DOCUMENT 2.0 – For Forum 21 March 2016

Relevant background information and details

for the understanding and envisaged further uptake of the '*Recommendations on the use of a semantic data model to support Interoperability for Electronic Invoicing*'

Revision Table

Revised by	Date	Revision (version) number
P.G.L. Potgieser	February 2015	-
P.G.L. Potgieser	July 2015	0.1
P.G.L. Potgieser, contributions of P. Noren, E. Gray	12 August 2015	0.2
P.G.L. Potgieser, contributions of P. Noren, E. Gray, D. Gulija, A. Caccia	14 August 2015	0.3
P.G.L. Potgieser, contributions of P. Noren, E. Gray, D. Gulija, A. Caccia	24 August 2015	0.4 for Forum
P.G.L. Potgieser, contributions of P. Noren, E. Gray, D. Gulija, A. Caccia	7 January 2016	0.5
P.G.L. Potgieser (red), replaced Ch.6 with specific contribution	16 February 2016	Final version for Forum

Disclaimer

The members of the 'Activity Group Standardisation' of the 'European Multi-Stakeholder Forum on Electronic Invoicing' contributed as independent experts, not representing their governments or organisations. The views expressed in this document are the views of these members and do not necessarily reflect the views of the European Commission or of the states or the organisations for which the members of the group work.

Reading guide:

Text segments that have been copied from the previous version of the 'Background Document' are given a background colour as shown here. Note that - where necessary - these segments may have been updated to reflect relevant developments and changes since that version of the Background Document has been issued or may have been reshuffled for readability purposes.

Text windows as shown on the right are used to highlight notes or conclusions based on the surrounding text, that do have influence later on in the document.

This document can be read as a 'stand-alone' document, where it is preferably read in its entirety.

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Preface

The European Multi-Stakeholder Forum on e-Invoicing ('Forum') has been organised by the European Commission. The Forum brings together representatives of National Fora and other stakeholders at EU level, where it aims at exchanging experiences and best practices on e-Invoicing and also at a recognised position allowing it to help the Commission in identifying further measures to facilitate the mass adoption of e-Invoicing across borders. These aims are in line with the Commission's objective[1] ('**The Objective'**) to make '*e-Invoicing the predominant method of invoicing by 2020*' in Europe in the context of the Digital Agenda and the Digital Single Market. The Forum had its first term between 2011 and 2013[2], and will have a second term between 2014 and 2017[3].

The originally 'monolithic' work of '*the Activity Group*[4] *Standardisation*'[5], allocated to the Forum, has been split upon request of the Members of this Forum and the European Commission in a number of parallel, but nevertheless related, activities. These activities were aimed at the development of:

1. a 'Recommendation';
2. a 'Background document';

where at a later stage, following the outcome of decision making in the Forum, has been added:

3. the Terms of Reference for the development of a European Standard, as referred to in COM (2013) 449[6] and COM (2013) 453[7].

Although the 'Recommendation' is a self-contained document that enables review and decision making, the accompanying 'Background document' provides addition information to highlight rationale, intended use and follow-up of the 'Recommendation'.
It contains (amongst others) descriptions of actions that need to be carried out in order to allow the full benefits of the Recommendation to be reaped.

The Recommendation[8] is a *pivotal element in an integral vision*, aimed at an optimal contribution to the public policy Objective. The '*ex-ante verification by stakeholders representatives*' approach used in developing the Recommendation was chosen to establish an optimal (future) adoption by the stakeholders of the Recommendation, for the benefit of said Objective.

The Recommendation was unanimously adopted and endorsed by the Forum in its meeting of 1 October 2013[9]; the Background Document however, for logistical (i.e. non-content related) reasons, did not yet reach a similar status.

The Recommendation has been taken up by the European Commission. In the context of various initiatives aiming at the development of the Single Digital Market, as set out in the Communication *'A Digital Agenda for Europe'*[10], one of the flagship initiatives of the Europe

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

[2] Commission Decision of 2 November 2010 setting up the European Multi-Stakeholder Forum on Electronic Invoicing (e-invoicing) http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32010D1203(02)

[3] Commission Decision of 25.6.2014 Setting-up the second European Multi-Stakeholder Forum on Electronic Invoicing (einvoicing) http://ec.europa.eu/transparency/regexpert/index.cfm?do=.groupDetail.groupDetailDoc&id=16455&no=2

[4] Although the name of this group was 'Activity 4' in the first Forum and 'Activity Group Standardisation' in the second Forum, the latter name will be used throughout this document to refer to the group.

[5] http://ec.europa.eu/enterprise/sectors/ict/files/invoicing/minutes_einvocing_en.pdf

[6] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2013:0449:FIN:EN:PDF

[7] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2013:0453:FIN:EN:DOC

[8] http://ec.europa.eu/enterprise/sectors/ict/files/invoicing/recommendation_on_the_use_of_a_semantic_data_model_en.pdf

[9] http://ec.europa.eu/DocsRoom/documents/4124/attachments/1/translations/en/renditions/pdf

[10] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52010DC0245R(01):EN:NOT

2020 strategy[11], a Directive[12] has been developed for '*e-Invoicing in e-Procurement'* and the Recommendation has been made its central focal point.

The Directive recognises, in the terms of the Recommendation, the set of all public sector Contracting Entities and Contracting Authorities together, as 'constituting a single Community'. However the Directive also adds requirements for receiving and processing of electronic invoices based on the availability of the European Standard it requests to be developed and gives already interpretations of specific articles of the Recommendation. As such, the Directive '*jumps the queue*' on the developments of further recommendations by the Forum, e.g. about adoption and implementation, where these were already explicitly mentioned in the (original) Recommendation as (other) essential themes, to be acted upon in unison, and where the Background Document[13] provided basic guidance to that purpose.

So the uptake process of the Recommendation indeed followed well established and formalised rules - but without the guidance of the Background Document it led to questions, local or too narrow interpretations with the risk for 'deviations' from the original vision and intentions. This in turn opens up possibilities of divergence regarding the original vision - and hence complications for future adoption.

It is for this reason that in the meeting of the Forum on 20 March 2014 the following was stated[14] ' *… accepted the changes introduced into the Directive as a result of the negotiations with the co-legislator, but stressed the remit of Activity Group Standardisation to provide recommendations that would attempt to (re)align as much as possible with the original vision and strategy that served as the basis for the original Recommendation. This could imply providing advice to move away from the wording of the Directive where it deviates from the Recommendation*.'

Given these observations, it is seen as indispensable to provide an updated version of the original Background Document. It is the document at hand and is the necessary medium to:

a) provide information on the intended scope and remit of the Recommendation - recognising the Recommendation as an agreed 'milestone' on which further matter can and must be built;
b) clarify steps that still need to be discussed and agreed with the Forum and lead to new recommendations and implied next steps;
c) document experiences gathered so far in the process(es) that provide valuable input and feedback;
d) provide unambiguous information on the (understanding of the) intention of (formal) Commission documents.

This document also gives descriptions of topics that are relevant in the broader context of the Objective, the framework in which they should be positioned and a number of Triggers to be further discussed and elaborated e.g. (combined) into Recommendations. It will repeat some material from the previous Background Document, where that is seen as necessary.

11 http://ec.europa.eu/europe2020/index_en.htm

12 http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0055

13 https://circabc.europa.eu/sd/a/90e29c14-2fc9-403b-842a-a3f4395d5351/Background%20Document%200.4%20Draft%20-%20frozen%2020150205.pdf

14 Document 'EMSF_meeting minutes_20.03.14_FINAL.pdf'

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Executive Summary

The originally 'monolithic' work of '*the Activity Group Standardisation*', derived from the tasks and responsibilities allocated to the European Multi-Stakeholder Forum on e-Invoicing, has early in its beginning been split (upon request of the Members of this Forum and the European Commission) in a number of parallel, but nevertheless related, activities aimed at the development of a 'Recommendation' and a 'Background document'; the purpose of the 'Background Document' was to provide the relevant background information and details to communicate and agree the fundamentals that the 'Recommendation' is based on. Although the 'Recommendation' is a self-contained document that enables review and decision making, the accompanying 'Background Document' provides addition information to highlight rationale, intended use and follow-up of the 'Recommendation'.

The Recommendation is a *pivotal element in an integral vision*, aimed at an optimal contribution to the public policy Objective.

The '*ex-ante verification by stakeholders representatives*' approach that was used in developing the Recommendation was chosen with the aim to establish an optimal (future) adoption by the stakeholders of the Recommendation, for the benefit of said Objective.

The Recommendation was unanimously adopted and endorsed[15] by the Forum in its meeting of 1 October 2013; the Background Document however, for logistical (i.e. non-content related) reasons, did not yet reach a similar status.

The Recommendation has been taken up by the European Commission. In the context of various initiatives aiming at the development of the Single Digital Market, a Directive[16] has been developed for '*e-Invoicing in e-Procurement'* and the Recommendation has been made its central focal point.

The uptake process of the Recommendation followed well established and formalised rules - but without the guidance of the Background Document the risk exists of local / too narrow interpretations and 'deviations' from the original vision and intentions behind the Recommendation. This in turn opens up possibilities of divergence regarding the original vision - and hence complications for future adoption.

Given these observations, it is seen as indispensable to provide an updated version of the Background Document, as the necessary medium to:

a) provide information on the intended scope and remit of the Recommendation - recognising the Recommendation as an agreed 'milestone' on which further matter can and must be built;
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c) document experiences gathered so far in the process(es) that provide valuable input and feedback;
d) provide unambiguous information on the (understanding of the) intention of (formal) Commission documents.

This is the document at hand; it gives descriptions of topics that are relevant in the broader context of the Objective, the framework in which they should be positioned and a number of

[15] This implies that the Forum endorsed and agreed with the fundamentals behind the Recommendation, as described in the Background Document and presented over time in the Forum.

[16] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0055

177 ‘Triggers’ to be further discussed and elaborated e.g. (combined) into Recommendations. It
178 will repeat some material from the previous version of the Background Document, where that
179 is seen as necessary.

180 This document is relevant, in its entirety, for those readers that want to fully reap the benefits
181 of the Recommendation and contribute to its proper uptake. It can be read on a stand alone
182 basis

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1. Introduction to this document

1.1 Rationale

Although not explicitly documented as such, the Recommendation[17] is intended to be one of the pivotal components in a structured project approach[18], that is assumed to be followed by the European Commission to help realise the Objective. Essential characteristics[19] of such a project approach are four distinguished steps, that are carried out sequentially (and if necessary repeatedly, like 'in a circle'): **Plan** (*set objective(s), define actions to realise these*), **Do** (*carry out the actions defined*), **Check** (*measure results and progress against expectations and objectives(s)*) and **Act** (*take corrective action if not 'on course'*). For optimal results, the project approach is supposed to tackle resp. Strategical, Tactical and Operational aspects of the path towards the goals to be realised. See Figure 32 in Annex 3; further elaboration is considered out of scope for this document..

Defining the objective(s) under '**Plan**' and the measurements / verifications supposed to take place under '**Check'** requires S.M.A.R.T.[20] definitions of these to be agreed. This in turn needs unique and unambiguous definitions of the topic(s) at hand.

Effectiveness of policy, in the context of objective(s), is proportional to its acceptance i.e. in fact proportional to the extent that the policy meets existing and / or identified needs and requirements. The '**Do'** step needs to take that into account, also in terms of avoiding superfluous or temporary investments for stakeholders c.q. deviations from common business practices, that would be necessary to just only meet requirements coming from legislation and / or regulation. Such matters would cause the hampering (within the jurisdiction(s) concerned) of the competition position of entities and stakeholders that do need to meet the requirements - versus those who do not need to. Yet another argument for single (unambiguous) interpretations.

Generally speaking one could say that this document is the appropriate medium to provide descriptions and understandings of the playing field that are used as a basis for the inception and development of Recommendations. Such descriptions do not only serve reference purposes, but also provide the rationale why a certain approach has been chosen.

A change in approach must be justified by a preceding change in (a) description(s) of the playing field. This could happen if for instance the results of new developments imply changes in that field or - undesirable but not improbable - an error has been found in the description. This approach also would help the phased approach that underlies the 'ex ante verification' mechanism that is envisaged by the Activity Group Standardisation - ensuring that the development of e.g. Recommendations is based on 'agreed (*with the stakeholders*) requirements and starting conditions'.

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[17] http://ec.europa.eu/enterprise/sectors/ict/files/invoicing/recommendation_on_the_use_of_a_semantic_data_model_en.pdf

[18] It is recognised that there are challenges here; take up suffers from a fragmented approach, lacking an over-all governance (especially in public sector); an example is from the European Parliament Report A7-0083/2012 on '*a competitive digital single market – e-Government as a spearhead*' which calls for electronic invoicing to be made mandatory for all public procurement **by 2016** and the need for guidance its publication implies as this is not aligned with the Directive 2014/55/EU.

[19] https://en.wikipedia.org/wiki/PDCA; PDCA (plan–do–check–act or plan–do–check–adjust) an iterative four-step management method used in business for the control and continuous improvement of processes and products. It is also known as the Deming circle/cycle/wheel, Shewhart cycle, control circle/cycle, or plan–do–study–act (PDSA).

[20] https://en.wikipedia.org/wiki/SMART_criteria

Directive 2014/55/EU aims at *'e-Invoicing in e-Procurement'*. But it contains statements that go beyond that and also cover more than one interpretation of 'e-Invoicing'.

Here it can be seen that there is a lot of haziness on '*e-invoicing*'. In order to be able to provide the European Commission with proper and suitably tailored advice and Recommendations, it must be made clear what the understanding of the Commission's definition / interpretation is. It will be obvious, that where the interpretation worked with does not equal the intended one, Recommendations run a large risk of being misinterpreted themselves and hence being far less effective.

The figure to the right is to illustrate that 'e-Invoicing' is a topic in e.g. (Public) e-Procurement, e-Business (in public and private sector), in the Directive 2014/55/EU, etc.

It must be realised that measures that are developed based on one interpretation not necessarily benefit developments based on a different interpretation - and can (for the latter) even be counterproductive (apart from the fact that this maintains the haziness).

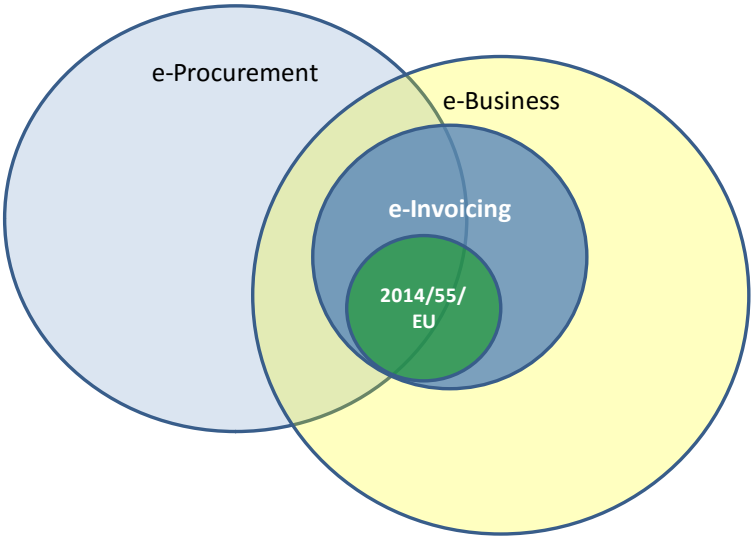

Figure 1 - 'e-Invoicing' in different contexts

So one objective of this document is to provide a working definition of e-Invoicing as mentioned by the European Commission; a next objective is to provide (based on that particular definition) Triggers regarding what is needed to further contribute to the Objective.

The document also suggests a way to identify other interpretations (and makes an initial start there), not covered in that definition, that also contribute to the Objective in order to be able to develop, via Triggers, a comprehensive set of Recommendations and Advice in the context of the Objective.

One of the justifications for the broader perspective can be found in Article 2 on the Commission Decision to set up the second Forum21, in the description of Tasks 1f) and 1g) saying:

> *f) to liaise with the future European Forum on e-Procurement for all matters regarding the use of e-invoicing in public procurement;*
>
> *g) to advise the Commission on the governance of the relevant Connecting Europe Facility digital service infrastructures.*

Other objectives of this document are (see also (a) - (d) in Preface): clarify the original intentions leading to the Recommendation, define, document and/or clarify basic assumptions and starting points to be used as unambiguous reference for the work of the Forum and to provide suggestions on how to further progress - based on the previous work.

[21] Document: C_2014_4142_F1_COMMISSION_DECISION_EN_V9_P1_771390.pdf

Of late the relevance of these latter objectives has been augmenting, as a number of topics have emerged / can be observed that deserve discussion and hence require a common understanding amongst the participants in the discussion.

Examples are:

- hybrid invoices;
- implementations and costs;
- electronic seals, signatures, delivery and preservation;
- the presumed impact of Article 7 of Directive 2014/55/EU;
- the difference between '*a semantic data model for the core elements of an invoice*' and '*an electronically processable invoice*';
- the establishment of entities '*just across the geographical border from member state A*' that are able to issue invoices into member state A without the burden of member state A specific legal requirements;
- impact of (e-)invoice on 3- and 4-way match models and v.v.;
- transmission infrastructures.

Trigger 1: To allow and enable the European Multi-Stakeholder Forum on e-Invoicing to provide proper and suitably tailored advice and Recommendations, relevant information about the decision making on the uptake of Recommendations and details of foreseen implementation(s) must be part of the dialogue and information exchange between the European Commission and said Forum.

1.2 Approach

The approach of this document is 'bottom up'. Based on a definition of e-Invoicing as understood from the European Commission's information (mainly) in the Directive 2014/55/EU, this document will provide suggested 'Triggers' to be elaborated into Recommendations for proper follow up. This follow up is supposed to take place after discussion of this document and its Triggers in the Forum, followed by the proper decision making.

Statements from '*Commission Decision of 25.6.2014 Setting-up the second European Multi-Stakeholder Forum on Electronic Invoicing*', which in fact describes the remit of the Forum and the deliverables that are to be expected from the Forum, have been taken as the leading reference framework, providing the justification for the approach of the work by the Activity Group Standardisation and the requirements following from that. The CEF[22] (and underlying) documentation has been interpreted and taken up in the broader context.

It is recognised that not everything is known to the members of the European Multi-Stakeholder Forum on e-Invoicing and that they do not participate in the internal information flows and decision making of the European Commission. The Recommendation, Triggers and document are assumed to be the best that could be achieved under these given circumstances. It is realised that this lack of information may imply that 'the perfect fit' could not be realised.

The 'Rules of Procedure[23]' of the Forum, as issued originally, do not provide answers to the information need of the Forum, as the elaboration of the Recommendation into Directive 2014/55/EU has shown.

[22] http://ec.europa.eu/digital-agenda/en/connecting-europe-facility

[23] http://ec.europa.eu/enterprise/sectors/ict/files/invoicing/rules_of_procedures_eu_forum_en.pdf

Trigger 2: The members of the European Multi-Stakeholder Forum on e-Invoicing must be provided with the relevant and necessary information and possibilities for dialogue around them, at the right moments in time and where necessary under relevant non-disclosure restrictions, to be able to meet the requirements from 'C_2014_4142_F1_COMMISSION_DECISION_EN_V9_P1_771390.pdf' and to provide suitably tailored an timely advice and Recommendations.

2. Basics and concepts

This chapter briefly tables and describes basics and concepts that must be taken into account ('as a given') in the matter at hand. Some information - for sake of easy reference and completeness - has been taken from the previous version of the Background Document.

2.1 Context for the works

The actions, recommendations and initiatives that the European Multi-Stakeholder Forum on e-Invoicing will bring forward do have to take into account that they will not meet a 'greenfield situation' in the marketplace.

Instead they will find a dynamic world of existing and evolutionary business, where market- and customer requirements provide for business cases that lead to developments and innovations. The deliverables of the European Multi-Stakeholder Forum on e-Invoicing, whether aimed at e.g. 'best practices', 'standards' or even legislation must hence be aimed at a proper positioning amongst these dynamics in order to allow them to effectively deliver the contribution to the Objective as envisaged and not turn out to be hampering or, worse, counterproductive.

This paragraph gives a high level overview, showing (see Figure 2) the four major forces that (are supposed to) have their impact on the playing field.

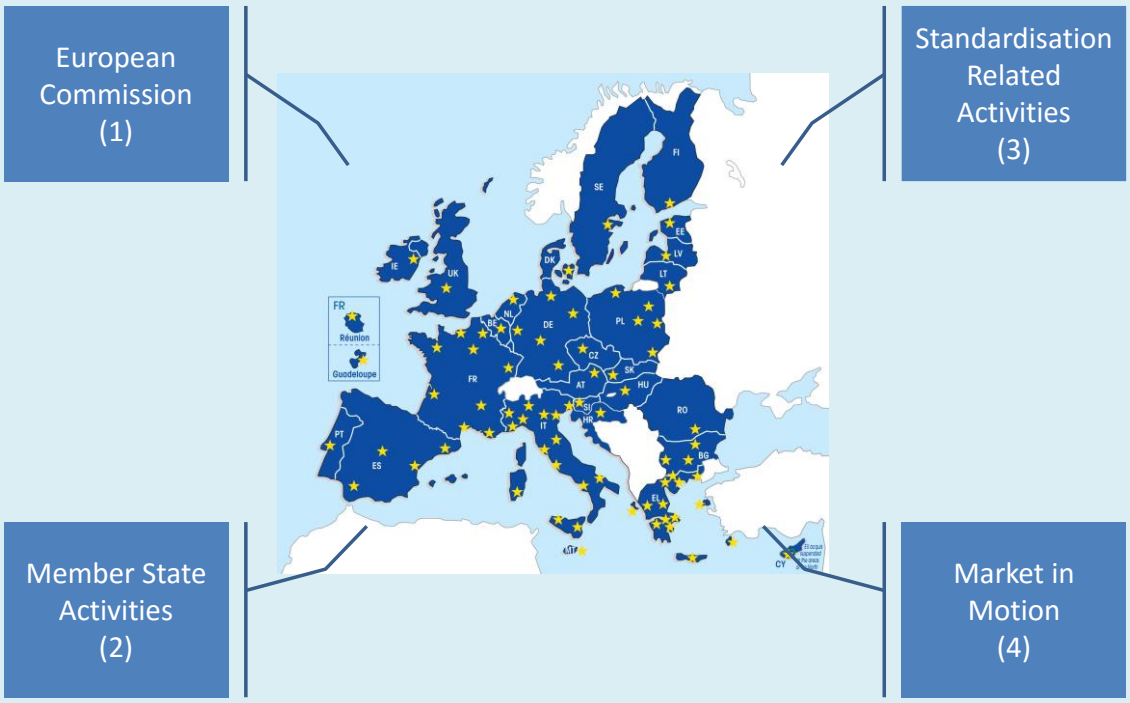

Figure 2 - Forces

In this figure 1, 2, 3 and 4 represent (sequence not implying a level of relevance):

1. European Commission

The influence of the European Commission on the playing field can be observed from the publicly available descriptions and information available on strategies, policies, actions and

initiatives. With the aim to further these, the Commission has also already funded, started the implementation of (or even already fully implemented) infrastructural projects of its own, e.g to help realise the e-SENS (Electronic Simple European Networked Services)24 deliverables. One of the elements here, considered to be touching the scope and remit of the Forum, is to promote the use and interoperability of e-invoicing at European level, with a particular focus on the B2G/public procurement domain, e.g. the e-PRIOR25 and PEPPOL26 (Pan-European Public Procurement On-Line) projects.

In the playing field, the European Commission also has established a 'European Multi-Stakeholder Platform on ICT standardisation'27 and an 'Expert Group on e-Procurement'28 29. Their individual deliverables include the identification of the need for further standardisation work, the coordination of European and national initiatives, and the sharing of best practice.

In fact this means that the Objective is also being translated, following a series of sequential steps and decision making, into a number of activities in parallel to the Forum.

2. Member state activities

This group could be characterized by the descriptions and actions given in topic 5.2.1 of the document COM (2010) 712[30] Final.

3. Standardisation (related) activities

Several European and international standardisation organisations are currently working on (or have been working on) standardisation for e-Invoicing, either as an individual subject or as an element in overarching developments. The most relevant are:

- The European Committee for Standardization (CEN), in particular Project Committee 434 '*e-Invoicing*', Project Committee 440 'e-*Procurement*' and the Workshop '*Business Interoperability Interfaces*' (BII) for public procurement in Europe.
- ISO[31], with the ISO 20022 Financial Invoice message.
- The Organisation for the Advancement of Structured Information Standards (OASIS) working on the Universal Business Language (UBL)[32] [33], including an e-invoice.
- UN/CEFACT[34] under UNECE, with the Cross Industry Invoice[35]

4. The market in motion

[24] http://www.esens.eu/home/

[25] http://ec.europa.eu/isa/actions/01-trusted-information-exchange/1-7action_en.htm

[26] http://www.peppol.eu/

[27] http://ec.europa.eu/digital-agenda/en/european-multi-stakeholder-platform-ict-standardisation

[28] http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=3142

[29] http://ec.europa.eu/growth/single-market/public-procurement/e-procurement/index_en.htm

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

[31] http://www.iso.org, http://www.iso20022.org

[32] https://www.oasis-open.org/committees/tc_home.php?wg_abbrev=ubl

[33] UBL is progressing to become an international standard in ISO JTC1. ISO/IEC FDIS 19845 'Information technology -- Universal Business Language Version 2.1 (UBL v2.1)'

[34] http://www.unece.org/cefact

[35] UN/CEFACT is mainly mentioned for the achieved in UN/EDIFACT and reference purposes. The assumptions that were basic to the advice in the Final Report of the Expert Group regarding further developments and convergence (i.e. with UBL) have not been realised in practice and no work or initiatives to those purposes are foreseen.

It should not be forgotten, that actually - at this moment - business is already taking place '*out there'*, transactions are being done, goods and services are being sold and purchased. (Business driven) innovation, developments and initiatives are taking place, often having been preceded by years of preparation and/or having long term impact changes. In addition to that, the playing field also has its legacy.

Trigger 3: Given the strict timelines and for reasons of business case economics, it is relevant that a smooth uptake and adoption of measures is realised. For this purpose, these measures must not be developed in isolation, but must take all relevant dimensions of the context into account. To this purpose it is relevant to adequately involve entities, like the Forum, that are supposed to be able to provide information, optimally mirroring stakeholders' interests in the context of the Objective.

2.2 No special role for G

A reference is made to paragraph 3.3 Positioning.

In business processes related to the e-Procurement and the '*Trade in goods and services*', public sector and private sector have different characteristics. A public sector entity 'G' can in fact be seen as 'owned by the public' and needs to meet requirements[36] regarding transparency and fairness that need not be met by private sector entities 'B'. A closer view reveals that the differences are in the 'pre-award' phase.

e-Procurement refers to the use of electronic communications and transaction processing by government institutions and other public sector organisations when buying supplies and services or tendering public works.

The e-Procurement process is divided into two e- Procurement phases, split by award of the contract: Pre- Award phase and Post-Award phase.

Pre-Award: e-Procurement process phases occurring before the award of the contract (e-Notification, e-Access, e-Submission, e-Evaluation, e-Awarding).

Post-Award: e-Procurement process phases occurring after the award of the contract (e-Ordering, e-Invoicing, e-Payment).

In the post-award phase, where a public sector entity 'G' is in the role of buyer, that role then is totally identical to a private sector entity 'B' in the same role of buyer. Therefore there is no need nor any justification for dedicated, i.e. 'G-specific' developments (like technical standards).

The role of 'G' must be limited to the removal of hindrances (in particular in the political, legal and regulatory environment) where 'B' does not have the required special competences and/or powers; the identification of the hindrances and ways to remove (or at least minimise) them should be a joint effort.

'G' should not act as 'B' as *a launching customer* for a solution that should be applied and used in a 'B' environment (that 'G' can use as well in a 'B' role).

2.3 Interoperability

Removing paper from business processes has been a business driver for companies and an ideal for many years: in today's global economy, every business faces constant pressures to improve the quality of its products or services, while at the same time tightly controlling or reducing costs. While computer information technology has automated or streamlined many

[36] Directive(s) t.b.d.

internal processes, in many businesses the external processes of exchanging information with other actors still lag far behind the internal procedures. The need for speed and accuracy of the information flows in external processes is becoming ever more critical.

Precise definition of the information flow is important because:

- Supply chains have become much more complex in the globalized economy. Information of the trade transaction is vital to reduce delays and costs. In recent times, there is also increased need for governments to receive advance trade information for automated risk analysis;
- The harmonization of processes and the simplification of cross-border procedures require clarity in the data required and provided. As documents are the core means to transfer data in international trade, the precise definition of the information in the trade document is important to simplify and harmonize processes.

Although most organizations have traditionally focused on improving efficiencies of the physical supply chain, *effective management of all information flows* (the green area in figure 3) is beneficial to all parties.

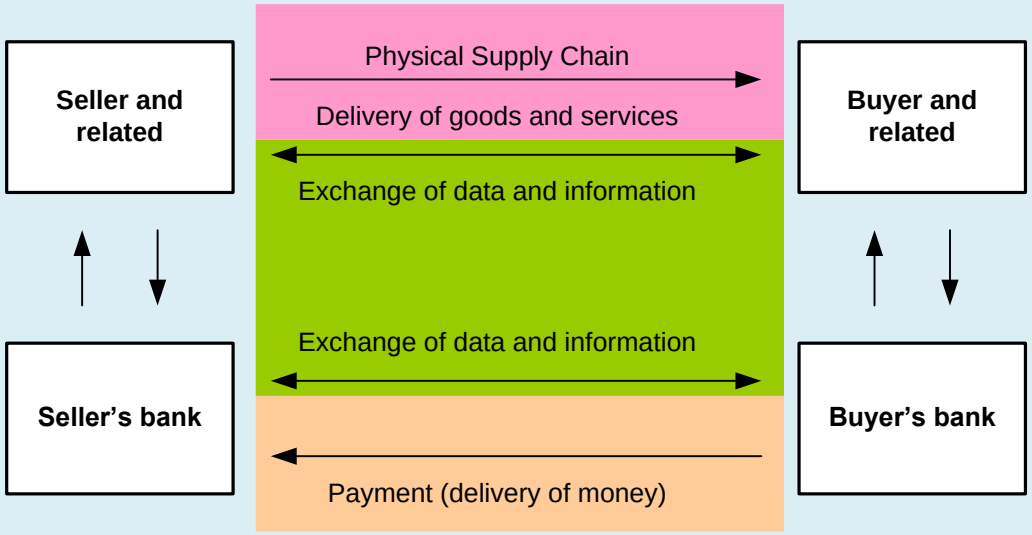

Figure 3 - Information flows

With automated and electronic solutions, information could be processed faster and more accurately so that lead-times could be reduced. A procurement process would also be quicker if purchase orders were managed electronically.

Furthermore, if a company is able of forecasting its purchases and sales with a high degree of accuracy, it will gain a competitive advantage by successful management of the supply chain.

The introduction of data interchange using electronic means (instead of paper) is a major contribution to *this effective management of information flows*. It should be noted, that for maximum efficiencies to be reached, not only business processes need to be automated – regarding the exchange of information - but also re-engineered. It should be recognized

Figure 3 highlights the meaning of the following concepts:

1. The physical supply chain (top pink), which consists of the flow of goods or services that move between the supplier and the Buyer;
2. The financial supply chain (bottom, orange): This is the flow of financial transactions (e.g. payments, invoice financing) that are implied by the move of the goods or services physically down the physical supply chain;
3. Underlying information flows (middle, green): These are the supportive flows of both the financial and physical supply chains and include things like purchase orders, confirmations and invoices.

that trade patterns are not static; also, new transport logistics concepts are developed which pose new information requirements.

The introduction of electronic data interchange should therefore not be a mere 1:1 substitution of paper documents by electronic messages, as that would practically freeze the current situation and make future developments and innovation difficult, if not impossible. So replacing paper documents with electronic ones will necessarily change the way that business is done.

Today, Internet (based) solutions have the potential to provide for the establishment of an open market. This electronic market can provide for new opportunities for information sharing, service and support, and payment. A business process can be set up (not only between businesses, but also between business and government or business and consumer) for specific purposes, defined ad-hoc or for one time use, as opposed to business processes belonging to established and permanent business relationships. The introduction of new techniques (like 'Cloud', SaaS, SOA and WebServices) for the compilation, exchange, storage and retrieval of data supports these evolving methods and provides an unprecedented opportunity for changes in processes carried out by governmental and private participants in international trade. The new information technology supporting these techniques may, in fact, for certain trade provide the actual means of delivery.

This calls for '**Interoperability**';

> Interoperability is *the capability to run business processes seamlessly across organisational boundaries*.

Interoperability is achieved by understanding how business processes of different organisations can interconnect, developing the standards to support these business processes efficiently and by specifying the electronic messages exchanged between the organizations to support these business processes in a scalable way.

The goal of interoperability is to allow information to be presented in a consistent manner between business systems, regardless of technology, application or platform. It thus provides organizations with the ability to transfer and use information across multiple technologies and systems by creating commonality in the way that business systems share information and processes across organizational boundaries. The establishment of interoperability will enable wider adoption of e-invoicing, while fostering improved competition, stimulating network effects.

In current business scenarios, interoperability represents the most complete form of collaboration, enabling companies not only to interact with each other electronically but also to interact as if they were a single 'virtual organization' - a perfect example of the Digital Single Market.

To reach this goal, interoperability is not intended to be limited to a technical level, but also to encompass the business- and process level (in fact the lower three layers in Figure 4), including for example processes related to the relationship between suppliers and buyers and to cooperation with business partners, commercial counterparties, financial institutions and authorities.

Interoperability is central to establishing growth in e-business and e-Invoicing.

Currently the lack of interoperability is the single most important impediment to e-business, particularly to the participation of small and medium enterprises (SMEs). Yet, the development of standards to facilitate interoperability requires a full understanding of the

problem domain, which is usually of an inter-organizational nature. The correct and logical approach towards the development of standards to facilitate international trade would thus be by means of a comprehensive study of all informational and procedural requirements for the execution of trade, followed by the negotiation of - and agreement on - international standards for these purposes. However, this would undoubtedly be a task of the greatest complexity. Therefore, a pragmatic step-by-step approach may be chosen under the condition that it must always be possible to make clear how the individual steps mutually support each other and fit into the larger context.

The subsequent text elaborates the meaning of this; for illustrational purposes, reference is made to the European Interoperability Framework[37] (EIF 2.0) that has been introduced by the European Commission IDABC as a 'tool' to help (build) interoperability between (e-) Governments, but its use is certainly not restricted to that. See figure 4.

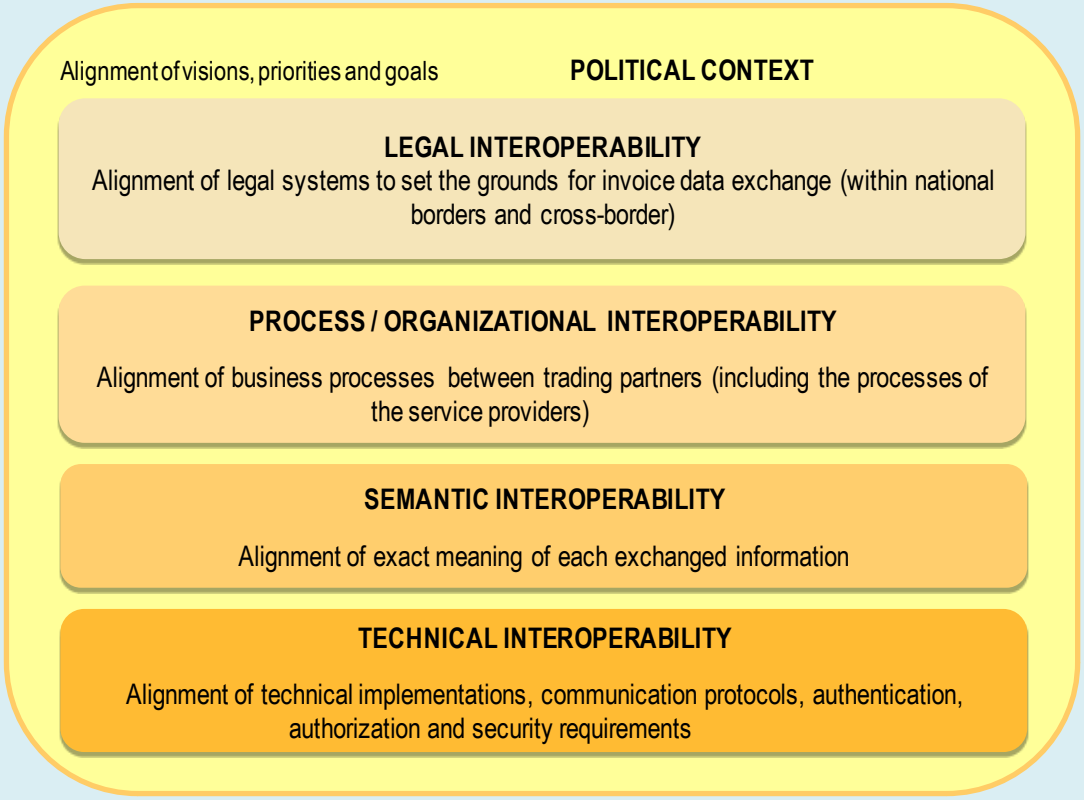

Figure 4 - EIF 2.0 Levels of interoperability

Figure 4 shows the four levels of interoperability within a single political context. When applied to electronic invoicing the trading partners must align all four levels of interoperability mentioned to successfully exchange electronic invoices in the following way (explained from and mostly limited to an e-Invoicing perspective):

Political context is set by various European Commission documents, especially Communication COM (2010) 712 '*Reaping the benefits of electronic invoicing for Europe*', Communication COM (2012) 573 '*Single market act II*' which defines a key action to 'make electronic invoicing the standard invoicing mode for public procurement'.

Legal interoperability is established by European VAT directives, '*Council Directive 2010/45/EU of 13 July 2010 amending Directive 2006/112/EC on the common system of value added tax*'. As regards the rules on invoicing this is the Directive that applies at the

[37] http://ec.europa.eu/idabc/servlets/Docb0db.pdf?id=31597

time of writing this document and finds implementations in the national legal systems of the European Union member states.

For this document, the Political Layer and Legal Layer are considered 'out of scope'.

Process / organizational interoperability requirements are usually defined by vertical industries that strive to standardize their business processes to make them more efficient. Process / organizational interoperability requirements should be, as much as possible, independent from semantic and technical interoperability because otherwise a uniform level cannot be guaranteed e.g. considering the size and the sector of different companies, their 'digital maturity', private vs. public sector, etc.

Some international work, such as CEN BII, defines '*Business Profiles*[38]*'* as a sequence of business messages needed to implement particular business processes, connecting Process interoperability level with lower semantic and technical levels.

To establish **semantic interoperability**, both parties must have equal understanding of the meaning of each piece of data contained in the electronic document that is exchanged. This means not only the definition of business information contained in each particular field of the data format, but also definitions of the values of codes (controlled vocabularies) contained in those fields.

In a heterogeneous business environment actors do not need to know in detail how another actor operates (internally); however the existence of business agreements that set out a common collaborative way of working together is vital.

Technical interoperability deals with questions such as:

- how to express the Semantic Data Model in a particular syntax ('format');
- how to address the trading partners (parties) and route the electronic messages;
- how to exchange information over the network (web services and/or communication protocol definition);
- how to protect data from unauthorized modification, ensure their integrity and achieve non-repudiation;
- mechanisms for authentication and authorization.

This is further illustrated in the figure 5 below:

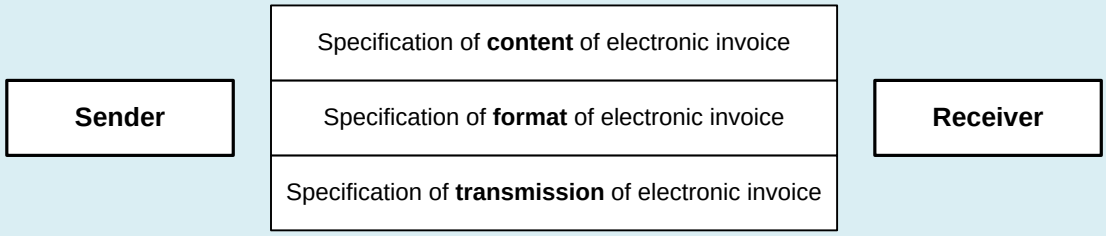

Figure 5 - Layers in technical interoperability

In order for the receiver of electronic messages to be able to understand and interpret them correctly, agreements must be made in some form with the sender of the electronic messages. This is what figure 5 refers to. From top to bottom:

1. specification of **content**: what information elements need to be conveyed, e.g. quantity, price per unit, date;

[38] https://joinup.ec.europa.eu/catalogue/repository/cen/bii-profiles

2. specification of **format**: how are the information elements represented, e.g. if a textstring is used to represent a date then does it use yyyymmdd or ddmmyyyy;
3. specification of **transmission**: how is the information in electronic format transferred from the sender to the receiver. To this purpose (seen from the receiver side) in fact a number of options is available[39]:
    - Electronic data interchange (EDI) e-invoicing: Trading partners send and receive electronic business documents, directly from system to system without human intervention (no manual retyping);
    - Web e-invoicing: This allows trading partners to manually fill the relevant information into an electronic form and submit as business document electronically, typically through web portals;
    - Scan and capture: Paper invoices are sorted, scanned and then data is captured either through manual keying or optical character recognition (OCR) technologies[40].

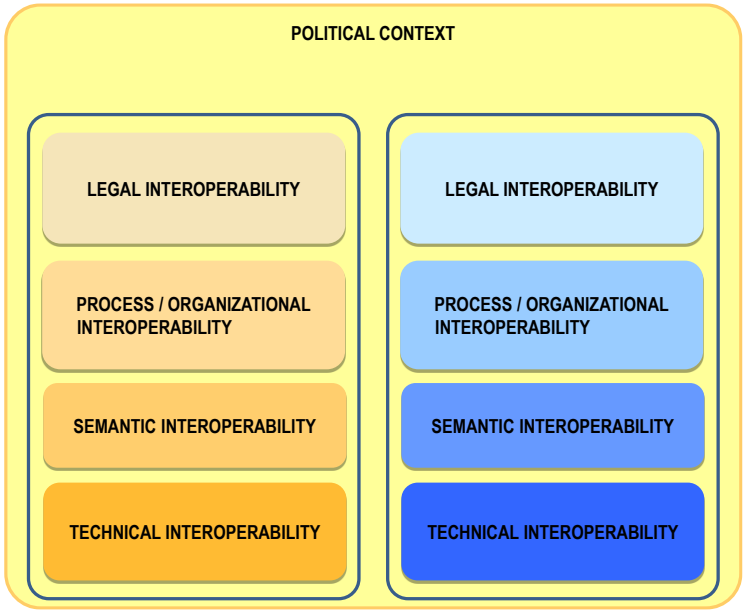

Figure 6 - Two communities with own interoperability layers in shared political context

Figure 6 schematically indicates 'interoperability' of two different communities, in different jurisdictions, within a single political context.

It illustrates that, in order for the communities to be able to do business between each other, agreements[41] must be made on each of the four lower levels.

This is yet another argument underpinning that within a single jurisdiction, 'G' in role of 'B' in post-award environment must not have an own ('proprietary') interoperability stack. There is absolutely no business rationale to develop own standards, process- or organisational requirements, because business cases will be jeopardised by the introduction of the need for interoperability measures that are not really necessary.

In relation to the additional sub-layers of Technical Interoperability identified above, a few remarks and suggestions are relevant in order to complete the picture.

Owing to the vast diversity of trading party relationships, which may be conducted for e-business either directly on a one to one basis or through the intermediation of a service or solution provider, the feasibility of convergence on formats and modes of transmission would

[39] They will be mentioned only; elaboration in further detail is beyond the scope of this document.

[40] These solutions have shown benefits for companies with little automation but are not considered true e-invoicing as they are not e-invoices as per art. 217 of Directive 2006/112/EC as modified by Directive 2010/45/EU, since they are exchanged as paper invoices.

[41] Process and organizational interoperability requirements should be kept very minimal as they can hinder the adoption

be very complex, perhaps even difficult to justify due to the heterogeneity of requirements and currently unjustified by a business case.

However, interoperability is increasingly being offered in the context of networks of users and their service providers and in the context of interoperability between networks. In the context of this network interoperability, it becomes feasible to agree on network standards for format (including syntax) and in the aspects of transmission based on the governance arrangements for the particular network environment.

These standards can be used independently of those used in the user system and in the systems of their service providers, if the latter are utilized. The availability of mapping software allows the smooth functioning on an end to end basis. Such interoperability initiatives will benefit from the moves to create a stronger level of semantic interoperability, and at the same time propel interoperability at the other levels of the framework.

Such 'network interoperability' initiatives are common and growing in terms of adoption, both at Member State level and at a pan-European level. Examples of the latter include the PEPPOL initiative (funded by the Commission and a number of public authorities) and the Model Interoperability Agreement of the European E-Invoicing Service Providers Association (EESPA[42]).

2.4 The roots and uptake of the Recommendation

In the Communication COM (2010) 712 Final, '*Reaping the benefits …*' the European Objective '*e-Invoicing predominant in 2020*' is stated. This Objective lies at the basis of the work of the Activity Group Standardisation of the European Multi-Stakeholder Forum on e-Invoicing.

The proposed program of work for the Forum[43] showed, regarding the topic of 'standards' and 'standardisation', an initial approach (suggested by the European Commission) to help achieve the Objective.

> *The group will assess the outstanding standardisation gaps and synergies among ongoing standardisation activities at European and international level. It will recommend specific actions that will attempt to resolve the identified problems.*

The remit of the Activity Group Standardisation in the first phase of the Forum was described as '*Migration towards a single e-Invoice standard data model*'.

For various reasons, and approved and endorsed by the Forum, the Activity Group Standardisation proposed a different approach to help realise the Objective - underpinning this approach by means of '*ex ante verification*' with (potential) stakeholders in the market and a proper identification and verification of market requirements[44].

The Activity Group Standardisation developed a '*Recommendation on the use of a Semantic Data Model to support Interoperability for Electronic Invoicing*'[45]. The development process found its roots in considerations how to contribute to the Objective via the mechanism established in the Commission Decision to set up this Forum and took into account various

[42] http://www.eespa.eu/

[43] http://ec.europa.eu/enterprise/sectors/ict/files/invoicing/minutes_einvocing_en.pdf

[44] 'best effort' determined by the responsiveness of (potential) stakeholders

[45] http://ec.europa.eu/enterprise/sectors/ict/files/invoicing/recommendation_on_the_use_of_a_semantic_data_model_en.pdf

previous deliverables (like the Final Report[46] of the '*Expert Group on e-Invoicing*' and the document '*e-Invoicing Standardisation Overview, issues and conclusions for future actions*'[47]) and verified their individual statements and conclusions against:

1. actual stakeholder requirements;
2. the way in which developments as foreseen had actually taken place and
3. the contemporaneous market infrastructures.

These verifications led to the conclusion that some statements[48] needed to be left, as they were outdated or overtaken by market developments.

The Recommendation was adopted unanimously by the Forum[49] in its meeting on 31 October 2013[50].

The Recommendation suggests the use of a semantic data model to support interoperability for electronic invoicing, as a contribution towards the Objective.

Given the timelines of various European Commission led initiatives and activities, the first 'uptake' of the Recommendation was as a basis for COM (2013) 449 Final, a proposed Directive, accompanied by COM (2013) 453 Final - a 'Communication' elaborating the topic.

The former document COM (2013) 449 Final underwent the process of negotiations with Member States, and was in the end approved as '*Directive 2014/55/EU on electronic invoicing in public procurement*'[51].

The Directive asks for a '*Standardisation request addressed to the European Standardisation Organisations in support of the implementation of the Directive 2014/55/EU on electronic invoicing in public procurement*' in order to identify, formalise and adopt the semantic data model mentioned in the Recommendation.

The Standardisation Request has been accepted by CEN and assigned to Project Committee 434 'e-Invoicing' that has absorbed it in its work.

Parallel to the Recommendation, the Activity Group Standardisation developed a 'Background Document', intended to provide background information on the rationale and the way of work for the Recommendation. Its version 0.4[52] was presented to the European Multi-Stakeholder Forum on electronic Invoicing, but has not (yet) been subject to approval procedures and/or decision making.

It should be noted, that the uptake of the Recommendation in the Directive, only covers a part of the scope of the Recommendation following from its vision how to contribute to the Objective '*e-Invoicing predominant in 2020*'.

[46] http://ec.europa.eu/internal_market/consultations/docs/2009/e-invoicing/report_en.pdf

[47] http://ec.europa.eu/enterprise/sectors/ict/files/invoicing/e-invoicing-standardisation-overview-issues-and-conclusions-for-future-actions_en.pdf

[48] Providing further detail is seen as 'out of scope' for this document, providing updated references and information.

[49] http://ec.europa.eu/enterprise/sectors/ict/e-invoicing/benefits/invoicing_forum_en.htm

[50] http://ec.europa.eu/DocsRoom/documents/4124

[51] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014L0055

[52] https://circabc.europa.eu/sd/a/90e29c14-2fc9-403b-842a-a3f4395d5351/Background%20Document%200.4%20Draft%20-%20frozen%2020150205.pdf

2.5 Summary of the Recommendation

The Recommendation of the Forum is intended to meet the needs of both the public and private sector on a neutral basis. It therefore addresses three themes that need to be elaborated in unison for the further uptake of electronic invoicing; they are:

- The recognition of an over-arching **Interoperability Framework** as defined in conceptual terms in the Recommendation.
- The proposed development of a **Semantic Data Model for the Core Section of an Electronic Invoice**, to include definitions, the identification of existing building blocks and practical user guidance.
- The identification of a **methodology**[53] and **implementation plan** for the carrying forward of the development of the Core Section including the identification of an organizational approach to the work required.

The concept is based on considering an invoice in general to be composed of a number of distinct sections:

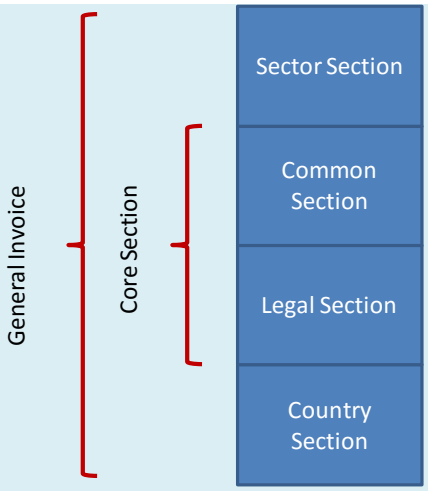

Figure 7 - Invoice sections

The **Core section** contains the Legal Section plus a Common Section. The Legal Section is concerned with both the observance of tax and commercial laws and regulations pertaining to electronic invoicing commonly in force throughout the EU. The Common Section contains commonly used and accepted data elements, which are not sector or country specific.

The **Sector Section** contains those data elements which are only a concern of a specific industry sector, community, supply chain or buyers and sellers of a particular type of product. Such data elements may be incorporated in an invoice as an 'Extension' of the Core Section data elements.

The **Country Section** contains those data elements which represent the specific requirements of a particular Member State above and beyond the Core Section data elements and which for local legal or other reasons are required in a compliant electronic invoice[54].

These Sections are illustrated in Figure 7.

Such a Semantic Data Model for the Core Section creates the possibility of a 'Core Invoice' or 'Minimum Core Dataset', which will support basic cross-industry electronic invoicing business requirements.

[53] A solid methodology/rulebook must be developed before a core/extension concept can be applied in a standard environment.

[54] For instance, the Country Section can contain a readable non structured format including all invoice data that are mandatory at domestic level in response to fiscal and legal requirements that are not covered in the Core Section.

All implementations should be capable and prepared to receive and process 'core invoices'. Organisations that receive invoices that conform to (core) specifications should be obliged to accept them. They may of course dispute the contents, but not the fact that the invoice was sent electronically.

A Core Invoice will not include the business requirements specific to any one particular industry sector, but it will be applicable to a broad community of users under the following conditions:

It should be noted that Sector Section and Country Section are not simply in fact 'a table of invoice elements where a sub-selection can be made to satisfy the requirements of the individual Sector or Country'. Sector or Country specific requirements may exist that are process related and that cannot be simply met by adding some fields . It is therefore that one of the deliverables of CEN/Project Committee 434 is the description of an 'Extension methodology', as extensions of the Core model may encompass:

- Adding (groups and structures of) fields
- Changing cardinalities (from mandatory to optional and vice versa)
- Increasing or decreasing repetition factors

1. Invoices between trading parties from differing industry sectors should only contain the Core Section and (where applicable) the required data elements from the applicable Country Section;
2. For a satisfactory level of cross-border[55] interoperability to be possible, a cross-border invoice should ideally have no Country Section and few Sector Section data elements;
3. The Core Section should be simple, stable and designed to be easily implemented to ensure adoption.
4. The Core Section should be developed taking into account existing requirements and specifications and in particular those that are already in common usage.
5. The Core Section should support a basic set of business processes in which the invoice plays a role, such as validity checking, approval, accounting and payment initiation.
6. The users and stakeholders in the EU environment should work with bodies having the appropriate remit, competence and credentials for the development and maintenance of the Core Section, so that the Core Invoice is usable in practice and covers 'off the shelf' a reasonable proportion of the market.

CEN Project Committee 434 ('Project Committee 434') has been established as an industry initiative, issued via the National Standardisation Organisations of The Netherlands (NEN) and Italy (UNI), to cover the topic of electronic invoicing.

The remit of Project Committee 434 includes and encompasses the development of the European Standard for the Semantic Data Model, meeting the requirements from the Recommendation and the Standardisation Request that followed Directive 2014/55/EU.

see https://www.cen.eu/work/areas/ICT/eBusiness/Pages/default.aspx

2.6 Envisaged adoption

Seen over time, the introduction of a single Semantic Data Model does not imply a 'single standard' immediately but more precisely a progressive convergence towards a single semantic reference data model will be seen, to be used by existing solutions as they progress through development lifecycles, recognizing that there will be a required period of time before new common solutions can be adopted.

Such migration to a single Semantic Data Model is anticipated to happen over a period of time, hence the reference to a migration plan in the Recommendation, recognizing there are many existing legacy investments and there will be a required period of time before investments in new common solutions are justified and these can be adopted.

[55] 'Cross-border' is intended to have the 'Outside-of-Europe' rather than the Intra-EU-Community perspective

If the trading parties ensure that they use the Semantic Data Model, cross sector interoperability will be enhanced.

If Member States ensure that they do not create or perpetuate the mandatory use of Country Section data elements, a greater measure of interoperability would be achievable. The root cause of such Country Section data elements will often lie in country-level legislation and regulations. If these Country Section data elements are harmonized at EU level or dispensed with as appropriate, a considerable barrier to full semantic interoperability would be removed. If such Country Section data elements are retained then trading parties and their service providers will be required to continue to identify and carry such data elements in a compliant manner between the trading parties.

The adoption of e-Invoice specifications will change over time[56] as depicted in Figure 8.

The number of country specific elements will decrease as a consequence of further harmonisation on a European level. Sector extensions, currently implicit and undocumented, will be explicitly defined with reference to a semantic registry. Cross sector invoices and invoices for facility goods and services will only contain a common core.

The differences per organisation[57] should disappear by:

- Requiring organisations to publish their deviations (short term);
- Requiring organisations to publicly state self-conformance (mid term);
- Requiring mappings to publicly demonstrate conformance (long term);
- Consider certifying conformance by independent auditors (long term).

Note that this does not mean that the Sector Section would disappear, but rather that the differences between information requirements of different organisation within the same sector disappear.

Differences per country should disappear by:

- Letting the deviations only apply to domestic (and not to cross-border) invoices (short term)
- Let the country adapt its legislation (long term)

Trigger 4: There must be enough time, seen from business economic perspective, allowed for migration towards the situation as depicted in the Objective - in order to improve adoption and avoid hindrances for business.

[56] Figure 8 schematically shows the originally envisaged, and seen as realistic, timeline; there was no relation intended to the date of transposition of Directive 2014/55/EU as the deadline as after that date the public authorities shall accept core based invoices

57 An organisation, for these purposes, is such a body which represents the requirements for a specific industry sector, supply chain, business process or product type

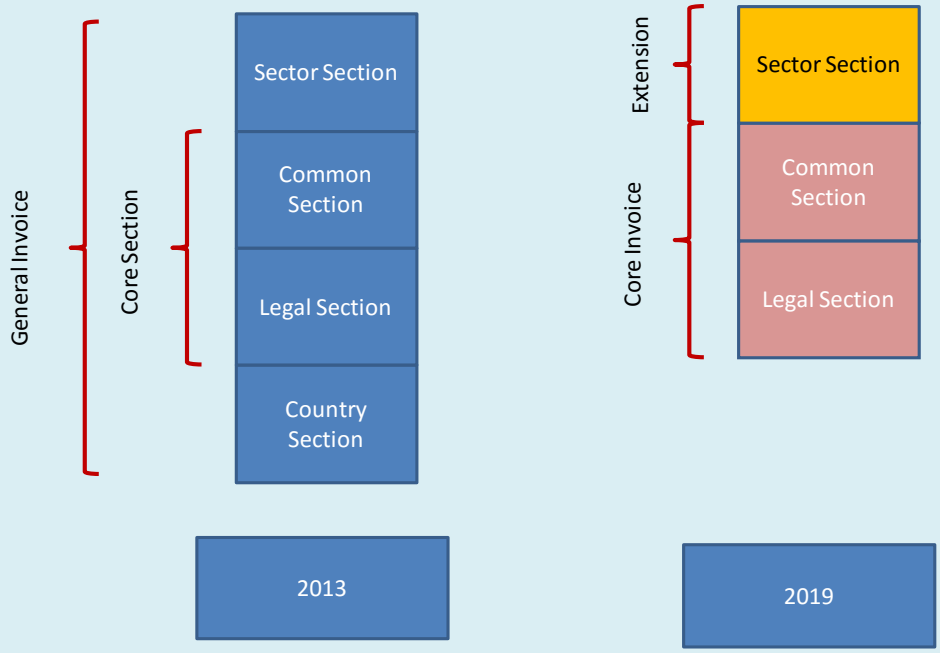

Figure 8 - Envisaged phasing out of national differences

Requiring organisations to show conformance to a reference data model provides a separation of concerns. Business and legal concerns will be separated from technical implementation concerns. Convergence towards interoperability will occur by using the following statements:

- The Legal segment is concerned with both Tax and trade laws common throughout the EU;
- The Core segment contains the Legal segment and other commonly used elements, which are not sector or country specific;
- Sector Specific are those elements which are only a concern of a specific industry sector, supply chain, business process or product type;
- Country Specific are those elements which are only the concern of a specific country e.g. legal requirements not used elsewhere in the EU;
- If organisations ensured that they reused the Common elements wherever possible; cross sector interoperability would be enhanced;
- If Governments ensured they did not create Country Specific elements; cross-border interoperability would be achieved;
- Ideally an Invoice should have no Country Specific and few Organisation Specific i.e. adopt the Core;
- Ideally the Core should strive to be simple, stable and designed to be easily implemented to ensure adoption;
- Governments and sectors should work with appropriate organisations such as CEN to maintain the Core.

An important dependency that must not be overlooked is that the timelines needed and essential for implementation at the receiver side do have impact on the feasible timelines for implementation at the sender side.

727 ## *2.7 Developments in 'Market in Motion'*

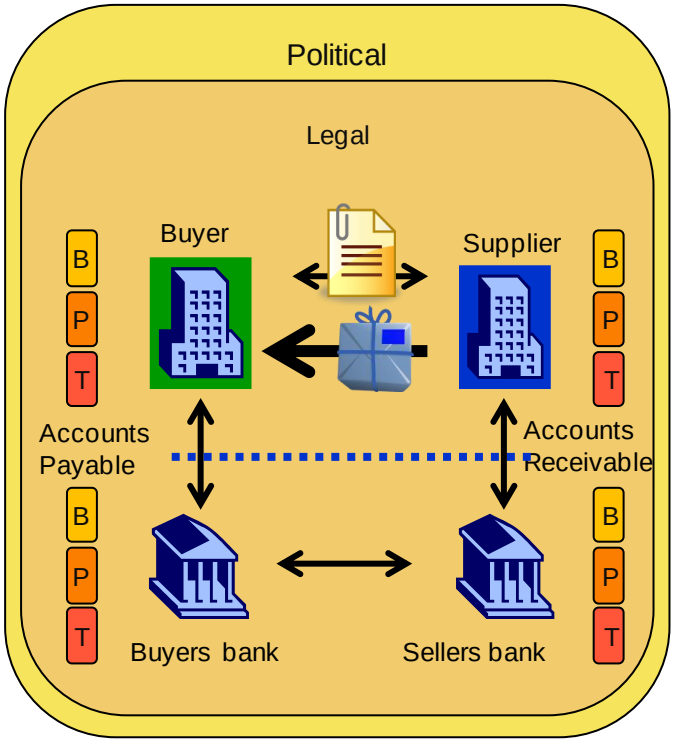

Figure 9 - Traditional documents exchange in Trade

This paragraph briefly illustrates developments in '*the market in motion*' (see also 2.1 Context for the works).

Internet based information exchange

Where goods and services exchanged as element in trade were traditionally accompanied by (paper) documents (see Figure 9[58]), and a relatively straight-forward bilateral exercise from supplier to buyer could be observed, it must nowadays be realised that the information exchanged between buyer and supplier - being electronic - is also enjoyed by many more entities participating in the trade. In addition, there may no longer be such an entity as 'a single supplier'.

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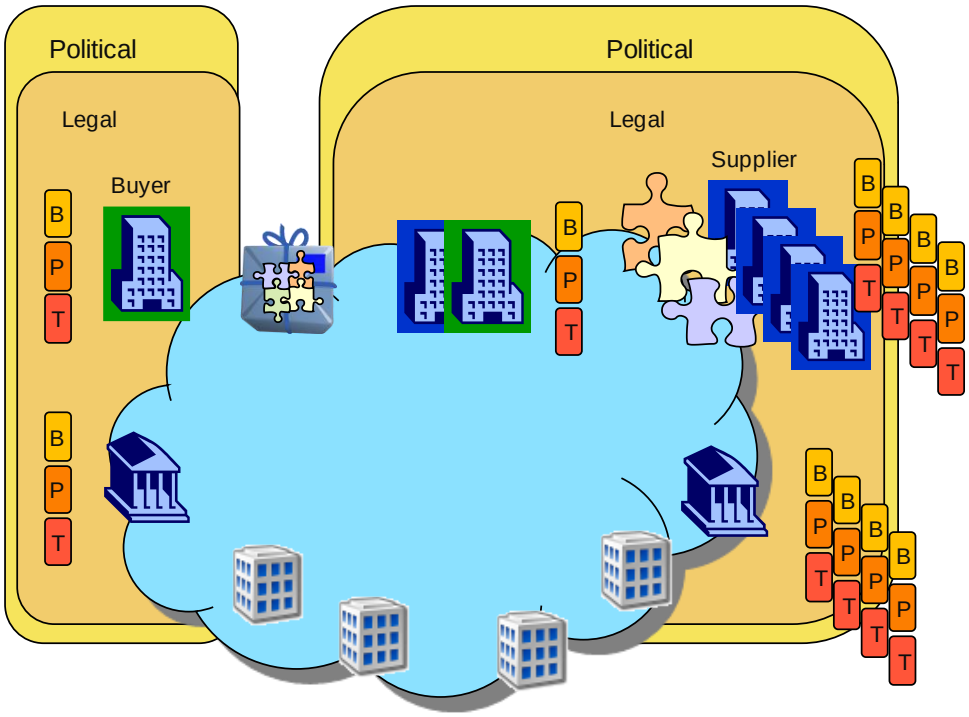


729

730 Figure 10 - Internet based Trade-information exchange and actor interaction

[58] B, P and T refer to the lower three layers of the EIF 2.0 model, in fact equivlent to Business, Process and Technology respectively

Innovation and new business supporting functions

Electronic invoicing, or better: electronic exchange of information instead of paper-based information exchange, in fact means that: i), information is available earlier, ii) information is available with less errors and iii) there is more (reliable) information about its status.

Combined with the rationale '*End-to-end e-procurement is not about implementing an IT project which would just replicate paper-based processes; it is an opportunity to fundamentally re-think the way public administration is organised. End-to-end e-procurement is therefore a key enabler ....'* (see 9.5 e-Procurement developments) this opens up the possibility for innovations, business incentives, business cases and (new) business supporting functions like 'Supply Chain Finance'.

In its 'Market Guide[59]', the Supply Chain Working Group of the Euro Banking Association defined Supply Chain Finance (SCF) as:

The use of financial instruments, practices and technologies to optimise the management of the working capital and liquidity tied up in supply chain processes for collaborating business partners. SCF is largely 'event-driven'. Each intervention (finance, risk mitigation or payment) in the financial supply chain is driven by an event in the physical supply chain. The development of advanced technologies to track and control events[60] in the physical supply chain creates opportunities to automate the initiation of SCF interventions'.

Further elaboration is out of scope for this document; it should be noted that providing 'physical supply chain event' information into the financial supply chain requires the availability of adequate 'cross-domain' standards.

Suffice to confirm again that (see section 2.3 Interoperability) the introduction of electronic data interchange should therefore not be a mere 1:1 substitution of paper documents by electronic messages, as that would practically freeze the current situation and make future developments difficult, if not impossible. So replacing paper documents with electronic messages conveying the information will necessarily change the way that business is done.

Trigger 5: While striving after the Objective regarding electronic invoicing, potential large(r) business benefits must be given the proper consideration in decision making.

[59] https://www.abe-eba.eu/downloads/knowledge-and-research/1406_EBA_Supply_Chain_Finance_European_Market_Guide_Second_edition.pdf

[60] Clearly, the (moment of availability of e.g. a) buyer approving invoice information can be considered such an event.

3. Invoice scenario's

This chapter was present in the original Background Document; developments and observations of the progress of various works and initiatives since then confirmed the justification of its presence.

In this chapter the following definition of 'scenario' is used[61]:

> *Internally consistent verbal picture of a phenomenon, sequence of events, or situation, based on certain assumptions and factors (variables) chosen by its creator. Scenarios are used in estimating the probable effects of one or more variables, and are an integral part of situation analysis and long-range planning*

There are many different scenarios for 'e-Invoicing', allowing for many more different, but individually still valid, interpretations of it. This means that measures defined with one interpretation in mind, where stakeholders unintentionally but justifiably use another, equally valid, interpretation may seriously hamper their effectiveness, progress and - in the end - contribution to the objectives.

Note:

> This is apart from any 'scoping' discussion. Later in this chapter some thoughts on scope will be positioned.

The first part of this chapter is dedicated to deriving an unambiguous description of (the understanding of) 'e-Invoicing' as an intended scenario conform Directive 2014/55/EU. That gives the context in which the Recommendation must be positioned and interpreted and given the follow-up it deserves.

But this is only part of the playing field and within the playing field only part of the potential ways to contribute to the Digital Single Market as implied in COM (2010) 712 Final.

3.1 e-Invoicing according to Directive 2014/55/EU

The Objective that the Forum is supposed to contribute to, in the way as described in the 'Commission Decision setting-up the second European Multi-Stakeholder Forum on Electronic Invoicing', is '*e-Invoicing predominant in 2020*'.

Interestingly, no S.M.A.R.T. criteria have been made available to allow for the verification to what extent (and in what environments) the (underlying) Objective(s) has (have) been realised.

In order to be able, on the one hand, to 'manage expectations' and on the other hand to develop suitably tailored recommendations and advice, it is necessary to look at (the definition of) 'e-Invoicing' according to the Directive 2014/55/EU.

A first key is given by Directive, where it says in Article 2 Definitions

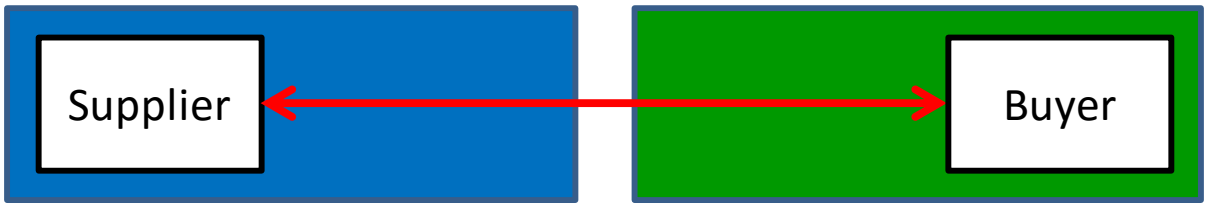
> *For the purposes of this Directive, the following definitions shall apply: (1) 'electronic invoice' means an invoice that has been issued, transmitted and received in a*

[61] after http://www.businessdictionary.com/definition/scenario.html

796 *structured electronic format which allows for its automatic and electronic*
797 *processing;*

798 A closer look at this definition shows that it obviously refers to a scenario, where the invoice
799 information is 'collected' into an electronic invoice by (e.g. the ERP system of) the supplier,
800 which is then transmitted electronically to (e.g. the ERP system of) the buyer, that - in turn -
801 can then process the information automatically and autonomously.

802 For the transfer there are a number of possibilities:



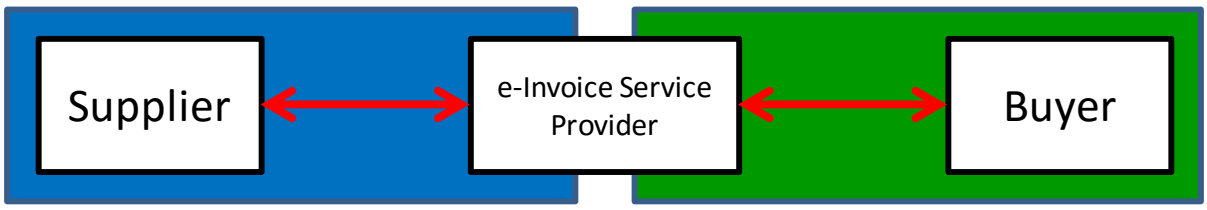
803

804 Figure 11 - Direct / '2 corner' information transfer

805 Figure 11 indicates a direct connection[62] between supplier and buyer; this is also known as a
806 2-corner model'.

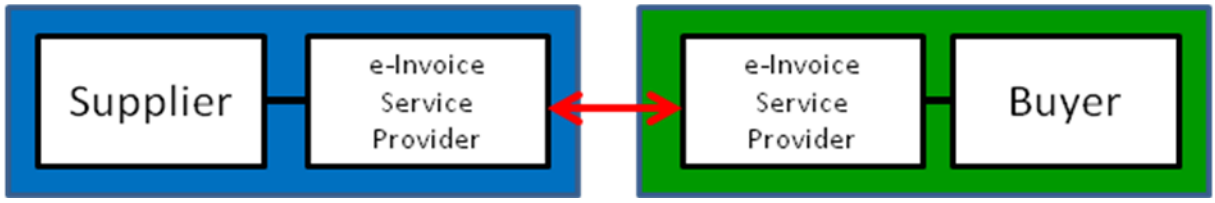
807 Note that for the scenario to be valid, the physical connection (Internet, Value Added
808 Network, ...) between supplier and buyer does not need to be direct.

809 Alternative to this direct connection is the use of a Service Provider[63], taking care of some of
810 the functions required; if both supplier and buyer use the same Service Provider, then a so
811 called '3-corner model' is used (Figure 12). If each has its own Service Provider, then a so
812 called '4-corner model' is used (Figure 13).



813

814 Figure 12 - '3-corner' model



815

816 Figure 13 - '4-corner' model

817 For a random supplier to send invoice information to a random buyer, assuming they have
818 no direct connection, (latest) at purchase time an agreement needs to be made how to
819 electronically transfer the (invoice) information.

---

[62] the word 'connection' is used to refer to the means to electronically transfer the information. An example would be 'the Internet' or 'a Value Added Network'

[63] note that a supplier or a buyer may use services of more than one Service Provider

If supplier and buyer do not have a Service Provider in common, it is up to their individual Service Providers to ensure a way in which the information can be transferred.

It should be noted that within the same single scenario, responsibilities can be allocated differently. Figure 14 gives in indication for the possible moments of formal invoice issue.

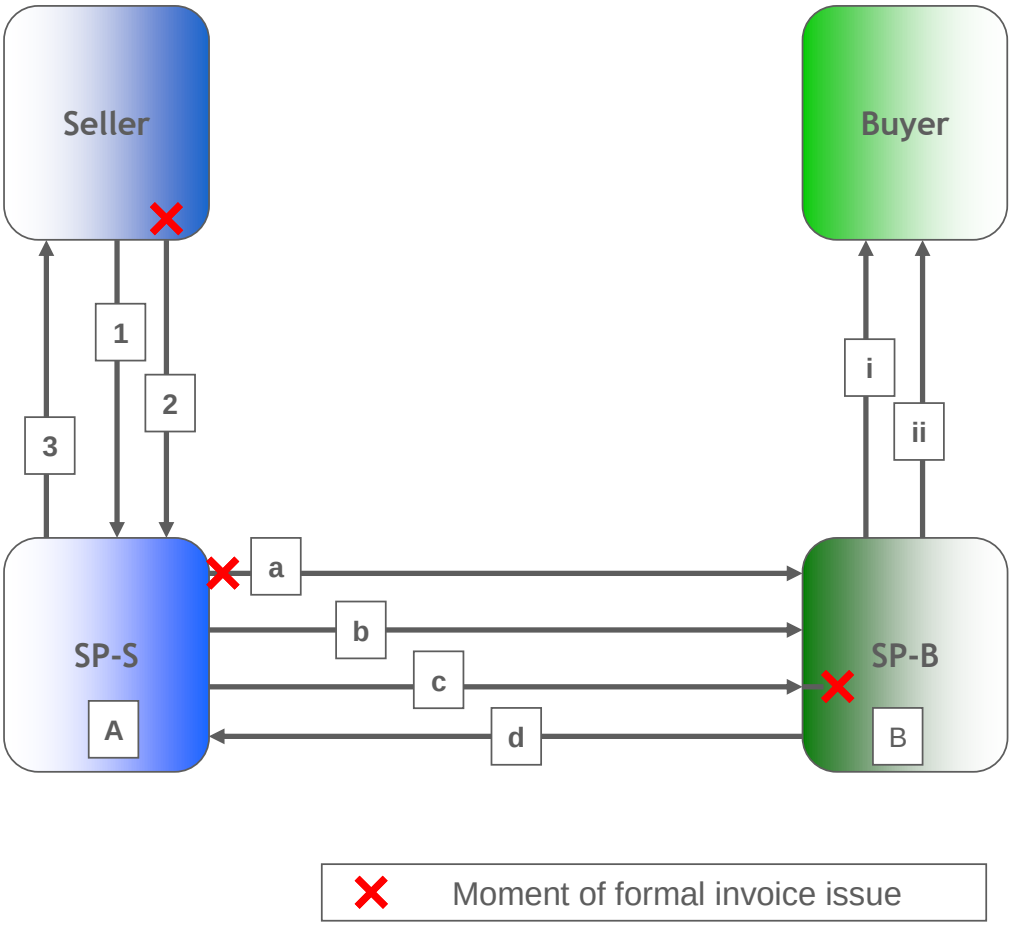


Figure 14 - 'X marks the spot'

The flows depicted in the figure above cover most of the known process options for a simple 4-corner model and are explained below:

1. Invoice data is sent by the supplier to SP-S.
   Next steps can be: a. SP-S issues the invoice in the name and on behalf the supplier and makes the invoice available to SP-B.
   Further steps can be 3 SP-S routes the invoice back to the supplier for storage or A SP-S stores the invoice on behalf of the supplier.
   OR c SP-S makes the invoice data available to SP-B for the latter to issue the invoice in the name and on behalf of the supplier.
   Next steps can be d SP-B routes the invoice back to SP-S.
   Further steps can be 3: SP-S routes the invoice back to the supplier for storage or A. SP S stores the invoice on behalf of the supplier or B. SP-B stores the invoice on behalf of the supplier and its service provider.
2. The invoice is issued by the supplier and sent to SP-S.
   Next steps can be b the invoice is made available to SP-B (always).
   Further steps can be B SP-S stores the invoice on behalf of the supplier. (If the supplier chooses to store the invoice locally he will have done so prior to step (b).

(For the further detailed description, see section 5.5.10 in the Final Report of the Expert

844 Group on e-Invoicing[64]; a further elaboration is out-of-scope for this document).

845 Interestingly,

846 *Whereas (7)* in the Directive says*: The benefits of electronic invoicing are*
847 *maximised when the generation, sending, transmission, reception and processing*
848 *of an invoice can be fully automated. For this reason, only machine-readable*
849 *invoices which can be processed automatically and digitally by the recipient should*
850 *be considered to be compliant with the European standard on electronic invoicing.*
851 *A mere image file should not be considered to be an electronic invoice for the*
852 *purpose of this Directive.*

853 seems to indicate that compliance requirements are limited to the recipient side of the
854 electronic invoice exchange while stating that for maximised benefits both supplier and buyer
855 need to be using automated systems.

856 The conclusions are:

857 1. e-Invoicing, as referred to in
858 Directive 2014/55/EU is done by
859 means of EDI[65].
860 2. the buyer processes electronic
861 invoices received by means of EDI.
862 3. '*a buyer receiving electronic*
863 *invoices by means of EDI*' leaves
864 open what the source of the
865 electronic invoice is; it could be the
866 supplier, it could be a Service
867 Provider collecting information from
868 the supplier either electronically or
869 via a Service Provider operated
870 web-form (see also Figure 14 and
871 15).

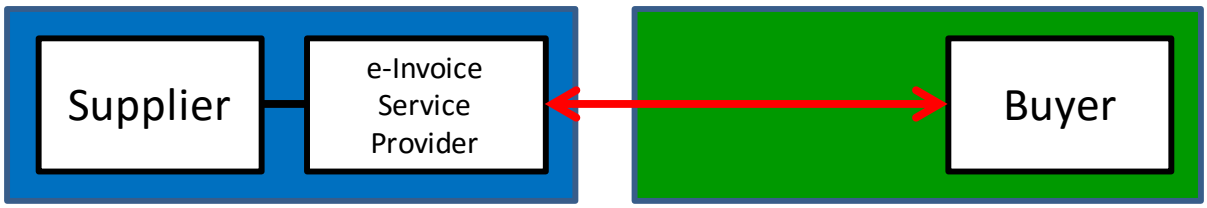
EDI as per definition of the European Commission: See 94/820/EC: *Commission Recommendation of 19 October 1994 relating to the legal aspects of electronic data interchange (Text with EEA relevance)*

Article 2 - Definitions

2.2. EDI: Electronic data interchange is the electronic transfer, from computer to computer, of commercial and administrative data using an agreed standard to structure an EDI message.

2.3. EDI message: An EDI message consists of a set of segments, structured using an agreed standard, prepared in a computer readable format and capable of being automatically and unambiguously processed.

872 Following the above conclusions, it is clear that requirements in the Directive 2014/55/EU
873 regarding 'user-friendly' - that imply human interaction - are misplaced; they cannot be valid
874 for a definition of the format of electronic information exchange at a technical level.

875 

876 Figure 15 - Service provider issuing Directive compliant electronic invoices

877 It is noted that e-Delivery (see 9.6 e-Sens and CEF-e-Invoicing-DSI) could have a role here.
878 This needs to be further explored, qualified and assessed.

879 **Trigger 6:** Further exploration, qualification and assessment of e-Delivery (or more in general e-SENS (related) projects and initiatives) is necessary.

64 http://ec.europa.eu/internal_market/consultations/docs/2009/e-invoicing/report_en.pdf

65 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31994H0820:en:HTML

3.2 The invoice in business processes

This paragraph is for sake of completeness. It only shows a possible basic process.

It must be realised, that it does not mention supporting functions and interactions with other actors whatsoever where in real life processes these do take place.

This paragraph does not show the differences with (public) e-Procurement processes. The e-Invoice definition as derived from Directive 2014/55/EU is applicable for information exchanges in this process that are based on EDI, in particular in the post-award phase.

The invoice plays an important role in the purchase-to-pay business process. Many variations exist on this process pattern: buyer and supplier may conclude a blanket contract, containing (delivery and payment) conditions, the Despatch Advice may not be present, the invoice (and payment) may precede the delivery, etc.

In all cases the Invoice is to prove that the sales transaction has been concluded, specifying the products or the services that have been bought or consumed and the amount due as a result of the transaction. One basic example of such a process is depicted in figure 16.

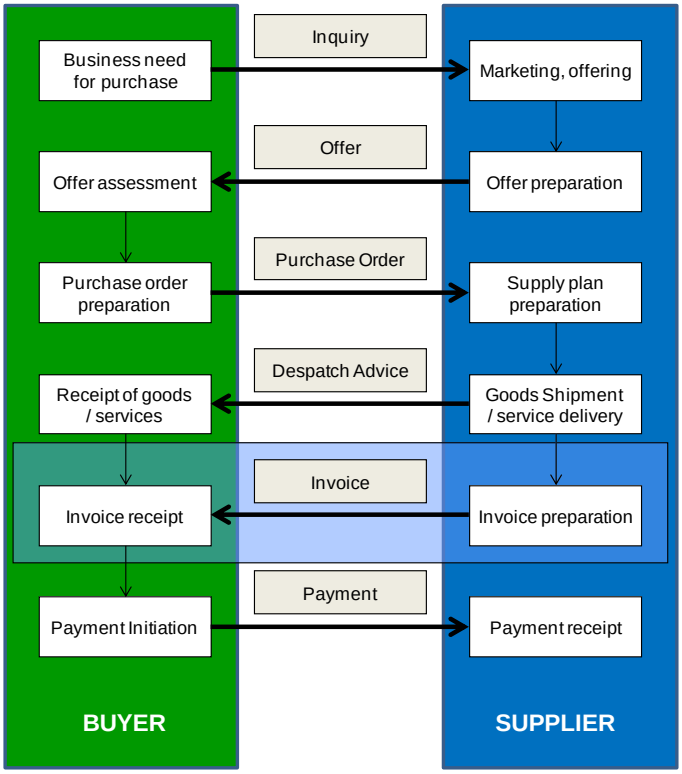


Figure 16 Purchase-to-pay process – Example

In the business processes, there are two types of activities:

- based on the invoice
- involving the invoice

Regarding the first, the reader is referred to the previous version of the Background Document.

In the second type are the activities that are indispensable to be able to automatically and autonomously process the (e-) invoice.

These activities have certain implications, that are often not explicitly mentioned but must surely be taken into account.

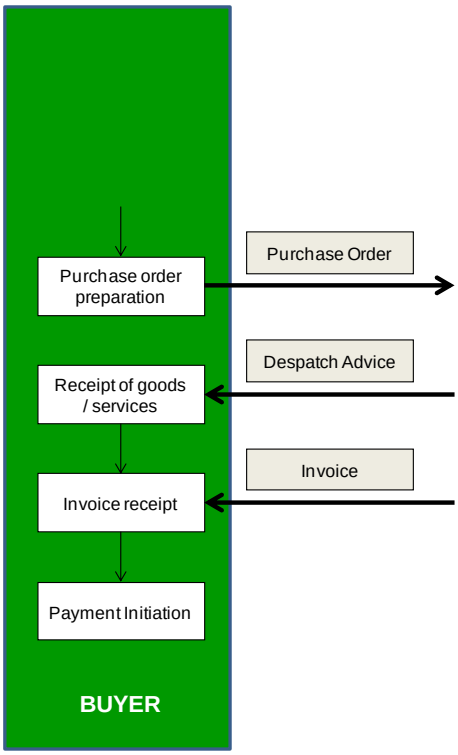


Figure 17 - 'Invoice matching'

Matching in the purchasing process attempts to confirm that only legitimate payments are made to suppliers.

A key element is segregation of duties for key steps The most common matching process is a 3 way match of: purchase order, goods receipt and supplier invoice

The process can be done manually but typically organizations rely on segregated input into an ERP system and the match occurs in the system A good 3 way match process should drive efficiency and not require constant management oversight

In practice three different match types can be chosen here:

- 2-way match
- 3-way match
- 4-way match.

In 2-Way Match, the purchase order quantity should match with invoice quantity and purchase order unit price should match with invoice unit price. All the matching should be within the tolerance limits allowed in the receiving control options.

In 3-Way Match purchase order quantity should match with invoice quantity and receipt quantity. Also purchase order unit price should match with invoice unit price. All the matching should be within the tolerance limits allowed in the receiving control options.

In 4-Way Match purchase order quantity should match with invoice quantity and receipt quantity and also accepted quantity. Also purchase order unit price should match with invoice unit price. All the matching should be within the tolerance limits allowed in the Receiving Control options.

It will be clear that - to allow for fully automated processing - depending on the match type chosen also one or more other documents must be available in electronic form and in the right format at the moment that the verification is done. If an electronic invoice needs to be matched against 'accepted quantity' data that needs to be manually supplied at that matching moment, the benefits of electronic invoices are largely lost.

This implies that the focus of work must not be restricted to just the invoice, but must include other trade related documents as well.[66]

In market economies, private companies are the essential actors responsible for trade transactions, and their exchanges create the market. In most cases, these companies are numerous, compete with each other, and build ever-changing networks that are impossible to describe except in very general terms.

[66] Note that this may invalidate previously issued statements that e.g. describe a perceived relation between SEPA and e-Invoices.

3.3 Positioning

This paragraph provides some basic insight and assumptions on the positioning of business processes.

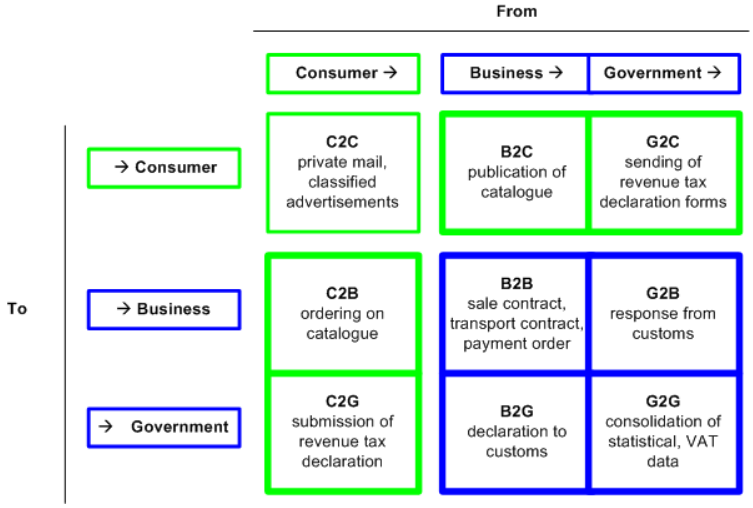


Figure 18 - Business process positioning

The blue-framed, low right 4 cells are seen as determining the scope for the Recommendation. Although Directive 2014/55/EU focuses on 'B2G', the work in CEN Project Committee 434 following the Standardisation Request inherently touches upon the other three cells. Decisions taken in Project Committee 434 could have impact, and the Forum should provide further information on the envisaged application of the Recommendation.

Developments in a cell need to take into account relevant dependencies with other cells because they share one or more layers from the EIF model to enable e.g. re-use of information.

It should be born in mind that seeing Trade as a mere interaction between buyer and supplier is a huge simplification: there are potentially some 40 or more parties involved in international trade; all these parties are usually referred to as 'the actors'.

Note the distinction between '*e-Business*' and '*e-Commerce*':

> *'Electronic Business', the process of doing business electronically (or e-Business for short), is more than 'Electronic Commerce'. While e-Commerce describes the world of Business-to-Consumer commercial transactions, the term e-Business usually refers to a broader scope of electronically-enabled activities, including Business-to-Business, Business-to-Government as well as Business-to-Consumer. e-Commerce is in principle covered by the 5 outer cells with the green borders.*

Trigger 7: Measures need to be taken to ensure that relevant, i.e. Objective impacting, developments are not carried out in isolation.

3.4 Other scenario's

The approach for e-Invoicing (as an intended contribution to the Objective), following the understanding of the European Commission's definition via Directive 2014/55/EU, covers in fact only one specific scenario.

Although presumably being the scenario with the largest contribution to the Objective if counted in number of invoices, this *may* look different if looked at the contribution to the Digital Single Market or the Digital Agenda as a concept.

Qualifying and quantifying this would be an enormous effort; comparable to the effort mentioned in 2.3 Interoperability.

Such an effort would necessarily not be limited to the (electronic) invoice.

Basically, a multiphase approach would be required: the set of all possible business process implementations should be identified, and then reduced to the implementations that are 'in scope' (for instance, a paper-based implementation would be considered out-of-scope).

Within the processes / workflows in scope, it should be determined which (combinations of) process steps could be qualified for contributing to the Digital Single Market. Note that e-Payments ('Single Euro Payment Area - SEPA') is only one such step, the (e-)Invoice another. A first insight in the number of steps is given by the description of pre- and post-award in the earlier section 2.2 No special role for G

A possible approach, limited to the invoice-process-step in business processes could be as follows:

I. An invoice can have one of the following appearances / invoice information can be transferred via:
    a. webform
    b. paper
    c. invoice image
    d. structured electronic data

II. For each of the individual appearances mentioned under I, there may be one or more possibilities to create it; paper can be printed, invoice image can be a scan or the result of an electronic conversion to e.g. PDF format;

III. An invoice may - in general - be received in any of the appearances mentioned under I above;

IV. There must be possibilities to convert from any of the appearances mentioned under I as sender, into any of the appearances mentioned under I as receiver; for instance a PDF file can be printed and information can be derived from it via Optical Character Recognition (OCR);

V. All invoice (information) transfers can be based on the 2-, 3- or 4-corner model;

VI. Remove from the overview the scenario's that are out of scope;

VII. Quantify and qualify each of the remaining scenario's (taking into account the considerations from 3.3 Positioning.

This approach would at least allow for unambiguous reasoning about the topic.

Figure 19 schematically illustrates the approach.

Trigger 8: It must be evaluated by the European Multi-Stakeholder Forom on e-Invoicing if the approach deserves elaboration and progressing and if so, how and with whom.

Trigger 9: It must be discussed how to absorb this into the European Commission policy decision making; a fragmented approach focussing only on one or two scenario's may interfere with business processes that are not taken into account resulting in hindrance regarding future developments for the Digital Single Market.

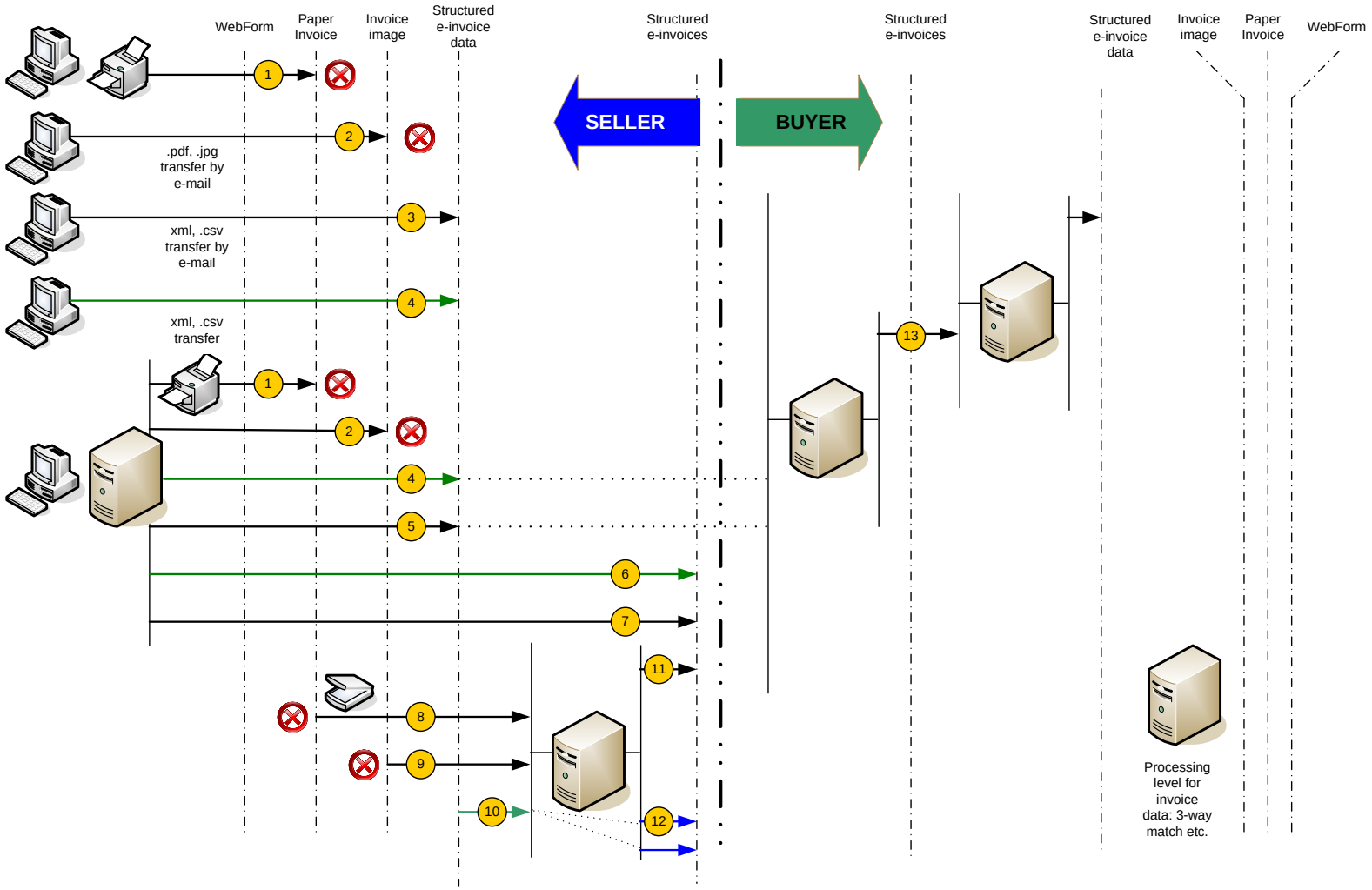


Figure 19 - an approach to identify e-Invoice scenarios in scope

A few notes, in the context of ‘positioning’:

- often, for instance in SME environment, EBPP / EIPP are mentioned. The abbreviations stand for Electronic Bill / Invoice Presentment and Payment. Although ‘Presentment’ already indicates human intervention, these concepts may be described to ascertain that EBPP and EIPP are left out of future discussions where not relevant.
- it is suggested to use BILL, as opposed to INVOICE, to refer to the document sent to an entity that is not entitled to reimbursement of VAT - like the consumer. For VAT reasons, EIPP and EBPP solutions may have to meet different (legal) requirements; for that purpose it could be relevant to make the distinction.

For sake of reference and completeness, the basic EBPP / EIPP scenario’s will be described below:

Seller Direct

In the seller direct model, the seller, or biller, controls the EIPP application. This model links one seller to its multiple buyers for invoice presentment. The seller deploys this model by requesting, or in some cases requiring, its buyers to view invoices on the seller’s EIPP system. Of course, buyers must be willing to use an invoicing process designed and controlled by the seller. Some sellers offer incentives, such as discounts, to persuade buyers to adopt the system.

This model offers several benefits for both the seller and the buyer. The seller, by controlling all aspects of the system, has the ability to integrate the EIPP system with other company applications, such as accounts receivable and customer care. The seller is also positioned to maximize its Web site for presenting related marketing and regulatory messages. For the buyer, this model offers the benefit of low implementation costs, as well as the economic incentives offered by the seller.

Where implementation is concerned, sellers can choose from several in-house or outsourced EIPP solutions. On the in-house side, sellers can elect to develop their own solutions, making them solely responsible for all customization needs, including systems features, and integration with other company applications. Sellers can also use a third-party software vendor to implement an in-house EIPP solution. Smaller companies with limited information technology resources may wish to outsource an EIPP solution to a third party. In this case, an application service provider (ASP) operates and maintains the EIPP system on behalf of the seller.

Buyer Direct

Contrary to the seller direct model, here the buyer controls the EIPP application. An EIPP application hosted by the buyer will usually link into the buyer’s accounts payable system.

The buyer direct process is a model that recognizes the dominant position buyers often have in B2B transactions. Large buyers who want to maintain control of purchase-order-driven invoicing and the payment process normally drive this solution.

In a typical buyer direct scenario, after the buyer purchases goods, the seller posts invoices to the buyer’s EIPP system. The buyer examines the invoice, and if it is deemed correct, initiates an electronic payment. If the buyer disputes the invoice due to a short shipment, for example, the information is communicated to the seller, who can adjust the invoice amount and then post the revised invoice to the buyer’s EIPP system.

By controlling all aspects of the system, buyers — as with sellers in the seller direct model — have the opportunity to integrate the EIPP system with other company applications. The buyer direct model also reduces the number of trading partner sites the buyer must interact with for invoicing and payment. Sellers, too, benefit by receiving payments more quickly.

Similar to the seller direct model, a buyer direct model can be implemented through an in-house EIPP software solution, a third party EIPP software vendor for an in-house solution, or an application service provider.

The Consolidator

In this model, the consolidator controls the EIPP application, providing an interface between multiple sellers and buyers. A seller may request that its buyers view and pay invoices through the consolidator. Similarly, a buyer may request that its sellers present invoices in this manner.

The consolidator process is also an evolving model, in response to the adoption hurdles - including costs and systems compatibility - faced by both buyers and sellers. The consolidator model simplifies invoice presentment, allowing trading partners to interact through one party. In both the buyer and seller models, a trade relationship usually already exists between a given buyer and seller. However, by serving multiple buyers and sellers, the consolidator model may attract more buyers to each seller (and vice versa), without the necessity of having an established relationship.

There are, however, several drawbacks or challenges for both buyers and sellers to consider. In this model, both buyers and sellers must comply with consolidator enrollment requirements and payment options. In addition, buyers and sellers may not be able to integrate consolidator functions with their existing accounts receivable and customer care systems. Sellers may also lose or be limited in their ability to present related marketing and regulatory messages on the consolidator's Web site.

Profiting from EIPP does not require that every business implement the technology at the outset. The invoice presentment models described above offer benefits for both buyers and sellers. Adopting the model that best meets the needs of an organization will enable it to reap the benefits of streamlined business processes.

Trigger 10: Future discussions in the European Multi-Stakeholder Forum on e-Invoicing should distinguish between follow up to the Directive 2014/55/EU on one hand and other scenario's that are within the remit of the Forum - as they could contribute to the Objective - on the other hand.

4. The vision on 'Core'

One of the assumptions made, ratified by the European Multi-Stakeholder Forum on e-Invoicing, is that developments in (private sector) business communities, as they are driven by business rationales and business cases, will autonomously find their way towards the use of electronic messages for the exchange of information supporting business processes, replacing paper documents. The use of electronic messages will include electronic invoices as identified in section 3.1 e-Invoicing according to Directive 2014/55/EU, and as such these developments will already contribute to the Objective and do not require further influencing.

Public sector support should be merely, restricted to, help get rid of legal and regulatory hindrances and cope with market failure.

A challenge may arise for the exchange of electronic invoices, or more in general 'electronic business documents', between different (business) communities. To help this, the idea of 'Core' has been developed. Presumed to be applicable to documents exchanged to support trade in goods and services in general, the idea will be elaborated referencing the invoice (only) below.

The Core

The concept of a 'Core Invoice' is based on the proposition that a limited, but sufficient, set of information elements can be defined that supports generally applicable invoice-related functionalities.[67]

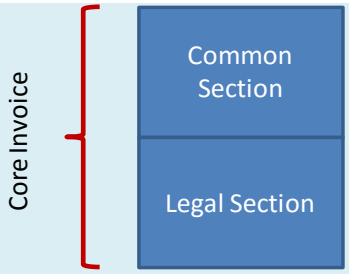


Figure 20 - Core Invoice

The Core Invoice contains a 'Legal Section' plus a 'Common Section', see Figure 20. The Legal Section is concerned with both the observance of tax and commercial laws and regulations pertaining to electronic invoicing commonly in force throughout the EU. The Common Section contains commonly used and accepted data elements, which are not (business) sector ('community') or country specific.

If, Europe wide, all organisations implement the e-invoice using this small set of elements, e-invoicing may take place without pre-negotiated bilateral agreements.

For this core, a Semantic Data Model is then defined by an openly accessible international standards organisation to ensure accessibility, stability in terms of maintenance and quality. It will also ensure that the reference e-invoice semantic data model is anchored in a global standard from an internationally recognised organisation.

A 'Core Invoice' or 'Minimum Core Dataset' should be seen as a key enabler for business efficiency by acting as a basis to achieve interoperability with minimum cost and complexity. It would be left to the market to utilize the Core Invoice and express it in different syntaxes depending on specific business use cases.

[67] Examples of these functionalities include invoice issuance and delivery, invoice validation, accounting, VAT reporting, payment and auditing.

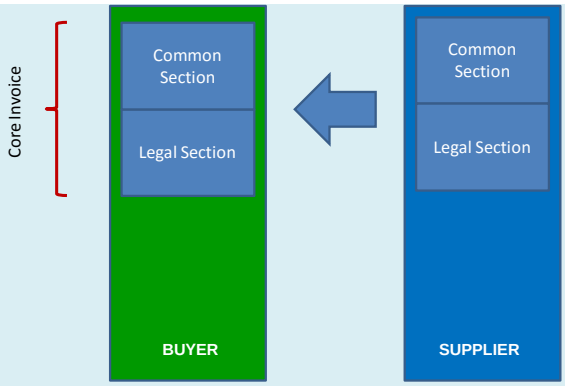


Figure 21 - e-Invoice based on Core Invoice

By adhering to one Semantic Data Model, interoperability will be facilitated because semantic data will be able to travel without supplement and/or transformation between formats as the data model is technology-neutral.

Trading parties (or their service providers) could be encouraged to use the Semantic Data Model and the formats and syntaxes representing it, undertaking the necessary conversions, as they require to meet their customers' needs. Standards bodies would begin to embed the single Semantic Data Model in the syntactical standards for which they are responsible.

Sector extensions

The core invoice should not assume specific agreements on (supply chain specific or community specific) aspects, such as identification schemes or process variations. It should be used by organisations in both the public and the private sector.

The specific requirements of certain supply chains (or 'business communities') should be translated into information elements that extend the core set (in the so called 'Sector Section'). Only organisations that are part of the supply chain or business community defining their Sector Section are expected to be able to process such extension.

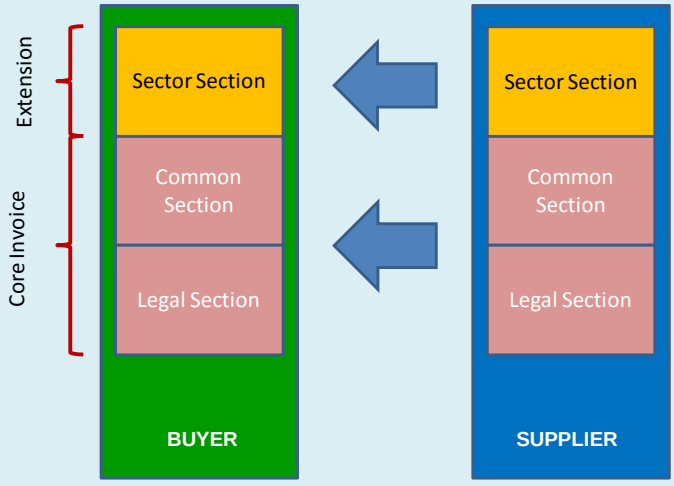


Figure 22 - Sector extension mirroring community requirements

If supply chain specific elements are defined as extensions to the core, cross sector trade could still use the core.

Invoice processing systems then at least support the core.

Ignoring extensions is a decision that should be left to each specific business.

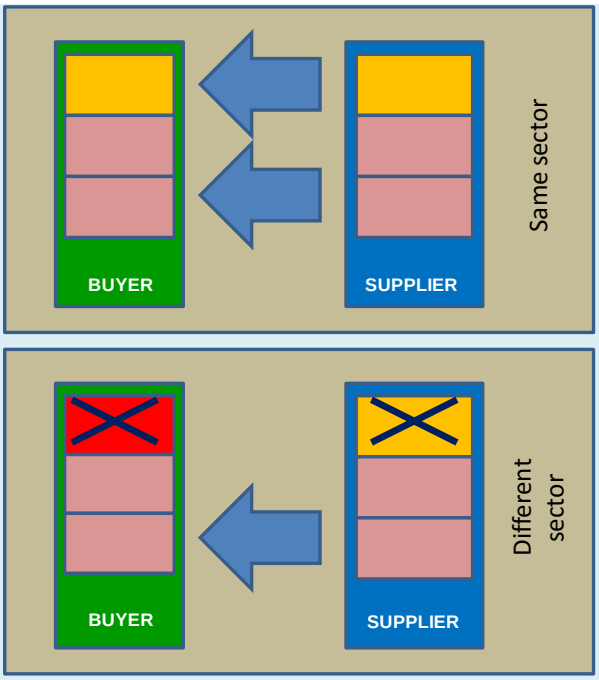


Figure 23 - Same sector invoicing (top) and cross sector invoicing (below)

Extensions may in many cases not be sector specific, but specific to functions, needed by multiple sectors. E.g. '*Vendor Managed Inventory*' has been implemented by the automotive industry, but also by the steel and by the printing industry.

Similar functions should be supported by the same elements in the model, i.e. elements defined for use in one sector must be re-used by another sector if the requirements are equal. This can be achieved by storing the semantics of these elements (and the requirements they cover) in a semantic repository or reference registry.

Supply chain specific extensions must be based on real business requirements. These can only be gathered by sector organisations such as GS1, Odette etc., or ultimately by the implementers themselves who understand these requirements. The resulting information elements need to be registered, with reference to the requirement. New requirements for elements need to be checked against that registry.

Country Section

The EU VAT Directive of 2010[68], and subsequent adoption by the 27 Member States, aimed to facilitate the increased adoption of e-Invoicing. To that purpose it implied that each e-Invoice needs to fulfil a minimal set of requirements to be compliant with these laws and enumerated up to 18 required information elements.

The new laws intended to simplify e-Invoicing by also introducing business controls as a tool to underpin correctness of invoices. However, this more liberal legislation in fact has opened the market to a plethora of possible solutions. As a result, an Invoice may now contain any information, provided there are controls to aid auditing.

To complicate matter further, Member States individually defined elements they find necessary for (tax) auditing activities, even further enlarging the fragmentation in the European markets. Such a Member State defined specific set of elements can be called a

[68] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:189:0001:0008:EN:PDF

‘Country Section’. Each Member State may (but preferably should not or should refrain from) extend the core, based on their specific legal requirements, such as additional taxes and auditing practices. In fact, the existence of the Country Sections does highlight the differences between Member States and discussions can be initiated to facilitate convergence by removing them over time by harmonising regulation and legislation.

Having regard to the current VAT Directive and its adoption in EU Member States on the one hand and significant differences between the national invoice information content requirements on the other hand, up to 27 national extensions could be expected where most of them would presumably be different. This would be a new, huge, barrier for e-invoicing uptake in the EU, particularly for inter Member State trade.

Each VAT compliant invoice should hence, to reduce the barriers to adoption, contain the same core: a basic set of legal and common elements. The Country Section extensions should not be needed for cross-border scenarios within Europe. If an element is needed for cross-border invoicing, then by definition it cannot be an element in a Country Section.

Ideally there should be no Country Sections[69] - every Member State should have the same legal requirements.

The sender of the invoice then no longer needs to be able to produce two different versions of the same invoice: for national use and for international use.

The ‘Core plus Extensions’ concept

This section elaborates on how the Core plus Extensions concept, as endorsed by the European Multi-Stakeholder Forum on e-Invoicing, and embodied by CEN Project Committee 434 as part of its work, should be seen as ‘fit for purpose’.

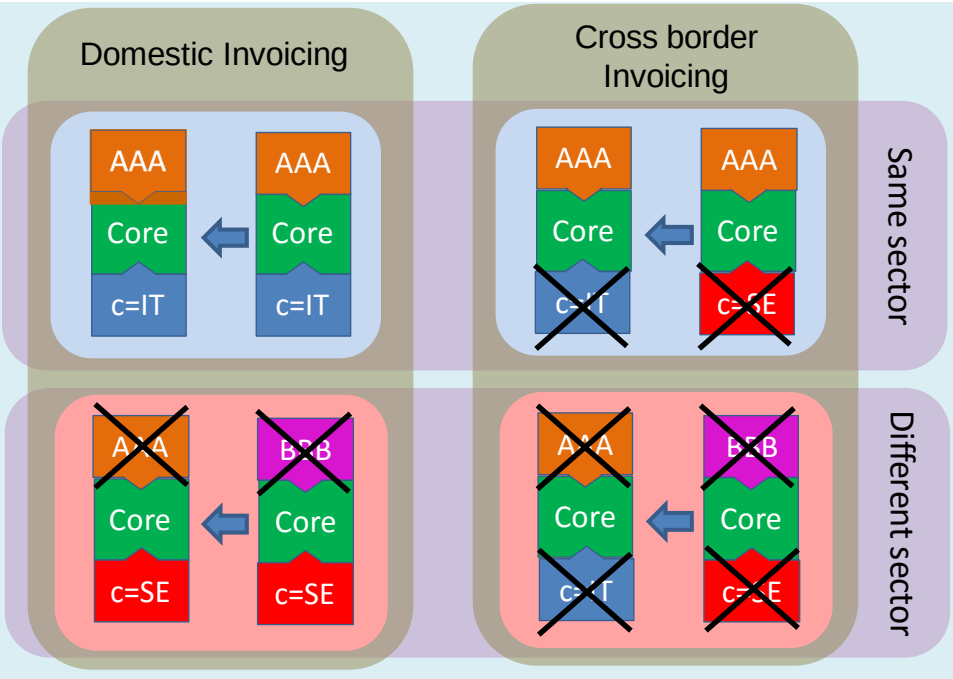


Figure 24 - Core invoice and extensions

[69] Note that (at least in case of public authorities) with the transposition of the Directive 2014/55/EU no country extension can be required

The diagram in figure 24 shows how various invoice exchanges can interoperate once the core requirements are separated from national- and sector extensions. The sector and national requirements may be different, depending on the sector involved and which Member State the transaction occurs in, but the core remains constant.

> *The basis is that the basic ('core') information needs to be sufficient if an invoice is sent / invoice information is transferred between two different communities in two different legal environments.*

Within a community all participants should know what is necessary information to be able to carry out transactions amongst the participants. Once a transaction with an entity outside the community is supposed to take place, then less information is assumed to be sufficient - after all, the two different communities will not have Sector Section information in common. This is simple, because if it were required information then this would mean that the entity that the transaction is to take place with also belongs to the community.

Note: National differences (County Sections) can be phased out. That is a competence of the legislators. But the differences following from the differences in sector / community can not be phased out as these are inherent to the fact that they represent different sectors / communities.

Extensions mechanism considerations

A standard mechanism extension how to complement the Core Section with Country Section and / or Sector Section should be defined, so that complex systems / solutions remain interoperable – both between themselves as well as interoperable with the core.

In order to fulfill these requirements, judgment must be made on the selection of the information elements to be included in the core model.

Guidance can be derived from CEN BII[70], where the CWA on '*Gathering of business requirements*'[71] outlines a methodology for collecting and documenting requirements for a particular core. This approach could mean that every requirement is included and documented so there is a need for an approach to check if the resulting models could be reduced in number of elements so that it is (among other things) as simple as possible, still sufficiently functional, and remains stable over time. This is detailed in the CWA called '*the concept of core*'[72] on which the following section is based.

The core needs to have 'principles of simplification' applied. Therefore, following the collection of all requirements, the following principles are applied in the order shown:

Reduce assumptions	This is a check that all elements are properly grounded and are referenced with and supported by real requirements and examples. **Example**: The invoice model had several references to documents created previously in the Supply Chain e.g. the Contract, the Order, the Despatch Advice, and the Delivery Note. If some of these were based on the assumption that they could be needed by the Buyer, but not explicitly stated, they should be considered for removal.

[70] http://www.cenbii.eu/

[71] CWA to be confirmed

[72] CWA to be confirmed

Limit functionality	This could also mean that some requirements are rejected because they should be dealt with by other means. Some organisations use the Invoice for purposes other organisations generally do not, whereas that functionality should have been carried out by another document. **Example**: if the Buyer used the Invoice for Stock control; this could force the Supplier to send the invoice with the goods. Whereas a Despatch Advice would carry out this function more easily as it would not need pricing and other checks to be carried out in advance.
Avoid duplication of information	Whereas duplication is often seen as simplifying the document, it can be counterproductive. **Example**: The Buyer may require the Supplier to include the Purchase Order quantity in the Invoice. However this is already included in the Purchase Order document and should be looked up instead by the Buyer.
Avoid Technological Influences	If the Semantic Data Model (for the invoice) is found to contain any elements included to facilitate a specific technology then it should be removed. This could mean that when a new technology is being considered the model cannot be used. It could also mean that the roll-out is delayed because consensus cannot be reached easily because of this dependency. **Example**: A mandatory element which stores the XML version, could mean that other syntax formats such as JSON could not also be used.

1185 While applying the principles, consensus has to be achieved. As the principles are
1186 inspirational rather than easily achievable, a compromise is usually needed as well.

1187

5. Implementations in the market place

This chapter provides some guidance and considerations on implementation.

The implementation of Directive 2014/55/EU needs to be done 'on top of' an existing, and dynamic, marketplace that already knows its innovations, developments and implementations.

This means that methods for implementation need to be sought that aim for 'absorption' rather than 'imposing'; if not done properly, its implementation may disrupt existing business cases and turn out counterproductive.

In this context, four dimensions of implementation need to be considered: 'where', 'what', 'when' and 'how'. Each will be looked into in more detail below. Note that 'where' is not to be interpreted as geographical, but rather in reference to business type and environment.

Seen from the perspective '*what is the (size of the) contribution to the Objective*', the continuum of sizes of trade entities can be diagrammed versus the number of (e-)invoices issued in a period of time. This leads to Figure 25 below.

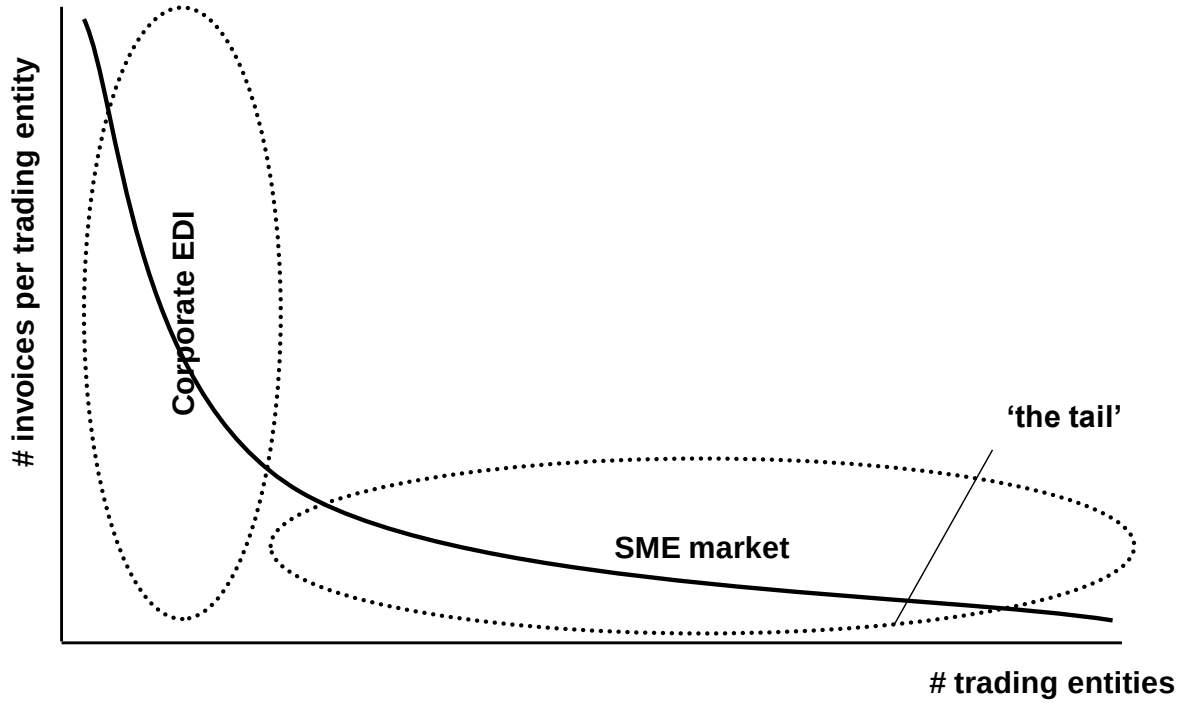


Figure 25 - Number of trading entities versus their periodic (e-)invoice volume

e-Invoicing, as per Directive 2014/55/EU, is positioned in the left side of the figure. This chapter will focus on both the left hand and the right hand of the horizontal axis, resulting in two cases for 'where'.

Large trading entities (left hand side)	
Objective	Absorption of the necessary functionality into ERP systems, administrative systems and workflow

What	Functionality allowing for automated processing of electronic invoices
How	Specifications and standards need to be simply available to software development bodies of system manufacturers[73] to allow for embedding of functionality in subsequent software releases. The required specifications and standards also need to cover other steps in the process, like 3- or 4-way match, in order to be able to have the invoice processed automatically. The decision to embed the functionality must not suffer from uncertainty about (public sector driven) market developments and allow for a sound business case.
When	In successive software maintenance cycles functions will be added.

1207

SME entities (right hand side)	
Objective	Availability of tools and means to process electronic invoices.
What	This is in fact determined by the receiving side: the extent in which this side is capable of fully automated processing and its willingness to receive. For an SME issuing the electronic invoice to a large trading entity, examples of means that can be used are: an alternative printer driver, that not only takes care of printing the invoice (locally, for archiving purposed) but in parallel sends the invoice information electronically to either the destination or, more likely, an e-Invoice Service Provider that further progresses it. There may be situations where the receiver does not want to use an e-Invoice Service Provider, but rather makes a web-portal available himself allowing the SME to enter the invoice information. This touches on the 'Buyer Direct' (or even 'Consolidator' models described before. The scenario's above are agnostic to the European Standard as required by Directive 2014/55/EU, as the invoice source SME does not need to provide information electronically in the required format himself. Somewhat larger SME's may exchange information with buyers directly and electronically themselves, for instance by means of an administration system that is able to communicate via Internet using the AS/2[74] protocol, implying that the approach to be followed is the one from the table above on large trading entities.
How	For small SME's, in fact determined by the receiving entities; for larger SME's as per the table above.

[73] This may - in certain environments - include the IT department of the user of the system(s) concerned, if maintenance is done 'in house'

[74] See for instance http://www.edibasics.com/types-of-edi/edi-via-as2/ Further description is out-of-scope for this document.

When	If available.

Notes:

- The ability to receive and process invoices electronically largely determines the benefits that can be obtained from the use of electronic invoices. In the consumer environment[75], receivers of bills[76] may not be supposed to be able to have this ability;
- Large trading entities, issuing and receiving many invoices, contribute relatively more to the Objective, independent of being located in public or private sector, more than individual SME's sending an invoice now and again;
- Implementation effort needs to be segmented as well: towards 'large contributors' differing from towards 'small contributors' - even in terms of EIF 2.0; facilitation measures per type can be different for each of the lower layers;
- An emphasis of the equality of 'G' in role of 'B' and 'B' in role of 'B' in post-award environment;
- Subsequent individual migrations of legacy, paper based, information exchanges to e-messages freezes current implementations and models and makes innovation difficult as well as the introduction of new functions and services that bear benefits for business. Implementation scenario's must consider the context.

Trigger 11: It is indispensable that the three themes mentioned in the Recommendation (see also 2.5 Summary of the Recommendation):

- Interoperability Framework
- Semantic Data Model for the Core Section of an Electronic Invoice
- The identification of a methodology and implementation plan

are acted upon in unison

[75] This is the environment, where bills to be paid are presented to the user in his own on-line banking environment. This is out-of-scope for this document. An example is given at http://www.betaalvereniging.nl/en/giro-based-and-online-payments/finbox/

[76] The word BILL is used to distinguish from an INVOICE in those environments where the receiver is not entitled to VAT reimbursement.

6. Hybrid invoices

In the context of this document, the following definition[77] of 'presentation' is used:

> *Formal submission or delivery to a human user of a document or negotiable instrument for the appropriate notice or action (acceptance, negotiation, payment, etc.) of the named entity. For example, an invoice is presented to a buyer for approval. Also called presentment.*

So, electronic invoicing as intended by means of the definition given in the Directive 2014/55/EU has in fact nothing to do with 'presentation'. However, even if the invoicing process at the receiver is fully automated, there may still arise a need for presenting the invoice to users if human intervention is required, e.g. for auditing, error processing or exception handling.
In addition, article 233 of the Directive 2006-112-UC, modified by Directive 2010-45-EU says:

> *"The authenticity of the origin, the integrity of the content and **the legibility of an invoice**, whether on paper or in electronic form, shall be ensured from the point in time of issue until the end of the period for storage of the invoice",*

which is seen for many European countries as an obligation to provide a full human readable version of an e-invoice. The Explanatory Notes of DG Taxud (2011) explain legibility as follows:

> Legibility of an invoice means that the invoice is human readable. It must remain so until the end of the storage period. The invoice should be presentable in a style where all the VAT contents of the invoice are clearly readable, on paper or on screen, without the need for excessive scrutiny or interpretation, e.g. EDI messages, XML messages and other structured messages in the original format are not considered human readable (after a transparent conversion process they may be considered human readable – see below).
> For electronic invoices, this condition will be considered as being fulfilled if the invoice can be presented on request within a reasonable time in the same manner as is required in Article 245(2) – including after a transparent conversion process – in a human readable form on screen or through printing. It should be possible to check the accuracy of information between the original electronic file and the readable document presented.
> The legibility of an electronic invoice from the point of issue until the end of the period of storage can be ensured by any means, but qualified electronic signatures and EDI, as mentioned in Article 233(2) are not sufficient by themselves to ensure legibility.

Furthermore, even if the goal of e-invoicing is automation, there remain many cases where e-invoices cannot be processed automatically, mainly for business reasons on the validation process, but also when specific business rules apply and are not automated on the receiving side. In that case, a human readable version is the only way to switch to a human process properly.

The screen shot below shows an example of how invoicing data can be presented in the user interface of an e-procurement platform:

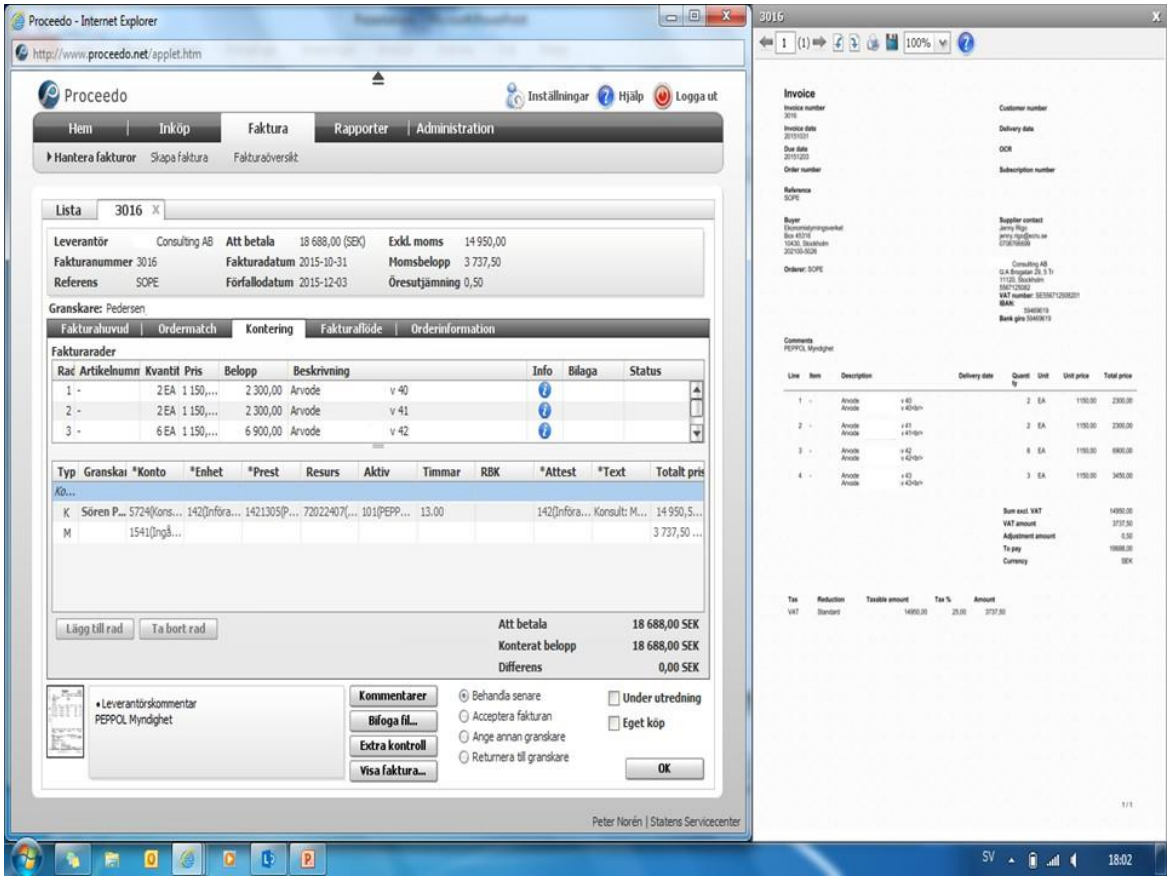


Figure 26 - Screen shot

The left hand side of the user interface of the example shows the extracted data of the e-invoice and how it is presented for approval. This includes details on invoice line level. To the right the generated image of the invoice, derived from a stylesheet in the e-procurement platform, is shown. In that view all the invoice data is exposed.

In order to be compliant to article 233 on legibility, a full-structured e-invoice must be presented for human reading, on each side of the trading partner relationship (buyer and supplier). There are three ways to implement this obligation:

- Use of a software tool that has implemented a “readable” function, which presents all the structured fields in a human readable version. It is generally the case of EDI tools. The readable version is unique for a given format (UN/EDIFACT, UBL, UN/XML,…) and it is implemented under the responsibility of the user (respectively supplier or buyer).
- For XML files, use of a XSLT template, which can be published online. This template can be implemented by the supplier in order to propose a presentation to the buyer. In that case, the supplier has to guaranty the completeness of the XSLT format, which means that all the structured fields must be presented through the XSLT template. The buyer must be connected to internet in order to see the presentation by “calling” the XSLT through the URL present in the full-structured e-invoice. If the XSLT has some errors that create some discrepancies between the readable version and the full-structured e-invoice.
  The buyer can also implement its own XSLT (one XSLT per XML structured

format), in order to first make sure that all structured fields can be presented (if the buyer does not want to depend on the supplier's XSLT) and second to have a unique presentation for all its inbound invoices. In case of use of extensions, XSLT must include the presentation of those extensions.

- Asking the supplier to create a full readable document in a PDF format, sent in parallel to the full-structured file (or embedded in the XML, or with the XML embedded in the pdf). If the full-structured file is in fact attached to the readable version in a PDF A/3 format, the result is a hybrid invoice.

In order to deploy e-invoicing on a very large scale, 'onboarding' SMEs is a key factor of success. It is then important to understand how SMEs are creating their invoices, and what are they capable of.

It is then clear that most SMEs are able to provide PDF invoices, exactly with the same presentation that paper invoices, which is less disturbing for their buyers that are used to see them like this, when they need it. On the contrary, most SMEs are not able yet to provide all information present in their invoices in a structured way, which is, for sure, the first step to be able to provide a full structured e-invoice.

Then, the concept of the hybrid invoice is to combine structured data (typically in XML-format) with information how to present that information to a human user. At present several approaches to the concept of hybrid invoices have emerged. As such, if the 'information how to present' were to be included in the electronic message compliant with the European Standard that is under development by CEN Project Committee 434, the 'hybrid invoice' would automatically fall within its remit.

In order to provide clarification and understanding about the topic, to further facilitate discussions around electronic invoicing, in the context of the European Multi-Stakeholder Forum on e-Invoicing, or also even CEN Project Committee 434, the topic of 'hybrid invoice' justifies a section in this document.

In order to comply with the need to provide a human readable version of an e-invoice, in principle two approaches could be followed:

1. electronic information plus information representing a facsimile image of the electronic document (i.e. invoice) at hand: this is a hybrid invoice because the e-invoice is a 2 side object: data for machines and human readable for people.
2. electronic information plus information describing how to generate an image for presentation, which is a technical solution to provide a human readable version from a full structured file.

6.1 Hybrid Invoice : an image with a dataset attached

The concept of hybrid invoice where a structured e-invoice is accompanied with a pdf readable is not new. There are many e-invoicing projects that have implemented structured e-invoices in EDIFACT or XML format, with a pdf embedded in base64 code (which can be an electronically signed pdf sometimes). It is well developed in the retail industry, in communities (like automotive repair) or in inter-company projects within large groups. It is demonstrated that it is a good solution for SMEs that are not able to provide a full structured e-invoice, but only a small dataset of invoice information plus a pdf.

The new concept of hybrid invoice is only an evolution of this practice, where the human readable is also an envelope that can include a dataset of invoice information, in a full-structured standard format.

The Portable Document Format (PDF) is one of the most common data formats for different kinds of business documents. The specific subset PDF/A is aimed for archiving purposes. This most recent version of the PDF/A standard includes the possibility to embed arbitrary data formats. Here we assume it will be XML-data, either based on an open standard or a proprietary data model.

The most widely known example of the hybrid invoice is the 'ZUGFeRD[83] invoice developed by the German E-invoicing forum and released in version 1.0 in 2014. The ZUGFeRD format is using the PDF/A-3 standard with an embedded XML-document. In this case the data content is a complete invoice, which means that all information present in the pdf is present in the structured format, and all information present in the structured format is present in the pdf.

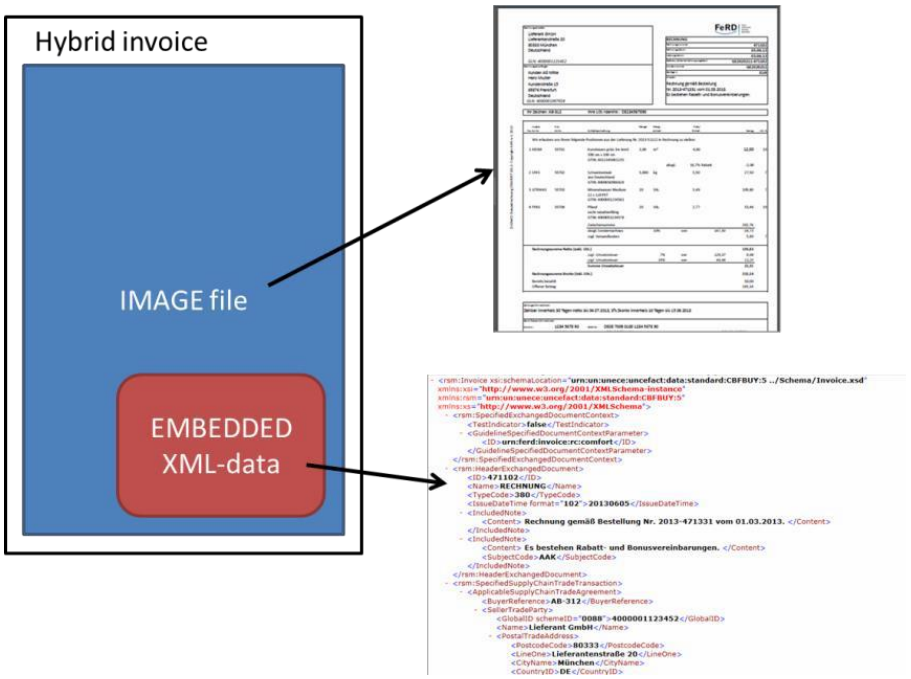


Figure 27 - Hybrid invoice concept

In France there is an ambition to develop a hybrid invoice. Their approach is slightly different from the German initiative where in the French case, in order to address the difficulty for suppliers to provide all invoice information in a structured way, it is allowed to provide only a partial dataset of invoice information in a structured file attached, even if it is recommended to provide a full structured dataset. However, all information present in the structured file must be present in the readable pdf. Hence, in that solution, full structured information is used for process automation (machines) on the buyer side and the pdf may content additional information either for legal reason (not processed) or in case of manual process.

The format of the structured file should be based on the semantic datamodel for interoperability.

Pros

- Fixed image of the document i.e. invoice;
- The receiver does not have to process XML-data, can rely on visual information;
- The obligation of legibility through long time period is more robust: the readable is created at the same time than the full structured file;
- Easy to use for SME acting as receivers;

- Easy to provide by Service Providers that are able to create a pdf from a full structured XML, with a guaranty of no discrepancy between the pdf and the structured file;
- Emergence of new solutions targeting SME segments of the market to offer e-invoicing capabilities. This is especially the case for domestic markets where the hybrid concept has been promoted as the way forward;
- If only partial data of the invoice is in the XML, it is easier for most suppliers to provide such hybrid invoices, which should speed up extremely e-invoice penetration;
- Hybrid invoice could be seen as an evolution of a full structured invoice: a 'one size fits all' invoice, as it is a format that can be used by the buyer as he wants: full structured file if he is capable to use it for a full automation; pdf for buyers that are not still equipped for automation.

Cons

- May complicate usage for SMEs acting as issuers as the seller needs software to be able to produce not only XML-documents, but a PDF/A-3 file with embedded XML- data. This relatively new technology has been implemented in more and more common ERP systems from systems specialized for SMEs to large scale ERP systems;
- When implementers neglect quality assurance it can happen, as with many other software tools, that differences between the information provided in the image and in the structured XML-data occur. At first glance unclear legal status may result if data in visual representation is not identical to the data in the embedded XML-document. Although the Directive says that an invoice is defined by its content, and not its form, the question of "where is the original invoice" is often being asked. The first answer is that the original invoice is the e-invoice as a whole. Even at paper based invoicing "the original" does often not exist anymore, as all relevant information for internal controls may be provided on separate business documents (i.e. delivery note). In addition, this question is directly related to the need to provide a readable version, which is a second presentation of the content that can create discrepancies when the seller creates the pdf or when an application or an XSLT are doing the same. It is not obvious that a creation of a pdf readable at the same time than a full structured e-invoice can create more discrepancies than a recalculation of a readable version with a tool or a compatible XSLT many years after the creation of the structured e-invoice. Creating a human readable presentation for example of an EDI message may lead to the same issues. To limit the occurrence of those issues internal controls assure that such issues become aware and can be reacted to – manually or fully automatic. A definition to prefer one or the other form of presentation does not really help as if a discrepancy is found during internal controls the seller should be informed and send a corrected version – exactly as in the paper world. Taking a look at the paper invoice a company would never try to make a decision on how to process an invoice where a discrepancy was found – but would always ask the seller to correct. If a company today receives more than one copy of the same invoice – e.g. by fax and paper or is able to download the invoice in various formats from an online portal – it can't be the responsibility of the receiver to cross check all available formats. So in practice always the copy that was used for accounting becomes "the original". The same concept should be applied for hybrid invoices. The variant that was used for internal controls and accounting is "the original" as it was checked and found accurate – or sent back to the issuer.
- If only partial data of the invoice is in the XML-data this could limit the possibilities

of automatic processing;

- If XML-data is not based on an established data model, it will cause interoperability problems. Yet another format to handle in the European e-invoicing landscape.

6.2 Full structured e-invoice including presentation prescription

A second approach could be chosen where there is only the electronic document information, plus a prescription how to present it. Such a 'presentation prescription' could take the form of a 'style sheet'. A style sheet is a separate file that describes how the layout and the presentation of the information it is related to should be done.

Style sheets form a commonly used technology for presenting XML and also for rendering web pages. There are different specifications to be used for this purpose; they are widespread and easy to use, and are therefore popular.

Note that for many existing specifications for e-invoicing using XML there are also already style sheets available as supporting tools to users. These style sheets are normally not normative for use, but a support to the solution providers of ERP's and similar applications handling e-invoices. As a result of the presentation being created in both the application used by buyer as well as the one used by the seller, it may look different to these different users. This can sometimes cause minor confusion

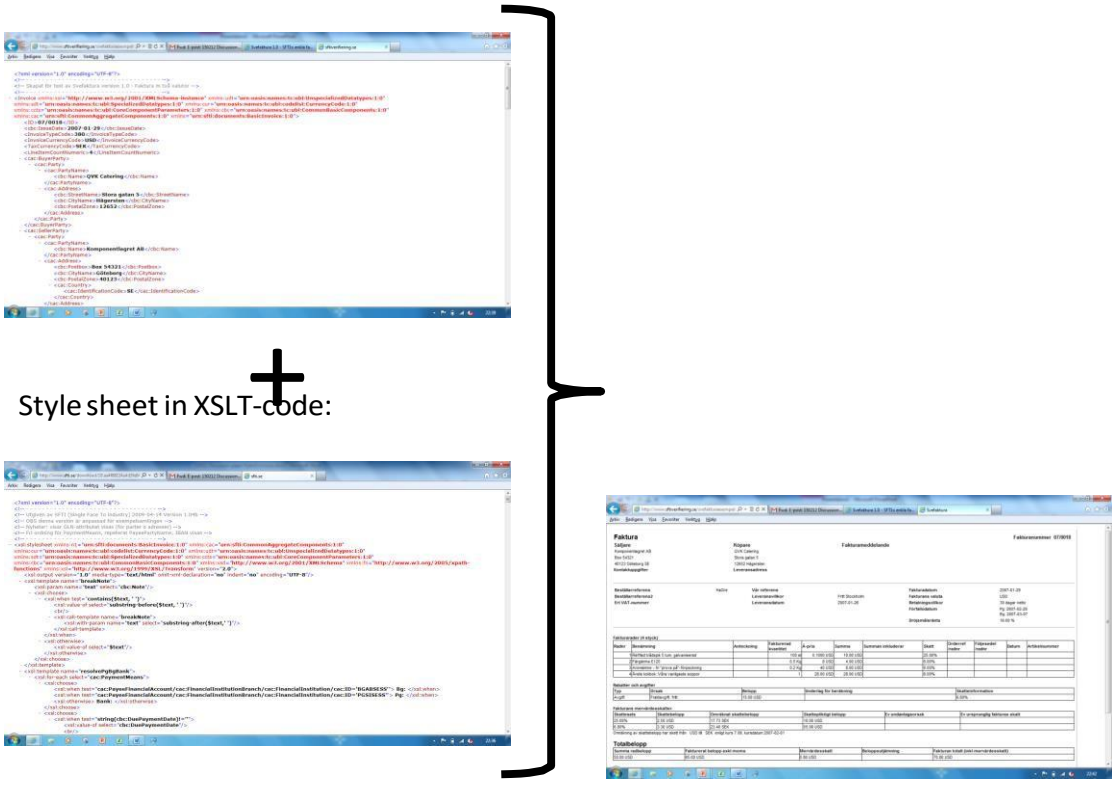


Figure 28 - The use of Style Sheets

A basic principle is that the user should be presented all data of the invoice. A solution where some information is omitted by the stylesheet used should be avoided. This is important from a perspective of internal control. A special look has to be taken on the quality of the used style sheet. As described in the previous paragraph a low quality style sheet could lead to discrepancies between the human readable presentation and the structured

data. A risk increases when extensions are applied, bilateral agreements are made or regular updates on the used structured data is performed.

Versioning of invoices and stylesheets is another concept to consider when designing applications. The users may need to visualise old e-invoices several years later and then there is a need for having older versions of stylesheets available. In some cases the buyer's ERP application or its service provider renders a pdf-file of the XML information in the e-invoice using the style sheet to have a static view available over time. An important factor to consider when it comes to the presentation of e-invoices is that it is dynamic due to the fact that the e-invoice (data) is separated from the presentation layer (stylesheet).

The Pro's and Con's of stylesheet use can be summarized as follows:

Pros

- Users will be presented with one standard layout for all invoices, independently of the supplier;
- A simple and well-known technology, reducing costs for implementation and maintenance;
- Often reference implementations are available for software providers as open source;
- Invoice data only in one place, the XML-file;
- Software providers can improve user experience by better design in their own stylesheets.

Cons

- The buyer and the supplier may see different views of the invoice and this can make handling of disputes more complex to resolve;
- Sometimes users complain e-invoicing are bad because the presentation of e-invoices is perceived ugly (this in most cases actually a case of a software provider not putting an effort in the user experience in their application).
- The quality of the readable version (absence of discrepancies, completeness of information) is directly dependent of the quality of the XSLT or the software provider solution. It is also directly dependent of the structured format, which means that a versioning has to be organized and archived. In case of extensions (which means evolution of the structured format), this technology becomes rapidly very complex to maintain.
- Maintaining a capability to recalculate a readable version through time is not easy to guaranty. That is why, in countries where the obligation of a human readable version is clearly mandatory, many solutions create pdf version with the full structured e-invoice, and archive both of them.

6.3 Discussion

Experience shows that there may be hard to show 'Return On Investment' on traditional EDI for both sides of the trading partner relationship (buyer and supplier) if the number of invoices exchanged is lower than 100 invoices per year. The main argument for the hybrid invoice approach is to allow SMEs in such situations to find a solution that adds value compared to plain PDF-invoices with no structured data. The idea has started out with very good ambitions like:

- Existing solutions used by SME's as a baseline and keeping investments in technology down;
- Make it easy to send e-invoices without bilateral agreements and testing;
- Use of (some) structured information in the invoice to facilitate automation for the buyer;
- Find a model that can be a first step before moving to more developed scenarios.

This is a good intention, but the question may be whether the use of hybrid invoices is a good solution for meeting the needs of SME's in Europe.

Hybrid invoices are by definition aimed to combine the presentation of information to a human user with structured data to ease the way for process optimization while taking the need for human interaction in optimized processes into account; in the case of invoices, this would mean the receiver of the invoice. Directive 2014/55/EU aims only at e-invoicing in e-Procurement, where the receivers primarily are public entities, but it cannot be expected that those public entities only want a full automation. A lot of small public entities, like towns, behave as SMEs and are not always able to set up a full automatic process. In addition, there are some specificities in public procurement and audit practices, where business rules can be very complex for a full automation (for instance public works and civil engineering). As an example, France has made e-invoices mandatory in the public sector (starting in 2017 for 100% of public entities), by implementing a public concentrator of all invoices for the public sector. This project shows a need for a lot of public entities to keep a capability to have a human readable invoice, even if the process is automated. In addition, the concept of hybrid invoice is not developed only for Public Sector but also as a mean to speed up SMEs onboarding for large buyers with a special focus on interoperability.

In order that SME's as issuer of invoices do benefit from hybrid invoices, compared to the generation of an XML e-invoice in a sales management tool the following aspects have to be taken into account. The first question is: is the sale management tool able to provide a full structured XML, and does it cost a lot to create a hybrid invoice then, knowing that all software tools are able to provide a pdf. The answer is no. Then, a full structured invoice only brings a maximum benefit to a customer that can handle it, and most SMEs are not able to do it. On the contrary a pdf invoice can be sent to most of the customers, which reduces paper and stamping costs. With a hybrid invoice the sender does not have to manage what customer needs what format and improves processing at the same time. For instance, payment information is provided in a structured format that already many banking tools can use to assure accounting assignment. The receiver gets both:

- structured format for those who are able to automate with it (with readable for human process if necessary, as a bonus),
- or pdf invoice, like paper for customer that are not still equipped with inbound invoice process automation (with structured file as a bonus to experiment automation).

As a receiver of hybrid invoices, the first benefit for SMEs is that the invoice is electronic and not paper. It means that the SME can archive it electronically, manage it in a ECM tool, without scanning it. If the SME is able to automate its process with the structured file, it can be said that a full structured invoice would have been enough. True, but the question may be: do hybrid invoices increase the number of suppliers that are able to provide e-invoices, with a direct cost reduction compared with a paper process?

Several countries, both in the Nordics and also in Spain report success in providing XML-based e-invoicing to SME's and have shown less interest in the hybrid concepts. In both the UK and Finland for several years many service providers have been providing an invoice

image in pdf format along with the actual XML e-invoice that offer the same value to the receiver as the hybrid concept based on full XML-data. In the beginning in some cases a similar approach to the hybrid concept was used for instance in Finland, but now the ambition is to have only invoice data in XML to automate processes better.

On the contrary, in countries like France or Germany, a lot of e-invoices project have had a second birth on the onboarding phase thanks to the hybrid invoice concept, which has been seen as a way to replace rapidly scanning and OCR chains on the buyer side. Furthermore, leading Service Providers have developed hybrid invoice concept services called “smart pdf”, by extracting invoice information from a pdf provided by SMEs that are not able to do more, in order to create a full structured format, in addition to the pdf. Last but not least the tools to create hybrid invoices are now integrated in accounting and bookkeeping software which is available for SMEs and does not create any additional cost or effort on their side. It is simply “good to go” and no additional services need to be acquired.

The interests of SME’s could be served by today’s wide palette of solutions providing full e-invoicing using different XML-syntaxes (no hybrid), available for SME’s at affordable prices in most European countries:

- web-based portals, often provided free of charge by buying organisations both in private and public sector. However, those solution are not fully integrated with accounting software, and force suppliers to have a double management of their customer invoices.
- Built in e-invoicing functionality in ERP or billing applications;
- Tools integrated in accounting and bookkeeping software;
- Plug-in solutions by third party providers;
- Service providers with value added services.

However, the penetration of those solution remains very low, compared to the use of ERP, sales management software which are the tools that most SMEs are using today. It can be questioned if it is reasonable to consider that the full deployment of e-invoices must be based on the hypothesis that all companies and public entities must change dramatically their internal processes and tools. An alternative is then to start from what is existing, and to make it compatible and interoperable with the semantic datamodel, in order to organize a continuous and progressive adoption avoiding any bilateral relationship: a hybrid invoice is a structured invoice for who are able to manage it AND a “classic” pdf invoice for the other.

To finish, it has been found that several stakeholders from various countries have raised concerns with the unclear legal status of the hybrid invoices and especially how to handle situations with discrepancies between information in image and structured data. Also suggestions have been made that when using hybrid invoices the image should always be generated on the structured XML-data to avoid these problems. In practice this does not complicate the creation of e-invoicing as a human readable format has to be provided any way – latest at a control situation at the receivers side.

This is a subject that should be addressed to get a common understanding of the benefit of applying internal controls, knowing that it is in fact related to the obligation of legibility. Pdf or software presentment: in both cases, the human readable may have some discrepancies with the dataset as it can happen at creating readability at the receiver´s side as well. Question is: how often, and isn’t it manageable and detectable by the validation process.

Notes

- Reference style sheets may be provided by different solution providers to offer an

even more attractive invoice presentation in their applications. A possible drawback with this approach is the fact buyer and supplier may end up using different style sheets and hence, may see different presentations of the invoice.

- A stylesheet can be embedded in the XML-file containing the document data, for each individual document. Most of the XML – standards used today, in some way or another, rely on using style sheets for presenting the invoice data. This is a simple and mature solution. An alternative is each document instead referencing a style sheet that is stored centrally, i.e. on the Internet. This however limits the possibilities for solution providers of ERP and similar to offer their own presentation tools;
- Older technologies like UN/EDIFACT lack the tools like stylesheets available for XML described above. In these cases, the presentation tools for e-invoices have relied on traditional programming in the different applications used by buyers and suppliers. The Annex 1 shows, for illustration purposes, an electronic invoice expressed in XML and Annex 2 an electronic invoice expressed in UN/EDIFACT. It is clear that the latter, as opposed to the former, cannot be interpreted in any way by a human reader and would need dedicated translation and presentation tools.

Trigger 12: The European Multi-Stakeholder Forum on e-Invoicing is suggested to analyse the legal implications on the obligation to guarantee the legibility of invoices and investigate further how hybrid e-invoices can be part of a solution to reach this goal. In doing that, presentation layer could be seen as a complement that does not interfere with the necessity to use the standard European Semantic Datamodel for expressing the semantics of invoice data, aimed to foster the SME adoption.

7. Code list management

In the context of the e-Invoice, a Code List is basically a list of predefined codes which should be used when a system needs to provide or check a code for a specific concept. In the European Standard for the Semantic Data Model under development in Project Committee 434, the use of Code Lists is envisaged for a.o:

- Currency
- Language
- Country Code
- VAT Category
- Payment Means type
- Invoiced quantity unit of measure

Code Lists are used as follows: If (for example), on semantic level, it has been agreed that an electronic invoice must be able to refer to 'VAT Category', then in the semantic model a field is reserved for that purpose. If the field is used in an electronic invoice, then the value in the field is one chosen from the relevant Code List. Code Lists usually have a long history already and are maintained separately (usually by existing formal standardisation organisations like ISO and UNECE).

Each code in a Code List usually has at least 3 attributes; Code, Description and Status (whether deprecated or not) and also sometimes a language code for the description.

As the European Standard under development by Project Committee 434 builds on the use of Code Lists, it automatically inherits the known problems related to these lists. This section briefly summarises these problems and comes to a Trigger that could be issued to the Forum for further uptake in order to mitigate the risk of these problems hampering the uptake of the Project Committee 434 deliverables and hence the Objective.

Currency	There are 167 official national currencies with the US Dollar being the most traded currency and the Euro being second. Currently ISO 4217 alpha-3 is recommended. However there are currencies not registered in the ISO list such the Jersey Pound, the Guernsey Pound and the Isle of Man Pound. Some other countries/organisations have added their own unofficial codes such as Hong Kong, Taiwan and even Bitcoin. Also ISO 4217 has also both a 3 digit numeric and 2 digit alpha code.
Language	According to the Ethnologue there are 7102 living languages in the world today. In Europe there are 286 languages representing 1.6 billion speakers. Currently Project Committee 434 recommends using ISO 639-1 alpha-2 which has a list of 136 2-letter codes. Whereas ISO 639-2 has 450 codes and ISO 639-3 has 7700 codes. According to the US Library of Congress no new 639-1 codes are added if 639-2 code already exists. However RFC 5646 is designed for computing systems. It merges all ISO 639 language codes in combination with ISO 3166 to designate the country in which it is used.
Country Code	Currently ISO 3166-1 alpha-2 is recommended but there is also alpha-3 and numeric versions. Alpha-2 is also the basis for other codes such as

	ISO 4217 Currency code. ISO 3166 has also sub-entity codes which describe regions or sub divisions within a country. This might be a factor as some regions have their own autonomy and therefore different legal requirements. Furthermore, there are countries and territories that are not internationally recognised or accepted to the UN (which is one of the criteria for assigning them a separate ISO Country Code), such as e.g. Kosovo, so they need a special handling. Eurostat uses its own coding system, NUTS, which provides them with the granularity they need and not provided by the ISO codes. However NUTS is only used to denote EU countries.
VAT Category Code	Currently UN/ECE 5305 code list is recommended to express which VAT category is being applied for the net value of each line item in the invoice. However this is a list of 13 codes, many of which are not normally used and one code 'IC' for intra community supply has even not yet been added to the list by UN/CEFACT. The application of some category codes can be onerous and confusing. Currently there are over 60 business rules related to the application of Vat Category. This rules require different elements depending on which codes are used e.g. VAT IDs, Country IDs, Delivery dates, Delivery reference etc.
Payment Means Type	Currently UN/ECE 4461 code list is recommended. However this list has 97 different codes many of which are obscure and need to be deprecated. SEPA transactions are not represented so the nearest code would be used e.g. code 46 Interbank Debit Transfer or Code 49 Direct Debit. However Credit Card is not defined although an example is given. There is also Code ZZZ which simply states that it is mutually defined
Unit of Measure	Currently Project Committee 434 recommends UN/ECE Recommendation N°.20 'Codes for Units of Measure Used in International Trade'. However Line-items in invoices also refer to packages such as box, tray or pack and these now have been deprecated as all packaging is now only contained in Recommendation 21. Considerations must be given on how to deal with these two separate lists. Currently there are nearly 400 packaging codes and over 2000 codes for measure.
Identification of business entities	Although a VAT identifier is usually used as the identifier for business entities that take part in a trade relation, in some cases it is not granular enough, especially in the government segment. For example, some government departments or agencies act as separate business entities, although they do not have a separate VAT identifier[77]. Furthermore, for some very large companies the VAT number also might not be granular enough. For that reason, other identification schemes such as GS1 GLN should

[77] Example: in Croatia the Tax Office and the Customs Office fall under the Ministry of Finance.

	be allowed in parallel to the VAT identifier, conforming to the existing international standards such as ISO/IEC 6523[78] [79] and OASIS ebCore Party Id Type[80]
Addressing and routing identifiers	As indicated in the CEN CWA 16464-1[81] document, identifiers are required on the 3 levels: content, message and transport. Similar to the business entity identification problem, addressing and routing identifiers should provide for identification of sub-organization entities, such as local or regional branches. Furthermore, both buyers and sellers could use the services of more than one service providers, thus the endpoint address must also include the identification of the service provider. A policy for using identifiers, such as PEPPOL Policy for use of Identifiers[82] , should be defined along with or as a part of European Norm Transport Recommendation deliverable.

In short:

In general some code lists are incomplete, some have too many codes and could be very difficult to implement and some (e.g. 'units of measure') have both problems. Some codes are not being updated because they are duplicating another standard. Language codes such as 639-1 are not being updated if 639-2 already contains it.

Therefore there is a maintenance and management issue as there is a need to both merge and restrict code lists and ensure they are up to date. Currently only Currency and units of measure are mandatory so their issues are the most critical. In particular units of measure has the most issues as it has a large number of codes but is officially missing packaging codes such as Box.

CEN BII has a document published on Code List and Identifier management which shows how these lists are managed i.e. merged and restricted. The CEN BII document covers many other documents than the Invoice, although the issues are similar and therefore the principles can be applied.

Therefore Project Committee 434 would need to adopt an approach similar to the way CEN BII manages code lists, particularly creating Core Lists which are a subset of the full list but consist of only the commonly used or legally required codes. These lists could be extended for a specific sector or country much in the same way as the Core Invoice will be used.

Also although Currency and units of measure are mandatory, the specific code lists are only recommended. This is probably a syntax issue but the e-Invoice needs to identify which code list is being used, particularly if it is not the recommended one.

[78] ISO/IEC 6523-1:1998, http://www.iso.org/iso/catalogue_detail.htm?csnumber=25773

[79] ISO/IEC 6523-2:1998, http://www.iso.org/iso/catalogue_detail.htm?csnumber=25774

[80] http://docs.oasis-open.org/ebcore/PartyIdType/v1.0/CS01/PartyIdType-1.0.odt

[81] ftp://ftp.cen.eu/CEN/Sectors/List/ICT/CWAs/CWA16464-1.pdf

[82] https://joinup.ec.europa.eu/svn/peppol/PEPPOL_EIA/1-ICT_Architecture/1-ICT-Transport_Infrastructure/13-ICT-Models/ICT-Transport-Policy_for_using_Identifiers-220.pdf

Trigger 13: Based on individual suggestions made above, the European Multi-Stakeholder Forum on e-Invoicing should help decide what advice could be given (via the European Commission) to, or interaction is needed with, Project Committee 434.

8. The role of bodies towards Project Committee 434

Although 'bodies' could be interpreted in general, this chapter explicitly refers to:

- European Multi-Stakeholder Forum on e-Invoicing[83]
- Multi-Stakeholders Expert Group on e-Procurement[84]

In general, there are clear requirements from the European Commission to ensure input in e.g. policy developments that is obtained from a wide variety of stakeholders. One of the frequently used mechanisms (although having some restrictions) is the 'Public Consultation'[85], but other tools and methods are envisaged as well.

At least four of the requirements in the Standardisation Request mention ensuring input of (the relevant stakeholders) in the work of Project Committee 434 and one specifically identifies the European Multi-Stakeholder Forum on e-Invoicing as an indispensable source. The aim is to enhance probability that, once the deliverables from Project Committee 434 are put forward for voting, all appropriate considerations have been taken care of and the voting result will be positive.

The current procedures in CEN do not easily facilitate direct participation of (members of) the European Multi-Stakeholder Forum on e-Invoicing - or any other body whatsoever - in the work of Project Committee 434, as membership[86] of CEN Project- or Technical Committees is restricted to representatives[87] of 'Shadow Committees', that should be established under individual National Standardisation Organisations in Member States that have stakeholders that are interested in participation in the work.

Participation in such a Shadow Committee may, as is the case in many countries, require members to pay a subscription fee. For certain stakeholder (organisations) this may definitely be a 'showstopper', leading to their decision not to participate but await the results (and react in a voting period[88]). Regulation 1025/2012 of 25 October 2012 seems to provide options for solutions to this problem.[89]

Regarding members and participants of the European Multi-Stakeholder Forum on e-Invoicing, the European Commission has purposely balanced membership with representatives from Member States and focuses on Public Bodies being represented, who are generally not sufficiently represented (or perhaps even interested) in participation in a Shadow Committee under a National Standardisation Organisation.

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[83] http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=2650

[84] http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=3142

[85] The reader is, as an example, suggested to follow https://www.google.nl/search?hl=en-NL&source=hp&biw=&bih=&q=european+commission+public+consultation

[86] http://boss.cen.eu/reference%20material/Guidancedoc/Pages/TCmtgPart.aspx

[87] a representative of a Shadow Committee can only be a participant from the Forum if two conditions are met: a) the Forum member participates in the Shadow Committee and b) the National Standardisation Organisation concerned endorses the proposal to have the Shadow Committee represented in the CEN Project Committtee work

[88] So the indirect impact of such a participation fee is that the comment processing from the ballot period takes much more time than required, over-all extending the timeline needed to achieve results more than in case the stakeholders would have been able to participate directly.

[89] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:316:0012:0033:EN:PDF

Therefore, theoretically, representation[90] (representatives) from the European Multi-Stakeholder Forum on e-Invoicing could complement the input into the work of Project Committee 434 as delivered via Shadow Committees, by providing a more balancing viewpoint.

Of course time is limited and there is a desire to complete the deliverables asked for in the Standardisation Request as soon as possible, preferably within the timelines given.

A balance must thus be found between - on the one hand - major deliberations that would take (too) much time and - on the other hand - the risk that many of the existing Member State initiatives and experiences[91] will not be properly considered.

Therefore it is indispensable that an efficient way is established to get feedback from a broad section of the community. The European Multi-Stakeholder Forum on e-Invoicing could fill in such a role, as its members can get feedback from the National Multistakeholder Forum in their Member State, that they represent, relatively quickly. However it only meets twice or three times a year. This is far too infrequent to be able to cope with the requirements following from the Project Committee 434 work.

A suggestion to overcome this could be considering the creation of a special review stage for the Authors in the Activity Group Standardisation of the European Multi-Stakeholder Forum on e-Invoicing. This should coincide with the availability of a stable draft version of the document to be commented upon, possibly with the Enquiry stage.

Project Committee 434 could be requested to facilitate one or two reviews in this way and the European Multi-Stakeholder Forum on e-Invoicing would in turn agree to provide feedback within a relatively short timescale. Ultimately the decision to approve the deliverables will be using normal CEN procedures. Therefore comments can be overruled – but at least they are seriously considered before the decision is taken.

A similar approach could be depicted for involving the Multi-Stakeholders Expert Group on e-Procurement, be it via its representative in the European Multi-Stakeholder Forum on e-Invoicing.

Trigger 14: The European Multi-Stakeholder Forum on e-Invoicing should discuss establishing a more suitable way to allow for its consultation in the work of Project Committee 434 and agree with the European Commission. The relevance of the Objective justifies the need for flexibility implied.

[90] Observations learn that the fact that this cannot be in the remit of the CEN representative in the Forum is not generally well understood.

[91] See COM (2010) 712 Final, section *5.2.1. Promoting e-invoicing at national level*, Action 5.1 and Action 5.2

9. The impact from Digital Agenda (based) initiatives

This chapter complements chapter '5. Implementations in the market place'. It finds its justification in the Commission Decision of 25 June 2014 '*Setting-up the second European Multi-Stakeholder Forum on Electronic Invoicing*'[92], where Article 2 defines a list of tasks, amongst which are (repeated here from section 1.1 Rationale for ease of reference):

f) to liaise with the future European Forum on e-Procurement for all matters regarding the use of e-invoicing in public procurement;
g) to advise the Commission on the governance of the relevant Connecting Europe Facility digital service infrastructures.

The list of the paragraphs in this chapter does not imply a preferred sequence or relevance.

In order to be able to develop deliverables as required, especially under g), a thorough understanding of the playing field is necessary. (This can also be seen as complementing '2.1 Context for the works' in more detail).

Based on publicly available information, a comprehensive summary touching many topics in the Digital Agenda and Digital Single Market context has been drafted. It is available in CIRCABC[93] to members of the Forum. It is assumed to be correct at the moment of writing; there has been no (corrective) feedback from the European Commission. This summary has been used to help explore a number of topics in more detail. These are described below.

9.1 Governance and information exchange

If the public sector is seen as a single community, in the sense of Directive 2014/55/EU, then this must be followed also in the other dimensions. Different European Commission driven activities should be synchronised under the same (European Commission) umbrella to ensure an optimal contribution to acceptance and adoption in the Digital Single Marketplace.

There are many activities, initiatives, etc. by individual Commission Bodies or entities. Their individual deliverables 'meet' in the marketplace via parallel channels. Each body responsible for its own objectives will in general not be able to invest time in looking after an over-all impact assessment and act accordingly.

It must be realised that providing information via separate channels, that sometimes are even not synchronised (i.e. one or more lagging more or less behind others), does not provide the structured information to the stakeholders in the marketplace, i.e. 'at the receiving end', necessary to underpin (business) decisions and investments.

Without a reliable overview, allowing for impact assessment, decisions and investments will be postponed. This may turn into a self-reinforcing effect, in the end causing the need for legislative and/or regulatory measures that mostly could have been prevented.

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92 http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetailDoc&id=16455&no=2

93 https://circabc.europa.eu/faces/jsp/extension/wai/navigation/container.jsp?FormPrincipal:_idcl=FormPrincipal:details_doc_waiid_2kr2o6nh6m0tqbbsltg10cp4j2fymbotwbew2qch47gdqg2egz6e65vd&FormPrincipal_SUBMIT=1&id=f05bfa1e-9603-4937-b0be-d622858ad920&imageName=details_doc_wai_AGS+Scope+and+Activities+v0.4--434.pdf&org.apache.myfaces.trinidad.faces.STATE=DUMMY

Involvement of stakeholders is indispensable, in particular the consultation of the bodies that have been established to that purpose must be carried out accordingly and their deliverables taken properly into account.

But in order to be able to develop suitably tailored recommendations, these bodies need to be properly informed (i.e. not limited to publicly available information) on actual and foreseen developments.

> **Trigger 15**: To allow and enable the European Multi-Stakeholder Forum on e-Invoicing to provide proper and suitably tailored advice and Recommendations, a mechanism must be established that provides the relevant information at the relevant moments in time. This implies providing unsolicited non-public-information under non-disclosure, a bidirectional mechanism for clarification where required and very short response- and delay times. The 'Rules of Procedure' should be updated accordingly.

The CEF e-Invoicing DSI Scoping Paper as presented in the Forum meeting of 18 March 2015 clearly does not meet these requirements, nor the delay in the drafting of the minutes of that meeting or the provisioning of the Forum related information on the Internet for stakeholders. The website[94] was last updated October 2013 (!); it shows an alert as copied in Figure 29 below but it is not possible to get informed about what happened with (and in) the Forum since its meeting in October 2013; there is no suitable link.

Figure 29 - Forum website

Note that it is important to ensure that the European Multi-Stakeholder Forum on e-Invoicing and the Multi-Stakeholders Expert Group on e-Procurement share information, to each other and to the stakeholders in the marketplace. The current mechanisms, example shown in Figure 29, are not adequate.

9.2 Terminology

The 'terminology' being used in Commission documents is not necessarily equal to the same terminology used in private sector business environments[95]. This causes confusion, and hampers assessments and hence investments, as the market is unsure what it will have to cope with.

[94] http://ec.europa.eu/enterprise/sectors/ict/e-invoicing/benefits/invoicing_forum_en.htm

[95] Example: 'platform' in CEF

The text box below gives an elaborated example around the word ‘Platform’; it may not the best possible term to illustrate the case, but on the other hand it is representing a real observation:

http://searchservervirtualization.techtarget.com/definition/platform defines a ‘Platform’ as: ‘*In computers, a platform is an underlying computer system on which application programs can run. On personal computers, Windows 2000 and the Mac OS X are examples of two different platforms. On enterprise servers or mainframes, IBM's S/390 is an example of a platform*’.

Similar definitions can be found like: https://en.wikipedia.org/wiki/Platform_as_a_service saying ‘*Platform as a service (PaaS) is a category of cloud computing services that provides a platform allowing customers to develop, run and manage Web applications without the complexity of building and maintaining the infrastructure typically associated with developing and launching an app.PaaS can be delivered in two ways: as a public cloud service from a provider, where the consumer controls software deployment and configuration settings, and the provider provides the networks, servers, storage and other services to host the consumer's application; or as software installed in private data centers or public infrastructure as a service and managed by internal IT departments’* or http://searchcloudcomputing.techtarget.com/definition/Platform-as-a-Service-PaaS saying ‘*Platform as a service (PaaS) is a cloud computing model that delivers applications over the Internet’*.

European Commission provided CEF information uses statements as:

- The main component of a digital service infrastructure is **a core service platform** (CSP) or capability, which is a central hub at EU level to which stakeholders at Member State level will have access.
- While a **CSP is provided by the Commission**,...
- CEF eInvoicing DSI would provide support to MS and service providers **to implement the limited number of syntaxes** selected by CEN

(the last one could be interpreted as providing a platform that takes care of translation of syntaxes, so a MS could support all syntaxes by implementing just one)

But on the other hand the European Commission provided CEF information uses a statement like:

- It is important to clarify that through CEF, the Commission does not intend to compete with the market and will not provide end-user solutions for the provision of eInvoicing services

obviously anticipating confusion. The messages are, from industry terminology perspective, not aligned and seem to carry the contradiction of Commission documents stating eInvoicing services that might compete with private sector offerings on the one hand, and the opposite in other documents on the other hand.

1755 **Trigger 16**: .The European Commission should, in line with its proposed promotion of 'best practices' also adopt the use of well established market terminology.

1756 ## *9.3 ICT Standardisation Multi-Stakeholder Platform*

1757 The '*European Multi Stakeholder Platform (MSP) on ICT standardisation*'[96] was set up at the
1758 end of 2011. Based on a European Commission Decision to advise on matters related to the
1759 implementation of ICT standardisation policies, it deals with:

1760 • potential future ICT standardisation needs in support of European legislation,
1761 policies and public procurement;
1762 • technical specifications for public procurements, developed by global ICT
1763 standards-developing organisations;
1764 • cooperation between ICT standards-setting organisations;
1765 • the Rolling Plan, which provides a multi-annual overview of the needs for
1766 preliminary or complementary ICT standardisation activities in support of the EU
1767 policy activities

1768 The MSP is composed of representatives of national authorities from EU Member States and
1769 EFTA countries, of the European and international ICT standardisation bodies, and of
1770 stakeholder organisations that represent industry, small and medium-sized enterprises and
1771 consumers.

1772 There is a risk in developing proprietary standards in first bullet. There is also a risk of
1773 misalignment with '2.2 No special role for G'.

1774 Focus of the MSP is mainly on the second bullet: put simply, '*formally recognise*
1775 *specifications*[97] *to allow them to be referenced in e-Procurement*'. A risk is that (industry)
1776 bodies see this as a goal, and use the MSP to have their specification positioned as a formal
1777 standard.

1778 This would institutionalise fragmentation of standards and can decrease interest in formal
1779 standards development.

1780 There is a risk in duplication of effort regarding the third bullet, if for instance compared with
1781 the '*MoU on electronic business between IEC, ISO, ITU, and UN/ECE*'[98] .

1782 The implications could hamper adoption and hence progress towards the Objective, and
1783 even the establishment of the Digital Single Market.

1784 **Trigger 17**: The European Commission should, in line with its proposed promotion of 'best practices' ensure an optimal involvement of the private sector.

[96] http://ec.europa.eu/digital-agenda/en/european-multi-stakeholder-platform-ict-standardisation

[97] In http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2011:011:0001:0072:EN:PDF the European Commission gives the following definition: '*Standardisation can take different forms, ranging from the adoption of consensus based standards by the recognised European or national standards bodies, through consortia and fora, to agreements between independent companies*'. The word 'specification; is used here to refer to - in fact - all but the first category..

[98] http://www.itu.int/en/ITU-T/ebusiness/Pages/mou/default.aspx

9.4 Rolling Action Plan

The EU Rolling Plan provides an overview of the needs for preliminary or complementary ICT standardisation activities to be undertaken in support of EU policy activities.

The Rolling Plan on ICT Standardisation[99] is drafted by the European Commission in collaboration with the 'European Multi-Stakeholder Platform on ICT Standardisation' and is updated annually. It lists all the topics identified as EU policy priorities where standardisation, standards, or ICT technical specifications ought to play a key role in the implementation of the policy. It covers technologies of 'horizontal importance', ones whose application have a wide impact across different technical fields, in the context of ICT infrastructures and ICT standardisation.

It must be realised that standards development usually follows business drive. Standard development in support of EU policy hence inherently runs the risk of a lack of business drive or representation of business stakeholders' requirements. If not managed properly, this could lead to development of proprietary standards, augmenting fragmentation.

It can be observed that the ICT Standardisation Rolling Plan is using outdated statements; it must be better aligned with business requirements as mirrored in establishment and work of European Standardisation Organisations in general, CEN Project Committees and Technical Committees in particular, for the benefit of adoption; adoption will suffer if public sector driven standardisation does not match / is not aligned with private sector requirements.

Note that Project Committee 434 and Project Committee 440 have been set up by CEN members as an implication of business requirements to *also* absorb the work coming from policy initiatives, where Project Committee 434 has not been established solely on the basis of a Standardisation Request, but on the basis of Business Drives from different EU Member States via their National Standardisation Organisation.

Trigger 18: Standardisation Requests in support of EU policy objectives should be incorporated in business driven standardisation, where CEN Project Committee 434 can serve as an example, rather than be developed individually. This approach also mitigates the risk coming from the use of outdated statements.

Trigger 19: Effort must be put in a mechanism to better involve business stakeholders in the development of the Rolling Plan, and in particular in the definition of its Standardisation Requests (to further avoid fragmentation).

9.5 e-Procurement developments

There are many developments initiated by Commission initiatives. Examples are e-SENS, CEF DSI's, e-ID, PEPPOL, e-Delivery, .

It must be ensured that the infrastructures that are being established within the public sector community are not a private silo / community (see Figure 6) but instead connect to (or even better: make use of) existing private sector functionality.

[99] https://ec.europa.eu/digital-agenda/en/rolling-plan-ict-standardisation

Different and/or parallel approaches will hamper investments, innovation and adoption and hence jeopardise the way towards the Objective or even the establishment of the Digital Single Market.

> **Trigger 20**: It is suggested to make clear what the deliverables will be, in the appropriate jargon, to allow B to assess impacts c.q. how to optimally connect to and/or support and use it; in such a way adoption would result. This also must include e.g. the impact from the new e-Procurement and ISA legislation.

For policy measures for the benefit of policy objectives, it still can be argued that the success depends on the implementation and on the alteration to (public- and private- sector) business processes. These implications can be circumvented by legally imposing, but costs of that will disrupt business perspectives and innovation. The emphasis must be on joint developments, with joint identification of optimal[100] implementation scenarios.

Notice that the Communication COM (2013) 453[101] identifies the state of implementation of 'end-to-end e-procurement' (from the electronic publication of notices to electronic payment) in the EU, as foreseen by the 2012 Communication '*A strategy for e-procurement'*[102] as follows: '*End-to-end e-procurement is not about implementing an IT project which would just replicate paper-based processes; it is an opportunity to fundamentally re-think the way public administration is organised. End-to-end e-procurement is therefore a key enabler of the above priorities, and can contribute to the sustainable growth objectives of the EU 2020 Strategy. Therefore, although the final goal is to conduct the whole procurement cycle from e-notification to e-payment electronically, at ….'* But, at the moment this is not the case.

Various stages in that process act as information islands that do not exchange or reuse information, having negative impact to the quality and cost of the overall procurement process; this implies that the proper results can only be achieved if the progress and development of the underlined is not to be carried out by the public sector in isolation because of the positive effect it creates on all economic sectors.

The new public procurement Directives make the use of e Procurement progressively mandatory. By March 2017, electronic submission of offers (e-submission) will become mandatory for Central purchasing bodies (public buyers buying on behalf of other public buyers), and by September 2018, electronic submission of offers (e-submission) will become mandatory for all contracting authorities[103].

As the timeline correlates with the timeline of the European Norm developed by Project Committee 434, this creates an opportunity to (re)use the information available in electronic form from pre-award phase in the invoice and the related documents, with the goal of improving the quality of the contract execution monitoring process, increasing the auditability of the invoice and delivering savings and other benefits promised by the end-to-end e-Procurement concept.

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[100] 'Optimal' at least in terms of funds, resources, effort, implementation / migration period

[101] http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52013DC0453

[102] http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2012:0179:FIN:EN:PDF

[103] http://ec.europa.eu/internal_market/publicprocurement/docs/modernising_rules/reform/fact-sheets/fact-sheet-04-computerisation_en.pdf

The e-Tendering Expert Group (e-TEG) in its 'Recommendation for effective public e-Procurement Part II'[104] states:

> *'Today, there is often no connection ('bridge') between platforms (pre-award phase) and ordering-invoice solutions (post-award process). The relevant information such as catalogue information that might need to be extended and other information about the contract and the party details should improve usability and efficiency'.*

and comes to the Recommendation:

> *'In order to facilitate contract management during post-award phase (including framework agreements), the information about the contract and the conditions should be available and searchable in the platform and transferred to the order-invoice system (post-award system) so that end users in the organisations can do the call-offs to framework agreements/contract. This should include the product information, even if it might need to be completed with more information in order to work practically with contract management, execution and monitoring (prices or price calculation schemes, logistics information required by the contract – e.g. about unit packages etc.). Usage of structured information is recommended to facilitate reuse'.*

Practically, this means that e-Tendering platforms should extend their capabilities to also handle e-invoices as a value-added service and offer public buyers added value of checking the integrity of electronic invoices and their alignment with the tender-offer-contract data. Alternatively, they could offer access to this data to the e-invoice service providers via the standardised protocols (that are being developed by the CEN Project Committee 440), allowing them to improve invoice quality checks they usually offer to the buyers as part of their service.

Another important potential of an integrated end-to-end e-Procurement process is reduction of payment delays and improvements in the cash flow management, as indicated in COM(2012) 573 Single Market Act II[105] document (see also 2.7 Developments in 'Market in Motion').

Long payment delays have negative impact on the overall economy, because they reduce liquidity of the real sector and therefore limit the funds available for investment that creates economic growth.

State and local government treasuries could receive information on future payment obligations as early as the moment that an invoice reaches the public buyer, allowing them better cash management, whilst the governing bodies could use that information to ensure that invoices are paid on time and the negative effects are avoided.

Additional saving potential lies in dynamic discounting[106] mechanisms, where sellers could offer dynamic discounts should public buyers pay their invoices earlier than the due date (depending on the cash flow in the treasury),

Trigger 21: Effort must be put in a mechanism to better involve business stakeholders in the development.

[104] http://ec.europa.eu/internal_market/publicprocurement/docs/eprocurement/eteg/eteg_part2-operational_recommendations_en.pdf

[105] http://ec.europa.eu/internal_market/smact/docs/single-market-act2_en.pdf

[106] https://en.wikipedia.org/wiki/Dynamic_discounting

Trigger 22: e-Tendering platforms and e-Invoice service providers should integrate their services, enabling overall end-to-end e-procurement process to be conducted electronically, with maximum reuse of existing electronic data. This should foster the improvements in the quality and auditability of overall procurement process and maximise the savings and cash management improvement potential for the public buyers.

9.6 e-Sens and CEF-e-Invoicing-DSI

CEF e-Invoicing DSI

The CEF-e-Invoicing-DSI Building block description[107] creates haziness on functions, availability and responsibilities; see also the bold print under e-Delivery below.

The European Commission is supporting the uptake of e-invoicing in several ways and not only in the legislative field. The e-SENS project[108] and the CEF[109] Digital programme are two important initiatives to support actual work on e-invoicing throughout Europe.

The e-SENS project aims at consolidating, improving, and extending technical solutions to foster electronic interaction with public administrations across the EU. The work is centered on setting up real-life pilots to prove that seamless electronic communication with public administration is possible in the EU and EES. One of the domains in e-SENS is public procurement and in this area pilots on e-invoicing are part of this work.

The work in e-SENS on e-invoicing is focusing on e-delivery and e-documents. The pilots' use of e-documents relies on the work in CEN WS BII and from the PEPPOL-community. e-SENS only reuses the already existing PEPPOL BIS- invoice messages. The real added value of the pilot is related to the e-delivery building blocks where tests are done using the e-SENS AS/4 e-delivery profile using EBMS3 as a complement to the AS/2 profile currently used in PEPPOL.[110] AS/4 is being implemented in e-SENS to meet business needs from other domains than e-procurement such as for instance e-justice.

CEF is a programme to finance and *govern the implementation* of a European digital infrastructure. The work is organised in annual work programmes. Whereas e-SENS deals with pilots to make sure building blocks are ready for practical use, the CEF e-invoicing DSI is targeting to help public administrations implement electronic invoicing in compliance with the e-invoicing Directive 2014/55/EU of the European Parliament and the Council.

In that sense CEF is taking adoption of e-invoicing one step further, that is to support its practical use by public authorities and their suppliers in Europe. The CEF e-invoicing DSI consists of both support for central components like validation tools and code list management and also support for individual organisations and their projects to start using e-invoicing based on the common standards being developed in CEN Project Committee 434 and also by other related EU-initiatives.

Trigger 23: In dialogue between the relevant stakeholder organisations, projects and initiatives it must be made clear what is happening, and where and how the responsibilities are.

[107] https://joinup.ec.europa.eu/community/cef/og_page/catalogue-building-blocks

[108] http://www.esens.eu or more specific information http://www.esens.eu/real-life-piloting/e-procurement/

[109] https://joinup.ec.europa.eu/community/cef/description

[110] Explanation of these acronyms is considered out-of-scope for this document

e-Delivery[111]

The objective of the e-SENS building block ‘e-Delivery’ is to establish a common transport infrastructure suited to the requirements of cross-border communication between e-Government applications in different domains. This common transport infrastructure leverages the work of the previous Large Scale Pilots (‘LSPs’) and combines their results in a modular approach. The goal is for the infrastructures in use by the other LSPs to converge over time towards this common standard.

The e-SENS e-Delivery infrastructure supports interoperable, secure and reliable exchange of structured, non-structured and/or binary data within (at least) asynchronous communication scenarios. As in most preceding LSPs, in e-SENS the common e-Delivery infrastructure does not replace existing infrastructures, but instead aims to transparently interconnect existing electronic delivery communities:

- Communities set up by the Member States for general e-Government purposes.
- Sector-oriented communities such as e-Procurement, e-Health and e-Justice.

In e-SENS, e-Delivery is based on the concept of a four-corner model, where end entities exchange messages via gateway intermediaries. The infrastructure only standardizes communication between these intermediaries. Communication between gateways and end entities may use e-SENS e-Delivery, but may also use a different solution. This model is illustrated in the following diagram:

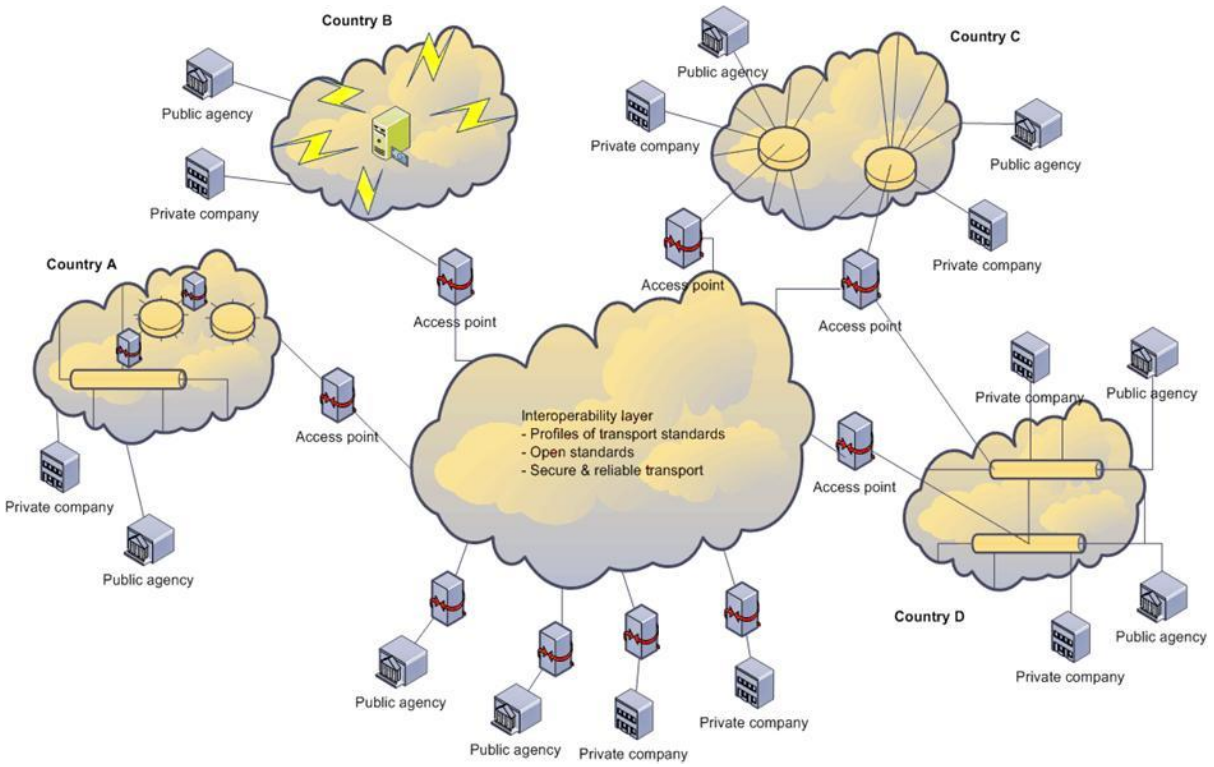

Figure 30 - e-Delivery

E-Delivery builds on earlier initiatives to converge the transport infrastructures of the LSPs PEPPOL, SPOCS and e-CODEX, for which an e-Delivery convergence task force was set up.

[111] Section copied from http://www.esens.eu/technical-solutions/e-sens-technical-solutions/e-delivery/ , given its importance

This group identified version 3 of OASIS ebXML Messaging Services (ebMS3), service discovery protocols and formats developed in PEPPOL (submitted to the OASIS BDX Technical Committee) and evidence messages standardized in ETSI ESI as building blocks for converged e-Delivery. The e-CODEX project has developed an e-Delivery solution based on these building blocks. This solution is currently in production use in a number of Member States. This solution, together with the experience gained in the e-CODEX project, is an important input for e-SENS.

In its first year, work on e-Delivery in e-SENS focused on taking stock of existing solutions from previous LSPs, selected national solutions, standards from standards bodies such as OASIS and ETSI, and the converged solution of e-CODEX. E-SENS has identified, and recommends for use in e-SENS pilots, a 'Core e-Delivery' high-level building block, which will be delivered as:

- A set of architecture building blocks – defined technical specifications.
- A solution building block that implements the specifications in a software product.

The Core e-Delivery architecture building blocks are the following:

- The recommended transport protocol is ebMS3, profiled for use in four-corner topologies. For interoperability reasons, the e-SENS profile will align closely with the AS4 profile of ebMS3, which is implemented by a growing number of commercial and open source solutions and is also adopted by other large user communities.
- The recommended end entity addressing format for legal entities is the ebCore Party ID type, which leverages existing party identification schemes. The project will define a similar scheme for natural entities to support interactions with citizens.

'Core e-Delivery' will be extended with two additional, optional building blocks:

- An end-to-end service providing evidence to uphold assertions of acceptance (i.e. of 'shipment'), of delivery/non-delivery, of retrieval, etc. of messages sent/delivered through that service. This serves to provide control, proof or notification of the flow. E-CODEX and SPOCS have used ETSI REM to provide this functionality. For e-SENS, a generalization of this concept is under development.
- Functionality that allows end entities to publish and enable discovery of service metadata, such as the (corner 3) service provider that receives messages on their behalf. The OASIS BDX Location specification is the recommended specification for a service location. A complementary specification called SMP (Service Metadata Publisher) is also part of the e-SENS target architecture. SMP has been submitted for standardization to OASIS.

E-Delivery can be used with other building blocks, such as container formats for payloads or mechanisms for security and trust. The relation between these building blocks is visualized in the following diagram:

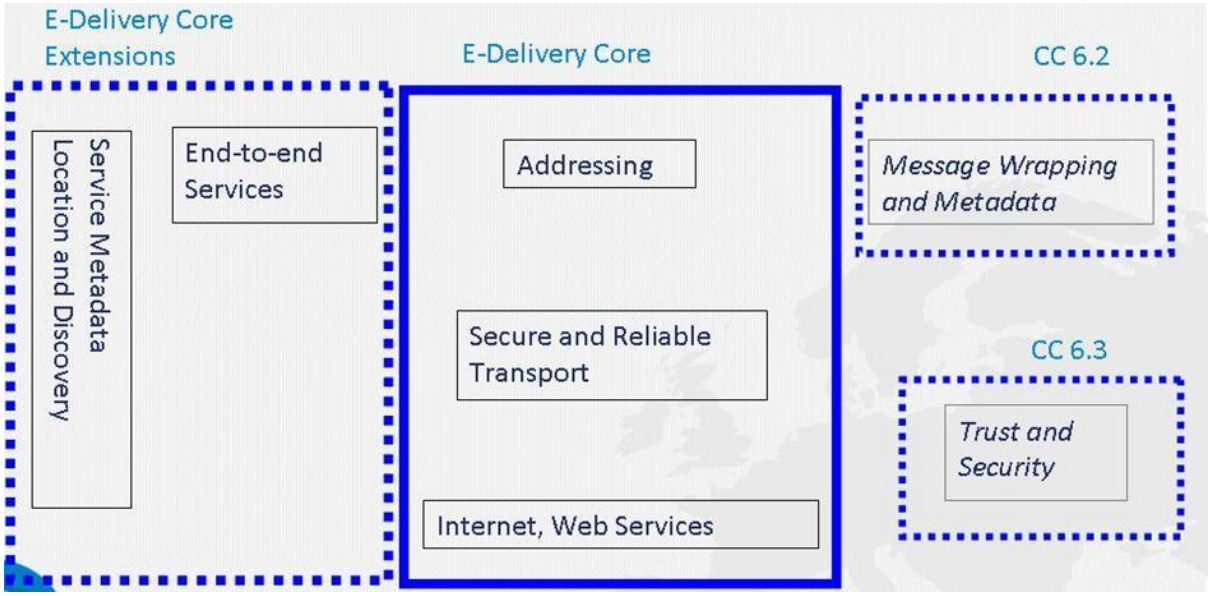

Figure 31 - e-Delivery

In parallel to the architecture building blocks, e-SENS collaborates with the Directorate-General for Informatics (DIGIT) and e-CODEX to deliver a solution building block, an implementation that:

- Implements Core e-Delivery
- Is free and open source
- Is mature and suited for production use
- Is fully tested and supported.

However, organizations may also implement e-Delivery using other solutions, such as commercial messaging products.

Current focus for e-Delivery is to support e-SENS pilots interested in using e-Delivery. This support will cover both:

- Adoption of e-SENS e-Delivery by communities that are not yet using e-Delivery.
- Migration of communities that are already using e-Delivery to use e-SENS e-Delivery.

Noteworthy regarding e-Delivery is, that OpenPEPPOL[112] has recently signed[113] an agreement with the *European Commission for hosting a central service as part of the e-Delivery Digital Service Infrastructure* (DSI). The European Commission is in the process of *establishing and operating* a number of DSIs and their core services as part of the Connecting Europe Facility (CEF) Telecom programme.

Under the terms of the agreement, the European Commission will host a central service of the CEF e-Delivery network - the Service Metadata Locator (SML) - which allows participants in the network to dynamically locate each other across Europe. The SML service is a central component of the PEPPOL Transport Infrastructure, managed to date by OpenPEPPOL.

The service is being used in production by more than 90 service providers and public administrations that have deployed Access Points using CEF e-Delivery within the PEPPOL

[112] http://www.peppol.eu/about_peppol/about-openpeppol-1

[113] http://www.peppol.eu/news/openpeppol-signs-agreement-with-the-european-commission

network. The agreement ensures technical maintenance of the e-Delivery software sample implementations, whereas OpenPEPPOL will continue to manage the business-related governance of the network in the e-procurement domain.

The agreement includes a service-level agreement for the availability of the SML service to be provided by DG DIGIT, thereby ensuring and even increasing the reliability and robustness of the PEPPOL e-Delivery network and the uninterrupted continuity of operations for all OpenPEPPOL members. The actual transfer of operations and related migration of the SML service is ongoing and is supposed to have been completed within June 2015.

This agreement marks the first instance of the European Commission becoming directly involved in the hosting and support of a core service which originated in a Large Scale Project (in this case, PEPPOL) and it will operate under the provisions of the Connecting Europe Facility (CEF) Telecom Programme.

It is a testament to the maturity of the service, which is currently used for millions of real business transactions, and paves the way for other services and building blocks from the e-Procurement domain or other communities to be run as part of the CEF e-Delivery digital service infrastructure (DSI).

The agreement is an important milestone towards integration of PEPPOL results into CEF e-Delivery DSI, harnessing the OpenPEPPOL governance model and strengthening long term sustainability of the PEPPOL network.

This development is a stepping stone on the sustainability roadmap of the PEPPOL infrastructure, operations and specifications. Closer cooperation on other building blocks and services with the European Commission is under discussion and further steps will be taken in due course. The Connecting Europe Facility Programme will continue to support core services in the e-Procurement domain and will also provide individual support though grants which will be open to public administrations and private providers within the e-Procurement domain. A series of Calls for Proposals that will support Generic Services in e-Delivery, eInvoicing and eCertis will be launched and concluded within 2015.

> **Trigger 24**: See also 9.2 Terminology; the information on the web suggests that there will be a new trend, where the European Commission will be directly involved in hosting and support of a core service. This statement is in contradiction with other information. There must be clear and unambiguous information to the stakeholders in the market.

9.7 eIDAS Regulation

Electronic identification (eID) and electronic Trust Services (eTS) are seen by the European Commission as key enablers for secure cross-border electronic transactions and central building blocks of the Digital Single Market.[114]

The Regulation (EU) N°910/2014 on electronic identification and trust services for electronic transactions in the internal market (eIDAS Regulation[115]) adopted by the co-legislators on 23 July 2014 is a milestone to provide a predictable regulatory environment to enable secure and seamless electronic interactions between businesses, citizens and public authorities.

[114] http://ec.europa.eu/digital-agenda/en/trust-services-and-eid

[115] http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.257.01.0073.01.ENG

The eIDAS Regulation, which is based on the Commission Communication ('*COM(2012) 238 Final*' of 4 June 2012), will increase the effectiveness of public and private online services, eBusiness and electronic commerce in the EU.

eID and eTS - namely electronic signature and electronic seal creation and validation, time stamp, electronic delivery service website authentication and related certificate issuance - are seen as inseparable by essence when analysing the requirements needed to ensure legal certainty, trust and security in electronic transactions. In this regard, the eIDAS Regulation

- ensures that people and businesses can use their own national electronic identification schemes (eIDs) to access public services in other EU countries where national eIDs are available and notified to the Commission in accordance with the eIDAS Regulation procedures.
- creates an European internal market for eTS by ensuring that they will work across borders and have the same legal status as traditional paper based processes. Only by providing certainty on the legal validity of all these services, businesses and citizens will use the digital interactions as their natural way of interaction.

The European Commission puts a lot of effort in promoting the uptake of the eIDAS Regulation in the private sector[116] in order to leverage eID as a key enabler of the Digital Single Market (DSM) by making cross-border electronic transactions more secure, convenient, and trustworthy.

In that context, there are some aspects of the eIDAS Regulation that can be relevant for e-invoicing services and e-business in general. In short, the question is: should e-invoicing and similar services be considered Trust Service Providers and, in consequence, are they subject to the eIDAS Regulation rules ?

Justification of this question comes from:

TSP definition (from Article 3(16)):

'an electronic service normally provided for remuneration which consists of:

(a) the creation, verification, and validation of electronic signatures, electronic seals or electronic time stamps, **electronic registered delivery services** and certificates related to those services, ...

Note: in bold the type of TSP of interest for within the scope of this document.

In Article 3(36) the definition of 'electronic registered delivery service': *a service that makes it possible to transmit data between third parties by electronic means and provides evidence relating to the handling of the transmitted data, including proof of sending and receiving the data, and that protects transmitted data against the risk of loss, theft, damage or any unauthorised alterations.*

This seems in line with an essential component of every e-invoicing provider and Article 43 (Legal effect of an electronic registered delivery service) establishes a common legal framework so that *'Data sent and received using an electronic registered delivery service shall not be denied legal effect and admissibility as evidence in legal proceedings solely on the grounds that it is in an electronic form*' that is very useful not only for e-invoices, whose legal validity is a consequence of the VAT directive, but also for all the supporting documents for e-procurement and e-business in general.

[116] https://ec.europa.eu/digital-agenda/en/news/eidas-private-sector-engagement-high-level-event-eid-emerging-business-cases

So it is likely that the electronic delivery component of an e-invoicing service should be considered a TSP.

The definition of e-seal in the eIDAS Regulation is: *'data in electronic form, which is attached to or logically associated with other data in electronic form to ensure the latter's origin and integrity*' (Article 3(25)).

Unless the electronic invoice is printed and preserved on paper audit trail, EDI logs, etc. that allows to demonstrate integrity and authenticity falls in the definition of electronic seal.

This seems in line also with Recital 59: '*Electronic seals should serve as evidence that an electronic document was issued by a legal person, ensuring certainty of the document's origin and integrity*' and Recital 61: '*This Regulation should ensure the long-term preservation of information, in order to ensure the legal validity of electronic signatures and electronic seals over extended periods of time and guarantee that they can be validated irrespective of future technological changes*'. Archival of document is subject to national legislation but the eIDAS Regulation provisions should be taken into account to guarantee a common legal basis in the Union.

Also taking into account the subject matter [2] and the scope [3] of the eIDAS Regulation the conclusion seems to be that when a third party provides a delivery or an archiving service (normally for remuneration and not just a 'storage' service like Dropbox) for e-invoices it should comply with the minimal TSP requirements specified in the eIDAS Regulation such as article 19 '*measures to manage the risks and notification of any breach of security or loss of integrity'*.

The eIDAS Regulation defines (like for any trust service):

- a 'basic' level;
- a qualified level, enjoying a legal presumption

In short: in order to achieve the qualified status, a third party conformity assessment report is needed and the service must be under supervision. A qualified TSP is inserted in the EU Trusted List defined in the eIDAS Regulation.

Quotes:

[1] The VAT directive establishes that integrity and authenticity must be guaranteed and, in case of an electronic invoice, in general is done by associating to the invoice some data related to the invoice.

From the explanatory notes on VAT invoicing rules (Council Directive 2010/45/EU):

'The use of business controls creating a reliable audit trail between the invoice and the supply can be used to ensure the authenticity of origin, integrity of content and legibility for all invoices, whether paper or electronic. Other than business controls, advanced electronic signatures based1 on a qualified certificate and created by a secure signature creation device or electronic data interchange (EDI) are examples of how the authenticity of the origin and integrity of the content of electronic invoices can be ensured through specific technologies. They provide a guarantee for businesses to ensure that the authenticity of the origin and the integrity of the content are met, and as such provide legal certainty. However, they are only examples and other technologies or procedures may be used.'

[2] Article 1 defines the subject matter of the eIDAS Regulation as follows:

‘With a view to ensuring the proper functioning of the internal market while aiming at an adequate level of security of electronic identification means and trust services this Regulation:

(a) lays down the conditions under which Member States recognise electronic identification means of natural and legal persons falling under a notified electronic identification scheme of another Member State;
(b) lays down rules for trust services, in particular for electronic transactions; and
(c) establishes a legal framework for electronic signatures, electronic seals, electronic time stamps, electronic documents, electronic registered delivery services and certificate services for website authentication.’

[3] Article 2 defines the scope of the eIDAS Regulation as follows:

1. This Regulation applies to electronic identification schemes that have been notified by a Member State, and to trust service providers that are established in the Union.
2. This Regulation does not apply to the provision of trust services that are used exclusively within closed systems resulting from national law or from agreements between a defined set of participants.
3. This Regulation does not affect national or Union law related to the conclusion and validity of contracts or other legal or procedural obligations relating to form.’

Trigger 25: As an emphasis is on ‘key enabler of the Digital Single Market’, where eID is element in CEF, and a relation with e-Business (and hence e-Invoices) is suggested, the European Multi-Stakeholder Forum on e-Invoicing must discuss to what extend this topic needs further exploration, given its remit.

9.8 Interpretation of Directives

Text in Directive 2014/55/EU, in particular Articles 6 and 7, needed clarification to allow Project Committee 434 to do its work efficiently.

The interpretation provided by the Commission[117] imposed requirements that are not within the remit of Project Committee 434; to put simply: Project Committee 434 ‘works’ in the lower three layers of the EIF 2.0 model whereas the conditions introduced by the Commission are on the higher legal and political layer.

The ‘translation’ of public sector policy objectives into measures in the lower three layers of EIF 2.0 must be done together with private sector stakeholders.

If not, these situations hamper progress and must be avoided - given the strict timelines there are no possibilities for in-efficiencies.

Trigger 26: A mechanism must be established that serves the explanation and clarification of texts in e.g. Directives that not only suits the timely needs of bodies that carry out work for the European Commission’s objectives but also shows the needed flexibility.

[117] https://circabc.europa.eu/sd/a/bb434a5f-50f8-4214-8e98-c1a91c53836f/Directive%202014-55-EU%20Articles%206%20and%207%20interpretation.doc

Trigger 27:. The added value that is ascribed to advisory bodies must be mirrored in the way in which they are informed, involved and approached.

On 22 June 2015 a meeting has taken place between representatives of the European Commission, the Activity Group Leaders of the European Multi-Stakeholder Forum on e-Invoicing and CEN Project Committee 434 to discuss the hindrances for the Project Committee's work coming from the explanation of Article 7 in the Directive.

Trigger 28: Processes about questions, clarifications and agreements to solve identified problems need to be clearly and unambiguously documented, especially regarding directions chosen or solutions agreed, for later reference purposes.

10. Availability of / Participation in Project Committee 434 deliverables

In order to ensure wide acceptance in e-invoicing in the marketplace[118] of the European Standard under development in Project Committee 434, providing free access to (at least some of) CEN Project Committee deliverables is crucial.

Namely, all the global fora and consortia provide free access to their e-business standards, so paying a fee to access the European Standard would certainly be a barrier.

Of course, Intellectual Property rights must be protected, but if the European Standard implementation should be mandatory in public procurement then also the access for something legally required should be free.

This probably means that some alternative way (business model) to paying fee to access the European Standard deliverables should be found.

Participation in the work of a CEN Project Committee is via the National Standardisation Organisation in the CEN Member Country. The number of participants may suffer from the general lack of interest that can be observed for standardisation work.

This may lead to 'unbalanced participation', implying risks for the acceptance and implementation at a later stage. It is important to involve as many of the relevant stakeholders as possible, at the earliest moment in time.

Trigger 29: Make involvement of as many relevant stakeholders as possible possible, take care of ex-ante verification, in public review do not rely on 'no answer equals approval' as no answer may mean that a relevant stakeholder is not reached or a relevant stakeholder has not taken the trouble to react.

Trigger 30: Initiative should be carried out to remove hindrances of participation fee (or purchase fee for standards-documents). Certain articles in REGULATION (EU) No 1025/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 25 October 2012 seem to enable that.

[118] Although the standard is asked for use in the Business to Government domain, there is no reason to treat this different from use in the Businss to Business domain; see 2.2 No special role for G and 3.3 Positioning

11. Organising for implementation

Copied from Background Document 1.0; topics maintained where relevant and reviewed and complemented / updated to get to actual status. The action items have been given a color code[119]:

Sub-Action x: GREEN - completed

Sub-Action x: YELLOW - in progress

Sub-Action x: RED - not started yet

The objective 'e-Invocing predominant in 2020' focuses on electronic invoicing in the context of Europe 2020, the Digital Single Market, etc. Implementing measures to achieve this goal should also recognise the fact that 'out there' there is not a 'Greenfield' situation - electronic business is happening; trade is taking place and 'dematerialisation of business processes' (i.e. the replacement of paper used for the exchange of information in trade and its supporting processes by electronic messages) and already now several initiatives and solutions exist in and across various markets – both in the private and the public sector providing answers to many business requests from various communities.

Respecting that these solutions have been implemented in order to address specific identified business needs relevant for that specific community, and to increase the uptake of e-Invoicing in general, is one of the main reasons for the recommendation to focus on semantic interoperability (see section 3.3) between communities.

It is further suggested that such semantic interoperability is best achieved by focusing on the concept of a 'Core Invoice' (see section 2.4) and nominating a common point of reference – a semantic reference model (see section 5.2).

In organizing for the implementation of these recommendations several aspects need to be considered, including:

1. Establishing a 'European Core Invoice'
2. Methodology for 'extending the Core'
3. Nomination of the 'common point of reference'
4. Statements of conformance
5. Public sector engagement

Each of these aspects are further elaborated in the following sub-sections.

It is necessary to recognise that a 'business drive' is essential. Public sector initiatives tend not to experience a vivid market uptake, and may vanish from the scene again, if they are not adopted because of filling a need given by practical market requirements. Public sector initiatives need to exploit the special competences to provide help, where the private sector cannot achieve the required progress on its own or does not have the possibility to.

Establishing a 'European Core Invoice'

[119] A RED code could, at this moment in time, imply that the Action item is considered outdated after discussion and will no more be followed up.

The concept of a ‘Core Invoice’ as discussed in section 2.4 assumes ‘that a (small) set of information elements can be defined that supports the core invoice functions’. The concept of a ‘Core Invoice’ has been adopted by e.g. the CEN WS/BII and the CEN MUG project, and has later gained wide attractions by a number of initiatives.

Sub-Action 1: In the process of establishing the Terms of Reference for continued actions to establishing a ‘European Core Invoice’, the relevant existing deliverables should be identified and referenced as a starting point.

In order to achieve the goal of European-wide increase in the uptake of e-Invoicing it is obvious that any actions to establish such a ‘European Core Invoice’ should take place within an organizational structure that allow for an open and balanced representation of all interests concerned at a European level with a view to achieve a vide agreement through a consensus building process. Such an approach would also ensure that the Semantic Data Model is not developed in isolation, just for the e-Invoice.

Leaving the further definition and elaboration of activities to the stakeholders in trade also reduces the risk of European Union local developments only. Trade, in general, is global and a European Union dedicated solution would put global trade by private sector entities in Europe in an exceptional position, hampering in the filling in of trade, i.e. the physical and the financial supply chain with Europe while these may in fact be directed at emerging economies.

Sub-Action 2: The ‘European Core Invoice’ should be developed as a European Norm (EN) within an appropriate CEN Technical Committee which ensures a balanced representation of all interests concerned.

A key target group for the ‘European Core Invoice’ are the SMEs. SMEs typically depend on solution providers and communities as their source for relevant information.

Sub-Action 3: Trading parties or their service providers should be encouraged to use the ‘European Core Invoice’ as the basis for the formats and syntaxes implemented in their solutions.

To support adoption by the SMEs the cost of obtaining information and relevant solutions should also be kept to an absolute minimum.

Sub-Action 4: The EN should be made available to interested stakeholders at zero cost, implying an absolutely zero threshold to obtain the information regarding the ‘European Core Invoice’. A similar approach should be considered for ‘rulebooks’ and ‘implementation guidelines’.

The associated costs could be covered from public sector funding, as for instance from CEF.

Methodology for ‘extending the Core’

The concept of a ‘Core Invoice’ also recognises that the ‘… (small) set of information elements …’ may, from the outset, not necessarily meet the specific requirements of a given country or supply chain (see sections 2.5 and 2.6).

Thus supply chain specific or country specific extensions could be expected, especially in the first years of adoption. It is however expected that, as experience is gained and the legal landscape is further harmonised, especially the 'country specific extensions' will gradually be eliminated.

Sub-Action 5: Member States should ensure that they do not create or perpetuate the mandatory use of Country Specific data elements in order to facilitate a greater measure of interoperability.

Nomination of the 'common point of reference'

In order to secure global interoperability the information elements contained in the 'European Core Invoice' should be mapped to a 'common point of reference'.

The work of UN/CEFACT has a global scope and is based on the requirements of different industries and sectors. As such it is well suited to serve as a global common point of reference to which other initiatives can relate, in order to achieve global interoperability.

Sub-Action 6: The UN/CEFACT work should be nominated as a common point of reference, to be incorporated in Sub-Action 1 in order to achieve global interoperability.

Statements of conformance

The availability of a 'European Core Invoice' and 'UN/CEFACT requirements reference model' as a global point of reference to support semantic interoperability would also provide a means for users to establish that their applications are conformant with it, to the degree which will support interoperability. To achieve this, the idea of self-conformance is an attractive one, as it avoids the high resource demands of proactive conformance testing.

Self-conformance could be achieved by providing two resources: a methodology for establishing and describing conformance; and a conformance registry, to provide visibility to trading partners and other communities of users. The methodology would provide a standard means of describing how business requirements and possibly existing syntaxes relate to specific portions of the 'European Core Invoice' and 'UN/CEFACT requirements reference model', including whatever qualifications for particular mappings might be needed. This includes both high level statements of conformance, and granular detail. Without this full set of information, semantic interoperability is not possible.

Sub-Action 7: A methodology and templates for use by users and solution providers to claim conformance to the 'European Core Invoice' and the 'relevant UN/CEFACT work' should be established.

The conformance registry is a simpler idea – effectively just a repository of conformance information, accessible as a website or possibly programmatically. The conformance registry would e.g. hold user's information in reference to the 'European Core Invoice' and 'UN/CEFACT requirements reference model', indicating where they are the same (that is, where they conform) and where they may be differences (that is, where they are not conformant).

Sub-Action 8: A registry for publication of self-conformance statements to be used by users and solution providers claiming conformance to the 'European Core Invoice' and the 'relevant UN/CEFACT workl' should be established.

Public sector engagement

Public sector entities have two important roles in relation to the goals of increasing the uptake of e-Invoicing.

Firstly as a user of e-invoicing, both as receivers of e-invoices and as issuers of e-invoices for services rendered to the market. In this respect a public sector entity as an actor in trade differs in nothing from a private sector entity in the same role - and does not justify any dedicated approach, standard, or measure. Based on business justification the public sector may however take the role as a 'launching or demanding customer' in order to boost developments. This would be especially true in cases where the special competences of the public sector may remove hindrances for which the private sector lacks these competences to be able to remove them.

Secondly as a facilitator for the implementation of the actions outlined above. In this respect it is important to ensure that actions are consistently implemented across the public sector entities and initiatives involved. Uncertainty in the market about the implications of Directives and Regulation that are seemingly developed in isolation are likely to cause uncertainty in the market and will hamper investments in new concepts and hence adoption.

Sub-Action 9: The European Commission should ensure that its efforts related to the adoption of e-Invoicing are harmonized Commission internally. Uncertainy in the market about implications of Directives and Regulation that are seemingly developed in isolation, or from efforts as the ICT Standardisation Multi-Stakeholder Platform cause fragmentation - and hence uncertainty - in the market, hampering investments in new

Note that proper uptake of electronic invoicing should not lead to the distinction of artificial roles: a public sector entity as an actor in trade differs in nothing from a private sector entity in the same role in trade - and does not justify any dedicated approach, standard, or measure. That would lack the business rationale, jeopardise uniformity and hence never experience the adoption.

Sub-Action 10: Sub-action 9 also implies taking care or harmonization and synchronisation with initiatives like eSENS. It should be considered that eSENS and its accompanying funding in CEF may provide excellent tools to help progress the outcome of the European Multi-Stakeholder Forum on e-Invoicing, while its contribution is a logical step to the further development of the functionality as envisaged in eSENS as they strive after in fact the same objectives.

12. Table of Recommendations

The ‘Triggers’ mentioned will be grouped and converted in proposed Recommendations in a separate document.

ANNEX: References

ANNEX -1 - Invoice formats

Example XML invoice messageL: UBL-Invoice-2.0-Example.xml

```
<?xml version='1.0' encoding='UTF-8'?>
<Invoice xmlns:qdt='urn:oasis:names:specification:ubl:schema:xsd:QualifiedDatatypes-2'
xmlns:ccts='urn:oasis:names:specification:ubl:schema:xsd:CoreComponentParameters-2'
xmlns:stat='urn:oasis:names:specification:ubl:schema:xsd:DocumentStatusCode-1.0'
xmlns:cbc='urn:oasis:names:specification:ubl:schema:xsd:CommonBasicComponents-2'
xmlns:cac='urn:oasis:names:specification:ubl:schema:xsd:CommonAggregateComponents-2'
xmlns:udt='urn:un:unece:uncefact:data:draft:UnqualifiedDataTypesSchemaModule:2'
xmlns='urn:oasis:names:specification:ubl:schema:xsd:Invoice-2'>
    <cbc:UBLVersionID>2.0</cbc:UBLVersionID>
    <cbc:CustomizationID>urn:oasis:names:specification:ubl:xpath:Invoice-2.0:sbs-1.0-
draft</cbc:CustomizationID>
    <cbc:ProfileID>bpid:urn:oasis:names:draft:bpss:ubl-2-sbs-invoice-notification-
draft</cbc:ProfileID>
    <cbc:ID>A00095678</cbc:ID>
    <cbc:CopyIndicator>false</cbc:CopyIndicator>
    <cbc:UUID>849FBBCE-E081-40B4-906C-94C5FF9D1AC3</cbc:UUID>
    <cbc:IssueDate>2005-06-21</cbc:IssueDate>
    <cbc:InvoiceTypeCode>SalesInvoice</cbc:InvoiceTypeCode>
    <cbc:Note>sample</cbc:Note>
    <cbc:TaxPointDate>2005-06-21</cbc:TaxPointDate>
    <cac:OrderReference>
        <cbc:ID>AEG012345</cbc:ID>
        <cbc:SalesOrderID>CON0095678</cbc:SalesOrderID>
        <cbc:UUID>6E09886B-DC6E-439F-82D1-7CCAC7F4E3B1</cbc:UUID>
        <cbc:IssueDate>2005-06-20</cbc:IssueDate>
    </cac:OrderReference>
    <cac:AccountingSupplierParty>
        <cbc:CustomerAssignedAccountID>CO001</cbc:CustomerAssignedAccountID>
        <cac:Party>
            <cac:PartyName>
                <cbc:Name>Consortial</cbc:Name>
            </cac:PartyName>
            <cac:PostalAddress>
                <cbc:StreetName>Busy Street</cbc:StreetName>
                <cbc:BuildingName>Thereabouts</cbc:BuildingName>
                <cbc:BuildingNumber>56A</cbc:BuildingNumber>
                <cbc:CityName>Farthing</cbc:CityName>
                <cbc:PostalZone>AA99 1BB</cbc:PostalZone>
                <cbc:CountrySubentity>Heremouthshire</cbc:CountrySubentity>
                <cac:AddressLine>
                    <cbc:Line>The Roundabout</cbc:Line>
                </cac:AddressLine>
                <cac:Country>
                    <cbc:IdentificationCode>GB</cbc:IdentificationCode>
                </cac:Country>
            </cac:PostalAddress>
            <cac:PartyTaxScheme>
                <cbc:RegistrationName>Farthing Purchasing
Consortia</cbc:RegistrationName>
                <cbc:CompanyID>175 269 2355</cbc:CompanyID>
                <cbc:ExemptionReason>N/A</cbc:ExemptionReason>
```

```
                <cac:TaxScheme>
                    <cbc:ID>VAT</cbc:ID>
                    <cbc:TaxTypeCode>VAT</cbc:TaxTypeCode>
                </cac:TaxScheme>
            </cac:PartyTaxScheme>
            <cac:Contact>
                <cbc:Name>Mrs Bouquet</cbc:Name>
                <cbc:Telephone>0158 1233714</cbc:Telephone>
                <cbc:Telefax>0158 1233856</cbc:Telefax>
                <cbc:ElectronicMail>bouquet@fpconsortial.co.uk</cbc:ElectronicMail>
            </cac:Contact>
        </cac:Party>
    </cac:AccountingSupplierParty>
    <cac:AccountingCustomerParty>
        <cbc:CustomerAssignedAccountID>XFB01</cbc:CustomerAssignedAccountID>
        <cbc:SupplierAssignedAccountID>GT00978567</cbc:SupplierAssignedAccountID>
        <cac:Party>
            <cac:PartyName>
                <cbc:Name>IYT Corporation</cbc:Name>
            </cac:PartyName>
            <cac:PostalAddress>
                <cbc:StreetName>Avon Way</cbc:StreetName>
                <cbc:BuildingName>Thereabouts</cbc:BuildingName>
                <cbc:BuildingNumber>56A</cbc:BuildingNumber>
                <cbc:CityName>Bridgtow</cbc:CityName>
                <cbc:PostalZone>ZZ99 1ZZ</cbc:PostalZone>
                <cbc:CountrySubentity>Avon</cbc:CountrySubentity>
                <cac:AddressLine>
                    <cbc:Line>3rd Floor, Room 5</cbc:Line>
                </cac:AddressLine>
                <cac:Country>
                    <cbc:IdentificationCode>GB</cbc:IdentificationCode>
                </cac:Country>
            </cac:PostalAddress>
            <cac:PartyTaxScheme>
                <cbc:RegistrationName>Bridgtow District Council</cbc:RegistrationName>
                <cbc:CompanyID>12356478</cbc:CompanyID>
                <cbc:ExemptionReason>Local Authority</cbc:ExemptionReason>
                <cac:TaxScheme>
                    <cbc:ID>UK VAT</cbc:ID>
                    <cbc:TaxTypeCode>VAT</cbc:TaxTypeCode>
                </cac:TaxScheme>
            </cac:PartyTaxScheme>
            <cac:Contact>
                <cbc:Name>Mr Fred Churchill</cbc:Name>
                <cbc:Telephone>0127 2653214</cbc:Telephone>
                <cbc:Telefax>0127 2653215</cbc:Telefax>
                <cbc:ElectronicMail>fred@iytcorporation.gov.uk</cbc:ElectronicMail>
            </cac:Contact>
        </cac:Party>
    </cac:AccountingCustomerParty>
    <cac:Delivery>
        <cbc:ActualDeliveryDate>2005-06-20</cbc:ActualDeliveryDate>
        <cbc:ActualDeliveryTime>11:30:00.0Z</cbc:ActualDeliveryTime>
        <cac:DeliveryAddress>
            <cbc:StreetName>Avon Way</cbc:StreetName>
            <cbc:BuildingName>Thereabouts</cbc:BuildingName>
            <cbc:BuildingNumber>56A</cbc:BuildingNumber>
            <cbc:CityName>Bridgtow</cbc:CityName>
            <cbc:PostalZone>ZZ99 1ZZ</cbc:PostalZone>
```

```
                <cbc:CountrySubentity>Avon</cbc:CountrySubentity>
                <cac:AddressLine>
                    <cbc:Line>3rd Floor, Room 5</cbc:Line>
                </cac:AddressLine>
                <cac:Country>
                    <cbc:IdentificationCode>GB</cbc:IdentificationCode>
                </cac:Country>
            </cac:DeliveryAddress>
        </cac:Delivery>
        <cac:PaymentMeans>
            <cbc:PaymentMeansCode>20</cbc:PaymentMeansCode>
            <cbc:PaymentDueDate>2005-07-21</cbc:PaymentDueDate>
            <cac:PayeeFinancialAccount>
                <cbc:ID>12345678</cbc:ID>
                <cbc:Name>Farthing Purchasing Consortia</cbc:Name>
                <cbc:AccountTypeCode>Current</cbc:AccountTypeCode>
                <cbc:CurrencyCode>GBP</cbc:CurrencyCode>
                <cac:FinancialInstitutionBranch>
                    <cbc:ID>10-26-58</cbc:ID>
                    <cbc:Name>Open Bank Ltd, Bridgstow Branch </cbc:Name>
                    <cac:FinancialInstitution>
                        <cbc:ID>10-26-58</cbc:ID>
                        <cbc:Name>Open Bank Ltd</cbc:Name>
                        <cac:Address>
                            <cbc:StreetName>City Road</cbc:StreetName>
                            <cbc:BuildingName>Banking House</cbc:BuildingName>
                            <cbc:BuildingNumber>12</cbc:BuildingNumber>
                            <cbc:CityName>London</cbc:CityName>
                            <cbc:PostalZone>AQ1 6TH</cbc:PostalZone>
                            <cbc:CountrySubentity>London
</cbc:CountrySubentity>
                            <cac:AddressLine>
                                <cbc:Line>5th Floor</cbc:Line>
                            </cac:AddressLine>
                            <cac:Country>
                                <cbc:IdentificationCode>GB</cbc:IdentificationCode>
                            </cac:Country>
                        </cac:Address>
                    </cac:FinancialInstitution>
                    <cac:Address>
                        <cbc:StreetName>Busy Street</cbc:StreetName>
                        <cbc:BuildingName>The Mall</cbc:BuildingName>
                        <cbc:BuildingNumber>152</cbc:BuildingNumber>
                        <cbc:CityName>Farthing</cbc:CityName>
                        <cbc:PostalZone>AA99 1BB</cbc:PostalZone>
                        <cbc:CountrySubentity>Heremouthshire</cbc:CountrySubentity>
                        <cac:AddressLine>
                            <cbc:Line>West Wing</cbc:Line>
                        </cac:AddressLine>
                        <cac:Country>
                            <cbc:IdentificationCode>GB</cbc:IdentificationCode>
                        </cac:Country>
                    </cac:Address>
                </cac:FinancialInstitutionBranch>
                <cac:Country>
                    <cbc:IdentificationCode>GB</cbc:IdentificationCode>
                </cac:Country>
            </cac:PayeeFinancialAccount>
        </cac:PaymentMeans>
        <cac:PaymentTerms>
```

```
        <cbc:Note>Payable within 1 calendar month from the invoice date</cbc:Note>
    </cac:PaymentTerms>
    <cac:AllowanceCharge>
        <cbc:ChargeIndicator>false</cbc:ChargeIndicator>
        <cbc:AllowanceChargeReasonCode>17</cbc:AllowanceChargeReasonCode>
        <cbc:MultiplierFactorNumeric>0.10</cbc:MultiplierFactorNumeric>
        <cbc:Amount currencyID='GBP'>10.00</cbc:Amount>
    </cac:AllowanceCharge>
    <cac:TaxTotal>
        <cbc:TaxAmount currencyID='GBP'>17.50</cbc:TaxAmount>
        <cbc:TaxEvidenceIndicator>true</cbc:TaxEvidenceIndicator>
        <cac:TaxSubtotal>
            <cbc:TaxableAmount currencyID='GBP'>100.00</cbc:TaxableAmount>
            <cbc:TaxAmount currencyID='GBP'>17.50</cbc:TaxAmount>
            <cac:TaxCategory>
                <cbc:ID>A</cbc:ID>
                <cac:TaxScheme>
                    <cbc:ID>UK VAT</cbc:ID>
                    <cbc:TaxTypeCode>VAT</cbc:TaxTypeCode>
                </cac:TaxScheme>
            </cac:TaxCategory>
        </cac:TaxSubtotal>
    </cac:TaxTotal>
    <cac:LegalMonetaryTotal>
        <cbc:LineExtensionAmount currencyID='GBP'>100.00</cbc:LineExtensionAmount>
        <cbc:TaxExclusiveAmount currencyID='GBP'>90.00</cbc:TaxExclusiveAmount>
        <cbc:AllowanceTotalAmount currencyID='GBP'>10.00</cbc:AllowanceTotalAmount>
        <cbc:PayableAmount currencyID='GBP'>107.50</cbc:PayableAmount>
    </cac:LegalMonetaryTotal>
    <cac:InvoiceLine>
        <cbc:ID>A</cbc:ID>
        <cbc:InvoicedQuantity unitCode='KG'>100</cbc:InvoicedQuantity>
        <cbc:LineExtensionAmount currencyID='GBP'>100.00</cbc:LineExtensionAmount>
        <cac:OrderLineReference>
            <cbc:LineID>1</cbc:LineID>
            <cbc:SalesOrderLineID>A</cbc:SalesOrderLineID>
            <cbc:LineStatusCode>NoStatus</cbc:LineStatusCode>
            <cac:OrderReference>
                <cbc:ID>AEG012345</cbc:ID>
                <cbc:SalesOrderID>CON0095678</cbc:SalesOrderID>
                <cbc:UUID>6E09886B-DC6E-439F-82D1-7CCAC7F4E3B1</cbc:UUID>
                <cbc:IssueDate>2005-06-20</cbc:IssueDate>
            </cac:OrderReference>
        </cac:OrderLineReference>
        <cac:TaxTotal>
            <cbc:TaxAmount currencyID='GBP'>17.50</cbc:TaxAmount>
            <cbc:TaxEvidenceIndicator>true</cbc:TaxEvidenceIndicator>
            <cac:TaxSubtotal>
                <cbc:TaxableAmount currencyID='GBP'>100.00</cbc:TaxableAmount>
                <cbc:TaxAmount currencyID='GBP'>17.50</cbc:TaxAmount>
                <cac:TaxCategory>
                    <cbc:ID>A</cbc:ID>
                    <cbc:Percent>17.5</cbc:Percent>
                    <cac:TaxScheme>
                        <cbc:ID>UK VAT</cbc:ID>
                        <cbc:TaxTypeCode>VAT</cbc:TaxTypeCode>
                    </cac:TaxScheme>
                </cac:TaxCategory>
            </cac:TaxSubtotal>
        </cac:TaxTotal>
```

```
        <cac:Item>
            <cbc:Description>Acme beeswax</cbc:Description>
            <cbc:Name>beeswax</cbc:Name>
            <cac:BuyersItemIdentification>
                <cbc:ID>6578489</cbc:ID>
            </cac:BuyersItemIdentification>
            <cac:SellersItemIdentification>
                <cbc:ID>17589683</cbc:ID>
            </cac:SellersItemIdentification>
            <cac:ItemInstance>
                <cac:LotIdentification>
                    <cbc:LotNumberID>546378239</cbc:LotNumberID>
                    <cbc:ExpiryDate>2010-01-01</cbc:ExpiryDate>
                </cac:LotIdentification>
            </cac:ItemInstance>
        </cac:Item>
        <cac:Price>
            <cbc:PriceAmount currencyID='GBP'>1.00</cbc:PriceAmount>
            <cbc:BaseQuantity unitCode='KG'>1</cbc:BaseQuantity>
        </cac:Price>
    </cac:InvoiceLine>
</Invoice>
```

ANNEX 2 – Example UN/EDIFACT

Example of UN/EDIFACT invoice message (not the same invoice)

(Ref http://www.edifactory.de/node/51)

```
UNA:+,? 'UNB+UNOA:2+FHPEDAL+HUBERGMBH+990802:1557+
9908021557'UNH+INVOIC0001+INVOIC:D:93A:UN'BGM+380+
9908001+9'DTM+3:19990802:102'RFF+ON:O0010001'DTM+4
:19999715:102'NAD+SE++Fahrradhandel Pedal++Waginge
rstr. 5+München++81549'NAD+BY++Huber GmbH++Obstgas
se 2+München++81549'LIN+1++4711.001'IMD+F++:::Fahr
rad, Damen'QTY+47:1:PCE'MOA+66:750'PRI+AAA:750'LIN
+2++4711.002'IMD+F++:::Luftpumpe, Stand-'QTY+47:1:
PCE'MOA+66:19,9'PRI+AAA:19,9'LIN+3++4711.003'IMD+F
++:::Ersatzventil'QTY+47:3:PCE'MOA+66:7,5'PRI+AAA:
2,5'UNS+S'MOA+79:777,4'MOA+124:124,38'MOA+128:901,
78'TAX+7+VAT+++:::16+S'UNT+28+INVOIC0001'UNZ+1+990
8021557'
```

Human readable version of the above:

```
Fahrradhandel Pedal, Wagingerstr. 5, 81549 München


Huber GmbH
Obstgasse 2
81549 München

                                          München, 02.08.99


Rechnung: 9908001  Ihre Bestellung Nr. O0010001 vom 15.07.99

Pos  Artikel  Beschreibung     Anzahl Einzelpreis Gesamt
1   4711.001  Fahrrad, Damen-    1       750,00   750,00
```

```
2   4711.002  Luftpumpe, Stand-  1        19,90    19,90
3   4711.003  Ersatzventil       3         2,50     7,50
                                           ----------
                              Gesamtsumme netto    777,40
                               Umsatzsteuer 16%    124,38
                                                  ========
                          zu zahlender Betrag       901,78


Alle Beträge verstehen sich in DEM
```

ANNEX 3 – Plan, Do, Check, Act

The figure below schematically depicts the use of Plan, Do, Check, Act on three hierarchical levels for the benefit of structured project management.

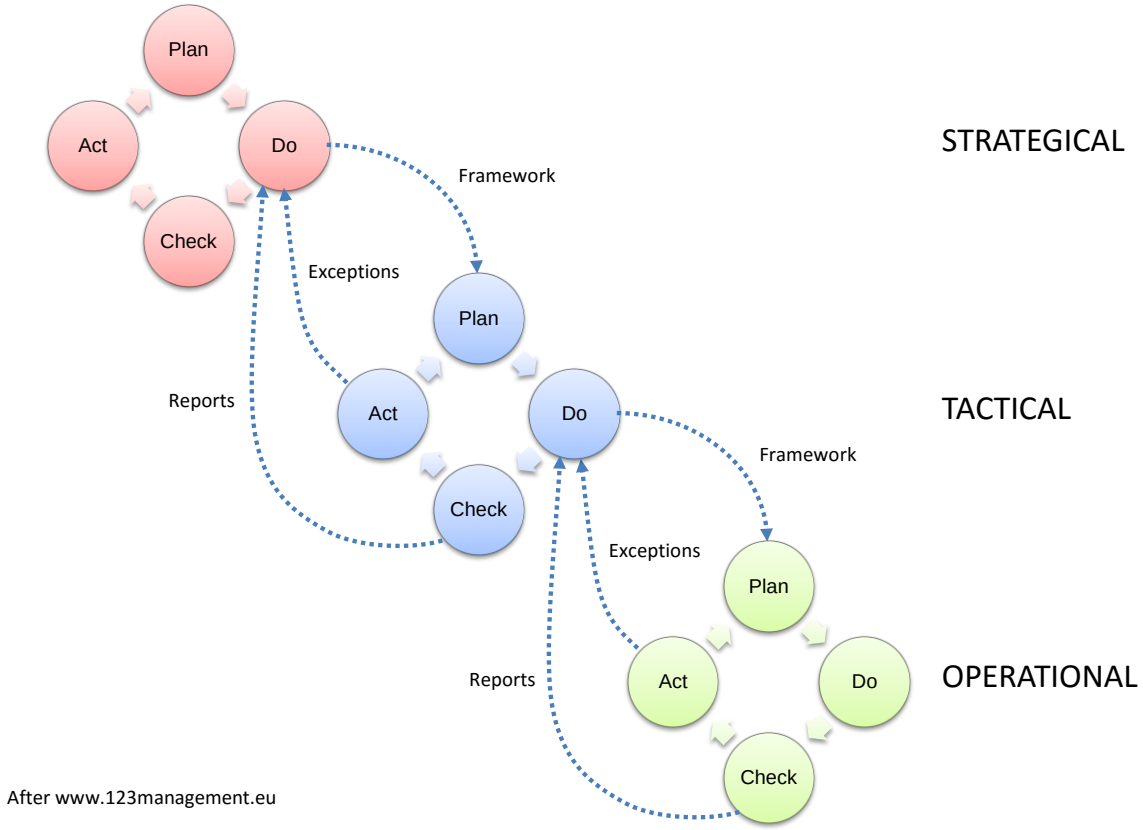

Figure 32 – Plan, Do, Check, Act

ANNEX 4 – Mapping issues affecting interoperability

The requirement

One of the objectives of the Standardisation Request is "to develop the mappings of the listed syntaxes (formats) onto the semantic data model, to be given in a set of Technical Specifications (TS)".

The idea is that if one syntax can be transformed into another then, in theory, a receiving system need only to understand one of the syntaxes approved. This has obvious benefits that both sender and receiver can chose their preferred syntax and when the receiver receives the invoice a transformation is applied based on the published mappings to the syntax. Therefore the receiver does not need to understand the other syntaxes, and avoids related costs with no determinable loss of information.

This is the ideal situation, but there are many issues that may affect some of the transformations, resulting in (the need for) manual intervention and implying related costs. Therefore, to avoid these costs, rules need to be created which are designed to ensure a high success rate and a seamless exchange.

According to the CEN/BII Workshop Agreeement[120] 'on Conformance and Customisation Methodology', interoperability is achieved primarily when the sender uses a more restricted set and sends to a more open receiver. Applying this to the mappings would suggest that provided the transformations are from the more restricted syntaxes then interoperability can be gained. Also the requirements put on the sender for conformance must be stricter than those on the receiver. For example the sender must not use ambiguous elements that are used for Straight Through Processing. They must be clearly defined and data typed.

The conclusion

As can be seen in the section below (an interoperable approach for mapping syntax), it should be accepted that the transformation should only be created in one direction and that the sender has to be restricted to fully qualified elements.

The unidirectional approach should be acceptable because the invoice is not expected to be returned. It should also be considered that when designing the mappings the sender's requirements should be more restrictive than the receiver. This could mean, for example, that the receiver can combine elements together but should not be expected to split or parse any piece of data (see examples). However creating further restrictions may cause more complexity so there must always be checks to ensure each restriction is necessary.

An interoperable approach for mapping syntax

The CEN/BII Workshop Agreeement 'on Conformance and Customisation Methodology' states that a strictly conformant instance can send to a non-strictly conformant instance and expect it to be interoperable.

Similarly PC434's work in progress in Work Stream 5 states that "If syntax mappings are to be complete and without information loss, the data type of an element must be defined according to the most restrictive syntax. Only then invoices may be transformed between the syntaxes without information loss."

This can be expanded to state that it is desirable (for interoperability) that the sender is more restricted than the receiver. For example UN/EDIFACT has specific size restrictions for many of the elements. Therefore an Identifier can never be more than 35 positions, or many text elements (e.g. an Address part) can never be more than 70 positions.

The reverse does not work so well; a syntax with no specific restrictions e.g. size, would probably have problems sending to one that has. For example if the sender sent a message with an Identifier of 36 characters long and the receiving system used UN/EDIFACT it would not accept those identifiers.

[120] Document reference to be published

This also applies to the semantics; if a receiving system implemented a syntax which did not understand all the elements, then they would be lost. Sometimes it can contain the data but in another way e.g. Full name as opposed to First Name and Surname. It could be difficult sending a message with Full name and which needs to be split. Maybe the Full name is "Gray, Edmund" or "Edmund Gray". Whereas combining two (or more) into one is usually much easier.

This will also apply to definitions of each of Information Elements or Business Terms. So if the sending system has a narrower definition, it should expect the receiving system to be able to transform it without loss of information. An example is unstructured address; if the receiver has Address1, Address2, Address3 and Address4, then it should have no problems with a sender who provides structured address as Street, City, Region and Country. However the reverse would not be possible unless the mapping rules mandated it.

Therefore, in general, a more restricted/constrained message can be sent to a more open receiver with a high level of confidence that it can be transformed. As an example a sender could send an UN/EDIFACT message to a Public Body which has implemented UBL and expect it to be transformed. However if the Public Body adopts UN/EDIFACT then it would reduce the probability of it being transformed from a less restricted syntax. For the latter, either mapping rules or business rules would have to ensure the receivers system was the most strict.

List of participants

Chairman:	
Peter Potgieser	Member of Multi-Stakeholder Forum
Members:	
Authors	**Role**
Andrea Caccia	Member of Multi-Stakeholder Forum
Antonio Conte	Member of Multi-Stakeholder Forum
Darko Gulija	Member of Multi-Stakeholder Forum
Edmund Gray	Member of Multi-Stakeholder Forum
Fred van Blommestein	Member of Multi-Stakeholder Forum
Harm Jan van Burg	Member of Multi-Stakeholder Forum
Peter Norén	Member of Multi-Stakeholder Forum
Tadeusz Rudnicki	Member of Multi-Stakeholder Forum
Reviewers	
Alexander Safarik Pstrosz	Member of Multi-Stakeholder Forum
Bernard Longhi	Member of Multi-Stakeholder Forum
Douglas Hill	Member of Multi-Stakeholder Forum
Helle Schade Sorensen	Member of Multi-Stakeholder Forum
Johannes Vermeire	Member of Multi-Stakeholder Forum
Jostein Fromyr	External expert
Juan Llorens	Member of Multi-Stakeholder Forum
Natascha Rossner	External expert
Observers	
Charles Bryant	Member of Multi-Stakeholder Forum
Doina Cristea	Member of Multi-Stakeholder Forum
Klaus Förderer	External expert
Jan Julianus	Member of Multi-Stakeholder Forum
Jan Sulik	Member of Multi-Stakeholder Forum
Martin Beno	Member of Multi-Stakeholder Forum
Pirjo Ilola	Member of Multi-Stakeholder Forum
Stefan Antimov	Member of Multi-Stakeholder Forum
Petr Kuchar	Member of Multi-Stakeholder Forum
Salvatore Stanziale	Member of Multi-Stakeholder Forum
Members who have resigned during the two-year period:	
n.a.	