by the given country code of the seller

Example rule text from a Country specific CIUS
When the Seller is Swedish, the Legal Registration Number must be numeric with 10 digits.
Context (what triggers the rule)
Existence of
Seller/Address/CountryCode='SE'
AND existence of
Seller/LegalRegistrationNumber

Layers of validation rules in PEPPOL



National rules in PEPPOL CIUS

To avoid creation of national CIUS'es:

- affected based on the country of the seller.
- Don't affect invoices issued in other countries.
- PEPPOL Authority responsible

Appendix C: National rules

The following rules have been defined by PEPPOL Authorities in addition to the rules for PEPPOL BIS in general. These rules are affected based on the country of the seller, and will not affect invoices issued in other countries. They apply in **all** profiles that use this transaction specification.

National rules are provided by each country's PEPPOL Authority, and if you need any changes or additions to these rules, please contact your PEPPOL Authority.

Table 18. National transaction business rules

Rule	Message/Context/Test
DK-R-001 **(warning)**	**For Danish suppliers when the Accounting code is known, it should be referred on the Invoice.**
	ubl-creditnote:CreditNote | ubl-invoice:Invoice
	not(cac:AccountingSupplierParty/cac:Party/cac:PostalAddress/cac:Country/cbc:IdentificationCode = 'DK' and (normalize-space(cbc:AccountingCost/text()) = ''))
DK-R-002 **(fatal)**	**Danish suppliers MUST provide legal entity (CVR-number).**
	ubl-creditnote:CreditNote | ubl-invoice:Invoice
	not(cac:AccountingSupplierParty/cac:Party/cac:PostalAddress/cac:Country/cbc:IdentificationCode = 'DK' and (normalize-space(./cac:AccountingSupplierParty/cac:Party/cac:PartyLegalEntity/cbc:CompanyID/text()) = ''))

Example - Swedish rules

- Formats for VAT and organisation numbers
- Swedish VAT rates
- Tax registration F-Skatt
- Payment means Bankgiro and Plusgiro

SE-R-001 For Swedish suppliers, Swedish VAT-numbers must consist of 14 characters.	fatal
SE-R-002 For Swedish suppliers, the Swedish VAT-numbers must have the trailing 12 characters in numeric form	fatal
SE-R-003 Swedish organisation numbers should be numeric.	fatal
SE-R-004 Swedish organisation numbers consist of 10 characters.	fatal
SE-R-005 For Swedish suppliers, when using Seller tax registration identifier, 'Godkänd för F-skatt' must be stated	fatal
SE-R-006 For Swedish suppliers, only standard VAT rate of 6, 12 or 25 are used	fatal
SE-R-007 For Swedish suppliers using Plusgiro, the Account ID must be numeric	warning
SE-R-008 For Swedish suppliers using Bankgiro, the Account ID must be numeric	warning
SE-R-009 For Swedish suppliers using Bankgiro, the Account ID must have 7-8 characters	warning
SE-R-010 For Swedish suppliers using Plusgiro, the Account ID must have 2-8 characteres	warning
SE-R-011 For Swedish suppliers using Swedish Bankgiro or Plusgiro, the proper way to indicate this is to use Code 30 for PaymentMeans and FinancialInstitutionBranch ID with code SE:BANKGIRO or SE:PLUSGIRO	warning

XML validation mechanisms

Martin Forsberg
DIGIT

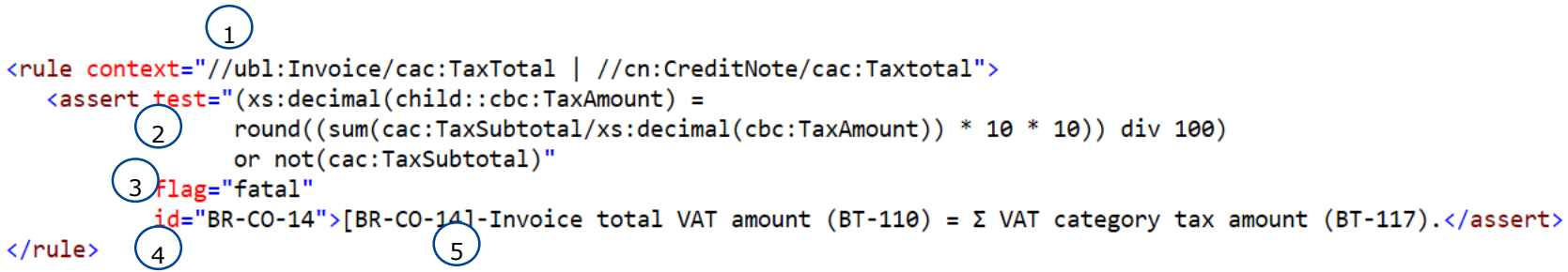
Schematron

- Rule based validation language for XML documents
- ISO-standard
- Can test dependencies between elements/attributes such as:
  - If Invoice contains a VAT amount, then the Supplier VAT-number must be stated
- Advanced functions
  - Invoice Total Amount = Sum of (Invoice Line Amount + charges – Allowances)
  - Check-sum validation of GLNs, GTINs…
- Gives meaningful error messages
- Can be used to decouple code list values from XML-schema

The structure of a typical validation rule in Schematron

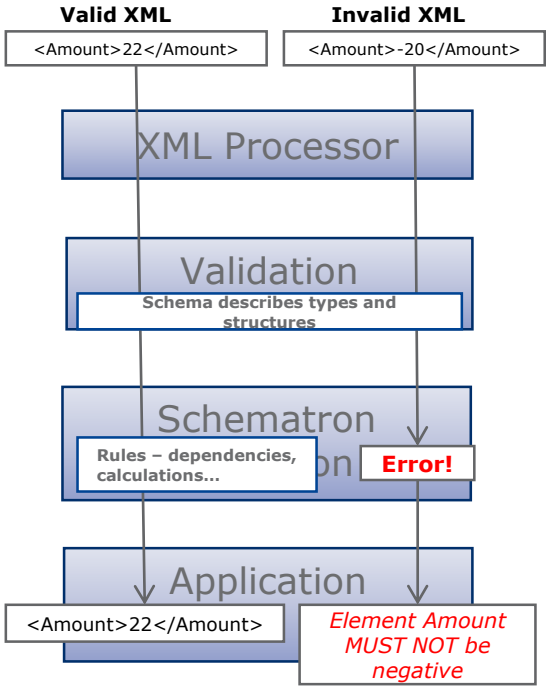
- Context – The element to be tested
- Assertion – The logical statement/rule to evaluate
  - If true – everything is ok, continue to next test
  - If false – rule violation!
- Message
  - Normally the rule text in natural language
- Flag
  - Often used flags:
    - fatal, warning och information
  - Fatal – violations against “SHALL/MUST”-rules
  - Warning – violations against SHOULD-regler
  - Information – highlights something which is not necessarly an error
    - “Element ABC should only be used if a bilateral agreement exists”

Example



1) context – which element will trigger the rule
2) assertion – the rule as a logical statement
3) flag – severity of the rule
4) id – A unique identifier of the rule
5) Rule text

Typical validation steps with schematron

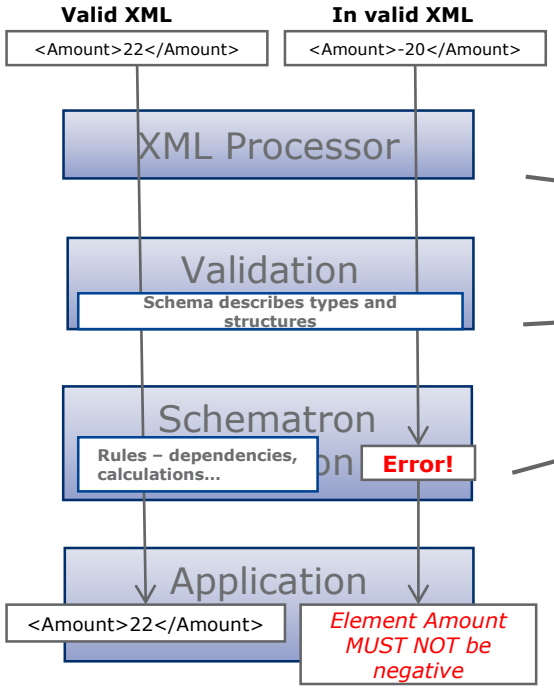


Well formed?

Valid?

Rules?

Which validation artefacts are used?

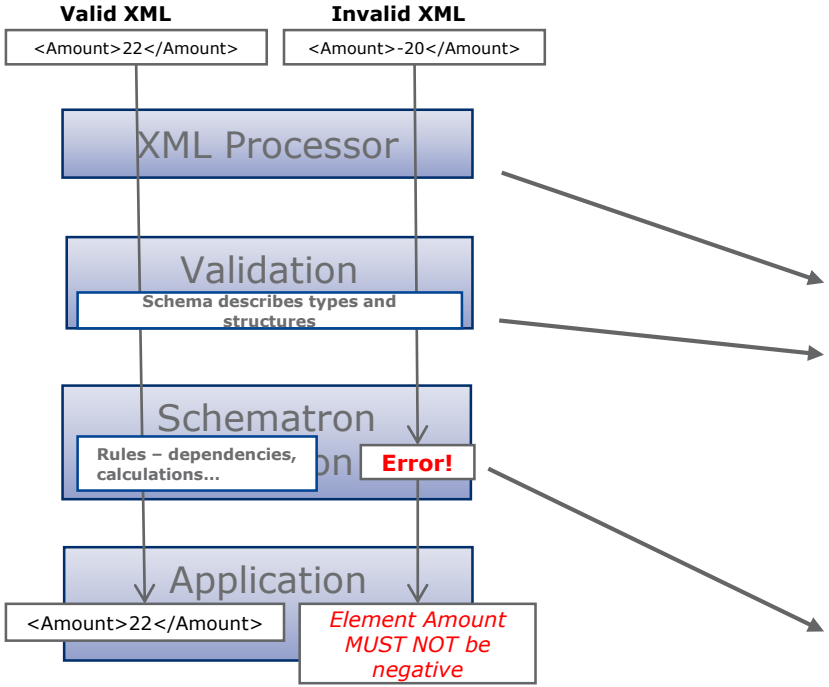


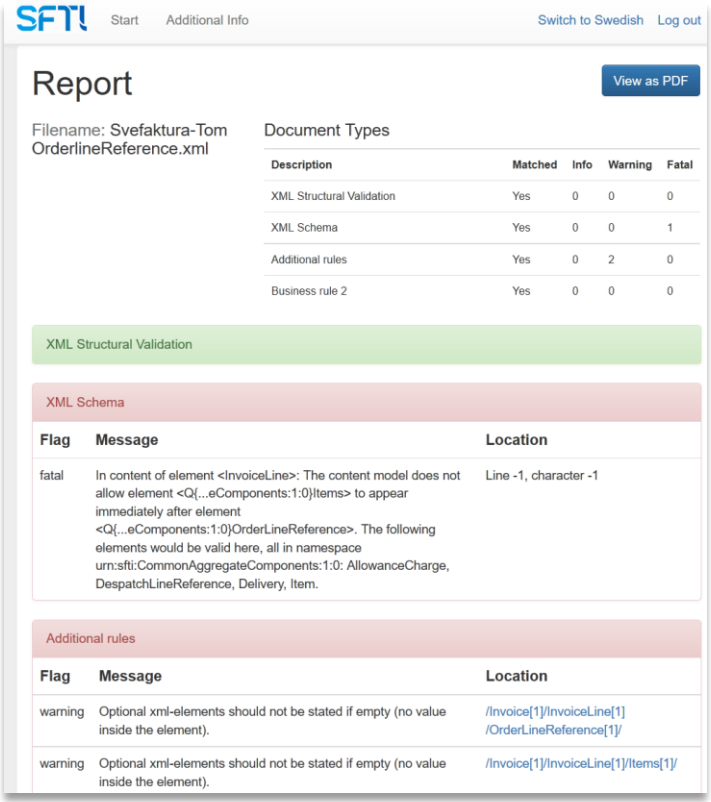
Automatically by the XML parser

XML-schema (XSD)

Schematron-files or rules transformed into XSLT-files

Validation services uses all levels of test artefacts





Member state plans for the future

Denmark

Before 2019

eInvoice usage in public sector

98 %

Main syntax standard

ISO/IEC 19845:2015 UBL

Infrastructure

NemHandel

2019 →

Implementaion of the EN/CIUS

PEPPOL CIUS
(+Rules for domestic suppliers)

Plans for infrastructure

PEPPOL and NemHandel in parallel.
PEPPOL only long term.

Legislation (transposition of the directive)

eInvoicing already mandated for suppliers by law. Additional types fo public entities will be affected.

Sweden

Before 2019

eInvoice usage in public sector

50% local/regional authorities
60% governmental authorities

Main syntax standard

ISO/IEC 19845:2015 UBL

Infrastructure

Various

2019 →

Implementaion of the EN/CIUS

PEPPOL CIUS
(+Rules for domestic suppliers)

Plans for infrastructure

PEPPOL

Legislation (transposition of the directive)

Law mandating suppliers to invoice electronically both above and below threshold.

Norway

Before 2019

eInvoice usage in public sector

70-80%

Main syntax standard

ISO/IEC 19845:2015 UBL

Infrastructure

PEPPOL

2019 →

Implementaion of the EN/CIUS

PEPPOL CIUS
(+Rules for domestic suppliers)

Plans for infrastructure

PEPPOL

Legislation (transposition of the directive)

…

Netherlands

Before 2019

eInvoice usage in public sector

Central government 50%
Regional/local 5%

Main syntax standard

ISO/IEC 19845:2015 UBL

Infrastructure

Central government - hub
The rest - PEPPOL

2019 →

Implementaion of the EN/CIUS

Country CIUS but will also accept PEPPOL CIUS

Plans for infrastructure

PEPPOL

Legislation (transposition of the directive)

As is from the directive. Mandate on the central government to require eInvoicing in new contracts.

Austria

Before 2019

eInvoice usage in public sector

Federal government 50%
The rest - ?%

Main syntax standard

Domestic XML format
ISO/IEC 19845:2015 UBL

Infrastructure

Central service (webform+upload)
PEPPOL

2019 →

Implementaion of the EN/CIUS

Austrian CIUS on 2 levels. Country specific rules and government specific rules)
PEPPOL for cross boarder

Plans for infrastructure

Central service (webform+upload)
PEPPOL

Legislation (transposition of the directive)

As is from the directive

Cyprus

Before 2019

eInvoice usage in public sector

0%

Main syntax standard

-

Infrastructure

-

2019 →

Implementaion of the EN/CIUS

PEPPOL CIUS
(+Rules for domestic suppliers)

Plans for infrastructure

PEPPOL

Legislation (transposition of the directive)

As is from the directive

Croatia

Before 2019

eInvoice usage in public sector

Small number

Main syntax standard

ISO/IEC 19845:2015 UBL

Infrastructure

Centralized solution

2019 →

Implementaion of the EN/CIUS

PEPPOL CIUS
Domestic CIUS

Plans for infrastructure

PEPPOL + Connection to central solution directly or through service provider

Legislation (transposition of the directive)

Mandatory to send

Governance…

Characteristics from countries with high penetration of e-Invoicing

- Strong initiative from public sector
- Either a governmental authority or collaboration between several
- Provide policy/directions – standards and infrastructure
- Give support and provide capacity building
- Involvement in EU-level initiatives
- EMSFEI (High level and policy issues)
- OpenPEPPOL (Operational and practical issues)

Interconnectivity – cross border and on national level

Martin Forsberg
DIGIT

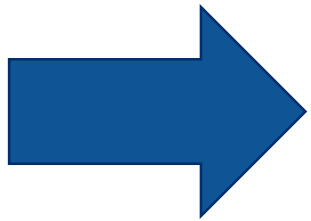
Areas covered by the standard

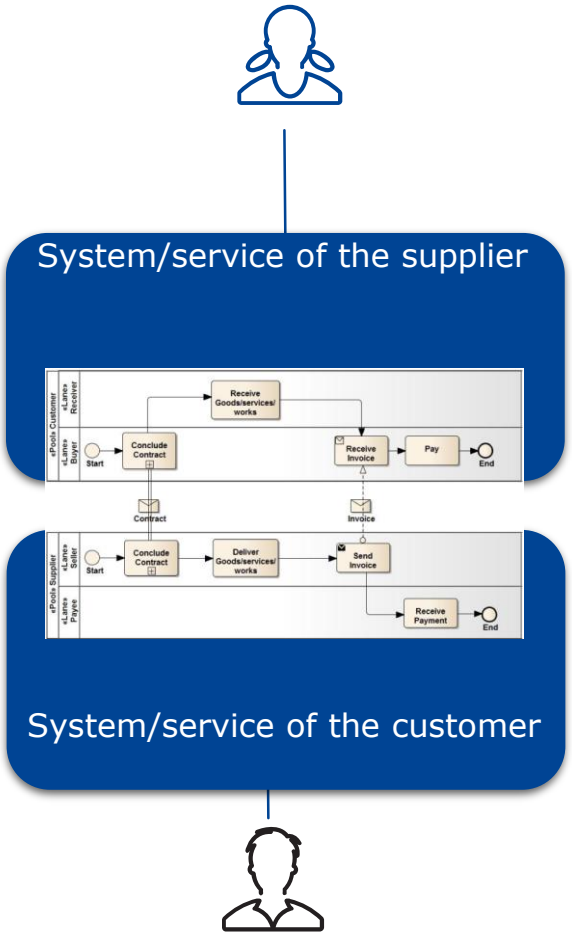
The European Standard

Steps in the process

Information to exchange

Technical format





Necessary functionality

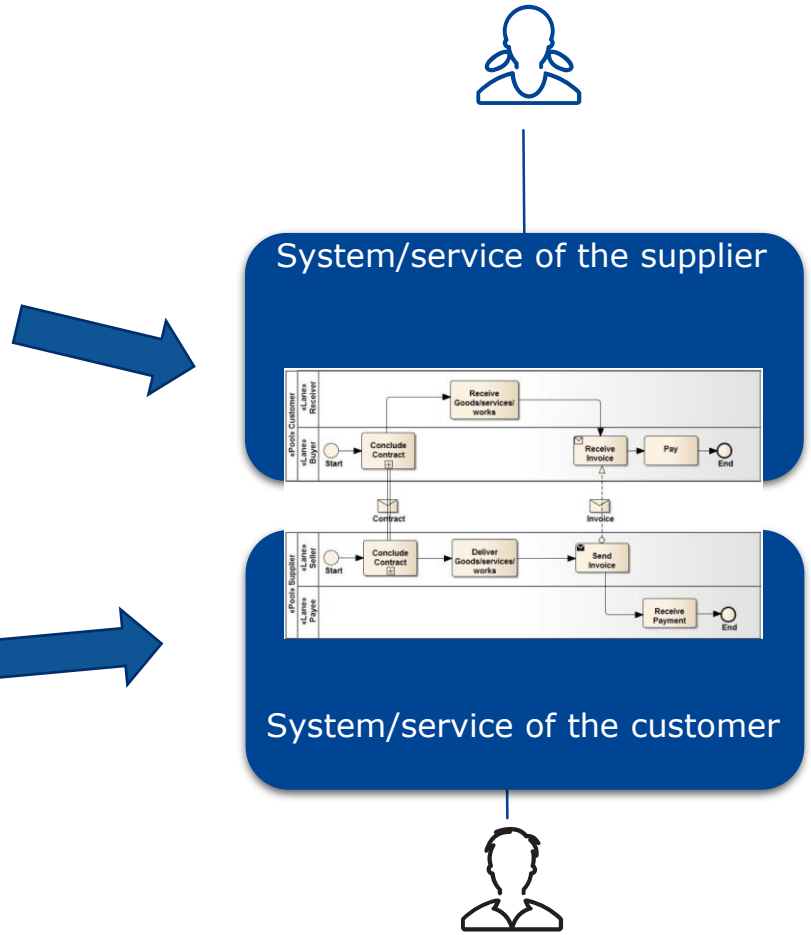
generation
transmission
reception
processing

Generation of the eInvoice

- ERP/Accounting system, web-portal or specialized services

Processing and reception

- Workflow for simplified processing
- Straight through processing
- Integration with ERP/Accounting



Areas covered by the standard

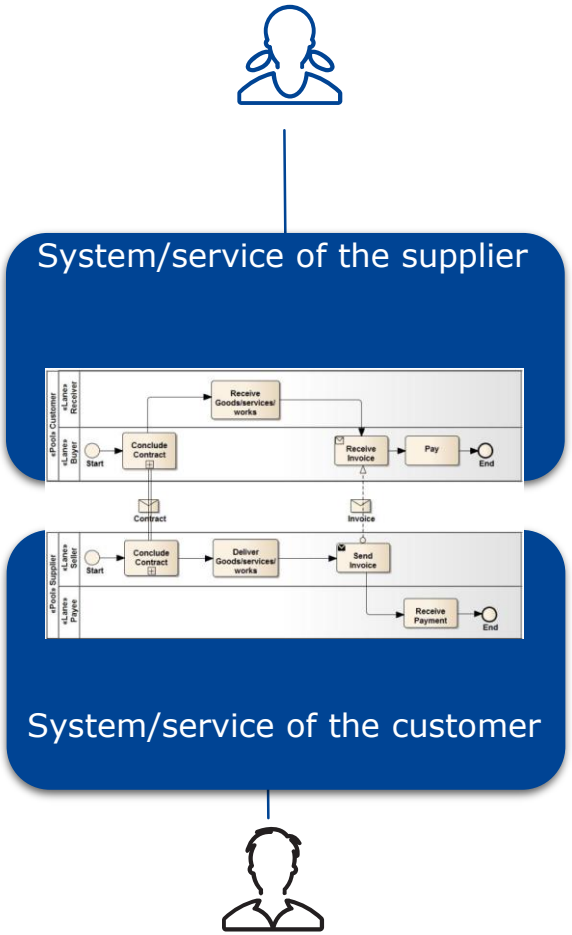
The European Standard

Steps in the process

Information to exchange

Technical format

Transport/eDelivery → ?

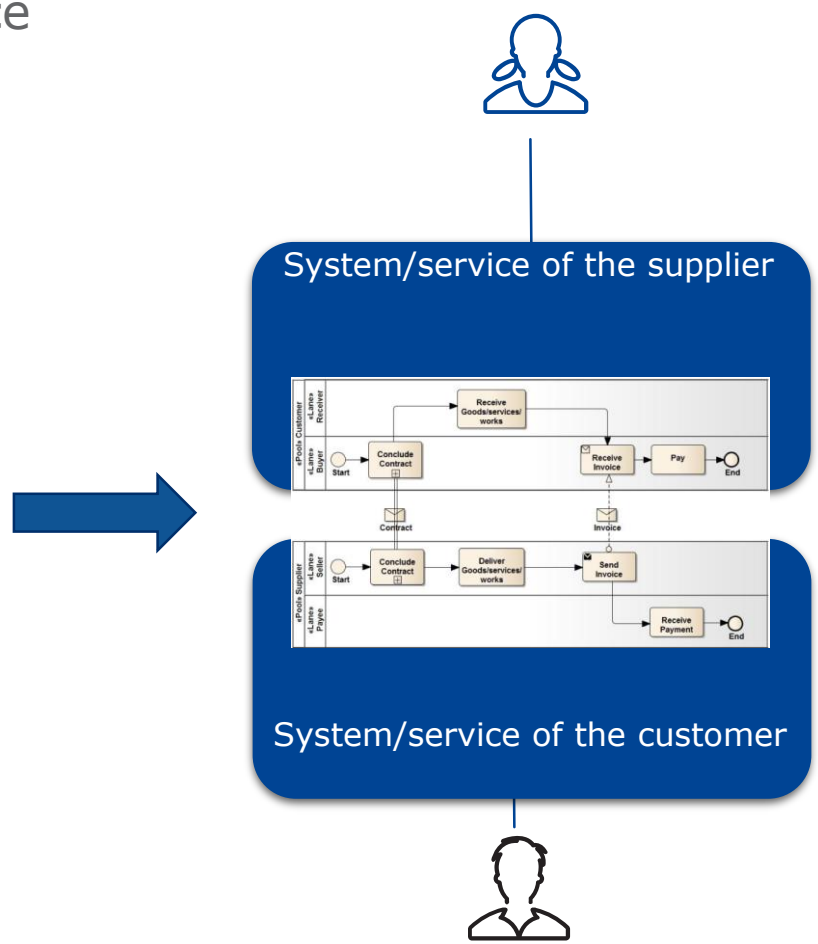


Transmission of the eInvoice

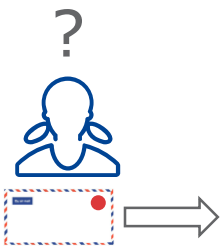
generation
<u>transmission</u>
reception
processing

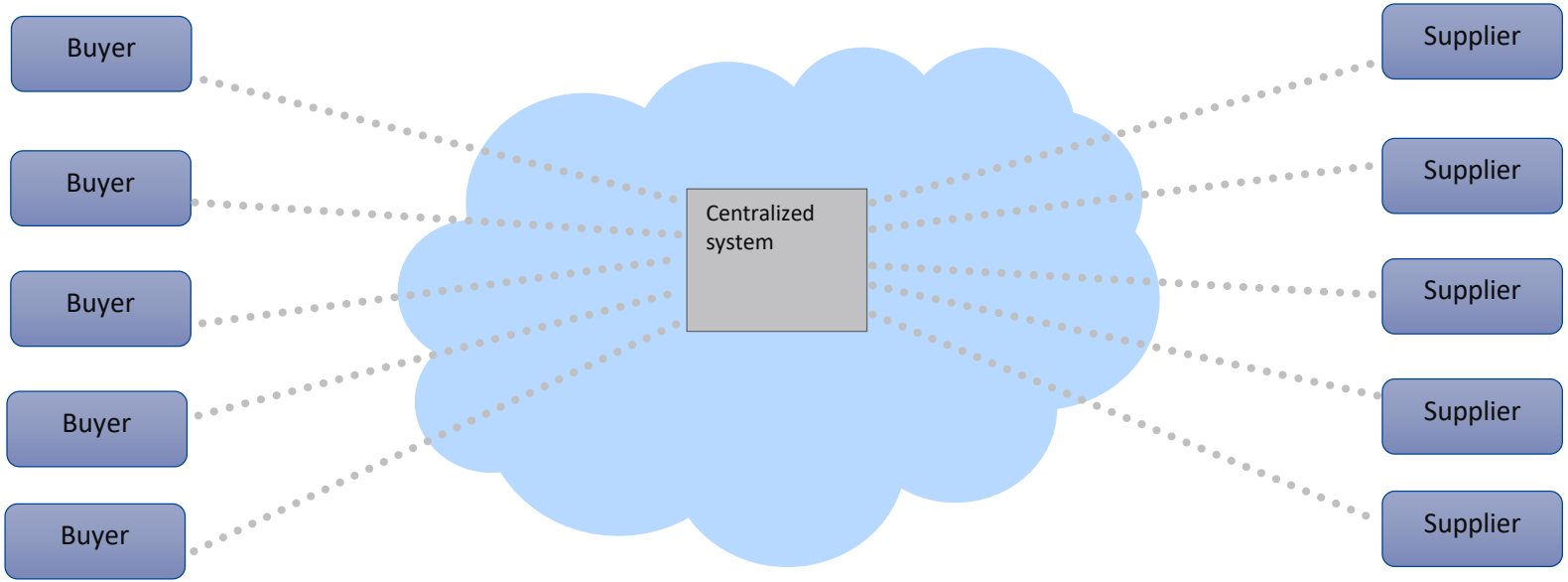
Transmission of the eInvoice

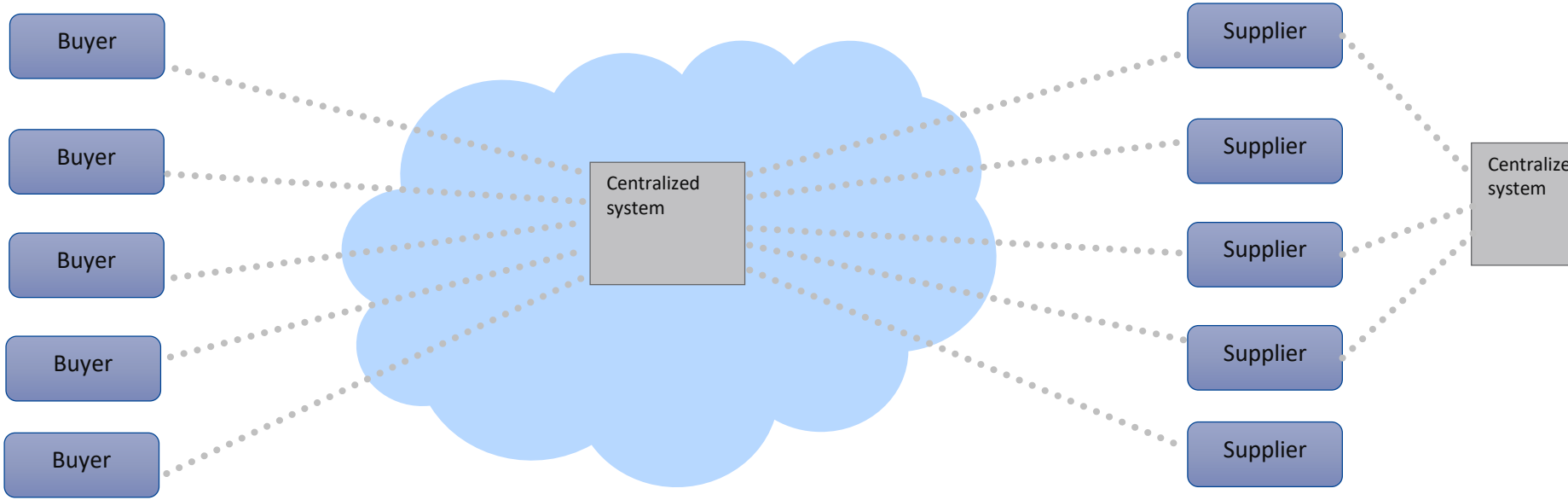
- Many different models for exchange

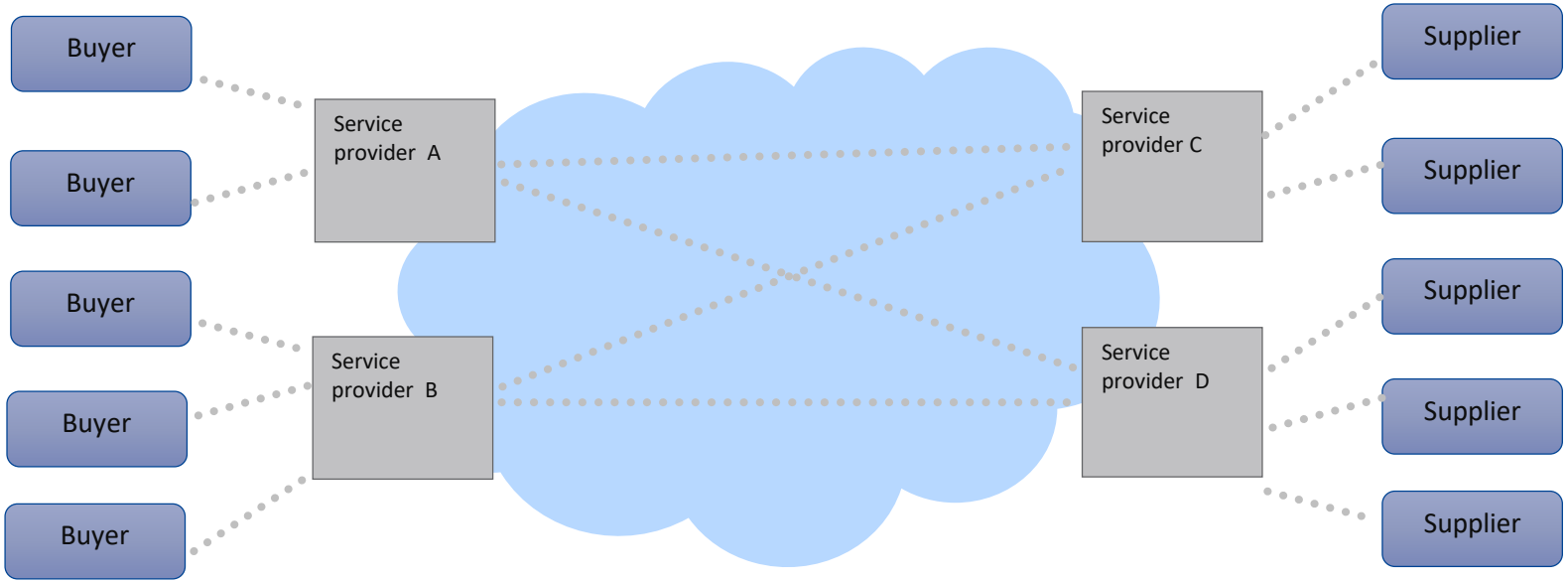


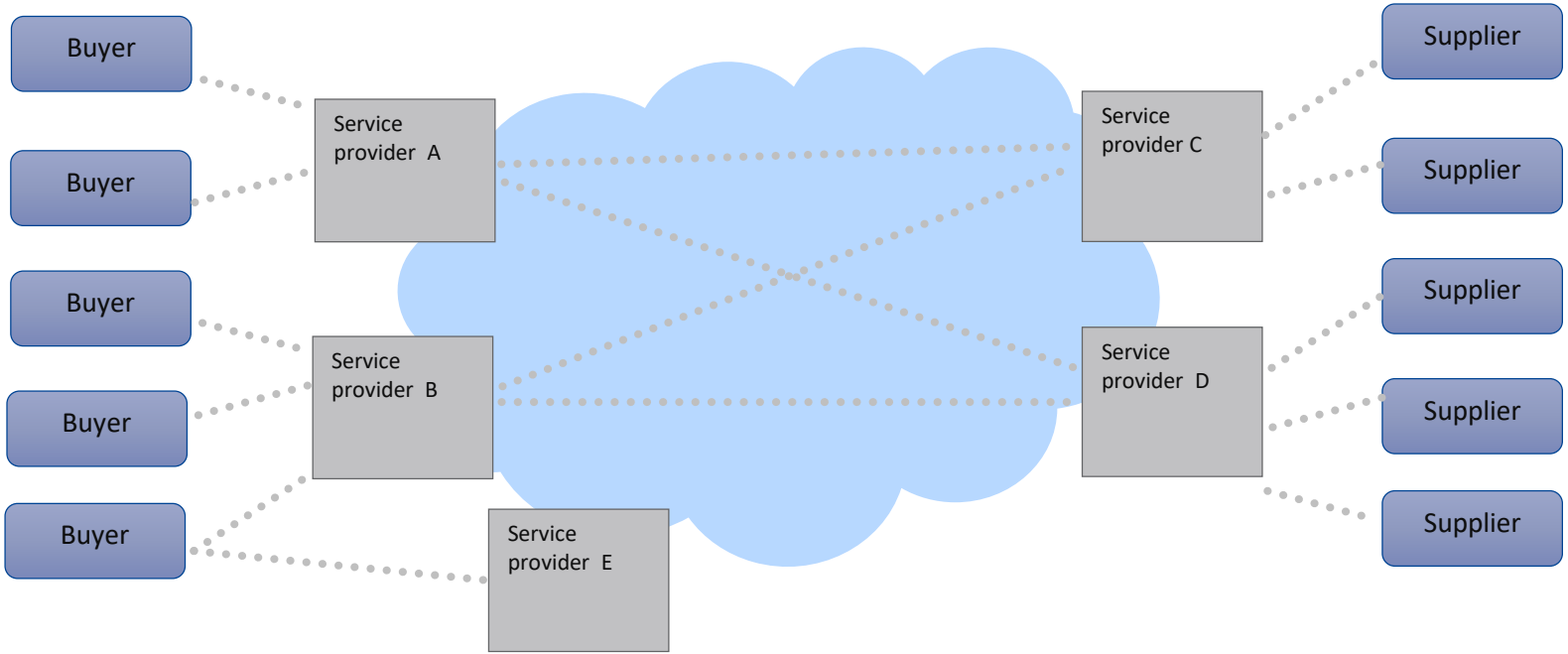
Some countries lack of clear policy on eDelivery - a big challenge for the suppliers











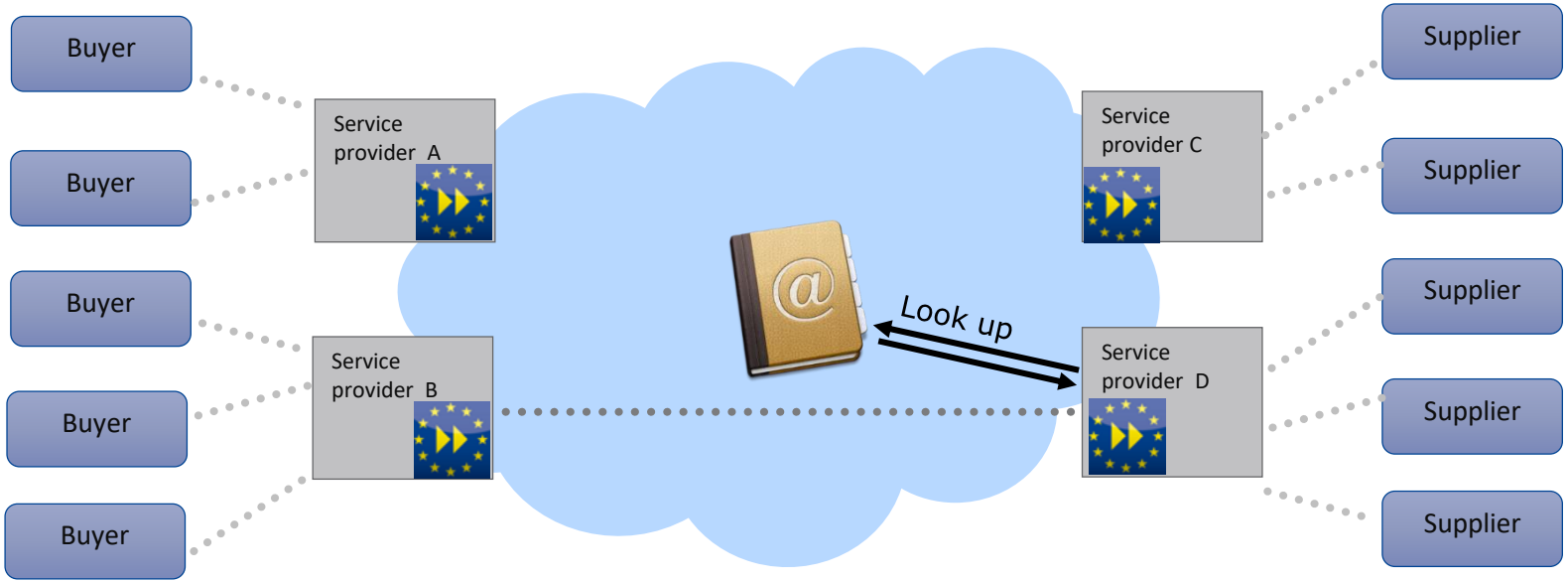
PEPPOL
PAN-EUROPEAN PUBLIC PROCUREMENT ONLINE

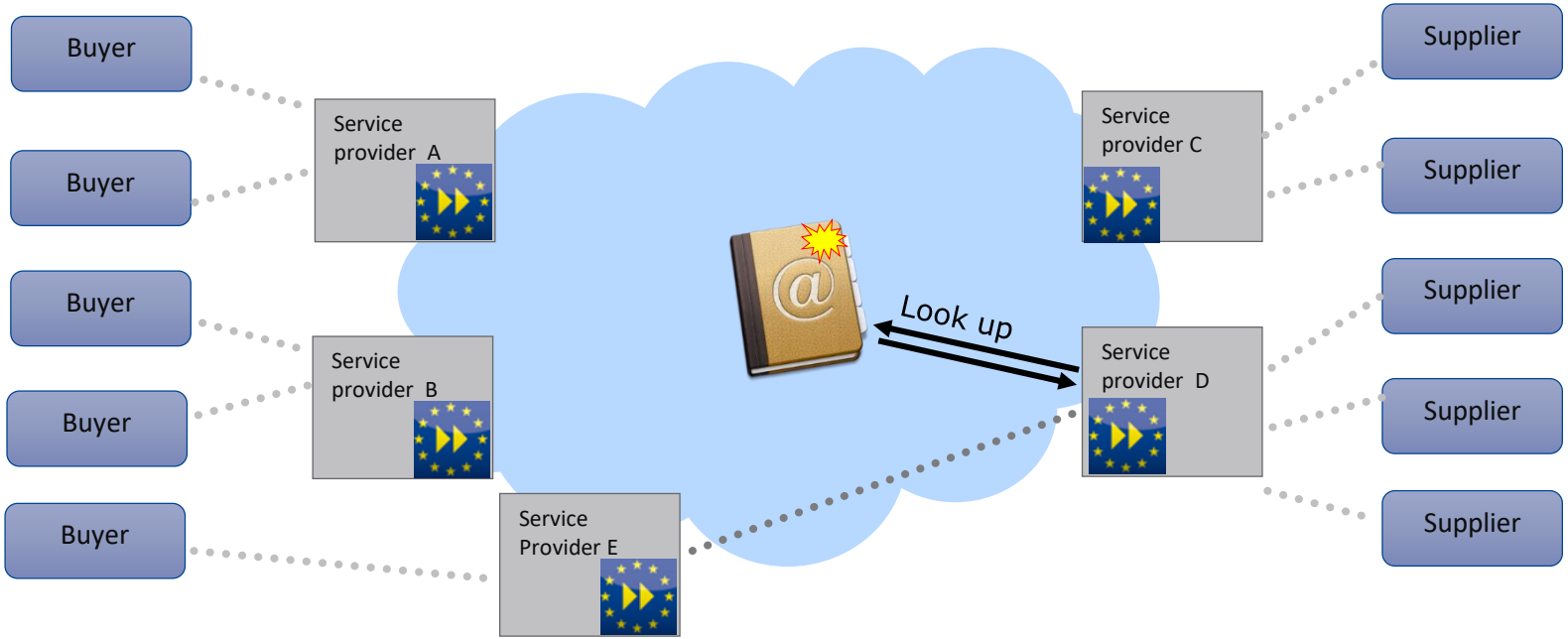
eDelivery Infrastructure where Buyers and Sellers can exchange e-documents

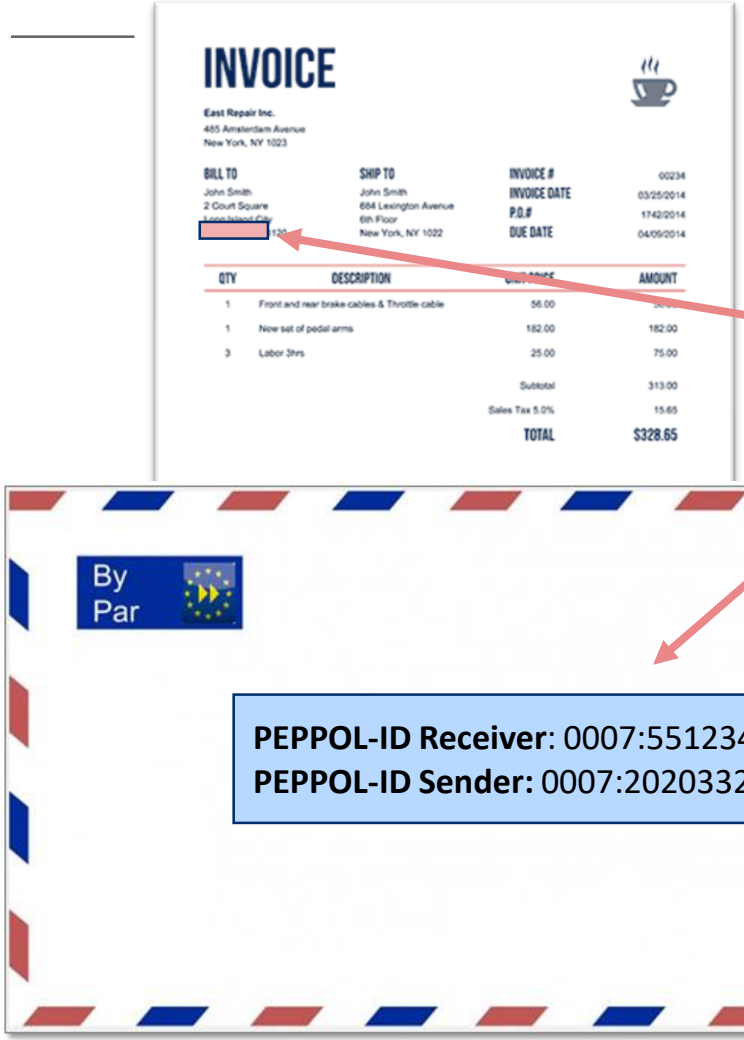
Specifications for electronic invoice, order, catalogue…

Non-for-profit organisation which maintains and governs

European Commission







Buyer
- Name and address
- Party identifiers

Delivery location
- Address
- Identifiers

Electronic address identifier (EndpointID)
- ”PEPPOL-ID” (GLN, DUNS etc)

0007 : 5512345678

Type code for Swedish organisation number

The actual number

European Commission

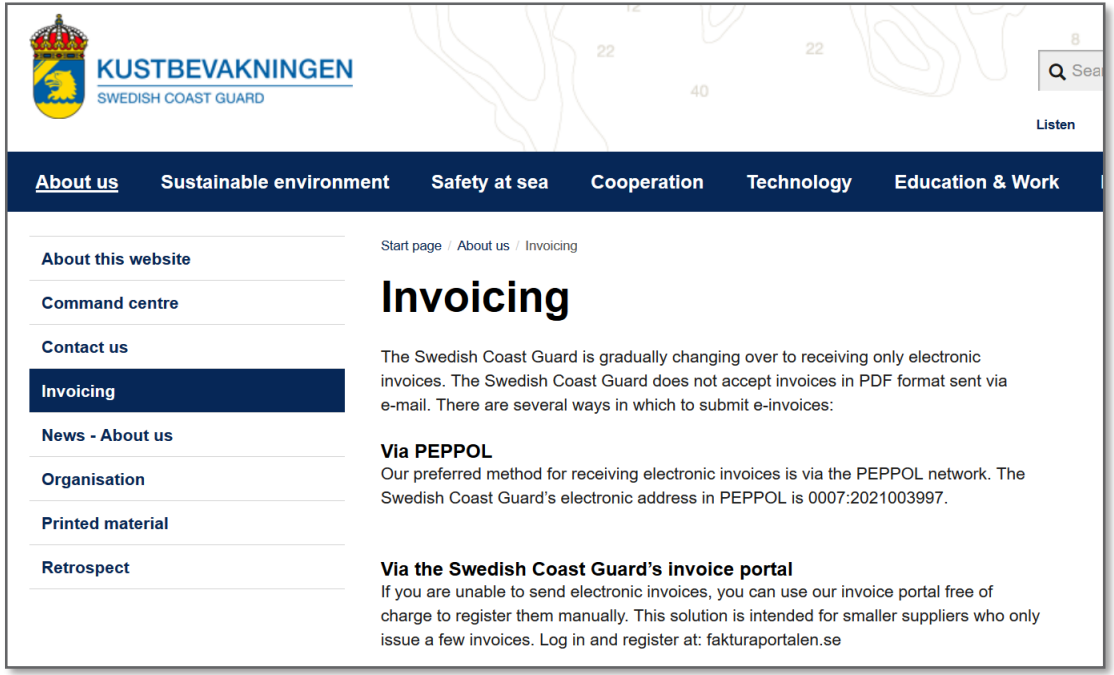
GÖTEBORGS UNIVERSITET

Gothenburg 2016-09-23

Billing the University of Gothenburg

E-invoice

The University of Gothenburg prefers e-invoicing. Our suppliers can send e-invoices via PEPPOL, which enables European businesses to easily deal electronically with any European public sector buyer in their procurement process. Our PEPPOL-id is 0007:2021003153.



SBDH

XML Envelope


```
<?xml version="1.0" encoding="UTF-8"?>
- <StandardBusinessDocument
xmlns="http://www.unece.org/cefact/namespaces/StandardBusinessDocumentHeader"
xmlns:xs="http://www.w3.org/2001/XMLSchema">
  - <StandardBusinessDocumentHeader>
      <HeaderVersion>1.0</HeaderVersion>
    - <Sender>
        <Identifier Authority="iso6523-actorid-upis">0088:7315458756324</Identifier>
      </Sender>
    - <Receiver>
        <Identifier Authority="iso6523-actorid-upis">0088:4562458856624</Identifier>
      </Receiver>
    - <DocumentIdentification>
        <Standard>urn:oasis:names:specification:ubl:schema:xsd:Invoice-2</Standard>
        <TypeVersion>2.1</TypeVersion>
        <InstanceIdentifier>123123</InstanceIdentifier>
        <Type>Invoice</Type>
        <CreationDateAndTime>2013-02-19T05:10:10Z</CreationDateAndTime>
      </DocumentIdentification>
    - <BusinessScope>
      - <Scope>
          <Type>DOCUMENTID</Type>
          <InstanceIdentifier>urn:oasis:names:specification:ubl:schema:xsd:Invoice-2::I
        </Scope>
      - <Scope>
          <Type>PROCESSID</Type>
          <InstanceIdentifier>urn:www.cenbii.eu:profile:bii04:ver2.0</InstanceIdentifier>
        </Scope>
      </BusinessScope>
  </StandardBusinessDocumentHeader>
- <Invoice:Invoice xmlns="urn:oasis:names:specification:ubl:schema:xsd:Invoice-2"
  xmlns:Invoice="urn:oasis:names:specification:ubl:schema:xsd:Invoice-2"
  xmlns:cac="urn:oasis:names:specification:ubl:schema:xsd:CommonAggregateComponen
  xmlns:cbc="urn:oasis:names:specification:ubl:schema:xsd:CommonBasicComponents-2"
      <cbc:UBLVersionID>2.1</cbc:UBLVersionID>
      ...
  </Invoice:Invoice>
</StandardBusinessDocument>
```

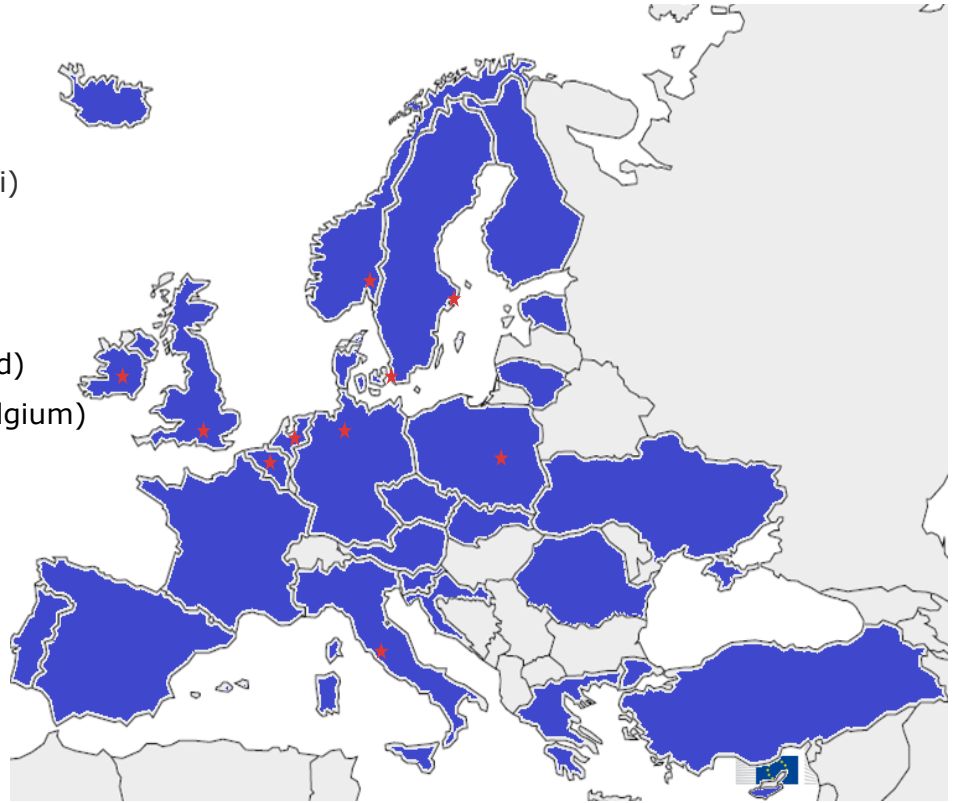
Contains all info necessary for a eDelivery Look-up

PEPPOL today

+200 Certified Access Points in **20** European countries, plus Singapore, Canada and USA. More than **150.000** e-Invoice receiving organizations connected. **60 million** e-invoices between APs in 2017.

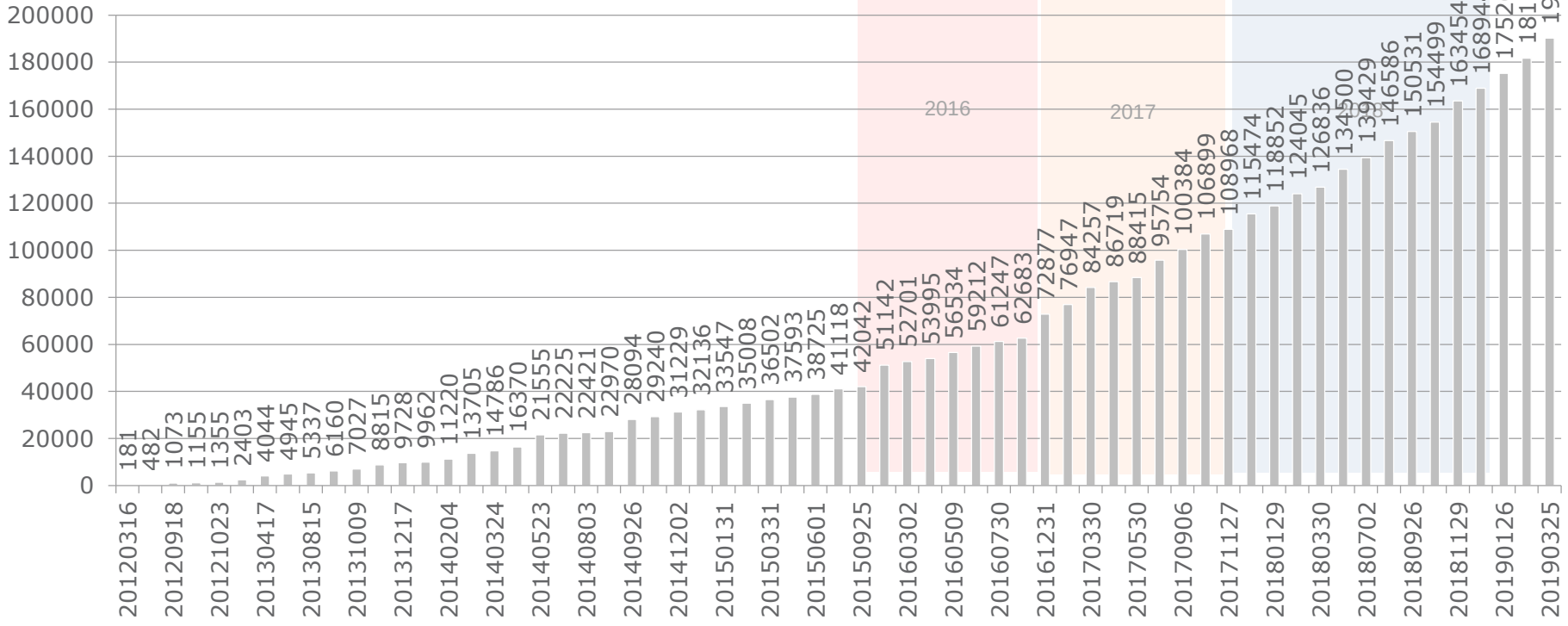
12 PEPPOL Authorities

- Agency for Digital Italy (AgID) (Italy)
- Agency for Public Management and eGovernment (Difi) (Norway)
- Danish Business Authority (Denmark)
- Department of Health (UK)
- Department of Public Expenditure and Reform (Ireland)
- Federal Public Service Policy and Support (BOSA) (Belgium)
- Agency for Digital Government (DIGG) (Sweden)
- Free Hanseatic City of Bremen – KoSIT (Germany)
- Ministry of Economic Development (Poland)
- SimplerInvoicing (Netherlands)
- **Info-communications Media Development Authority (IMDA) (Singapore)**
- OpenPEPPOL AISBL



PEPPOL
PAN-EUROPEAN PUBLIC PROCUREMENT ONLINE

Number of receivers in PEPPOL



eDelivery Access points in PEPPOL

2C Solution SRL	Italy
216 Accountants B.V	Netherlands
AdValvas Europe	Belgium
Advanced Business Software and Solutions	UK
Advania Holding hf.	Iceland
Aksess Innkjøp (Prosjektservice AS)	Norway
Aksesspunkt Norge AS	Norway
Aliquid Italy	Italy
Amesto Solutions Purchasing A/S	Norway
Azets Insight AS	Norway
Order2Cash – (Anachron B.V.)	Netherlands
Apix Messaging Oy	Finland
Apro Consulting Services B.V.	Netherlands
Archiva S.r.L.	Italy
Archivium SrL	Italy
Arco Information N.V.	Belgium
At Work Systems	Norway
B2B Router (Invinet Sistemes)	Spain
B4 value.net GmbH	Germany
Babelway	Belgium
Basware	EU
BEAst AB	Sweden
Billit	Belgium
BIZbrains A/S	Denmark
Bluzor B.V.	Netherlands
Brain2	Belgium
Bundesrechenzentrum GmbH (BRZ)	Austria
Calvi Business Software BV	Netherlands
Catalog360 Limited	UK
CEGEDIM	France
Celtrino – EDI Factory	Ireland
Centric Netherlands	Netherlands
CGI Sverige AB	Sweden
CloudOffice AS	Norway
Cloud Trade Technology Ltd.	UK
CodaBox N.V.	Belgium
Comarch SA	Poland
Commerce-Connections	UK
Consorci Administració Oberta de Catalunya (AOC)	Spain
Consumer Cloud Technology Services Pte Limited	Singapore
Consumer Cloud Technology Services Pte Limited	Singapore
Compello AS	Norway
Credemtel S.p.A.	Italy
Crediflow Försäljnings AB	Sweden
Consip SpA (Italy)	Italy
crossinx GmbH	Germany
CS Amed SRL	Italy
Daldata AS	Norway
DataPost Pte Ltd	Singapore
Data Interchange	UK
Danish Business Authority (ERST)	Denmark
Dcode Websolutions AS	Norway
DERWID.com GmbH	Austria
Desk Drive	Belgium
Digital Cab ApS	Denmark
Danish Business Authority (ERST)	Denmark
DocFlow Italia S.p.A.	Italia
Document Centric Solutions	Ireland
Docuten (Enxendra Technologies)	Spain
Doxee S.p.A.	Italy
Dynatos NV	Belgium
DXC	UK
Easy Systems B.V.	Netherlands
EC/DG DIGIT	Belgium
EDI Plus Ltd	UK
EDICOM CAPITAL S.L.	Spain
EDIGard AS	Norway
EDISON S.A.	Poland
Effektus AS	Norway
eFinans AS	Norway
Elcom	UK
Electronic Data Transfer S.A.S.	France
Enable-U B.V.	Netherlands
Enercom Swiss Finance SA	Switzerland
Epoca S.r.l.	Italy
Esker S.A.	France
Eesti Post AS (Omniva)	Estonia
EVRY AS	Norway
Exact	Netherlands
F.R. Biernat	Norway
Faber system Srl	Italy
FIKEN AS	Norway
FinHill Hilversum B.V.	Netherlands
Financijska agencija	Croatia
Fitek Group	Estonia
Fylkesmannen i Sogn og Fjordane	Norway
Genesis IT AB	Sweden
Generix Group Benelux	Belgium
GHX UK	UK
Goldman Solutions & Services Ltd.	Cyprus
GXS (OpenText)	USA
Hafslund Tellier AS	Norway
Hogia Business Products AB	Sweden
Ibistic	Norway
IBM Corporation	USA
IBM Danmark ApS	Denmark
iEDI ApS	Denmark
IFIN Sisstemi S.r.L. a socio unico	Italy
ILGE Sybscription Management BVBA	Belgium
Implema AB	Sweden
In.Te. S.A.	Italy
Inaras NV	Belgium
InExchange Factorum AB	Sweden
Infinite Sp. z.o.o.	Poland
Infocert S.p.A.	Italy
INPOSIA Solutions GmbH	Germany
Integrasjonssystemer AS	Norway
Intercent-ER	Italy
KBC Commercial Finance	Belgium
KMD Denmark	Denmark
Kofax Sweden Services AB	Sweden
LBMX Inc.	Canada
Liaison Technologies Oy	Finland
Logiq AS	Norway
Lyanthe	Netherlands
Maritech Systems AS	Norway
Millum AS	Norway
Ministry of Finance, Republic of Slovenia	Slovenia
Miracle A/S	Denmark
Moneybird	Netherlands
mySupply ApS	Denmark
NetClient AS	Norway
NetEDI	UK
Netropolix Software NV	Belgium
Nets Norway AS	Norway
nexMart GmbH & Co. KG	Germany
Norwegian Labour and Welfare Service (NAV)	Norway
Onetrail BV	Netherlands
Oppgjorskontoret AS	Norway
Opus Capita Group Oy	Finland
Outsourcia AS Bakke	Norway
Pagero	Sweden
Pagero HBS GmbH	Germany
Pagero Norway	Norway
Palette Software AB	Sweden
Payt B.V.	Netherlands
PaperLess Innovation Ltd.	Malta
Pearl Norge AS	Norway
PIMEC, Petita i Mitjana Empresa de Catalunya	Spain
PinkRoccade Local Government BK.V.	Netherlands
PostNord (Strålfors Svenska AB)	Sweden
PowerOffice Software AS	Norway
PracBiz Pte Ltd	Singapore
Prosjektservice AS	Norway
Qvalia Group AB	Sweden
Reknes AS	Norway
Resforma AS	Norway
Ricoh Netherlands B.V.	Netherlands
S.A.T.A.	Italy
Science Warehouse Limited	UK
SEEBURGER AG	Germany
Seen Solution SrL	Italy
Seres	France
Seres SA	Spain
SIA S.p.A.	Italy
Simpler Invoicing	Netherlands
SINGAPORE E-BUSINESS PTE LTD	Singapore
Skaitos kompiuteriu servisas	Lithuania
Smartbook Technology AS	Norway
Sorvive Technologies Inc.	USA
STDM SrL	Italy
StarHub Ltd	Singapore
Storecove (Datajust B.V.)	Netherlands
SYMTRAX S.A.	France
System Kreditt AS	Norway
Svea Ekonomi AB	Sweden
TB Okonomi AS	Norway
Tecmarket Servizi S.p.A.	Italy
Teal IT	Belgium
Telema AS	Estonia
Telenor Norge AS	Norway
Tesisquare S.p.A	Italy
TIE Kinetix	Netherlands
Tieto	Finland
Tradeinterop	Netherlands
Tradeshift	Denmark
Tradeshift AB	Sweden
Transalis Ltd.	UK
Tripletex AS	Norway
True Commerce (Coventry) Ltd.	UK
TrueCommerce ApS Denmark	Denmark
Truelink A/S	Denmark
Tungsten Network Ltd.	UK
Tyringe Konsult AB	Sweden
TX2 Concept	Singapore
UNI MICRO AS	Norway
UnifiedPost	Netherlands
Unimaze Software	Iceland
Unit4 Agresso	Norway
Upheads AS	Norway
UPRC Greece	Greece
ValidatedID S.L.	Spain
Van Meijel	Netherlands
Viaduct AB	Sweden
Virtualstock Ltd.	UK
Visma Labs	Sweden
Visma Software International AS	Norway
Voxel Media S.L.	Spain
Wax Digital Ltd.	UK
Webware Internet Solutions GmbH	Germany
Workflow Management & Document Consulting Asia Pte Ltd	Singapore
Xledger Labs AS	Norway
XS Offfice AS	Norway
Zirius AS	Norway
ZZI d.o.o	Slovenia

Funding and Grants – possibilities within CEF

Funding opportunities

Call	Open Calls	Deadline for submissions
CEF-TC-2019-1 **Automated Translation** (indicative budget: €4M)	14 February 2019	14 May 2019
CEF-TC-2019-1 **eID & eSignature** (indicative budget: €5M)	14 February 2019	14 May 2019
CEF-TC-2019-1 **eDelivery** (indicative budget: €1M)	14 February 2019	14 May 2019
CEF-TC-2019-1 **eInvoicing** (indicative budget: €6.2M)	14 February 2019	14 May 2019

Visit INEA Website

2019 CEF Telecom eInvoicing call: Context

- eInvoicing **Directive deadline**: 17/4/2019 for both transposition and implementation;
- Public authorities must be able to process eInvoices **compliant** with the European standard **(EN)**;
- Some Member States are still **lagging behind** in the implementation of the Directive;
- The regional authorities of those countries that have opted for the deadline **extension**;
- Innovative **solutions** are essential to help Member States in the path to more efficient eInvoicing.

2019 CEF Telecom eInvoicing call: Details

2019-1 call:

- **Budget**: €6.2 million
- **Co-funding rate**: 75% of eligible costs
- **Pre-financing**: up to 50% of maximum grant amount
- Indicative **duration** of the actions: 12 months

2019 CEF Telecom eInvoicing call: Eligibility

The 2019 Work Programme makes the following proposals eligible:

- Proposals from one or more **EU/EEA** Member States;
- Proposals from **international organisations**, joint, public or private **undertakings** or **bodies**, from EU/EEA countries;
- Proposals from **third countries** and applicants without legal identity may be accepted (see eInvoicing call text for info).

2019 CEF Telecom eInvoicing call: Objectives

Objective 1:

- Proposals that increase the **national readiness** to **accept and process EN compliant invoices**;

- All proposals submitted to include relevant national or regional public authorities responsible for the implementation of the **Directive 2014/55/EU**.

2019 CEF Telecom eInvoicing call: Objectives

Objective 2:

- Update of **existing eInvoicing solutions** (from public and private providers) to achieve compliance with the **EN**;

- In the update of solutions, only **CIUS** (Core Invoice Usage Specifications) could be funded.

2019 CEF Telecom eInvoicing call: Objectives

Objective 3:

- Implementation of innovative solutions that enable advanced **eInvoicing/eProcurement functionalities using the EN**;
- This includes proposals aiming to **fully digitise processes** using robotics or other innovative solutions;
- The goal of proposals submitted under this objective is to produce an **improved processing** of invoices.

2019 CEF Telecom eInvoicing call: Award criteria

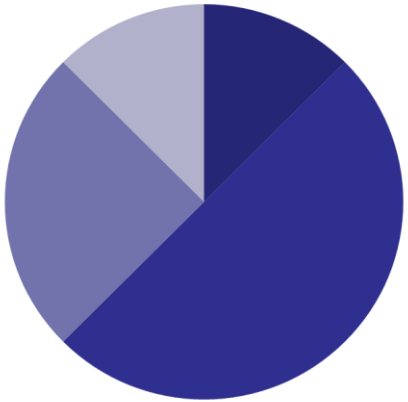
Award will be determined by the following:

- 1) The **Relevance** of the proposal;
- 2) Its **Quality** & **Efficiency;**
- 3) **Impact** & **Sustainability.**

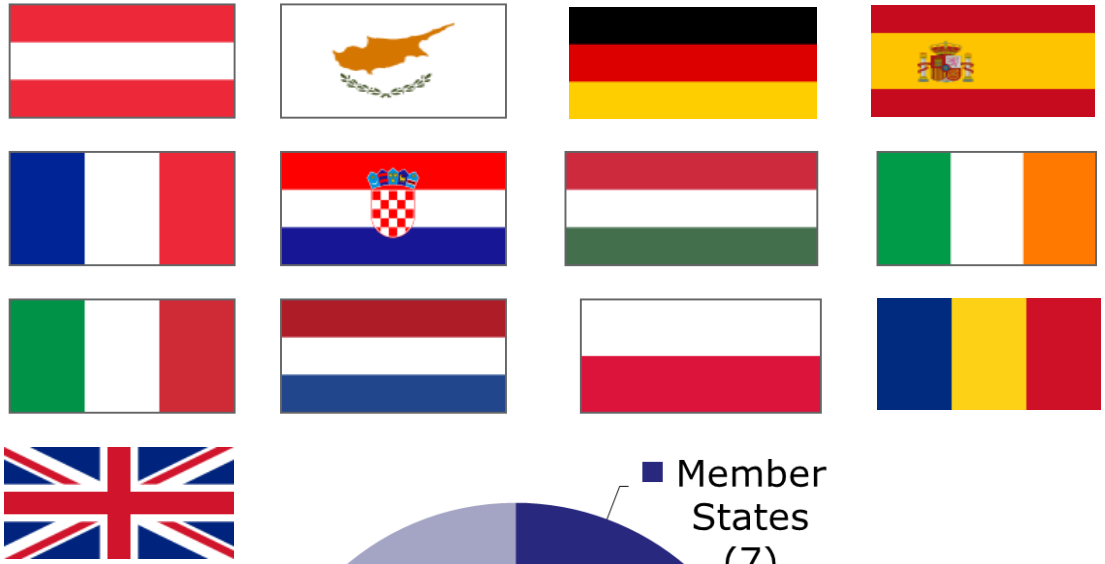
A score will be applied to the three objectives on a scale from 0 to 5. The threshold for **individual criteria is 3** and the **overall threshold** is **10.** Proposals with a score **on/above** these thresholds may be recommended for funding.

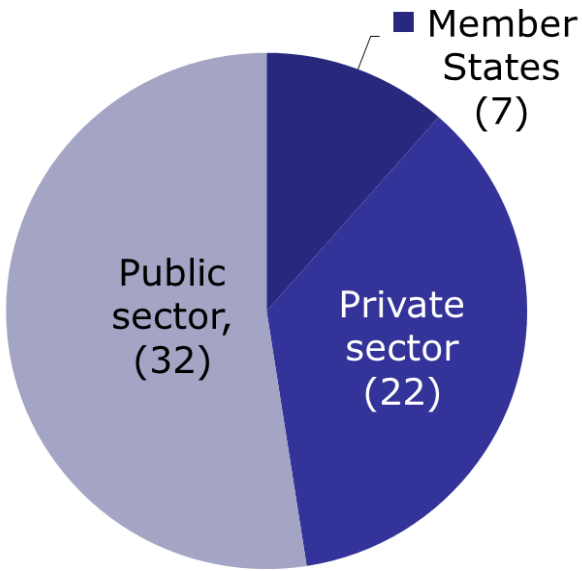
Past eInvoicing calls

2015-1 eInvoicing call:
Member States involved (13)

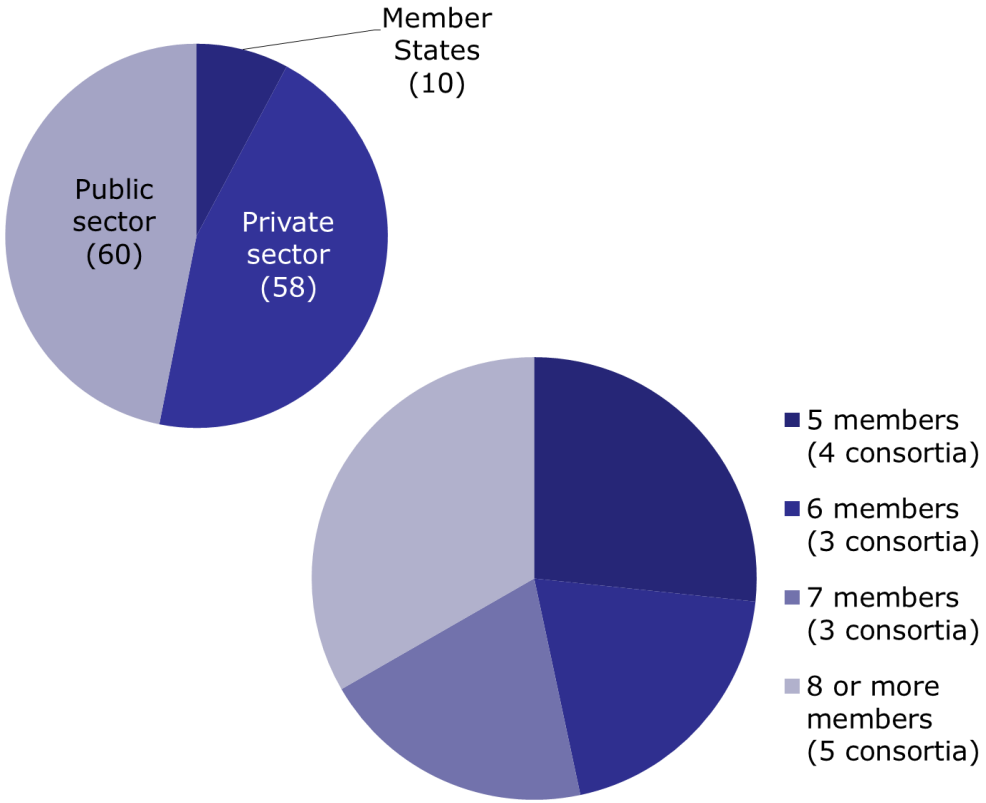


- 5 members (1 consortium)
- 6 members (4 consortia)
- 7 members (2 consortia)
- 8 or more members (1 consortium)

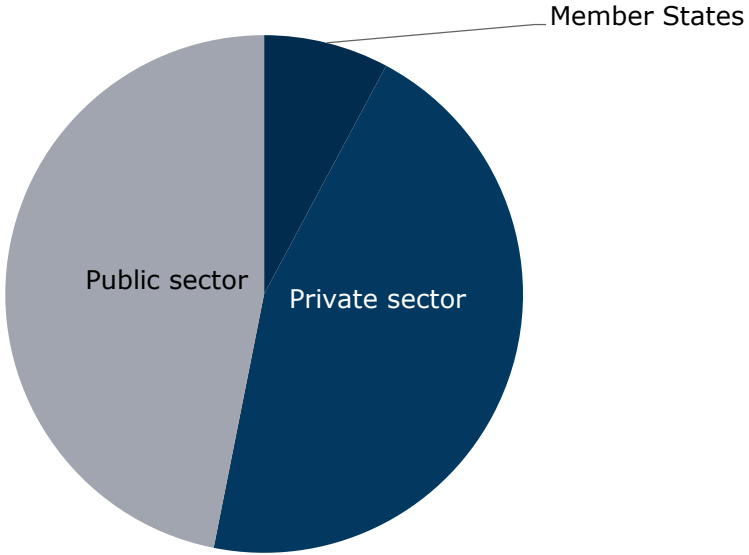




2016-3 eInvoicing call
Member States involved (22)

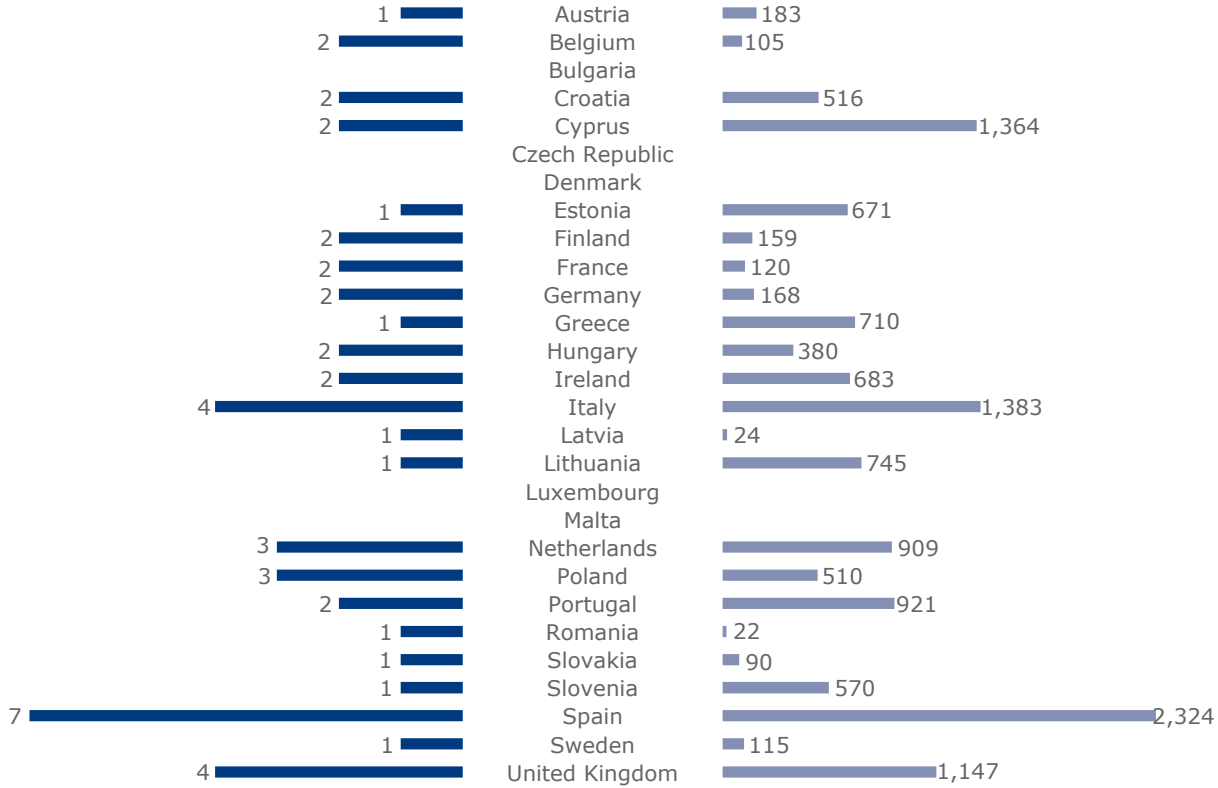


2017-3 eInvoicing call
Member States involved (16)



European Commission

Member States
Number of projects and CEF funding (€ thousand)



EEA and Third Countries
Number of projects and CEF funding (€ thousand)

CEF Telecom 2014-2016

List of grant agreements for eInvoicing DSI building blocks

Project Code	Title	Beneficiary countries	Start Date	End Date	Project Status	CEF funding for the action (€)
2015-AT-IA-0049	EVA - e-Invoicing for Austria	AT	01/09/2016	31/12/2017	Ongoing	183,000
2015-CY-IA-0052	E-invoicing Cyprus	CY	01/10/2016	31/12/2017	Ongoing	561,430
2015-ES-IA-0055	SMART eINVOICING PLATFORM TO ENFORCE CROSS-BORDER DOCUMENTATION EXCHANGE (SEINPEX)	ES	01/08/2016	31/12/2017	Ongoing	222,781
2015-EU-IA-0050	eIGOR - eInvoicing GO Regional	IT,UK	01/01/2017	31/12/2017	Ongoing	1,252,500
2015-EU-IA-0054	Semantic conversion of business documents (SCOBDO)	DE,NL	01/09/2016	31/12/2017	Ongoing	283,199
2015-EU-IA-0058	GOVeIn European eInvoicing Project: implementation of the European electronic invoice within the Public Health area	ES,FR,HU,IE,IT,NL,PL,RO,UK	01/10/2016	31/10/2017	Ongoing	770,249
2015-HR-IA-0048	Croatian eInvoicing Business-to-Administration Exchange Project	HR	02/06/2016	30/05/2017	Closed	251,328
2015-UK-IA-0056	eInvoice Expansion	UK	01/10/2016	31/12/2017	Ongoing	901,624
2016-CY-IA-0105	Cy e-Invoicing (Local Authorities)	CY	01/01/2018	31/12/2018	Ongoing	802,134
2016-EL-IA-0130	Interoperable eInvoicing in Greece (GRinv)	EL	01/10/2017	30/09/2018	Ongoing	710,065
2016-ES-IA-0117	FACe - The core platform of the Spanish public authorities to process the European standard on electronic invoice	ES	01/09/2017	30/11/2018	Ongoing	298,691
2016-ES-IA-0134	EUeInvoicing.cat - European standards adoption for eInvoicing in Catalonia	ES	01/09/2017	31/08/2018	Ongoing	622,833
2016-EU-IA-0086	Tools and support towards the adoption of the future EN on electronic invoicing in SMEs	BE,ES,IT	01/09/2017	31/08/2018	Ongoing	372,054
2016-EU-IA-0096	GOV2EU - Supporting public entities to adopt EU Standard on electronic invoice for cross-border transactions	BE,DE,ES,FR,HU,IT,PL,PT,SK	01/09/2017	31/10/2018	Ongoing	1,248,208
2016-EU-IA-0109	SAPHeIN – Implementing SAPHetydoc for the wide adoption of eINvoicing	ES,PT	01/06/2017	31/08/2018	Ongoing	908,837
2016-EU-IA-0119	Facilitate and increase the use of the European Norm on e-invoice and the use of access point in the EU	FI,NO,SE	15/12/2016	01/06/2018	Ongoing	887,879
2016-EU-IA-0120	Internet of Business (IoB)	EE,FI,LV	01/06/2017	31/05/2018	Ongoing	795,248
2016-EU-IA-0126	Promote uptake of e-invoicing in Ireland	IE,UK	01/07/2017	30/06/2018	Ongoing	755,904
2016-HR-IA-0090	eINVOICING For Croatian Public Authorities (eICPA)	HR	19/09/2017	19/09/2018	Ongoing	264,201
2016-LT-IA-0104	eInvoicing cross-border LT	LT	01/09/2017	01/09/2018	Ongoing	744,553
2016-NL-IA-0088	NL eInvoicing	NL	16/12/2016	31/05/2018	Ongoing	705,068
2016-PL-IA-0106	European cross-border e-invoice in local public procurement in Poland	PL	01/10/2017	30/11/2018	Ongoing	420,442
2016-SI-IA-0103	Readiness of Slovenian E-invoicing	SI	01/06/2017	01/06/2018	Ongoing	570,248

2019 CEF Telecom eInvoicing call: Additional information

- Link to call webpage: https://ec.europa.eu/inea/en/connecting-europe-facility/cef-telecom/apply-funding/2019-einvoicing;
- For more information concerning the technical specifications, you may access the call text;
- For information concerning eInvoicing and the EU Commission's efforts to promote it, please consult CEF Digital and its services;
- CEF eInvoicing country Factsheets.

More information on the calls…

inea-cef-telecom-calls@ec.europa.eu

inea@ec.europa.eu

https://ec.europa.eu/inea/en/connecting-europe-facility/cef-telecom/apply-funding/2019-cef-telecom-calls-proposals

@inea_eu #CEFTelecom
#ConnectingEurope
#CEFTelecomDay

INEA

Discussion

Curious to learn more?!

Contact info

- CEF-BUILDING-BLOCKS@ec.europa.eu

Planning for 2019

- Several workshops in planning

Meanwhile – take a look at the available material on CEF Digital

- https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/eInvoicing

Lessons learned

QUESTIONS?