

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'*

1 **Revision Table**

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2

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Disclaimer

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

9

Reading guide:

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

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

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

18 This document can be read as a ‘stand-alone’ document,
 19 where it is preferably read in its entirety.

20

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21 Preface

22 The European Multi-Stakeholder Forum on e-Invoicing ('Forum') has been organised by the
 23 European Commission. The Forum brings together representatives of National Fora and
 24 other stakeholders at EU level, where it aims at exchanging experiences and best practices
 25 on e-Invoicing and also at a recognised position allowing it to help the Commission in
 26 identifying further measures to facilitate the mass adoption of e-Invoicing across borders.
 27 These aims are in line with the Commission's objective¹ (**'The Objective'**) to make 'e-
 28 *Invoicing the predominant method of invoicing by 2020*' in Europe in the context of the Digital
 29 Agenda and the Digital Single Market. The Forum had its first term between 2011 and 2013²,
 30 and will have a second term between 2014 and 2017³.

31 The originally 'monolithic' work of '*the Activity Group⁴ Standardisation*⁵, allocated to the
 32 Forum, has been split upon request of the Members of this Forum and the European
 33 Commission in a number of parallel, but nevertheless related, activities. These activities
 34 were aimed at the development of:

- 35 1. a 'Recommendation';
- 36 2. a 'Background document';

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

- 40 3. the Terms of Reference
 41 for the development of a European Standard, as referred to in COM (2013) 449⁶
 42 and COM (2013) 453⁷.

Although the 'Recommendation' is a self-contained document that enables review and decision making, the accompanying 'Background document' provides additional 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.

43 The Recommendation⁸ is a *pivotal element in an integral vision*, aimed at an optimal
 44 contribution to the public policy Objective. The '*ex-ante verification by stakeholders*
 45 *representatives*' approach used in developing the Recommendation was chosen to establish
 46 an optimal (future) adoption by the stakeholders of the Recommendation, for the benefit of
 47 said Objective.

48 The Recommendation was unanimously adopted and endorsed by the Forum in its meeting
 49 of 1 October 2013⁹; the Background Document however, for logistical (i.e. non-content
 50 related) reasons, did not yet reach a similar status.

51 The Recommendation has been taken up by the European Commission. In the context of
 52 various initiatives aiming at the development of the Single Digital Market, as set out in the
 53 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\(02\)](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 (e-invoicing) <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_einvoicing_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](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52010DC0245R(01):EN:NOT)

54 2020 strategy¹¹, a Directive¹² has been developed for ‘*e-Invoicing in e-Procurement*’ and the
55 Recommendation has been made its central focal point.

56 The Directive recognises, in the terms of the Recommendation, the set of all public sector
57 Contracting Entities and Contracting Authorities together, as ‘constituting a single
58 Community’. However the Directive also adds requirements for receiving and processing of
59 electronic invoices based on the availability of the European Standard it requests to be
60 developed and gives already interpretations of specific articles of the Recommendation. As
61 such, the Directive ‘*jumps the queue*’ on the developments of further recommendations by
62 the Forum, e.g. about adoption and implementation, where these were already explicitly
63 mentioned in the (original) Recommendation as (other) essential themes, to be acted upon
64 in unison, and where the Background Document¹³ provided basic guidance to that purpose.

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

70 It is for this reason that in the meeting of the Forum on 20 March 2014 the following was
71 stated¹⁴ ‘... *accepted the changes introduced into the Directive as a result of the*
72 *negotiations with the co-legislator, but stressed the remit of Activity Group Standardisation to*
73 *provide recommendations that would attempt to (re)align as much as possible with the*
74 *original vision and strategy that served as the basis for the original Recommendation. This*
75 *could imply providing advice to move away from the wording of the Directive where it*
76 *deviates from the Recommendation.*’

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

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

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

92

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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135 Executive Summary

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

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

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

151 The Recommendation was unanimously adopted and endorsed¹⁵ by the Forum in its
 152 meeting of 1 October 2013; the Background Document however, for logistical (i.e. non-
 153 content related) reasons, did not yet reach a similar status.

154 The Recommendation has been taken up by the European Commission. In the context of
 155 various initiatives aiming at the development of the Single Digital Market, a Directive¹⁶ has
 156 been developed for '*e-Invoicing in e-Procurement*' and the Recommendation has been made
 157 its central focal point.

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

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

- 165 a) provide information on the intended scope and remit of the Recommendation -
- 166 recognising the Recommendation as an agreed 'milestone' on which further matter
- 167 can and must be built;
- 168 b) clarify steps that still need to be discussed and agreed with the Forum and lead to
- 169 new recommendations and implied next steps;
- 170 c) document experiences gathered so far in the process(es) that provide valuable input
- 171 and feedback;
- 172 d) provide unambiguous information on the (understanding of the) intention of (formal)
- 173 Commission documents.
- 174

175 This is the document at hand; it gives descriptions of topics that are relevant in the broader
 176 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

183

184

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185 1. Introduction to this document

186 1.1 Rationale

187 Although not explicitly documented as such, the Recommendation¹⁷ is intended to be one of
 188 the pivotal components in a structured project approach¹⁸, that is assumed to be followed by
 189 the European Commission to help realise the Objective. Essential characteristics¹⁹ of such a
 190 project approach are four distinguished steps, that are carried out sequentially (and if
 191 necessary repeatedly, like 'in a circle'): **Plan** (*set objective(s), define actions to realise*
 192 *these*), **Do** (*carry out the actions defined*), **Check** (*measure results and progress against*
 193 *expectations and objectives(s)*) and **Act** (*take corrective action if not 'on course'*). For
 194 optimal results, the project approach is supposed to tackle resp. Strategical, Tactical and
 195 Operational aspects of the path towards the goals to be realised. See Figure 32 in Annex 3;
 196 further elaboration is considered out of scope for this document..

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

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

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

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

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

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

222 Here it can be seen that there is a lot of haziness on *'e-invoicing'*. In order to be able to
 223 provide the European Commission with proper and suitably tailored advice and
 224 Recommendations, it must be made clear what the understanding of the Commission's
 225 definition / interpretation is. It will be obvious, that where the interpretation worked with does
 226 not equal the intended one, Recommendations run a large risk of being misinterpreted
 227 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).

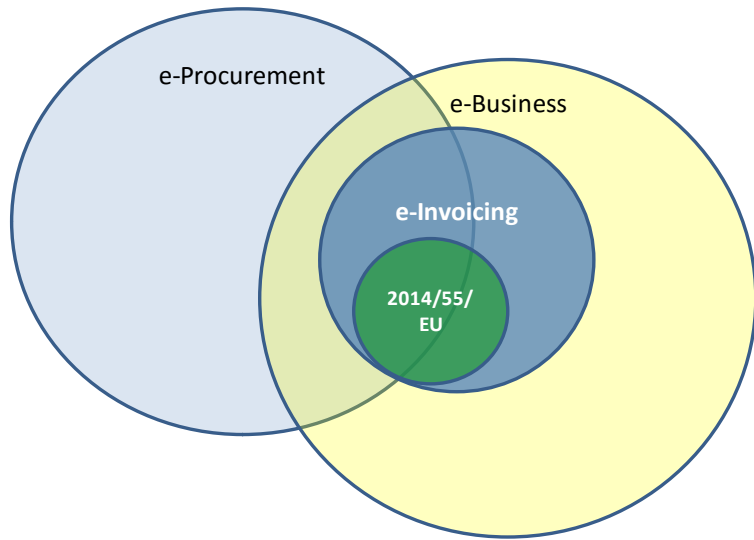


Figure 1 - 'e-Invoicing' in different contexts

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

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

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

238 f) *to liaise with the future European Forum on e-Procurement for all matters regarding*
 239 *the use of e-invoicing in public procurement;*

240 g) *to advise the Commission on the governance of the relevant Connecting Europe*
 241 *Facility digital service infrastructures.*

242 Other objectives of this document are (see also (a) - (d) in Preface): clarify the original
 243 intentions leading to the Recommendation, define, document and/or clarify basic
 244 assumptions and starting points to be used as unambiguous reference for the work of the
 245 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

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

249 Examples are:

- 250 • hybrid invoices;
- 251 • implementations and costs;
- 252 • electronic seals, signatures, delivery and preservation;
- 253 • the presumed impact of Article 7 of Directive 2014/55/EU;
- 254 • the difference between '*a semantic data model for the core elements of an invoice*'
 255 and '*an electronically processable invoice*';
- 256 • the establishment of entities '*just across the geographical border from member state*
 257 *A*' that are able to issue invoices into member state A without the burden of member
 258 state A specific legal requirements;
- 259 • impact of (e-)invoice on 3- and 4-way match models and v.v.;
- 260 • transmission infrastructures.
- 261

262 **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.

263 **1.2 Approach**

264 The approach of this document is 'bottom up'. Based on a definition of e-Invoicing as
 265 understood from the European Commission's information (mainly) in the Directive
 266 2014/55/EU, this document will provide suggested 'Triggers' to be elaborated into
 267 Recommendations for proper follow up. This follow up is supposed to take place after
 268 discussion of this document and its Triggers in the Forum, followed by the proper decision
 269 making.

270 Statements from '*Commission Decision of 25.6.2014 Setting-up the second European Multi-*
 271 *Stakeholder Forum on Electronic Invoicing*', which in fact describes the remit of the Forum
 272 and the deliverables that are to be expected from the Forum, have been taken as the leading
 273 reference framework, providing the justification for the approach of the work by the Activity
 274 Group Standardisation and the requirements following from that. The CEF²² (and underlying)
 275 documentation has been interpreted and taken up in the broader context.

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

282 The 'Rules of Procedure'²³ of the Forum, as issued originally, do not provide answers to the
 283 information need of the Forum, as the elaboration of the Recommendation into Directive
 284 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.

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287 **2. Basics and concepts**

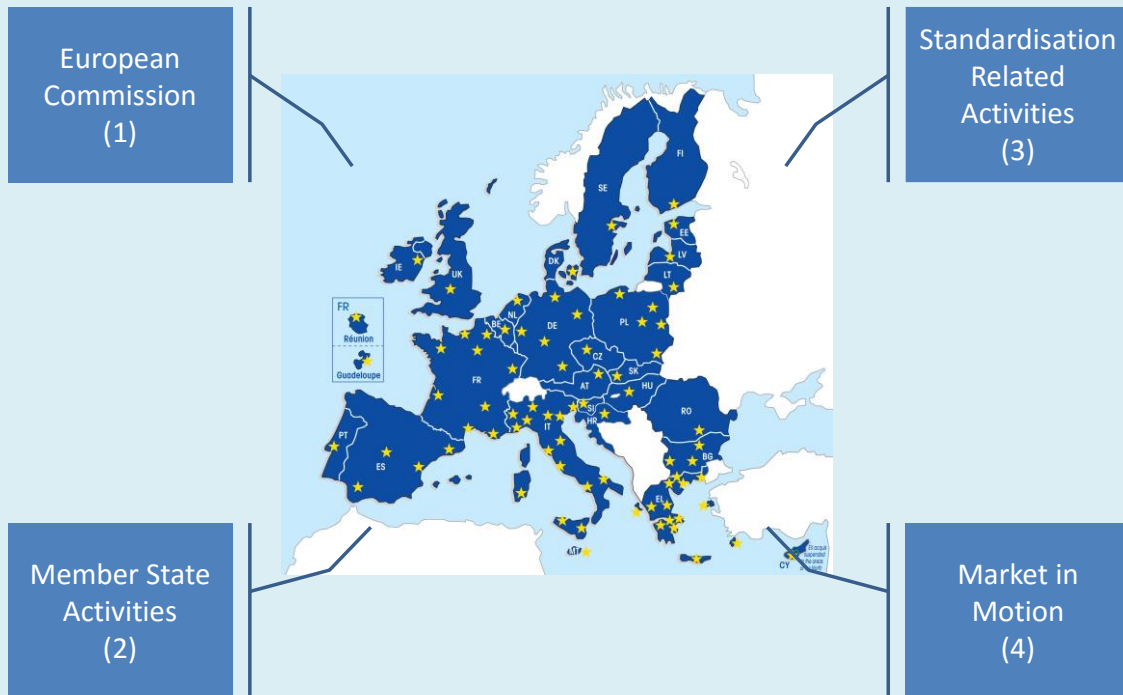
288 This chapter briefly tables and describes basics and concepts that must be taken into
 289 account ('as a given') in the matter at hand. Some information - for sake of easy reference
 290 and completeness - has been taken from the previous version of the Background Document.

291 **2.1 Context for the works**

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

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

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



304
 305 **Figure 2 - Forces**

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

307 **1. European Commission**

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

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310 initiatives. With the aim to further these, the Commission has also already funded, started
 311 the implementation of (or even already fully implemented) infrastructural projects of its own,
 312 e.g to help realise the e-SENS (Electronic Simple European Networked Services)²⁴
 313 deliverables. One of the elements here, considered to be touching the scope and remit of the
 314 Forum, is to promote the use and interoperability of e-invoicing at European level, with a
 315 particular focus on the B2G/public procurement domain, e.g. the e-PRIOR²⁵ and
 316 PEPOL²⁶ (Pan-European Public Procurement On-Line) projects.

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

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

324 **2. Member state activities**

325 This group could be characterized by the descriptions and actions given in topic 5.2.1 of the
 326 document COM (2010) 712³⁰ Final.

327 **3. Standardisation (related) activities**

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

- 331 • The European Committee for Standardization (CEN), in particular Project Committee
 332 434 '*e-Invoicing*', Project Committee 440 '*e-Procurement*' and the Workshop
 333 '*Business Interoperability Interfaces*' (BII) for public procurement in Europe.
- 334 • ISO³¹, with the ISO 20022 Financial Invoice message.
- 335 • The Organisation for the Advancement of Structured Information Standards (OASIS)
 336 working on the Universal Business Language (UBL)^{32 33}, including an e-invoice.
- 337 • UN/CEFACT³⁴ under UNECE, with the Cross Industry Invoice³⁵

338 **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.

339 It should not be forgotten, that actually - at this moment - business is already taking place
 340 'out there', transactions are being done, goods and services are being sold and purchased.
 341 (Business driven) innovation, developments and initiatives are taking place, often having
 342 been preceded by years of preparation and/or having long term impact changes. In addition
 343 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.

344

345 **2.2 No special role for G**

346 A reference is made to paragraph 3.3 Positioning.

347 In business processes related to
 348 the e-Procurement and the '*Trade*
 349 *in goods and services*', public
 350 sector and private sector have
 351 different characteristics. A public
 352 sector entity 'G' can in fact be seen
 353 as 'owned by the public' and needs
 354 to meet requirements³⁶ regarding
 355 transparency and fairness that
 356 need not be met by private sector
 357 entities 'B'. A closer view reveals
 358 that the differences are in the 'pre-
 359 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).

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

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

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

370 **2.3 Interoperability**

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

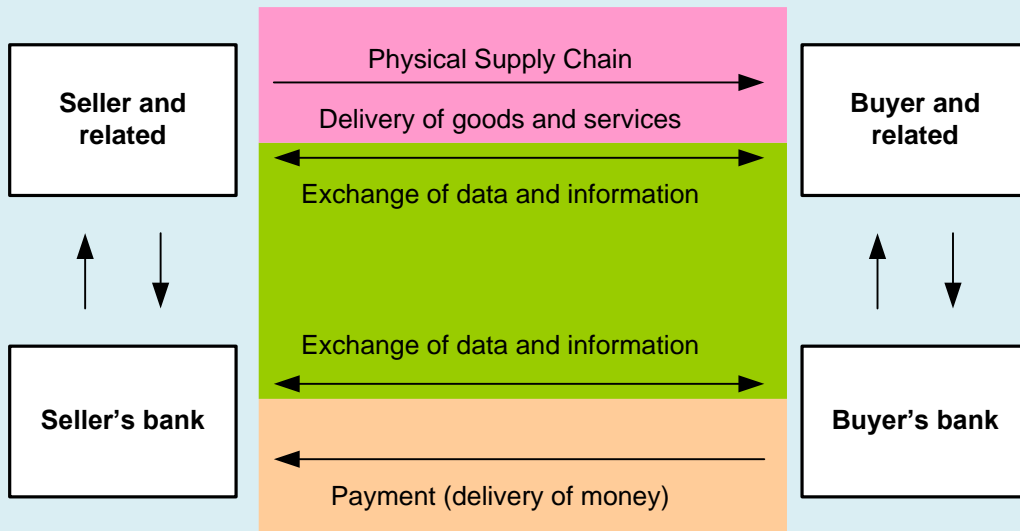
³⁶ Directive(s) t.b.d.

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

378 Precise definition of the information flow is important because:

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

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



390
 391 Figure 3 - Information flows

392 With automated and electronic solutions, information could be processed faster and more
 393 accurately so that lead-times could be reduced. A procurement process would also be
 394 quicker if purchase orders were managed electronically.
 395

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

402 The introduction of data
 403 interchange using electronic
 404 means (instead of paper) is a
 405 major contribution to *this effective management of information flows*. It should be noted, that
 406 for maximum efficiencies to be reached, not only business processes need to be automated
 407 – 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.

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

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

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

426 This calls for '**Interoperability**';

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

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

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

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

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

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

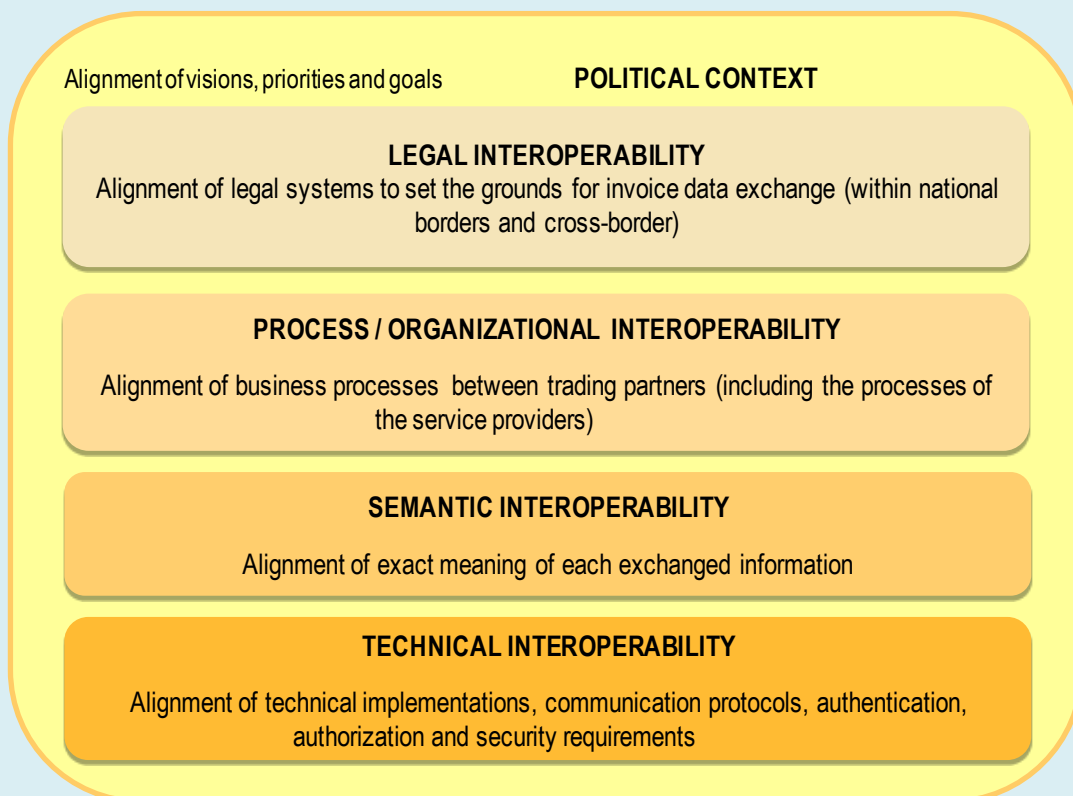
450 Currently the lack of interoperability is the single most important impediment to e-business,
451 particularly to the participation of small and medium enterprises (SMEs). Yet, the
452 development of standards to facilitate interoperability requires a full understanding of the

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

461 The subsequent text elaborates the meaning of this; for illustrational purposes, reference is
 462 made to the European Interoperability Framework³⁷ (EIF 2.0) that has been introduced by
 463 the European Commission IDABC as a 'tool' to help (build) interoperability between (e-)
 464 Governments, but its use is certainly not restricted to that. See figure 4.



465

466

Figure 4 - EIF 2.0 Levels of interoperability

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

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

475 **Legal interoperability** is established by European VAT directives, '*Council Directive*
 476 *2010/45/EU of 13 July 2010 amending Directive 2006/112/EC on the common system of*
 477 *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>

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

480 For this document, the Political Layer and Legal Layer are considered ‘out of scope’.

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

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

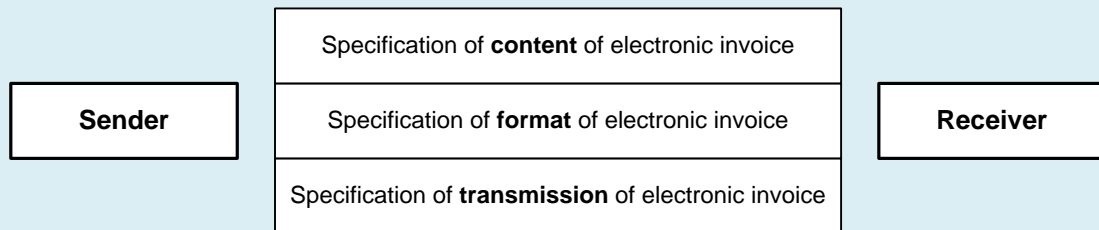
490 To establish **semantic interoperability**, both parties must have equal understanding of the
 491 meaning of each piece of data contained in the electronic document that is exchanged. This
 492 means not only the definition of business information contained in each particular field of the
 493 data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

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

498 **Technical interoperability** deals with questions such as:

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

506 This is further illustrated in the figure 5 below:



507
 508 Figure 5 - Layers in technical interoperability

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

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

³⁸ <https://joinup.ec.europa.eu/catalogue/repository/cen/bii-profiles>

- 514 2. specification of **format**: how are the information elements represented, e.g. if a
 515 textstring is used to represent a date then does it use yyyyymmdd or ddmmyyyy;
 516 3. specification of **transmission**: how is the information in electronic format transferred
 517 from the sender to the receiver. To this purpose (seen from the receiver side) in fact
 518 a number of options is available³⁹:
- 519 ○ Electronic data interchange (EDI) e-invoicing: Trading partners send and
 520 receive electronic business documents, directly from system to system
 521 without human intervention (no manual retyping);
 - 522 ○ Web e-invoicing: This allows trading partners to manually fill the relevant
 523 information into an electronic form and submit as business document
 524 electronically, typically through web portals;
 - 525 ○ Scan and capture: Paper invoices are sorted, scanned and then data is
 526 captured either through manual keying or optical character recognition (OCR)
 527 technologies⁴⁰.
- 528

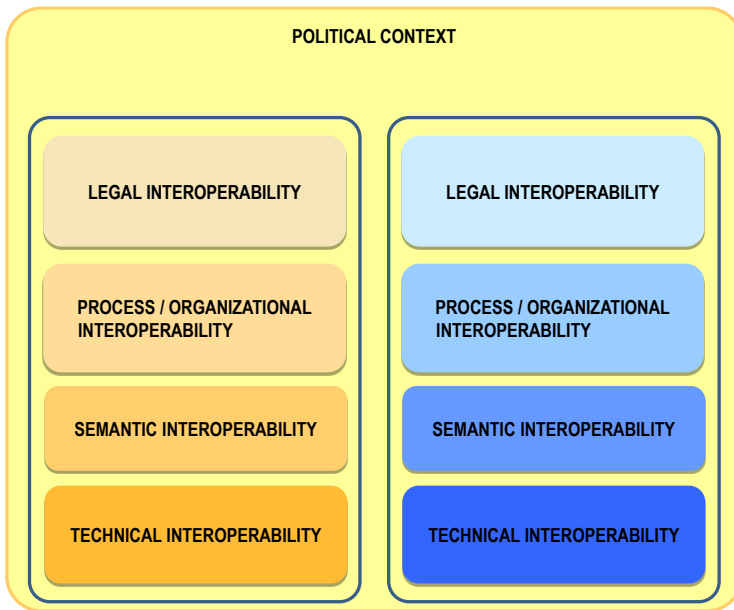


Figure 6 - Two communities with own interoperability layers in shared political context

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, agreements⁴¹ 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.

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

531 Owing to the vast diversity of trading party relationships, which may be conducted for e-
 532 business either directly on a one to one basis or through the intermediation of a service or
 533 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

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

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

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

546 Such 'network interoperability' initiatives are common and growing in terms of adoption, both
547 at Member State level and at a pan-European level. Examples of the latter include the
548 PEPPOL initiative (funded by the Commission and a number of public authorities) and the
549 Model Interoperability Agreement of the European E-Invoicing Service Providers Association
550 (EESPA⁴²).

551 **2.4 The roots and uptake of the Recommendation**

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

556 The proposed program of work for the Forum⁴³ showed, regarding the topic of 'standards'
557 and 'standardisation', an initial approach (suggested by the European Commission) to help
558 achieve the Objective.

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

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

565 For various reasons, and approved and endorsed by the Forum, the Activity Group
566 Standardisation proposed a different approach to help realise the Objective - underpinning
567 this approach by means of '*ex ante verification*' with (potential) stakeholders in the market
568 and a proper identification and verification of market requirements⁴⁴.

569 The Activity Group Standardisation developed a '*Recommendation on the use of a Semantic*
570 *Data Model to support Interoperability for Electronic Invoicing*⁴⁵. The development process
571 found its roots in considerations how to contribute to the Objective via the mechanism
572 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

573 previous deliverables (like the Final Report⁴⁶ of the ‘Expert Group on e-Invoicing’ and the
574 document ‘e-Invoicing Standardisation Overview, issues and conclusions for future
575 actions’⁴⁷) and verified their individual statements and conclusions against:

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

579 These verifications led to the conclusion that some statements⁴⁸ needed to be left, as they
580 were outdated or overtaken by market developments.

581 The Recommendation was adopted unanimously by the Forum⁴⁹ in its meeting on 31
582 October 2013⁵⁰.

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

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

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

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

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

597 Parallel to the Recommendation, the Activity Group
598 Standardisation developed a ‘Background
599 Document’, intended to provide background
600 information on the rationale and the way of work for
601 the Recommendation. Its version 0.4⁵² was
602 presented to the European Multi-Stakeholder Forum
603 on electronic Invoicing, but has not (yet) been subject
604 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>

605 2.5 Summary of the Recommendation

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

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

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

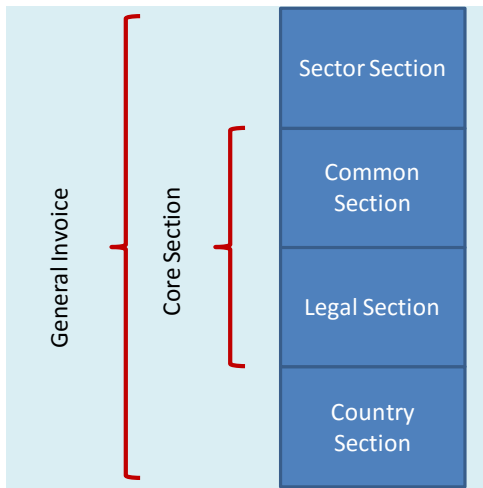


Figure 7 - Invoice sections

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 invoice⁵⁴.

These Sections are illustrated in Figure 7.

619 Such a Semantic Data Model for the Core Section creates the possibility of a 'Core Invoice'
620 or 'Minimum Core Dataset', which will support basic cross-industry electronic invoicing
621 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.

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

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

- 635 1. Invoices between trading parties from differing industry sectors should only contain
 636 the Core Section and (where applicable) the required data elements from the
 637 applicable Country Section;
- 638 2. For a satisfactory level of cross-border⁵⁵ interoperability to be possible, a cross-
 639 border invoice should ideally have no Country Section and few Sector Section data
 640 elements;
- 641 3. The Core Section should be simple, stable and designed to be easily implemented to
 642 ensure adoption.
- 643 4. The Core Section should be developed taking into account existing requirements and
 644 specifications and in particular those
 645 that are already in common usage.
- 646 5. The Core Section should support a
 647 basic set of business processes in
 648 which the invoice plays a role, such
 649 as validity checking, approval,
 650 accounting and payment initiation.
- 651 6. The users and stakeholders in the
 652 EU environment should work with
 653 bodies having the appropriate remit,
 654 competence and credentials for the
 655 development and maintenance of
 656 the Core Section, so that the Core
 657 Invoice is usable in practice and
 658 covers 'off the shelf' a reasonable
 659 proportion of the market.

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

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>

660 **2.6 Envisaged adoption**

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

666 Such migration to a single Semantic Data Model is anticipated to happen over a period of
 667 time, hence the reference to a migration plan in the Recommendation, recognizing there are
 668 many existing legacy investments and there will be a required period of time before
 669 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

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

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

680 The adoption of e-Invoice specifications will change over time⁵⁶ as depicted in Figure 8.

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

685 The differences per organisation⁵⁷ should disappear by:

- 686 • Requiring organisations to publish their deviations
687 (short term);
- 688 • Requiring organisations to publicly state self-
689 conformance (mid term);
- 690 • Requiring mappings to publicly demonstrate
691 conformance (long term);
- 692 • Consider certifying conformance by independent
693 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.

694 Differences per country should disappear by:

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

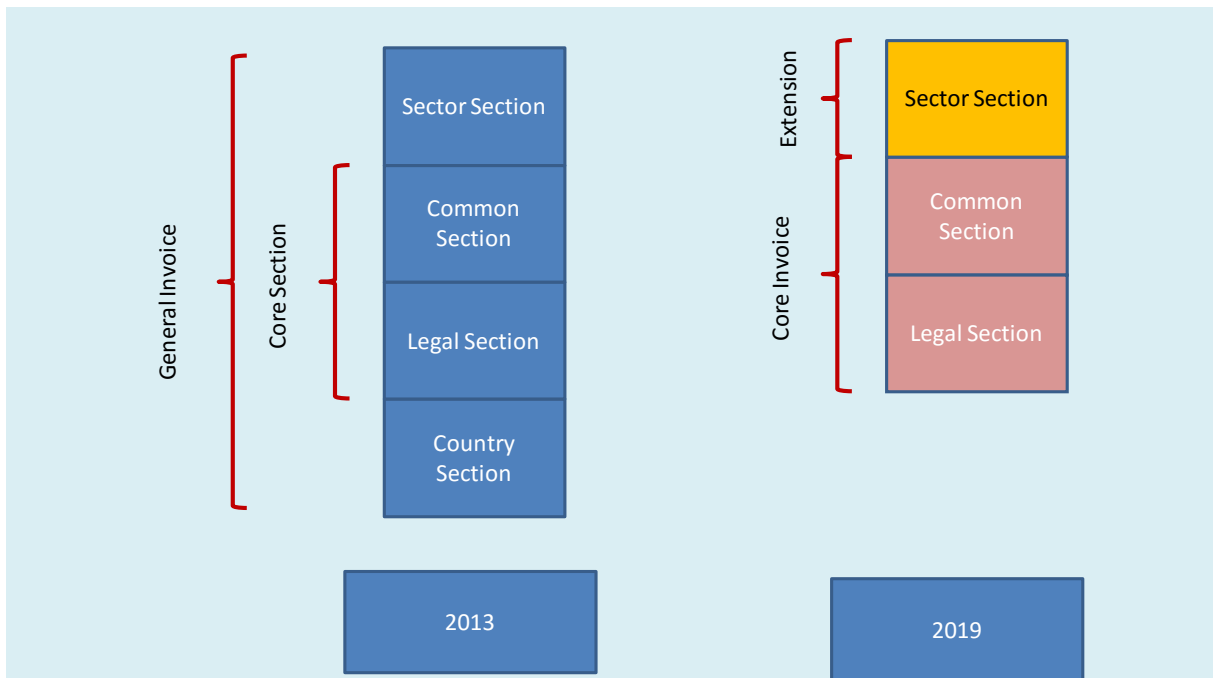
698

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.

699

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



700

701

Figure 8 - Envisaged phasing out of national differences

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

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

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

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

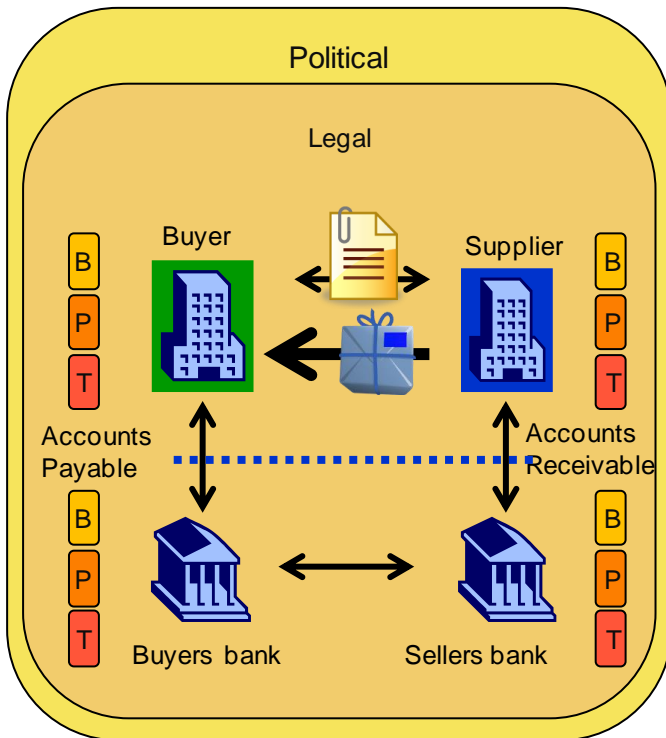


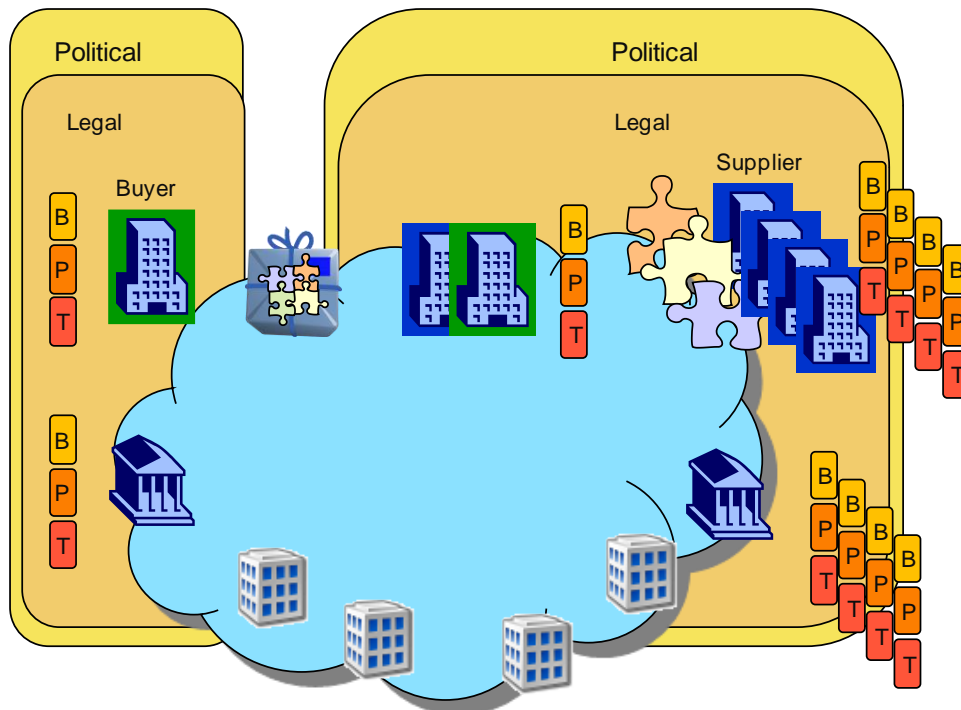
Figure 9 - Traditional documents exchange in Trade

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 9⁵⁸), and a relatively straightforward 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'.

728



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 equivalent to Business, Process and Technology respectively

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731 **Innovation and new business supporting functions**

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

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

741 In its 'Market Guide⁵⁹', the Supply Chain Working Group of the Euro Banking Association
742 defined Supply Chain Finance (SCF) as:

743 *The use of financial instruments, practices and technologies to optimise the management of*
744 *the working capital and liquidity tied up in supply chain processes for collaborating business*
745 *partners. SCF is largely 'event-driven'. Each intervention (finance, risk mitigation or*
746 *payment) in the financial supply chain is driven by an event in the physical supply chain. The*
747 *development of advanced technologies to track and control events⁶⁰ in the physical supply*
748 *chain creates opportunities to automate the initiation of SCF interventions'.*

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

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

757 **Trigger 5:** While striving after the Objective regarding electronic invoicing, potential
758 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.

759 3. Invoice scenario's

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

763 In this chapter the following definition of 'scenario' is used⁶¹:

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

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

774 Note:

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

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

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

783 **3.1 e-Invoicing according to Directive 2014/55/EU**

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

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

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

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

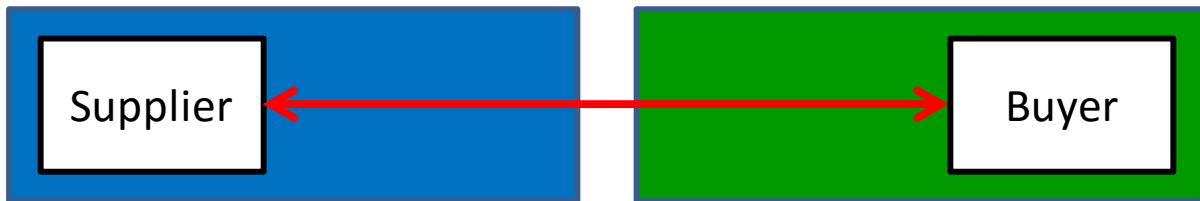
794 *For the purposes of this Directive, the following definitions shall apply: (1) 'electronic*
795 *invoice' means an invoice that has been issued, transmitted and received in a*

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:



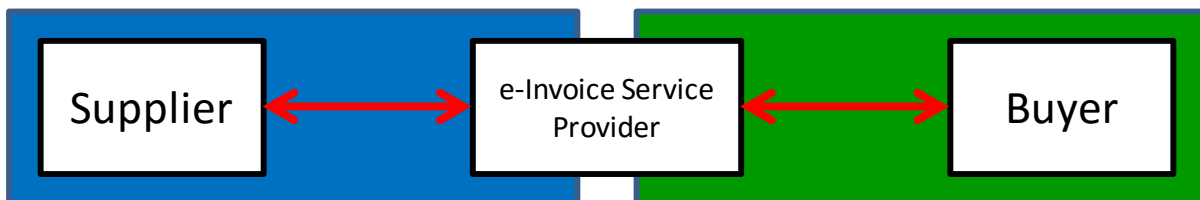
803

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

805 Figure 11 indicates a direct connection⁶² between supplier and buyer; this is also known as a
 806 2-corner model'.

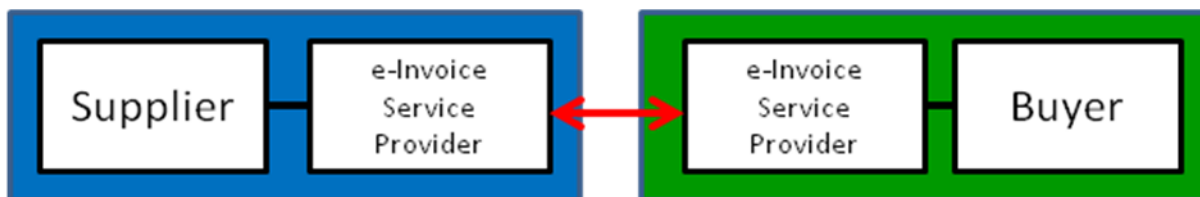
807 Note that for the scenario to be valid, the physical connection (Internet, Value Added
 808 Network, ...) between supplier and buyer does not need to be direct.

809 Alternative to this direct connection is the use of a Service Provider⁶³, 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

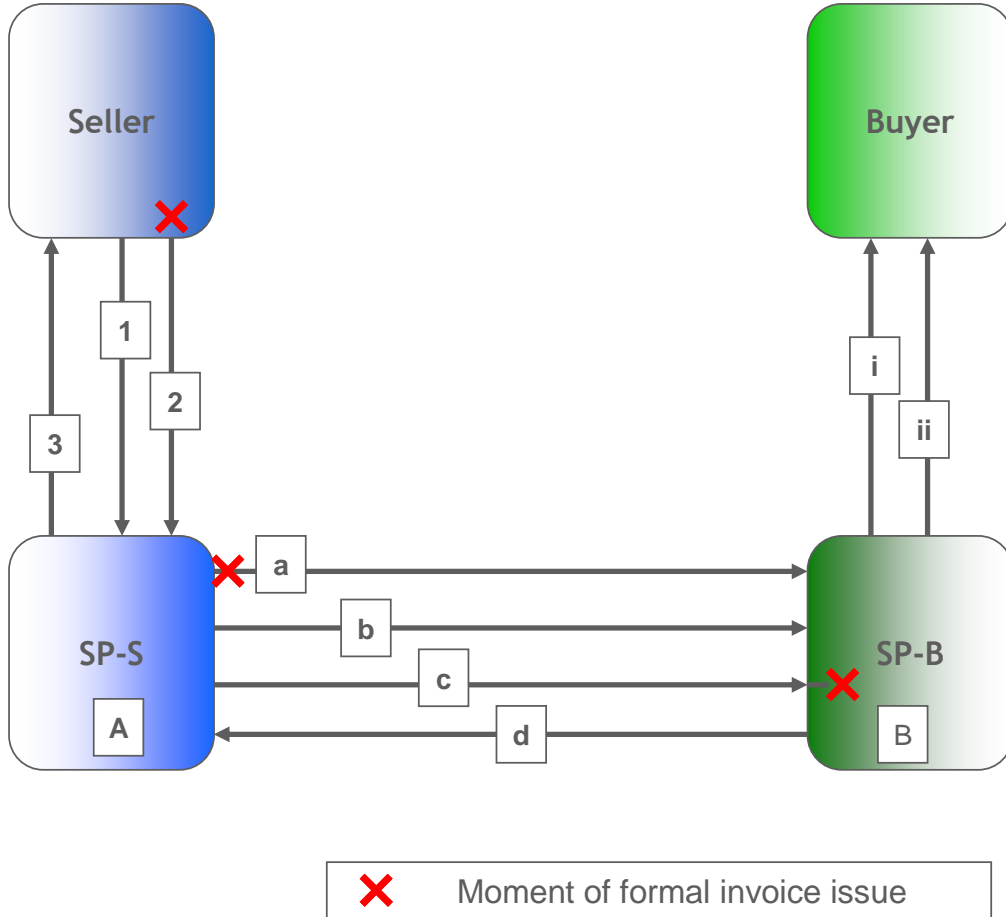
817 For a random supplier to send invoice information to a random buyer, assuming they have
 818 no direct connection, (latest) at purchase time an agreement needs to be made how to
 819 electronically transfer the (invoice) information.

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

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

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



824

825

Figure 14 - 'X marks the spot'

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

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

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

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844 Group on e-Invoicing⁶⁴; 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 EDI⁶⁵.
- 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).

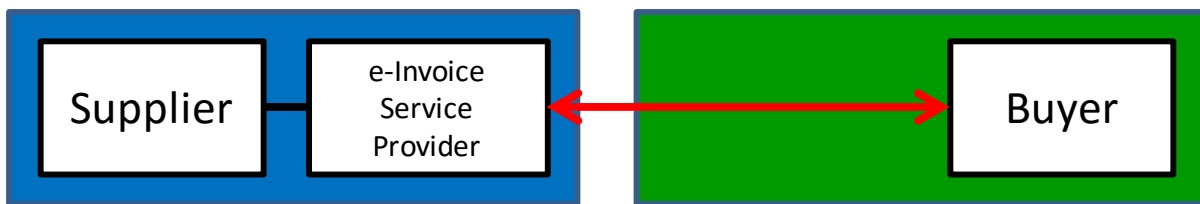
EDI as per definition of the European Commission:
 See 94/820/EC: Commission Recommendation of 19
 October 1994 relating to the legal aspects of
 electronic data interchange (Text with EEA
 relevance)

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.

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

879

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>

880 **3.2 The invoice in business processes**

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

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

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

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

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

894

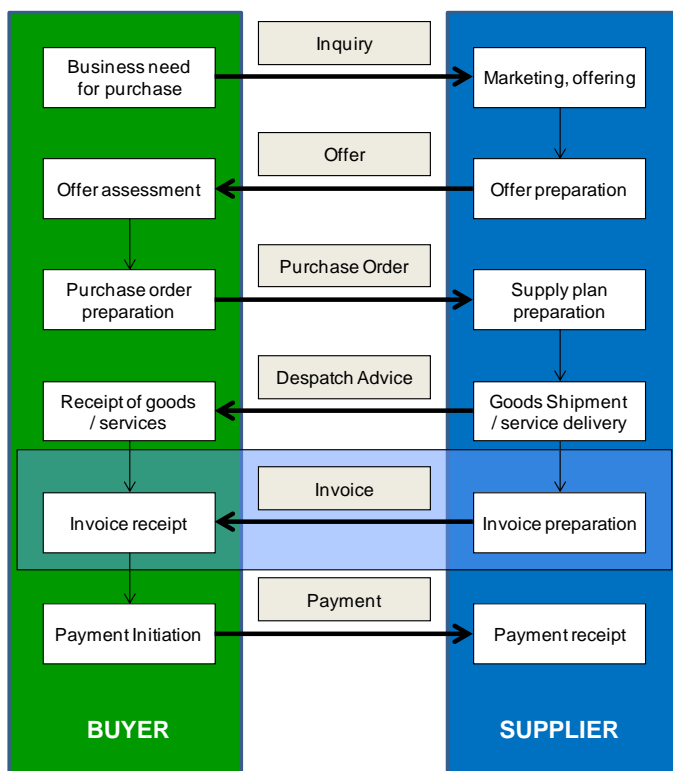


Figure 16 Purchase-to-pay process – Example

895

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.

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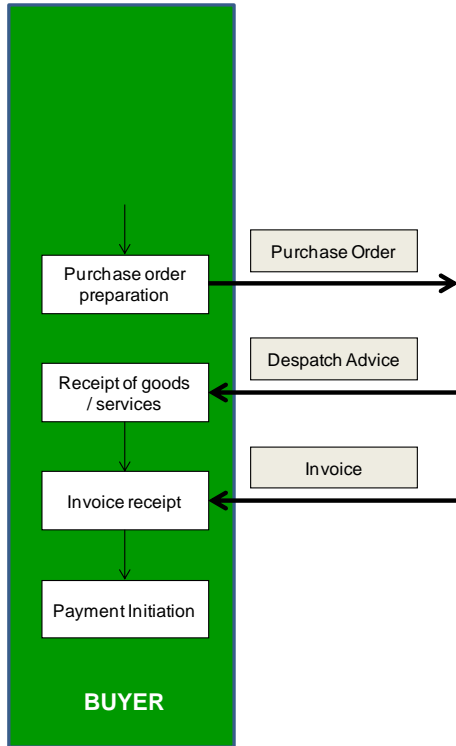


Figure 17 - 'Invoice matching'

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.

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

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

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

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

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

913 In market economies, private companies are the essential actors responsible for trade
 914 transactions, and their exchanges create the market. In most cases, these companies are
 915 numerous, compete with each other, and build ever-changing networks that are impossible
 916 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.

917 **3.3 Positioning**

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

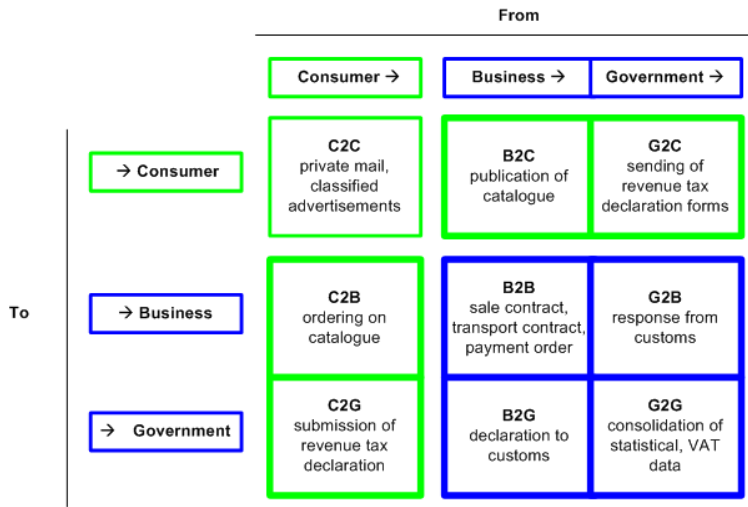


Figure 18 - Business process positioning

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.

920

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

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

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

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

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

935 **3.4 Other scenario's**

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

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

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

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

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

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

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

- 955 I. An invoice can have one of the following appearances / invoice information can be
956 transferred via:
- 957 a. webform
 - 958 b. paper
 - 959 c. invoice image
 - 960 d. structured electronic data
- 961 II. For each of the individual appearances mentioned under I, there may be one or more
962 possibilities to create it; paper can be printed, invoice image can be a scan or the
963 result of an electronic conversion to e.g. PDF format;
- 964 III. An invoice may - in general - be received in any of the appearances mentioned under
965 I above;
- 966 IV. There must be possibilities to convert from any of the appearances mentioned under
967 I as sender, into any of the appearances mentioned under I as receiver; for instance
968 a PDF file can be printed and information can be derived from it via Optical Character
969 Recognition (OCR);
- 970 V. All invoice (information) transfers can be based on the 2-, 3- or 4-corner model;
- 971 VI. Remove from the overview the scenario's that are out of scope;
- 972 VII. Quantify and qualify each of the remaining scenario's (taking into account the
973 considerations from 3.3 Positioning.

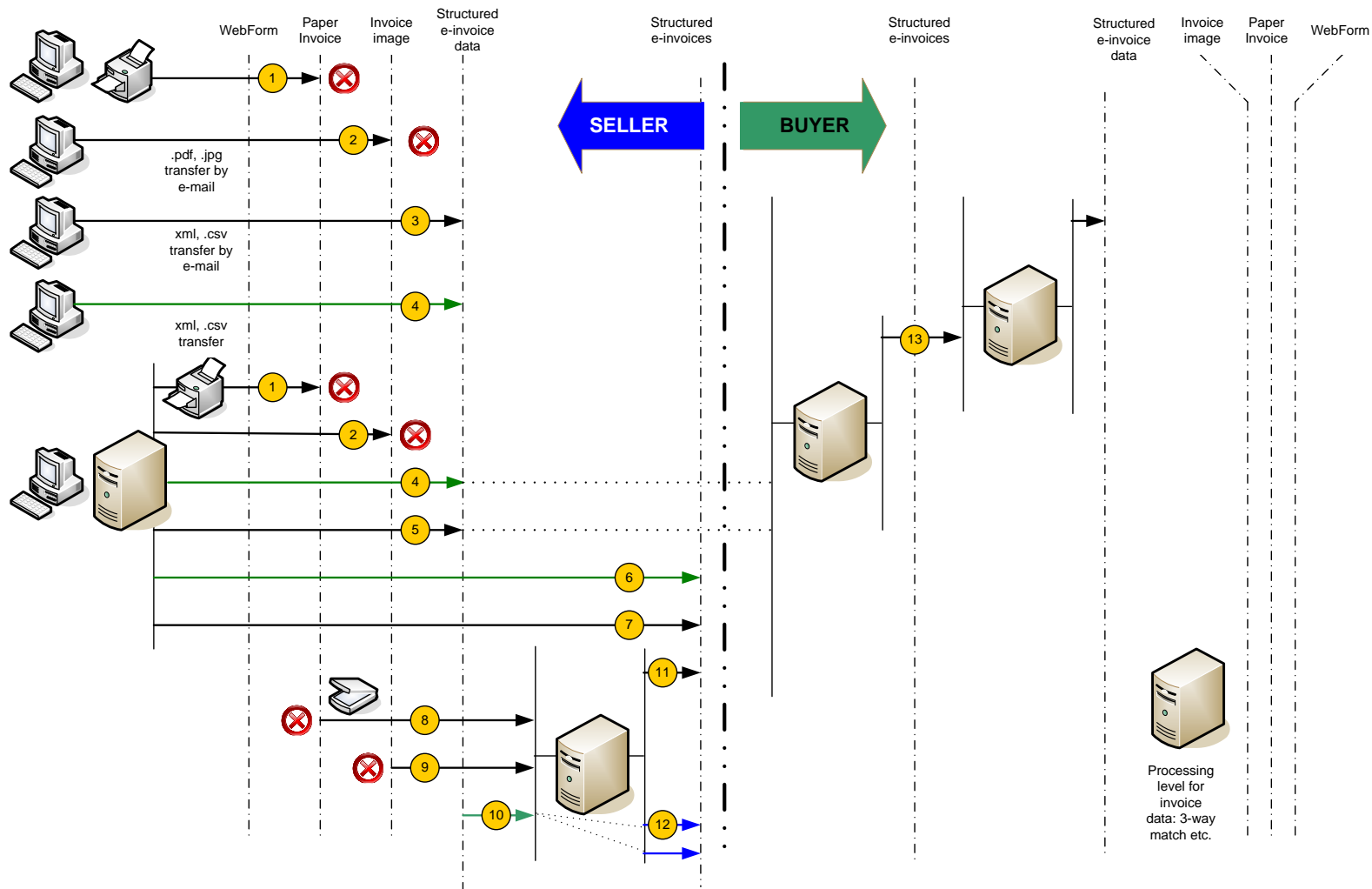
974 This approach would at least allow for unambiguous reasoning about the topic.

975 Figure 19 schematically illustrates the approach.

976

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

978 **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.



979

980

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

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981 A few notes, in the context of 'positioning':

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

991 For sake of reference and completeness, the basic EBPP / EIPP scenario's will be described

992 below:

993 **Seller Direct**

994 In the seller direct model, the seller, or biller, controls the EIPP application. This model links

995 one seller to its multiple buyers for invoice presentment. The seller deploys this model by

996 requesting, or in some cases requiring, its buyers to view invoices on the seller's EIPP

997 system. Of course, buyers must be willing to use an invoicing process designed and

998 controlled by the seller. Some sellers offer incentives, such as discounts, to persuade buyers

999 to adopt the system.

1000 This model offers several benefits for both the seller and the buyer. The seller, by controlling

1001 all aspects of the system, has the ability to integrate the EIPP system with other company

1002 applications, such as accounts receivable and customer care. The seller is also positioned to

1003 maximize its Web site for presenting related marketing and regulatory messages. For the

1004 buyer, this model offers the benefit of low implementation costs, as well as the economic

1005 incentives offered by the seller.

1006 Where implementation is concerned, sellers can choose from several in-house or

1007 outsourced EIPP solutions. On the in-house side, sellers can elect to develop their own

1008 solutions, making them solely responsible for all customization needs, including systems

1009 features, and integration with other company applications. Sellers can also use a third-party

1010 software vendor to implement an in-house EIPP solution. Smaller companies with limited

1011 information technology resources may wish to outsource an EIPP solution to a third party. In

1012 this case, an application service provider (ASP) operates and maintains the EIPP system on

1013 behalf of the seller.

1014 **Buyer Direct**

1015 Contrary to the seller direct model, here the buyer controls the EIPP application. An EIPP

1016 application hosted by the buyer will usually link into the buyer's accounts payable system.

1017 The buyer direct process is a model that recognizes the dominant position buyers often have

1018 in B2B transactions. Large buyers who want to maintain control of purchase-order-driven

1019 invoicing and the payment process normally drive this solution.

1020 In a typical buyer direct scenario, after the buyer purchases goods, the seller posts invoices

1021 to the buyer's EIPP system. The buyer examines the invoice, and if it is deemed correct,

1022 initiates an electronic payment. If the buyer disputes the invoice due to a short shipment, for

1023 example, the information is communicated to the seller, who can adjust the invoice amount

1024 and then post the revised invoice to the buyer's EIPP system.

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1025 By controlling all aspects of the system, buyers — as with sellers in the seller direct model —
 1026 have the opportunity to integrate the EIPP system with other company applications. The
 1027 buyer direct model also reduces the number of trading partner sites the buyer must interact
 1028 with for invoicing and payment. Sellers, too, benefit by receiving payments more quickly.

1029 Similar to the seller direct model, a buyer direct model can be implemented through an in-
 1030 house EIPP software solution, a third party EIPP software vendor for an in-house solution, or
 1031 an application service provider.

1032 **The Consolidator**

1033 In this model, the consolidator controls the EIPP application, providing an interface between
 1034 multiple sellers and buyers. A seller may request that its buyers view and pay invoices
 1035 through the consolidator. Similarly, a buyer may request that its sellers present invoices in
 1036 this manner.

1037 The consolidator process is also an evolving model, in response to the adoption hurdles -
 1038 including costs and systems compatibility - faced by both buyers and sellers. The
 1039 consolidator model simplifies invoice presentment, allowing trading partners to interact
 1040 through one party. In both the buyer and seller models, a trade relationship usually already
 1041 exists between a given buyer and seller. However, by serving multiple buyers and sellers,
 1042 the consolidator model may attract more buyers to each seller (and vice versa), without the
 1043 necessity of having an established relationship.

1044 There are, however, several drawbacks or challenges for both buyers and sellers to
 1045 consider. In this model, both buyers and sellers must comply with consolidator enrollment
 1046 requirements and payment options. In addition, buyers and sellers may not be able to
 1047 integrate consolidator functions with their existing accounts receivable and customer care
 1048 systems. Sellers may also lose or be limited in their ability to present related marketing and
 1049 regulatory messages on the consolidator's Web site.

1050 Profiting from EIPP does not require that every business implement the technology at the
 1051 outset. The invoice presentment models described above offer benefits for both buyers and
 1052 sellers. Adopting the model that best meets the needs of an organization will enable it to
 1053 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.

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1056 4. The vision on ‘Core’

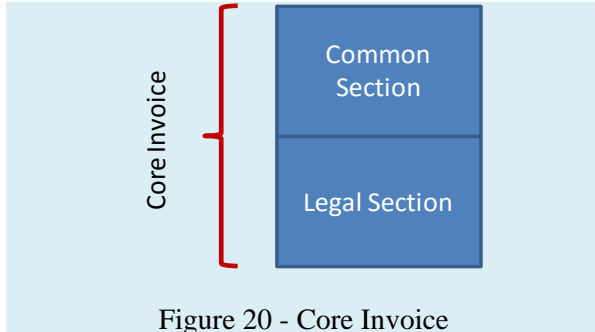
1057 One of the assumptions made, ratified by the European Multi-Stakeholder Forum on e-
 1058 Invoicing, is that developments in (private sector) business communities, as they are driven
 1059 by business rationales and business cases, will autonomously find their way towards the use
 1060 of electronic messages for the exchange of information supporting business processes,
 1061 replacing paper documents. The use of electronic messages will include electronic invoices
 1062 as identified in section 3.1 e-Invoicing according to Directive 2014/55/EU, and as such
 1063 these developments will already contribute to the Objective and do not require further
 1064 influencing.

1065 Public sector support should be merely, restricted to, help get rid of legal and regulatory
 1066 hindrances and cope with market failure.

1067 A challenge may arise for the exchange of electronic invoices, or more in general ‘electronic
 1068 business documents’, between different (business) communities. To help this, the idea of
 1069 ‘Core’ has been developed. Presumed to be applicable to documents exchanged to support
 1070 trade in goods and services in general, the idea will be elaborated referencing the invoice
 1071 (only) below.

1072 The Core

1073 The concept of a ‘Core Invoice’ is based on the proposition that a limited, but sufficient, set
 1074 of information elements can be defined that supports generally applicable invoice-related
 1075 functionalities.⁶⁷



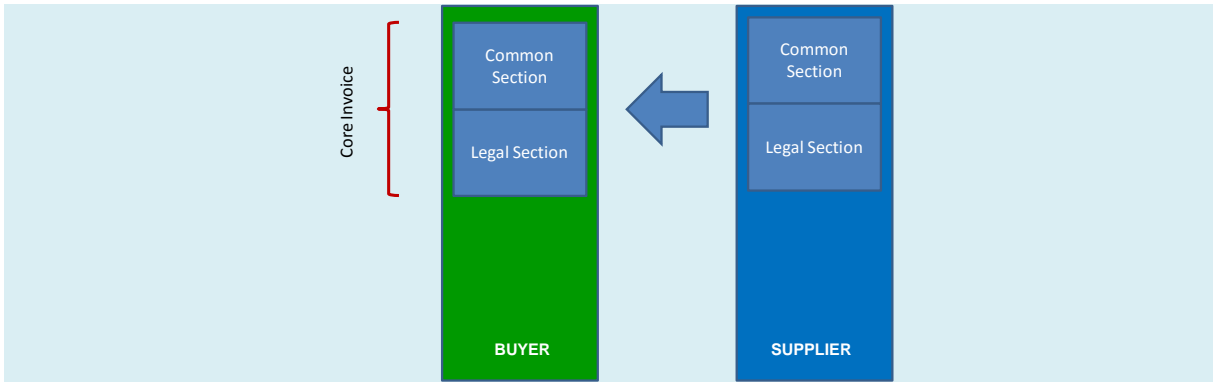
The Core Invoice contains a ‘Legal Section’ plus a ‘Common Section’, see Figure 20. The Legal Section is concerned with both the observance of tax and commercial laws and regulations pertaining to electronic invoicing commonly in force throughout the EU. The Common Section contains commonly used and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

1076 If, Europe wide, all organisations implement the e-invoice using this small set of elements, e-
 1077 invoicing may take place without pre-negotiated bilateral agreements.

1078 For this core, a Semantic Data Model is then defined by an openly accessible international
 1079 standards organisation to ensure accessibility, stability in terms of maintenance and quality.
 1080 It will also ensure that the reference e-invoice semantic data model is anchored in a global
 1081 standard from an internationally recognised organisation.

1082 A ‘Core Invoice’ or ‘Minimum Core Dataset’ should be seen as a key enabler for business
 1083 efficiency by acting as a basis to achieve interoperability with minimum cost and complexity.
 1084 It would be left to the market to utilize the Core Invoice and express it in different syntaxes
 1085 depending on specific business use cases.

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



1086

1087

Figure 21 - e-Invoice based on Core Invoice

1088 By adhering to one Semantic Data Model, interoperability will be facilitated because
 1089 semantic data will be able to travel without supplement and/or transformation between
 1090 formats as the data model is technology-neutral.

1091 Trading parties (or their service providers) could be encouraged to use the Semantic Data
 1092 Model and the formats and syntaxes representing it, undertaking the necessary conversions,
 1093 as they require to meet their customers' needs. Standards bodies would begin to embed the
 1094 single Semantic Data Model in the syntactical standards for which they are responsible.

1095 **Sector extensions**

1096 The core invoice should not assume specific agreements on (supply chain specific or
 1097 community specific) aspects, such as identification schemes or process variations. It should
 1098 be used by organisations in both the public and the private sector.

1099 The specific requirements of certain supply chains (or 'business communities') should be
 1100 translated into information elements that extend the core set (in the so called 'Sector
 1101 Section'). Only organisations that are part of the supply chain or business community
 1102 defining their Sector Section are expected to be able to process such extension.

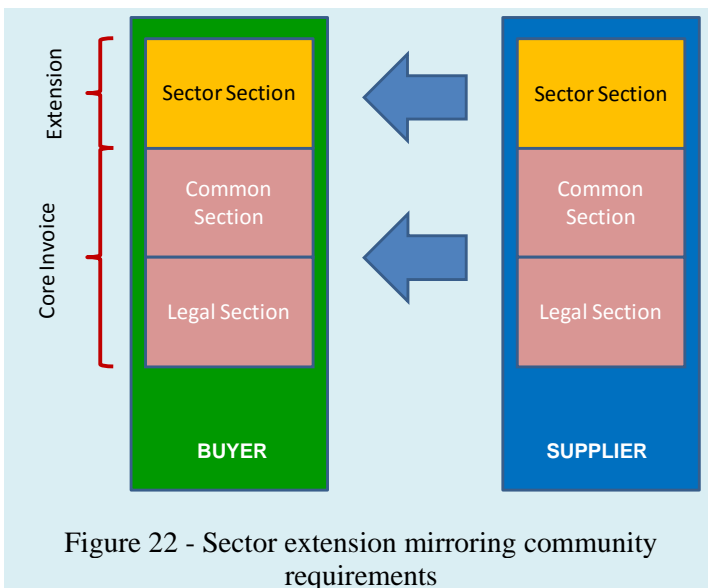


Figure 22 - Sector extension mirroring community requirements

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.

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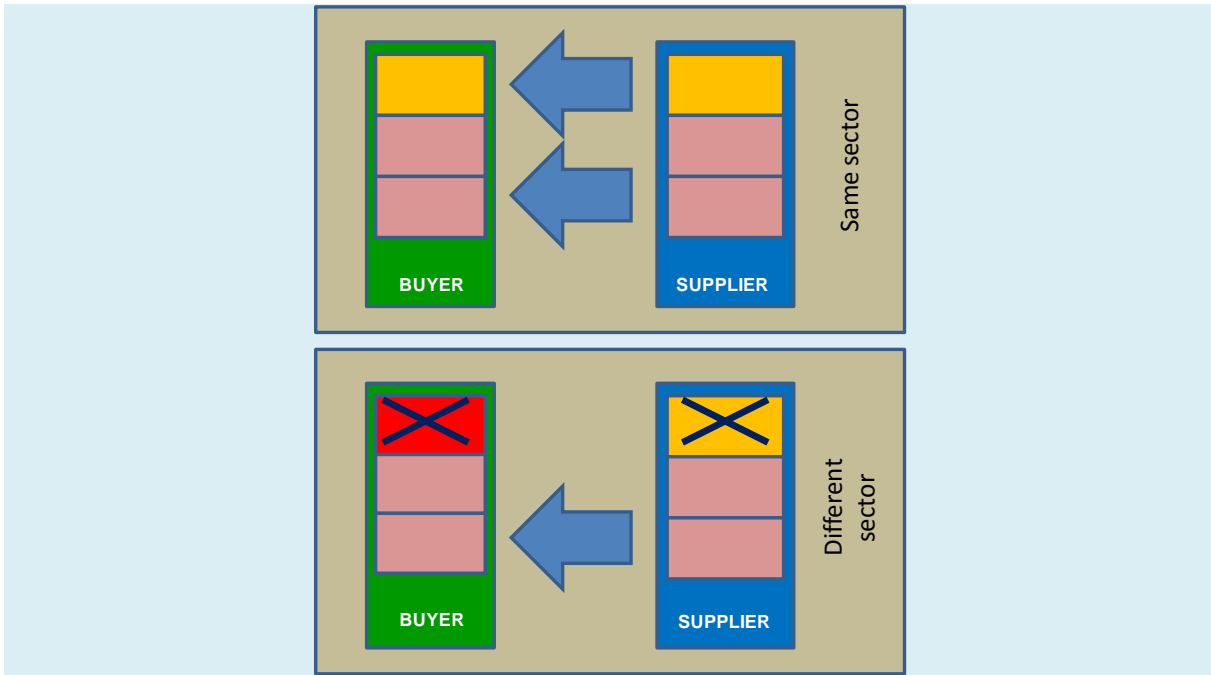


Figure 23 - Same sector invoicing (top) and cross sector invoicing (below)

1103

1104

1105 Extensions may in many cases not be sector specific, but specific to functions, needed by
 1106 multiple sectors. E.g. '*Vendor Managed Inventory*' has been implemented by the automotive
 1107 industry, but also by the steel and by the printing industry.

1108 Similar functions should be supported by the same elements in the model, i.e. elements
 1109 defined for use in one sector must be re-used by another sector if the requirements are
 1110 equal. This can be achieved by storing the semantics of these elements (and the
 1111 requirements they cover) in a semantic repository or reference registry.

1112 Supply chain specific extensions must be based on real business requirements. These can
 1113 only be gathered by sector organisations such as GS1, Odette etc., or ultimately by the
 1114 implementers themselves who understand these requirements. The resulting information
 1115 elements need to be registered, with reference to the requirement. New requirements for
 1116 elements need to be checked against that registry.

1117 **Country Section**

1118 The EU VAT Directive of 2010⁶⁸, and subsequent adoption by the 27 Member States, aimed
 1119 to facilitate the increased adoption of e-Invoicing. To that purpose it implied that each e-
 1120 Invoice needs to fulfil a minimal set of requirements to be compliant with these laws and
 1121 enumerated up to 18 required information elements.

1122 The new laws intended to simplify e-Invoicing by also introducing business controls as a tool
 1123 to underpin correctness of invoices. However, this more liberal legislation in fact has opened
 1124 the market to a plethora of possible solutions. As a result, an Invoice may now contain any
 1125 information, provided there are controls to aid auditing.

1126 To complicate matter further, Member States individually defined elements they find
 1127 necessary for (tax) auditing activities, even further enlarging the fragmentation in the
 1128 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>

1129 'Country Section'. Each Member State may (but preferably should not or should refrain from)
 1130 extend the core, based on their specific legal requirements, such as additional taxes and
 1131 auditing practices. In fact, the existence of the Country Sections does highlight the
 1132 differences between Member States and discussions can be initiated to facilitate
 1133 convergence by removing them over time by harmonising regulation and legislation.

1134 Having regard to the current VAT Directive and its adoption in EU Member States on the one
 1135 hand and significant differences between the national invoice information content
 1136 requirements on the other hand, up to 27 national extensions could be expected where most
 1137 of them would presumably be different. This would be a new, huge, barrier for e-invoicing
 1138 uptake in the EU, particularly for inter Member State trade.

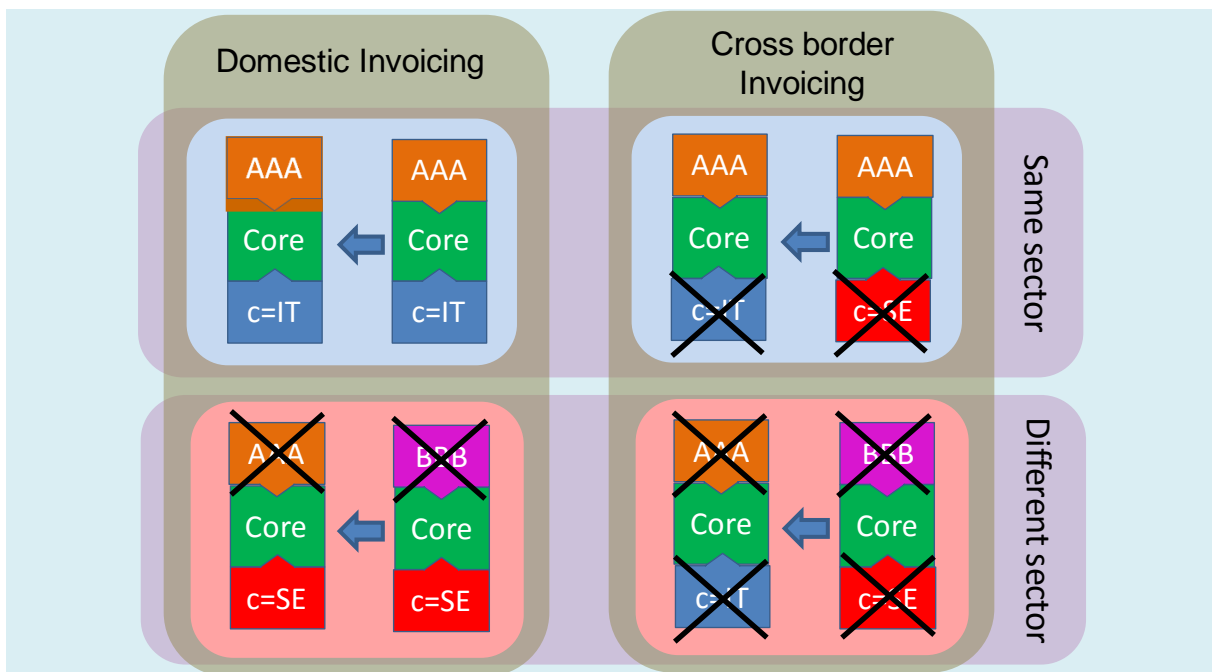
1139 Each VAT compliant invoice should hence, to reduce the barriers to adoption, contain the
 1140 same core: a basic set of legal and common elements. The Country Section extensions
 1141 should not be needed for cross-border scenarios within Europe. If an element is needed for
 1142 cross-border invoicing, then by definition it cannot be an element in a Country Section.

1143 Ideally there should be no Country Sections⁶⁹ - every Member State should have the same
 1144 legal requirements.

1145 The sender of the invoice then no longer needs to be able to produce two different versions
 1146 of the same invoice: for national use and for international use.

1147 The 'Core plus Extensions' concept

1148 This section elaborates on how the Core plus Extensions concept, as endorsed by the
 1149 European Multi-Stakeholder Forum on e-Invoicing, and embodied by CEN Project
 1150 Committee 434 as part of its work, should be seen as 'fit for purpose'.



1151
 1152 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

1153 The diagram in figure 24 shows how various invoice exchanges can interoperate once the
 1154 core requirements are separated from national- and sector extensions. The sector and
 1155 national requirements may be different, depending on the sector involved and which Member
 1156 State the transaction occurs in, but the core remains constant.

1157 *The basis is that the basic ('core') information needs to be sufficient if an*
 1158 *invoice is sent / invoice information is transferred between two different*
 1159 *communities in two different legal environments.*

1160 Within a community all participants should know what is necessary information to be able to
 1161 carry out transactions amongst the participants. Once a transaction with an entity outside the
 1162 community is supposed to take place, then less information is assumed to be sufficient -
 1163 after all, the two different communities will not have Sector Section information in common.
 1164 This is simple, because if it were required information then this would mean that the entity
 1165 that the transaction is to take place with also belongs to the community.

1166 Note: National differences (County Sections) can be phased out. That is a competence of
 1167 the legislators. But the differences following from the differences in sector / community can
 1168 not be phased out as these are inherent to the fact that they represent different sectors /
 1169 communities.

1170 **Extensions mechanism considerations**

1171 A standard mechanism extension how to complement the Core Section with Country Section
 1172 and / or Sector Section should be defined, so that complex systems / solutions remain
 1173 interoperable – both between themselves as well as interoperable with the core.

1174 In order to fulfill these requirements, judgment must be made on the selection of the
 1175 information elements to be included in the core model.

1176 Guidance can be derived from CEN BII⁷⁰, where the CWA on '*Gathering of business*
 1177 *requirements*'⁷¹ outlines a methodology for collecting and documenting requirements for a
 1178 particular core. This approach could mean that every requirement is included and
 1179 documented so there is a need for an approach to check if the resulting models could be
 1180 reduced in number of elements so that it is (among other things) as simple as possible, still
 1181 sufficiently functional, and remains stable over time. This is detailed in the CWA called '*the*
 1182 *concept of core*'⁷² on which the following section is based.

1183 The core needs to have 'principles of simplification' applied. Therefore, following the
 1184 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

1188 **5. Implementations in the market place**

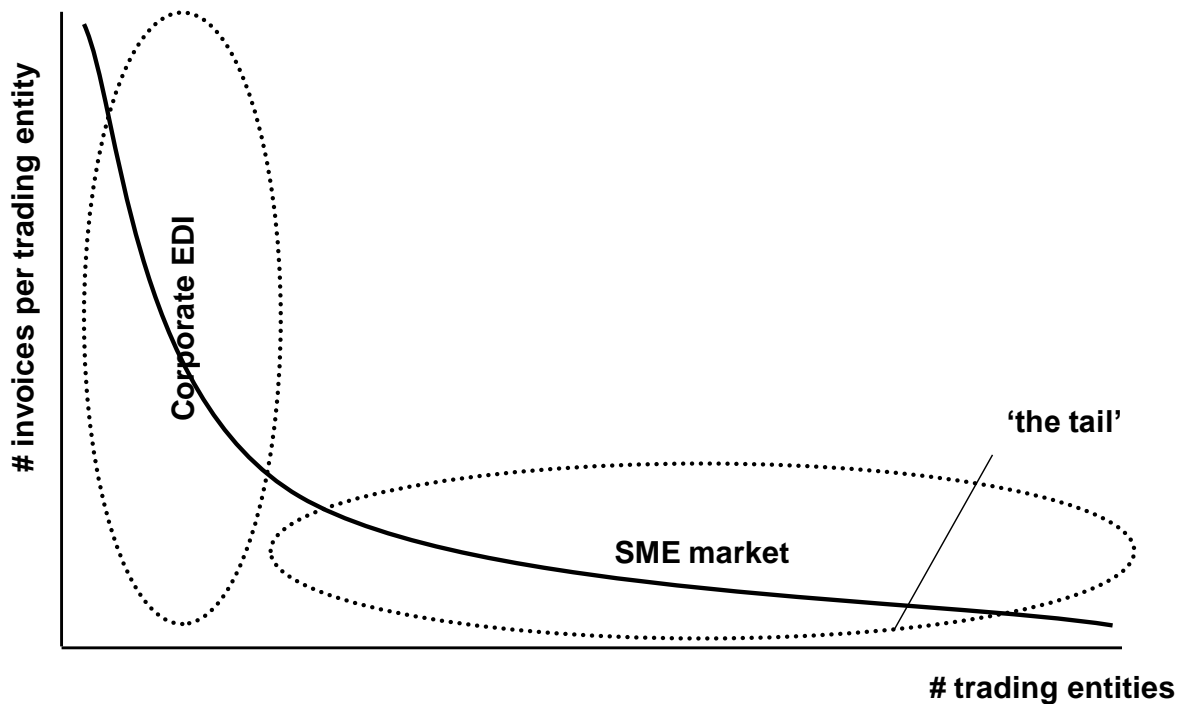
1189 This chapter provides some guidance and considerations on implementation.

1190 The implementation of Directive 2014/55/EU needs to be done ‘on top of’ an existing, and
 1191 dynamic, marketplace that already knows its innovations, developments and
 1192 implementations.

1193 This means that methods for implementation need to be sought that aim for ‘absorption’
 1194 rather than ‘imposing’; if not done properly, its implementation may disrupt existing business
 1195 cases and turn out counterproductive.

1196 In this context, four dimensions of implementation need to be considered: ‘where’, ‘what’,
 1197 ‘when’ and ‘how’. Each will be looked into in more detail below. Note that ‘where’ is not to be
 1198 interpreted as geographical, but rather in reference to business type and environment.

1199 Seen from the perspective ‘what is the (size of the) contribution to the Objective’, the
 1200 continuum of sizes of trade entities can be diagrammed versus the number of (e-)invoices
 1201 issued in a period of time. This leads to Figure 25 below.



1202

1203 Figure 25 - Number of trading entities versus their periodic (e-)invoice volume

1204 e-Invoicing, as per Directive 2014/55/EU, is positioned in the left side of the figure. This
 1205 chapter will focus on both the left hand and the right hand of the horizontal axis, resulting in
 1206 two cases for ‘where’.

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

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What	Functionality allowing for automated processing of electronic invoices
How	<p>Specifications and standards need to be simply available to software development bodies of system manufacturers⁷³ to allow for embedding of functionality in subsequent software releases.</p> <p>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.</p> <p>The decision to embed the functionality must not suffer from uncertainty about (public sector driven) market developments and allow for a sound business case.</p>
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	<p>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.</p> <p>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 purposes) but in parallel sends the invoice information electronically to either the destination or, more likely, an e-Invoice Service Provider that further progresses it.</p> <p>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.</p> <p>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.</p> <p>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/2⁷⁴ protocol, implying that the approach to be followed is the one from the table above on large trading entities.</p>
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.

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When	If available.
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1208 Notes:

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- 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 environment⁷⁵, receivers of bills⁷⁶ 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

1224

1225

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.

1226 6. Hybrid invoices

1227 In the context of this document, the following definition⁷⁷ of 'presentation' is used:

1228

1229 *Formal submission or delivery to a human user of a document or negotiable*
 1230 *instrument for the appropriate notice or action (acceptance, negotiation,*
 1231 *payment, etc.) of the named entity. For example, an invoice is presented to a*
 1232 *buyer for approval. Also called presentment.*

1233

1234 So, electronic invoicing as intended by means of the definition given in the Directive
 1235 2014/55/EU has in fact nothing to do with 'presentation'. However, even if the invoicing
 1236 process at the receiver is fully automated, there may still arise a need for presenting the
 1237 invoice to users if human intervention is required, e.g. for auditing, error processing or
 1238 exception handling.

1239 In addition, article 233 of the Directive 2006-112-UC, modified by Directive 2010-45-EU says:

1240

1241 *"The authenticity of the origin, the integrity of the content and **the legibility of an***
 1242 ***invoice**, whether on paper or in electronic form, shall be ensured from the point*
 1243 *in time of issue until the end of the period for storage of the invoice",*

1244

1245 which is seen for many European countries as an obligation to provide a full human readable
 1246 version of an e-invoice. The Explanatory Notes of DG Taxud (2011) explain legibility as
 1247 follows:

1248

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.

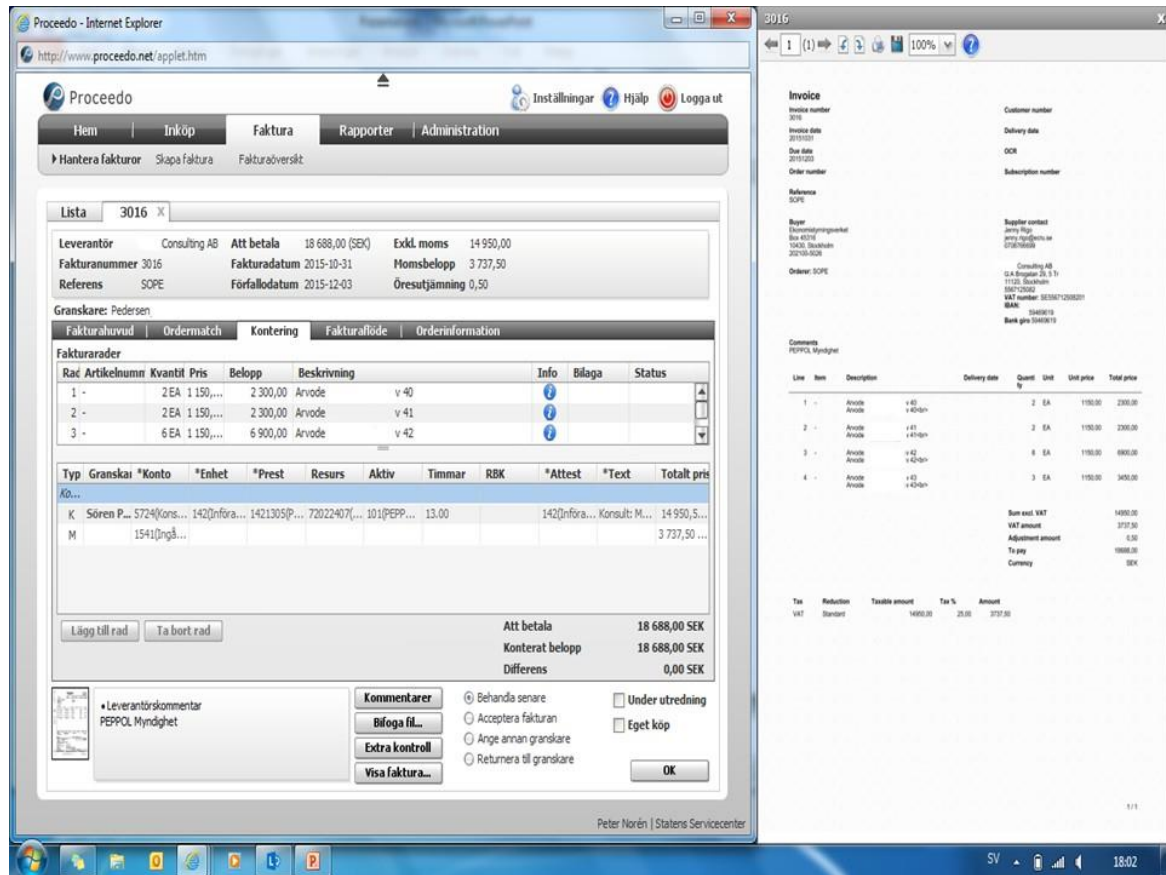
The legibility of an electronic invoice from the point of issue until the end of the period of storage can be ensured by any means, but qualified electronic signatures and EDI, as mentioned in Article 233(2) are not sufficient by themselves to ensure legibility.

1249 Furthermore, even if the goal of e-invoicing is automation, there remain many cases where
 1250 e-invoices cannot be processed automatically, mainly for business reasons on the validation
 1251 process, but also when specific business rules apply and are not automated on the receiving
 1252 side. In that case, a human readable version is the only way to switch to a human process
 1253 properly.

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1254 The screen shot below shows an example of how invoicing data can be presented in the
 1255 user interface of an e-procurement platform:



1256
 1257

Figure 26 - Screen shot

1258 The left hand side of the user interface of the example shows the extracted data of the e-
 1259 invoice and how it is presented for approval. This includes details on invoice line level. To
 1260 the right the generated image of the invoice, derived from a stylesheet in the e-procurement
 1261 platform, is shown. In that view all the invoice data is exposed.

1262 In order to be compliant to article 233 on legibility, a full-structured e-invoice must be
 1263 presented for human reading, on each side of the trading partner relationship (buyer and
 1264 supplier). There are three ways to implement this obligation:

1265 • Use of a software tool that has implemented a “readable” function, which presents
 1266 all the structured fields in a human readable version. It is generally the case of EDI
 1267 tools. The readable version is unique for a given format (UN/EDIFACT, UBL,
 1268 UN/XML,...) and it is implemented under the responsibility of the user (respectively
 1269 supplier or buyer).

1270 • For XML files, use of a XSLT template, which can be published online. This
 1271 template can be implemented by the supplier in order to propose a presentation to
 1272 the buyer. In that case, the supplier has to guaranty the completeness of the XSLT
 1273 format, which means that all the structured fields must be presented through the
 1274 XSLT template. The buyer must be connected to internet in order to see the
 1275 presentation by “calling” the XSLT through the URL present in the full-structured e-
 1276 invoice. If the XSLT has some errors that create some discrepancies between the
 1277 readable version and the full-structured e-invoice.

1278 The buyer can also implement its own XSLT (one XSLT per XML structured

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1279 format), in order to first make sure that all structured fields can be presented (if the
 1280 buyer does not want to depend on the supplier's XSLT) and second to have a
 1281 unique presentation for all its inbound invoices. In case of use of extensions, XSLT
 1282 must include the presentation of those extensions.

1283 • Asking the supplier to create a full readable document in a PDF format, sent in
 1284 parallel to the full-structured file (or embedded in the XML, or with the XML
 1285 embedded in the pdf). If the full-structured file is in fact attached to the readable
 1286 version in a PDF A/3 format, the result is a hybrid invoice.

1287 In order to deploy e-invoicing on a very large scale, 'onboarding' SMEs is a key factor of
 1288 success. It is then important to understand how SMEs are creating their invoices, and what
 1289 are they capable of.

1290 It is then clear that most SMEs are able to provide PDF invoices, exactly with the same
 1291 presentation that paper invoices, which is less disturbing for their buyers that are used to see
 1292 them like this, when they need it. On the contrary, most SMEs are not able yet to provide all
 1293 information present in their invoices in a structured way, which is, for sure, the first step to be
 1294 able to provide a full structured e-invoice.

1295 Then, the concept of the hybrid invoice is to combine structured data (typically in XML-
 1296 format) with information how to present that information to a human user. At present several
 1297 approaches to the concept of hybrid invoices have emerged. As such, if the 'information how
 1298 to present' were to be included in the electronic message compliant with the European
 1299 Standard that is under development by CEN Project Committee 434, the 'hybrid invoice'
 1300 would automatically fall within its remit.

1301 In order to provide clarification and understanding about the topic, to further facilitate
 1302 discussions around electronic invoicing, in the context of the European Multi-Stakeholder
 1303 Forum on e-Invoicing, or also even CEN Project Committee 434, the topic of 'hybrid invoice'
 1304 justifies a section in this document.

1305 In order to comply with the need to provide a human readable version of an e-invoice, in
 1306 principle two approaches could be followed:

- 1307 1. electronic information plus information representing a facsimile image of the
 1308 electronic document (i.e. invoice) at hand: this is a hybrid invoice because the e-
 1309 invoice is a 2 side object: data for machines and human readable for people.
- 1310 2. electronic information plus information describing how to generate an image for
 1311 presentation, which is a technical solution to provide a human readable version
 1312 from a full structured file.

1313 **6.1 Hybrid Invoice : an image with a dataset attached**

1314 The concept of hybrid invoice where a structured e-invoice is accompanied with a pdf
 1315 readable is not new. There are many e-invoicing projects that have implemented structured
 1316 e-invoices in EDIFACT or XML format, with a pdf embedded in base64 code (which can be
 1317 an electronically signed pdf sometimes). It is well developed in the retail industry, in
 1318 communities (like automotive repair) or in inter-company projects within large groups. It is
 1319 demonstrated that it is a good solution for SMEs that are not able to provide a full structured
 1320 e-invoice, but only a small dataset of invoice information plus a pdf.

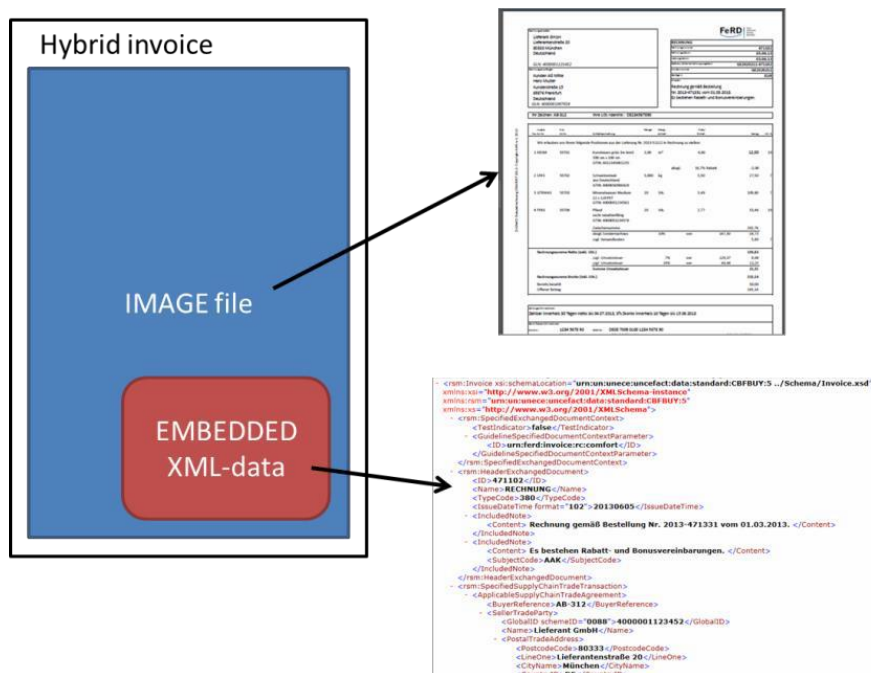
1321 The new concept of hybrid invoice is only an evolution of this practice, where the human
 1322 readable is also an envelope that can include a dataset of invoice information, in a full-
 1323 structured standard format.

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1324 The Portable Document Format (PDF) is one of the most common data formats for different
 1325 kinds of business documents. The specific subset PDF/A is aimed for archiving purposes.
 1326 This most recent version of the PDF/A standard includes the possibility to embed arbitrary
 1327 data formats. Here we assume it will be XML-data, either based on an open standard or a
 1328 proprietary data model.

1329 The most widely known example of the hybrid invoice is the 'ZUGFeRD⁸³ invoice developed
 1330 by the German E-invoicing forum and released in version 1.0 in 2014. The ZUGFeRD format
 1331 is using the PDF/A-3 standard with an embedded XML-document. In this case the data
 1332 content is a complete invoice, which means that all information present in the pdf is present
 1333 in the structured format, and all information present in the structured format is present in the
 1334 pdf.



1335

1336

Figure 27 - Hybrid invoice concept

1337 In France there is an ambition to develop a hybrid invoice. Their approach is slightly different
 1338 from the German initiative where in the French case, in order to address the difficulty for
 1339 suppliers to provide all invoice information in a structured way, it is allowed to provide only a
 1340 partial dataset of invoice information in a structured file attached, even if it is recommended
 1341 to provide a full structured dataset. However, all information present in the structured file
 1342 must be present in the readable pdf. Hence, in that solution, full structured information is
 1343 used for process automation (machines) on the buyer side and the pdf may content
 1344 additional information either for legal reason (not processed) or in case of manual process.

1345 The format of the structured file should be based on the semantic datamodel for
 1346 interoperability.

1347 Pros

- 1348 • Fixed image of the document i.e. invoice;
- 1349 • The receiver does not have to process XML-data, can rely on visual information;
- 1350 • The obligation of legibility through long time period is more robust: the readable is
 1351 created at the same time than the full structured file;
- 1352 • Easy to use for SME acting as receivers;

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- 1353 • Easy to provide by Service Providers that are able to create a pdf from a full
1354 structured XML, with a guaranty of no discrepancy between the pdf and the
1355 structured file;
- 1356 • Emergence of new solutions targeting SME segments of the market to offer e-
1357 invoicing capabilities. This is especially the case for domestic markets where the
1358 hybrid concept has been promoted as the way forward;
- 1359 • If only partial data of the invoice is in the XML, it is easier for most suppliers to
1360 provide such hybrid invoices, which should speed up extremely e-invoice
1361 penetration;
- 1362 • Hybrid invoice could be seen as an evolution of a full structured invoice: a 'one
1363 size fits all' invoice, as it is a format that can be used by the buyer as he wants: full
1364 structured file if he is capable to use it for a full automation; pdf for buyers that are
1365 not still equipped for automation.

1366 **Cons**

- 1367 • May complicate usage for SMEs acting as issuers as the seller needs software to
1368 be able to produce not only XML-documents, but a PDF/A-3 file with embedded
1369 XML- data. This relatively new technology has been implemented in more and
1370 more common ERP systems from systems specialized for SMEs to large scale
1371 ERP systems;
- 1372 • When implementers neglect quality assurance it can happen, as with many other
1373 software tools, that differences between the information provided in the image and
1374 in the structured XML-data occur. At first glance unclear legal status may result if
1375 data in visual representation is not identical to the data in the embedded XML-
1376 document. Although the Directive says that an invoice is defined by its content,
1377 and not its form, the question of "where is the original invoice" is often being asked.
1378 The first answer is that the original invoice is the e-invoice as a whole. Even at
1379 paper based invoicing "the original" does often not exist anymore, as all relevant
1380 information for internal controls may be provided on separate business documents
1381 (i.e. delivery note). In addition, this question is directly related to the need to
1382 provide a readable version, which is a second presentation of the content that can
1383 create discrepancies when the seller creates the pdf or when an application or an
1384 XSLT are doing the same. It is not obvious that a creation of a pdf readable at the
1385 same time than a full structured e-invoice can create more discrepancies than a
1386 recalculation of a readable version with a tool or a compatible XSLT many years
1387 after the creation of the structured e-invoice. Creating a human readable
1388 presentation for example of an EDI message may lead to the same issues. To limit
1389 the occurrence of those issues internal controls assure that such issues become
1390 aware and can be reacted to – manually or fully automatic. A definition to prefer
1391 one or the other form of presentation does not really help as if a discrepancy is
1392 found during internal controls the seller should be informed and send a corrected
1393 version – exactly as in the paper world. Taking a look at the paper invoice a
1394 company would never try to make a decision on how to process an invoice where
1395 a discrepancy was found – but would always ask the seller to correct. If a company
1396 today receives more than one copy of the same invoice – e.g. by fax and paper or
1397 is able to download the invoice in various formats from an online portal – it can't be
1398 the responsibility of the receiver to cross check all available formats. So in practice
1399 always the copy that was used for accounting becomes "the original". The same
1400 concept should be applied for hybrid invoices. The variant that was used for
1401 internal controls and accounting is "the original" as it was checked and found
1402 accurate – or sent back to the issuer.
- 1403 • If only partial data of the invoice is in the XML-data this could limit the possibilities

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- 1404 of automatic processing;
- 1405 • If XML-data is not based on an established data model, it will cause interoperability
- 1406 problems. Yet another format to handle in the European e-invoicing landscape.

1407 **6.2 Full structured e-invoice including presentation prescription**

1408 A second approach could be chosen where there is only the electronic document

1409 information, plus a prescription how to present it. Such a 'presentation prescription' could

1410 take the form of a 'style sheet'. A style sheet is a separate file that describes how the layout

1411 and the presentation of the information it is related to should be done.

1412 Style sheets form a commonly used technology for presenting XML and also for rendering

1413 web pages. There are different specifications to be used for this purpose; they are

1414 widespread and easy to use, and are therefore popular.

1415 Note that for many existing specifications for e-invoicing using XML there are also already

1416 style sheets available as supporting tools to users. These style sheets are normally not

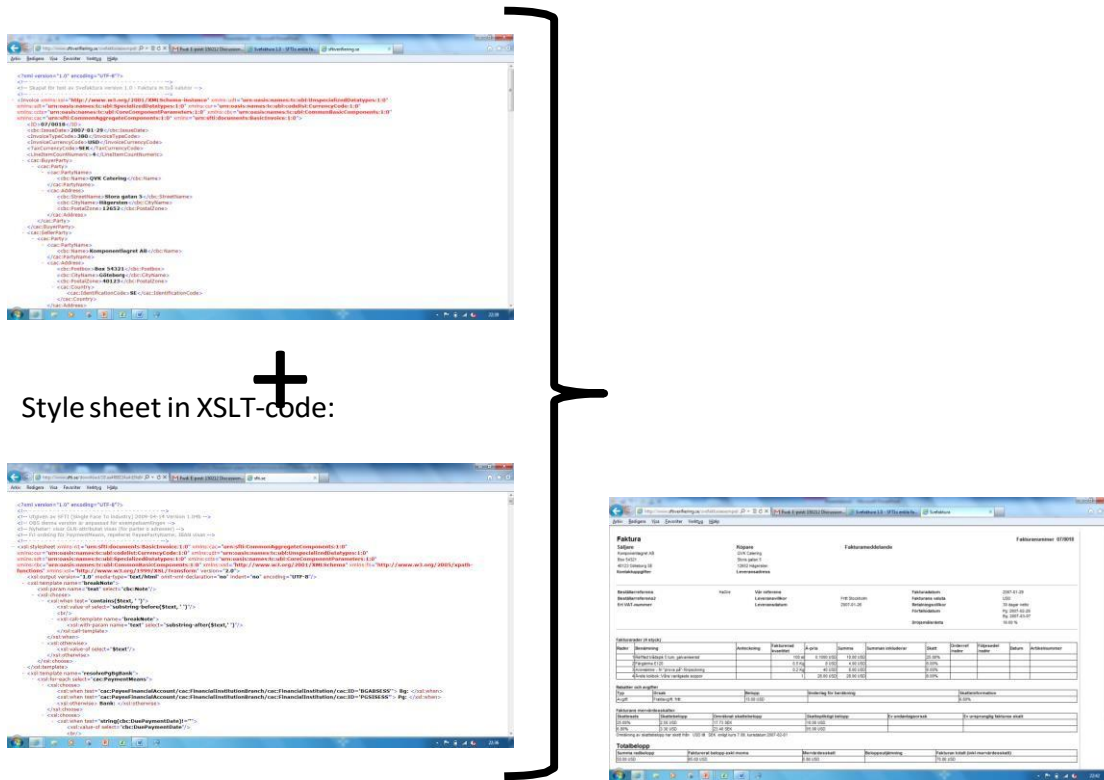
1417 normative for use, but a support to the solution providers of ERP's and similar applications

1418 handling e-invoices. As a result of the presentation being created in both the application

1419 used by buyer as well as the one used by the seller, it may look different to these different

1420 users. This can sometimes cause minor confusion

1421



1422

1423

Figure 28 - The use of Style Sheets

1424 A basic principle is that the user should be presented all data of the invoice. A solution

1425 where some information is omitted by the stylesheet used should be avoided. This is

1426 important from a perspective of internal control. A special look has to be taken on the quality

1427 of the used style sheet. As described in the previous paragraph a low quality style sheet

1428 could lead to discrepancies between the human readable presentation and the structured

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1429 data. A risk increases when extensions are applied, bilateral agreements are made or
1430 regular updates on the used structured data is performed.

1431 Versioning of invoices and stylesheets is another concept to consider when designing
1432 applications. The users may need to visualise old e-invoices several years later and then
1433 there is a need for having older versions of stylesheets available. In some cases the buyer's
1434 ERP application or its service provider renders a pdf-file of the XML information in the e-
1435 invoice using the style sheet to have a static view available over time. An important factor to
1436 consider when it comes to the presentation of e-invoices is that it is dynamic due to the fact
1437 that the e-invoice (data) is separated from the presentation layer (stylesheet).

1438 The Pro's and Con's of stylesheet use can be summarized as follows:

1439 **Pros**

- 1440 • Users will be presented with one standard layout for all invoices, independently of
1441 the supplier;
- 1442 • A simple and well-known technology, reducing costs for implementation and
1443 maintenance;
- 1444 • Often reference implementations are available for software providers as open
1445 source;
- 1446 • Invoice data only in one place, the XML-file;
- 1447 • Software providers can improve user experience by better design in their own
1448 stylesheets.

1449 **Cons**

- 1450 • The buyer and the supplier may see different views of the invoice and this can
1451 make handling of disputes more complex to resolve;
- 1452 • Sometimes users complain e-invoicing are bad because the presentation of e-
1453 invoices is perceived ugly (this in most cases actually a case of a software provider
1454 not putting an effort in the user experience in their application).
- 1455 • The quality of the readable version (absence of discrepancies, completeness of
1456 information) is directly dependent of the quality of the XSLT or the software
1457 provider solution. It is also directly dependent of the structured format, which
1458 means that a versioning has to be organized and archived. In case of extensions
1459 (which means evolution of the structured format), this technology becomes rapidly
1460 very complex to maintain.
- 1461 • Maintaining a capability to recalculate a readable version through time is not easy
1462 to guaranty. That is why, in countries where the obligation of a human readable
1463 version is clearly mandatory, many solutions create pdf version with the full
1464 structured e-invoice, and archive both of them.

1465 **6.3 Discussion**

1466 Experience shows that there may be hard to show 'Return On Investment' on traditional EDI
1467 for both sides of the trading partner relationship (buyer and supplier) if the number of
1468 invoices exchanged is lower than 100 invoices per year. The main argument for the hybrid
1469 invoice approach is to allow SMEs in such situations to find a solution that adds value
1470 compared to plain PDF-invoices with no structured data. The idea has started out with very
1471 good ambitions like:

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- 1472 • Existing solutions used by SME's as a baseline and keeping investments in
1473 technology down;
 - 1474 • Make it easy to send e-invoices without bilateral agreements and testing;
 - 1475 • Use of (some) structured information in the invoice to facilitate automation for the
1476 buyer;
 - 1477 • Find a model that can be a first step before moving to more developed scenarios.
- 1478 This is a good intention, but the question may be whether the use of hybrid invoices is a
1479 good solution for meeting the needs of SME's in Europe.

1480 Hybrid invoices are by definition aimed to combine the presentation of information to a
1481 human user with structured data to ease the way for process optimization while taking the
1482 need for human interaction in optimized processes into account; in the case of invoices, this
1483 would mean the receiver of the invoice. Directive 2014/55/EU aims only at e-invoicing in e-
1484 Procurement, where the receivers primarily are public entities, but it cannot be expected that
1485 those public entities only want a full automation. A lot of small public entities, like towns,
1486 behave as SMEs and are not always able to set up a full automatic process. In addition,
1487 there are some specificities in public procurement and audit practices, where business rules
1488 can be very complex for a full automation (for instance public works and civil engineering).
1489 As an example, France has made e-invoices mandatory in the public sector (starting in 2017
1490 for 100% of public entities), by implementing a public concentrator of all invoices for the
1491 public sector. This project shows a need for a lot of public entities to keep a capability to
1492 have a human readable invoice, even if the process is automated. In addition, the concept of
1493 hybrid invoice is not developed only for Public Sector but also as a mean to speed up SMEs
1494 onboarding for large buyers with a special focus on interoperability.

1495 In order that SME's as issuer of invoices do benefit from hybrid invoices, compared to the
1496 generation of an XML e-invoice in a sales management tool the following aspects have to be
1497 taken into account. The first question is: is the sale management tool able to provide a full
1498 structured XML, and does it cost a lot to create a hybrid invoice then, knowing that all
1499 software tools are able to provide a pdf. The answer is no. Then, a full structured invoice
1500 only brings a maximum benefit to a customer that can handle it, and most SMEs are not able
1501 to do it. On the contrary a pdf invoice can be sent to most of the customers, which reduces
1502 paper and stamping costs. With a hybrid invoice the sender does not have to manage what
1503 customer needs what format and improves processing at the same time. For instance,
1504 payment information is provided in a structured format that already many banking tools can
1505 use to assure accounting assignment. The receiver gets both:

- 1506 • structured format for those who are able to automate with it (with readable for
1507 human process if necessary, as a bonus),
- 1508 • or pdf invoice, like paper for customer that are not still equipped with inbound
1509 invoice process automation (with structured file as a bonus to experiment
1510 automation).

1511 As a receiver of hybrid invoices, the first benefit for SMEs is that the invoice is electronic and
1512 not paper. It means that the SME can archive it electronically, manage it in a ECM tool,
1513 without scanning it. If the SME is able to automate its process with the structured file, it can
1514 be said that a full structured invoice would have been enough. True, but the question may
1515 be: do hybrid invoices increase the number of suppliers that are able to provide e-invoices,
1516 with a direct cost reduction compared with a paper process?

1517 Several countries, both in the Nordics and also in Spain report success in providing XML-
1518 based e-invoicing to SME's and have shown less interest in the hybrid concepts. In both the
1519 UK and Finland for several years many service providers have been providing an invoice

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1520 image in pdf format along with the actual XML e-invoice that offer the same value to the
 1521 receiver as the hybrid concept based on full XML-data. In the beginning in some cases a
 1522 similar approach to the hybrid concept was used for instance in Finland, but now the
 1523 ambition is to have only invoice data in XML to automate processes better.

1524 On the contrary, in countries like France or Germany, a lot of e-invoices project have had a
 1525 second birth on the onboarding phase thanks to the hybrid invoice concept, which has been
 1526 seen as a way to replace rapidly scanning and OCR chains on the buyer side. Furthermore,
 1527 leading Service Providers have developed hybrid invoice concept services called “smart
 1528 pdf”, by extracting invoice information from a pdf provided by SMEs that are not able to do
 1529 more, in order to create a full structured format, in addition to the pdf. Last but not least the
 1530 tools to create hybrid invoices are now integrated in accounting and bookkeeping software
 1531 which is available for SMEs and does not create any additional cost or effort on their side. It
 1532 is simply “good to go” and no additional services need to be acquired.

1533 The interests of SME’s could be served by today’s wide palette of solutions providing full e-
 1534 invoicing using different XML-syntaxes (no hybrid), available for SME’s at affordable prices
 1535 in most European countries:

- 1536 • web-based portals, often provided free of charge by buying organisations both in
 1537 private and public sector. However, those solution are not fully integrated with
 1538 accounting software, and force suppliers to have a double management of their
 1539 customer invoices.
- 1540 • Built in e-invoicing functionality in ERP or billing applications;
- 1541 • Tools integrated in accounting and bookkeeping software;
- 1542 • Plug-in solutions by third party providers;
- 1543 • Service providers with value added services.

1544 However, the penetration of those solution remains very low, compared to the use of ERP,
 1545 sales management software which are the tools that most SMEs are using today. It can be
 1546 questioned if it is reasonable to consider that the full deployment of e-invoices must be
 1547 based on the hypothesis that all companies and public entities must change dramatically
 1548 their internal processes and tools. An alternative is then to start from what is existing, and to
 1549 make it compatible and interoperable with the semantic datamodel, in order to organize a
 1550 continuous and progressive adoption avoiding any bilateral relationship: a hybrid invoice is a
 1551 structured invoice for who are able to manage it AND a “classic” pdf invoice for the other.

1552 To finish, it has been found that several stakeholders from various countries have raised
 1553 concerns with the unclear legal status of the hybrid invoices and especially how to handle
 1554 situations with discrepancies between information in image and structured data. Also
 1555 suggestions have been made that when using hybrid invoices the image should always be
 1556 generated on the structured XML-data to avoid these problems. In practice this does not
 1557 complicate the creation of e-invoicing as a human readable format has to be provided any
 1558 way – latest at a control situation at the receivers side.

1559 This is a subject that should be addressed to get a common understanding of the benefit of
 1560 applying internal controls, knowing that it is in fact related to the obligation of legibility. Pdf or
 1561 software presentment: in both cases, the human readable may have some discrepancies
 1562 with the dataset as it can happen at creating readability at the receiver’s side as well.
 1563 Question is: how often, and isn’t it manageable and detectable by the validation process.

1564 Notes

- 1565 • Reference style sheets may be provided by different solution providers to offer an

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1566 even more attractive invoice presentation in their applications. A possible
 1567 drawback with this approach is the fact buyer and supplier may end up using
 1568 different style sheets and hence, may see different presentations of the invoice.

1569 • A stylesheet can be embedded in the XML-file containing the document data, for
 1570 each individual document. Most of the XML – standards used today, in some way
 1571 or another, rely on using style sheets for presenting the invoice data. This is a
 1572 simple and mature solution. An alternative is each document instead referencing a
 1573 style sheet that is stored centrally, i.e. on the Internet. This however limits the
 1574 possibilities for solution providers of ERP and similar to offer their own
 1575 presentation tools;

1576 • Older technologies like UN/EDIFACT lack the tools like stylesheets available for
 1577 XML described above. In these cases, the presentation tools for e-invoices have
 1578 relied on traditional programming in the different applications used by buyers and
 1579 suppliers. The Annex 1 shows, for illustration purposes, an electronic invoice
 1580 expressed in XML and Annex 2 an electronic invoice expressed in UN/EDIFACT. It
 1581 is clear that the latter, as opposed to the former, cannot be interpreted in any way
 1582 by a human reader and would need dedicated translation and presentation tools.

1583

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.

1584
 1585

1586 7. Code list management

1587 In the context of the e-Invoice, a Code List is basically a list of predefined codes which
 1588 should be used when a system needs to provide or check a code for a specific concept. In
 1589 the European Standard for the Semantic Data Model under development in Project
 1590 Committee 434, the use of Code Lists is envisaged for a.o:

- 1591 • Currency
- 1592 • Language
- 1593 • Country Code
- 1594 • VAT Category
- 1595 • Payment Means type
- 1596 • Invoiced quantity unit of measure

1597 Code Lists are used as follows: If (for example), on semantic level, it has been agreed that
 1598 an electronic invoice must be able to refer to 'VAT Category', then in the semantic model a
 1599 field is reserved for that purpose. If the field is used in an electronic invoice, then the value in
 1600 the field is one chosen from the relevant Code List. Code Lists usually have a long history
 1601 already and are maintained separately (usually by existing formal standardisation
 1602 organisations like ISO and UNECE).

1603 Each code in a Code List usually has at least 3 attributes; Code, Description and Status
 1604 (whether deprecated or not) and also sometimes a language code for the description.

1605 As the European Standard under development by Project Committee 434 builds on the use
 1606 of Code Lists, it automatically inherits the known problems related to these lists. This section
 1607 briefly summarises these problems and comes to a Trigger that could be issued to the
 1608 Forum for further uptake in order to mitigate the risk of these problems hampering the uptake
 1609 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

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	<p>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.</p> <p>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.</p> <p>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.</p>
VAT Category Code	<p>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.</p> <p>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.</p>
Payment Means Type	<p>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</p>
Unit of Measure	<p>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.</p>
Identification of business entities	<p>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 identifier⁷⁷. Furthermore, for some very large companies the VAT number also might not be granular enough.</p> <p>For that reason, other identification schemes such as GS1 GLN should</p>

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

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	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	<p>As indicated in the CEN CWA 16464-1⁸¹ document, identifiers are required on the 3 levels: content, message and transport.</p> <p>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.</p> <p>A policy for using identifiers, such as PEPPOL Policy for use of Identifiers⁸², should be defined along with or as a part of European Norm Transport Recommendation deliverable.</p>

1610 **In short:**

1611 In general some code lists are incomplete, some have too many codes and could be very
 1612 difficult to implement and some (e.g. 'units of measure') have both problems. Some codes
 1613 are not being updated because they are duplicating another standard. Language codes such
 1614 as 639-1 are not being updated if 639-2 already contains it.

1615 Therefore there is a maintenance and management issue as there is a need to both merge
 1616 and restrict code lists and ensure they are up to date. Currently only Currency and units of
 1617 measure are mandatory so their issues are the most critical. In particular units of measure
 1618 has the most issues as it has a large number of codes but is officially missing packaging
 1619 codes such as Box.

1620 CEN BII has a document published on Code List and Identifier management which shows
 1621 how these lists are managed i.e. merged and restricted. The CEN BII document covers
 1622 many other documents than the Invoice, although the issues are similar and therefore the
 1623 principles can be applied.

1624 Therefore Project Committee 434 would need to adopt an approach similar to the way CEN
 1625 BII manages code lists, particularly creating Core Lists which are a subset of the full list but
 1626 consist of only the commonly used or legally required codes. These lists could be extended
 1627 for a specific sector or country much in the same way as the Core Invoice will be used.

1628 Also although Currency and units of measure are mandatory, the specific code lists are only
 1629 recommended. This is probably a syntax issue but the e-Invoice needs to identify which
 1630 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](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](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/13-ICT-Transport-Policy_for_using_Identifiers-220.pdf

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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.

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1633 8. The role of bodies towards Project Committee 434

1634 Although 'bodies' could be interpreted in general, this chapter explicitly refers to:

- 1635 • European Multi-Stakeholder Forum on e-Invoicing⁸³
- 1636 • Multi-Stakeholders Expert Group on e-Procurement⁸⁴

1637 In general, there are clear requirements from the European Commission to ensure input in
1638 e.g. policy developments that is obtained from a wide variety of stakeholders. One of the
1639 frequently used mechanisms (although having some restrictions) is the 'Public
1640 Consultation'⁸⁵, but other tools and methods are envisaged as well.

1641 At least four of the requirements in the Standardisation Request mention ensuring input of
1642 (the relevant stakeholders) in the work of Project Committee 434 and one specifically
1643 identifies the European Multi-Stakeholder Forum on e-Invoicing as an indispensable source.
1644 The aim is to enhance probability that, once the deliverables from Project Committee 434
1645 are put forward for voting, all appropriate considerations have been taken care of and the
1646 voting result will be positive.

1647 The current procedures in CEN do not easily facilitate direct participation of (members of)
1648 the European Multi-Stakeholder Forum on e-Invoicing - or any other body whatsoever - in
1649 the work of Project Committee 434, as membership⁸⁶ of CEN Project- or Technical
1650 Committees is restricted to representatives⁸⁷ of 'Shadow Committees', that should be
1651 established under individual National Standardisation Organisations in Member States that
1652 have stakeholders that are interested in participation in the work.

1653 Participation in such a Shadow Committee may, as is the case in many countries, require
1654 members to pay a subscription fee. For certain stakeholder (organisations) this may
1655 definitely be a 'showstopper', leading to their decision not to participate but await the results
1656 (and react in a voting period⁸⁸). Regulation 1025/2012 of 25 October 2012 seems to provide
1657 options for solutions to this problem.⁸⁹

1658 Regarding members and participants of the European Multi-Stakeholder Forum on e-
1659 Invoicing, the European Commission has purposely balanced membership with
1660 representatives from Member States and focuses on Public Bodies being represented, who
1661 are generally not sufficiently represented (or perhaps even interested) in participation in a
1662 Shadow Committee under a National Standardisation Organisation.

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 Committee 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>

1663 Therefore, theoretically, representation⁹⁰ (representatives) from the European Multi-
 1664 Stakeholder Forum on e-Invoicing could complement the input into the work of Project
 1665 Committee 434 as delivered via Shadow Committees, by providing a more balancing
 1666 viewpoint.

1667 Of course time is limited and there is a desire to complete the deliverables asked for in the
 1668 Standardisation Request as soon as possible, preferably within the timelines given.

1669 A balance must thus be found between - on the one hand - major deliberations that would
 1670 take (too) much time and - on the other hand - the risk that many of the existing Member
 1671 State initiatives and experiences⁹¹ will not be properly considered.

1672 Therefore it is indispensable that an efficient way is established to get feedback from a broad
 1673 section of the community. The European Multi-Stakeholder Forum on e-Invoicing could fill in
 1674 such a role, as its members can get feedback from the National Multistakeholder Forum in
 1675 their Member State, that they represent, relatively quickly. However it only meets twice or
 1676 three times a year. This is far too infrequent to be able to cope with the requirements
 1677 following from the Project Committee 434 work.

1678 A suggestion to overcome this could be considering the creation of a special review stage for
 1679 the Authors in the Activity Group Standardisation of the European Multi-Stakeholder Forum
 1680 on e-Invoicing. This should coincide with the availability of a stable draft version of the
 1681 document to be commented upon, possibly with the Enquiry stage.

1682 Project Committee 434 could be requested to facilitate one or two reviews in this way and
 1683 the European Multi-Stakeholder Forum on e-Invoicing would in turn agree to provide
 1684 feedback within a relatively short timescale. Ultimately the decision to approve the
 1685 deliverables will be using normal CEN procedures. Therefore comments can be overruled –
 1686 but at least they are seriously considered before the decision is taken.

1687 A similar approach could be depicted for involving the Multi-Stakeholders Expert Group on e-
 1688 Procurement, be it via its representative in the European Multi-Stakeholder Forum on e-
 1689 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.

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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

1692 **9. The impact from Digital Agenda (based) initiatives**

1693 This chapter complements chapter '5. Implementations in the market place'. It finds its
1694 justification in the Commission Decision of 25 June 2014 '*Setting-up the second European*
1695 *Multi-Stakeholder Forum on Electronic Invoicing*⁹², where Article 2 defines a list of tasks,
1696 amongst which are (repeated here from section 1.1 Rationale for ease of reference):

- 1697 f) to liaise with the future European Forum on e-Procurement for all matters regarding
- 1698 the use of e-invoicing in public procurement;
- 1699 g) to advise the Commission on the governance of the relevant Connecting Europe
- 1700 Facility digital service infrastructures.

1701 The list of the paragraphs in this chapter does not imply a preferred sequence or relevance.

1702 In order to be able to develop deliverables as required, especially under g), a thorough
1703 understanding of the playing field is necessary. (This can also be seen as complementing
1704 '2.1 Context for the works' in more detail).

1705 Based on publicly available information, a comprehensive summary touching many topics in
1706 the Digital Agenda and Digital Single Market context has been drafted. It is available in
1707 CIRCABC⁹³ to members of the Forum. It is assumed to be correct at the moment of writing;
1708 there has been no (corrective) feedback from the European Commission. This summary has
1709 been used to help explore a number of topics in more detail. These are described below.

1710 **9.1 Governance and information exchange**

1711 If the public sector is seen as a single community, in the sense of Directive 2014/55/EU, then
1712 this must be followed also in the other dimensions. Different European Commission driven
1713 activities should be synchronised under the same (European Commission) umbrella to
1714 ensure an optimal contribution to acceptance and adoption in the Digital Single Marketplace.

1715 There are many activities, initiatives, etc. by individual Commission Bodies or entities. Their
1716 individual deliverables 'meet' in the marketplace via parallel channels. Each body
1717 responsible for its own objectives will in general not be able to invest time in looking after an
1718 over-all impact assessment and act accordingly.

1719 It must be realised that providing information via separate channels, that sometimes are
1720 even not synchronised (i.e. one or more lagging more or less behind others), does not
1721 provide the structured information to the stakeholders in the marketplace, i.e. 'at the
1722 receiving end', necessary to underpin (business) decisions and investments.

1723 Without a reliable overview, allowing for impact assessment, decisions and investments will
1724 be postponed. This may turn into a self-reinforcing effect, in the end causing the need for
1725 legislative and/or regulatory measures that mostly could have been prevented.

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

1726 Involvement of stakeholders is indispensable, in particular the consultation of the bodies that
 1727 have been established to that purpose must be carried out accordingly and their deliverables
 1728 taken properly into account.

1729 But in order to be able to develop suitably tailored recommendations, these bodies need to
 1730 be properly informed (i.e. not limited to publicly available information) on actual and foreseen
 1731 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.

1732

1733 The CEF e-Invoicing DSI Scoping Paper as presented in the Forum meeting of 18 March
 1734 2015 clearly does not meet these requirements, nor the delay in the drafting of the minutes
 1735 of that meeting or the provisioning of the Forum related information on the Internet for
 1736 stakeholders. The website⁹⁴ was last updated October 2013 (!); it shows an alert as copied
 1737 in Figure 29 below but it is not possible to get informed about what happened with (and in)
 1738 the Forum since its meeting in October 2013; there is no suitable link.



1739

1740 Figure 29 - Forum website

1741 Note that it is important to ensure that the European Multi-Stakeholder Forum on e-Invoicing
 1742 and the Multi-Stakeholders Expert Group on e-Procurement share information, to each other
 1743 and to the stakeholders in the marketplace. The current mechanisms, example shown in
 1744 Figure 29, are not adequate.

1745 **9.2 Terminology**

1746 The 'terminology' being used in Commission documents is not necessarily equal to the same
 1747 terminology used in private sector business environments⁹⁵. This causes confusion, and
 1748 hampers assessments and hence investments, as the market is unsure what it will have to
 1749 cope with.

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

⁹⁵ Example: 'platform' in CEF

1750 The text box below gives an elaborated example around the word 'Platform'; it may not be
 1751 the best possible term to illustrate the case, but on the other hand it is representing a real
 1752 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.

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

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9.3 ICT Standardisation Multi-Stakeholder Platform

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

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

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

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1773

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

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

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1779

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

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

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

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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>

1785 **9.4 Rolling Action Plan**

1786 The EU Rolling Plan provides an overview of the needs for preliminary or complementary
1787 ICT standardisation activities to be undertaken in support of EU policy activities.

1788 The Rolling Plan on ICT Standardisation⁹⁹ is drafted by the European Commission in
1789 collaboration with the 'European Multi-Stakeholder Platform on ICT Standardisation' and is
1790 updated annually. It lists all the topics identified as EU policy priorities where
1791 standardisation, standards, or ICT technical specifications ought to play a key role in the
1792 implementation of the policy. It covers technologies of 'horizontal importance', ones whose
1793 application have a wide impact across different technical fields, in the context of ICT
1794 infrastructures and ICT standardisation.

1795 It must be realised that standards development usually follows business drive. Standard
1796 development in support of EU policy hence inherently runs the risk of a lack of business
1797 drive or representation of business stakeholders' requirements. If not managed properly, this
1798 could lead to development of proprietary standards, augmenting fragmentation.

1799 It can be observed that the ICT Standardisation Rolling Plan is using outdated statements; it
1800 must be better aligned with business requirements as mirrored in establishment and work of
1801 European Standardisation Organisations in general, CEN Project Committees and Technical
1802 Committees in particular, for the benefit of adoption; adoption will suffer if public sector
1803 driven standardisation does not match / is not aligned with private sector requirements.

1804 Note that Project Committee 434 and Project Committee 440 have been set up by CEN
1805 members as an implication of business requirements to *also* absorb the work coming from
1806 policy initiatives, where Project Committee 434 has not been established solely on the basis
1807 of a Standardisation Request, but on the basis of Business Drives from different EU Member
1808 States via their National Standardisation Organisation.

1809 **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.

1810 **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).

1811 **9.5 e-Procurement developments**

1812 There are many developments initiated by Commission initiatives. Examples are e-SENS,
1813 CEF DSI's, e-ID, PEPPOL, e-Delivery, .

1814 It must be ensured that the infrastructures that are being established within the public sector
1815 community are not a private silo / community (see Figure 6) but instead connect to (or even
1816 better: make use of) existing private sector functionality.

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

1817 Different and/or parallel approaches will hamper investments, innovation and adoption and
 1818 hence jeopardise the way towards the Objective or even the establishment of the Digital
 1819 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.

1820

1821 For policy measures for the benefit of policy objectives, it still can be argued that the success
 1822 depends on the implementation and on the alteration to (public- and private- sector)
 1823 business processes. These implications can be circumvented by legally imposing, but costs
 1824 of that will disrupt business perspectives and innovation. The emphasis must be on joint
 1825 developments, with joint identification of optimal¹⁰⁰ implementation scenarios.

1826 Notice that the Communication COM (2013) 453¹⁰¹ identifies the state of implementation of
 1827 'end-to-end e-procurement' (from the electronic publication of notices to electronic payment)
 1828 in the EU, as foreseen by the 2012 Communication 'A strategy for e-procurement'¹⁰² as
 1829 follows: '*End-to-end e-procurement is not about implementing an IT project which would just
 1830 replicate paper-based processes; it is an opportunity to fundamentally re-think the way public
 1831 administration is organised. End-to-end e-procurement is therefore a key enabler of the
 1832 above priorities, and can contribute to the sustainable growth objectives of the EU 2020
 1833 Strategy. Therefore, although the final goal is to conduct the whole procurement cycle from
 1834 e-notification to e-payment electronically, at ...*' But, at the moment this is not the case.

1835 Various stages in that process act as information islands that do not exchange or reuse
 1836 information, having negative impact to the quality and cost of the overall procurement
 1837 process; this implies that the proper results can only be achieved if the progress and
 1838 development of the underlined is not to be carried out by the public sector in isolation
 1839 because of the positive effect it creates on all economic sectors.

1840 The new public procurement Directives make the use of e Procurement progressively
 1841 mandatory. By March 2017, electronic submission of offers (e-submission) will become
 1842 mandatory for Central purchasing bodies (public buyers buying on behalf of other public
 1843 buyers), and by September 2018, electronic submission of offers (e-submission) will become
 1844 mandatory for all contracting authorities¹⁰³.

1845 As the timeline correlates with the timeline of the European Norm developed by Project
 1846 Committee 434, this creates an opportunity to (re)use the information available in electronic
 1847 form from pre-award phase in the invoice and the related documents, with the goal of
 1848 improving the quality of the contract execution monitoring process, increasing the auditability
 1849 of the invoice and delivering savings and other benefits promised by the end-to-end e-
 1850 Procurement concept.

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

1851 The e-Tendering Expert Group (e-TEG) in its 'Recommendation for effective public e-
1852 Procurement Part II'¹⁰⁴ states:

1853 *'Today, there is often no connection ('bridge') between platforms (pre-award phase)*
1854 *and ordering-invoice solutions (post-award process). The relevant information such*
1855 *as catalogue information that might need to be extended and other information*
1856 *about the contract and the party details should improve usability and efficiency'.*

1857 and comes to the Recommendation:

1858 *'In order to facilitate contract management during post-award phase (including*
1859 *framework agreements), the information about the contract and the conditions*
1860 *should be available and searchable in the platform and transferred to the order-*
1861 *invoice system (post-award system) so that end users in the organisations can do*
1862 *the call-offs to framework agreements/contract. This should include the product*
1863 *information, even if it might need to be completed with more information in order to*
1864 *work practically with contract management, execution and monitoring (prices or*
1865 *price calculation schemes, logistics information required by the contract – e.g. about*
1866 *unit packages etc.). Usage of structured information is recommended to facilitate*
1867 *reuse'.*

1868 Practically, this means that e-Tendering platforms should extend their capabilities to also
1869 handle e-invoices as a value-added service and offer public buyers added value of checking
1870 the integrity of electronic invoices and their alignment with the tender-offer-contract data.
1871 Alternatively, they could offer access to this data to the e-invoice service providers via the
1872 standardised protocols (that are being developed by the CEN Project Committee 440),
1873 allowing them to improve invoice quality checks they usually offer to the buyers as part of
1874 their service.

1875 Another important potential of an integrated end-to-end e-Procurement process is reduction
1876 of payment delays and improvements in the cash flow management, as indicated in
1877 COM(2012) 573 Single Market Act II¹⁰⁵ document (see also 2.7 Developments in 'Market in
1878 Motion').

1879 Long payment delays have negative impact on the overall economy, because they reduce
1880 liquidity of the real sector and therefore limit the funds available for investment that creates
1881 economic growth.

1882 State and local government treasuries could receive information on future payment
1883 obligations as early as the moment that an invoice reaches the public buyer, allowing them
1884 better cash management, whilst the governing bodies could use that information to ensure
1885 that invoices are paid on time and the negative effects are avoided.

1886 Additional saving potential lies in dynamic discounting¹⁰⁶ mechanisms, where sellers could
1887 offer dynamic discounts should public buyers pay their invoices earlier than the due date
1888 (depending on the cash flow in the treasury),

1889 **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.

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1891 **9.6 e-Sens and CEF-e-Invoicing-DSI**

1892 **CEF e-Invoicing DSI**

1893 The CEF-e-Invoicing-DSI Building block description¹⁰⁷ creates haziness on functions,
1894 availability and responsibilities; see also the bold print under e-Delivery below.

1895 The European Commission is supporting the uptake of e-invoicing in several ways and not
1896 only in the legislative field. The e-SENS project¹⁰⁸ and the CEF¹⁰⁹ Digital programme are two
1897 important initiatives to support actual work on e-invoicing throughout Europe.

1898 The e-SENS project aims at consolidating, improving, and extending technical solutions to
1899 foster electronic interaction with public administrations across the EU. The work is centered
1900 on setting up real-life pilots to prove that seamless electronic communication with public
1901 administration is possible in the EU and EES. One of the domains in e-SENS is public
1902 procurement and in this area pilots on e-invoicing are part of this work.

1903 The work in e-SENS on e-invoicing is focusing on e-delivery and e-documents. The pilots'
1904 use of e-documents relies on the work in CEN WS BII and from the PEPPOL-community. e-
1905 SENS only reuses the already existing PEPPOL BIS- invoice messages. The real added
1906 value of the pilot is related to the e-delivery building blocks where tests are done using the e-
1907 SENS AS/4 e-delivery profile using EBMS3 as a complement to the AS/2 profile currently
1908 used in PEPPOL.¹¹⁰ AS/4 is being implemented in e-SENS to meet business needs from
1909 other domains than e-procurement such as for instance e-justice.

1910 CEF is a programme to finance and *govern the implementation* of a European digital
1911 infrastructure. The work is organised in annual work programmes. Whereas e-SENS deals
1912 with pilots to make sure building blocks are ready for practical use, the CEF e-invoicing DSI
1913 is targeting to help public administrations implement electronic invoicing in compliance with
1914 the e-invoicing Directive 2014/55/EU of the European Parliament and the Council.

1915 In that sense CEF is taking adoption of e-invoicing one step further, that is to support its
1916 practical use by public authorities and their suppliers in Europe. The CEF e-invoicing DSI
1917 consists of both support for central components like validation tools and code list
1918 management and also support for individual organisations and their projects to start using e-
1919 invoicing based on the common standards being developed in CEN Project Committee 434
1920 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.

1921

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

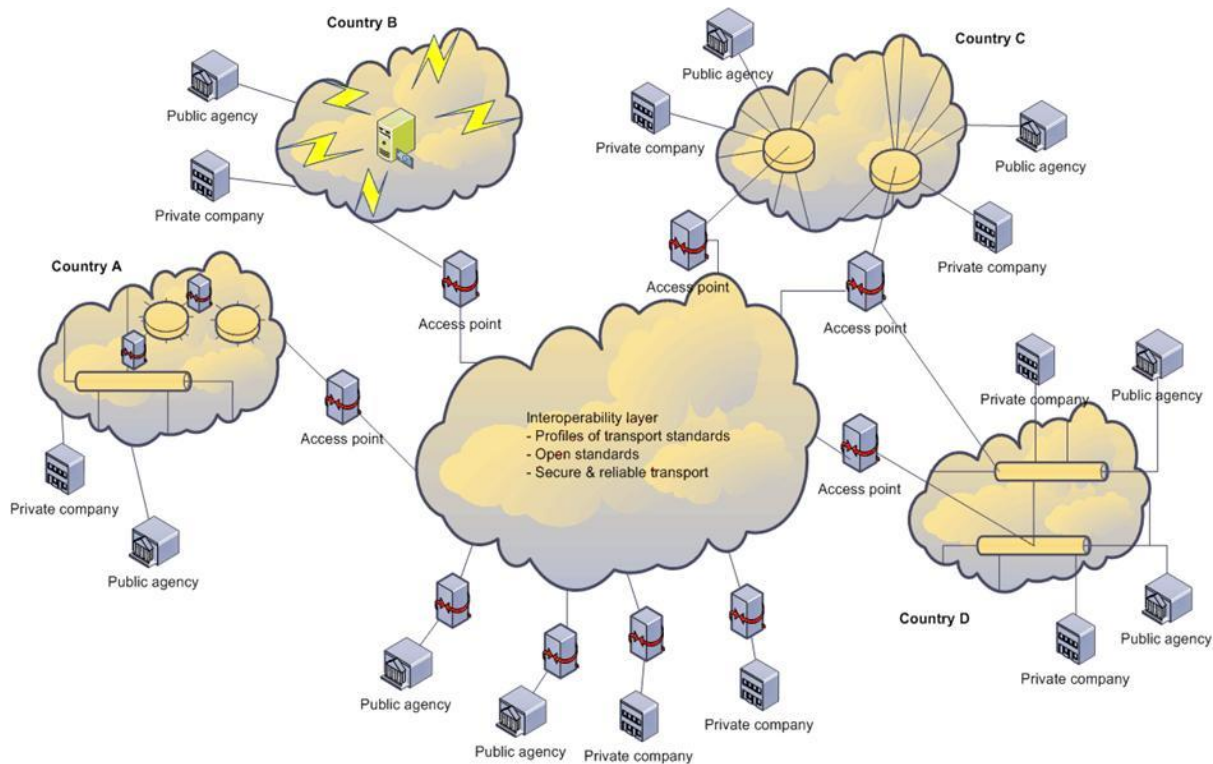
1922 **e-Delivery**¹¹¹

1923 The objective of the e-SENS building block 'e-Delivery' is to establish a common transport
 1924 infrastructure suited to the requirements of cross-border communication between e-
 1925 Government applications in different domains. This common transport infrastructure
 1926 leverages the work of the previous Large Scale Pilots ('LSPs') and combines their results in
 1927 a modular approach. The goal is for the infrastructures in use by the other LSPs to converge
 1928 over time towards this common standard.

1929 The e-SENS e-Delivery infrastructure supports interoperable, secure and reliable exchange
 1930 of structured, non-structured and/or binary data within (at least) asynchronous
 1931 communication scenarios. As in most preceding LSPs, in e-SENS the common e-Delivery
 1932 infrastructure does not replace existing infrastructures, but instead aims to transparently
 1933 interconnect existing electronic delivery communities:

- 1934 • Communities set up by the Member States for general e-Government purposes.
 1935 • Sector-oriented communities such as e-Procurement, e-Health and e-Justice.

1936 In e-SENS, e-Delivery is based on the concept of a four-corner model, where end entities
 1937 exchange messages via gateway intermediaries. The infrastructure only standardizes
 1938 communication between these intermediaries. Communication between gateways and end
 1939 entities may use e-SENS e-Delivery, but may also use a different solution. This model is
 1940 illustrated in the following diagram:



1941

1942

Figure 30 - e-Delivery

1943 E-Delivery builds on earlier initiatives to converge the transport infrastructures of the LSPs
 1944 PEPPOL, SPOCS and e-CODEX, for which an e-Delivery convergence task force was set
 1945 up.

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

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1946 This group identified version 3 of OASIS ebXML Messaging Services (ebMS3), service
 1947 discovery protocols and formats developed in PEPPOL (submitted to the OASIS BDX
 1948 Technical Committee) and evidence messages standardized in ETSI ESI as building blocks
 1949 for converged e-Delivery. The e-CODEX project has developed an e-Delivery solution based
 1950 on these building blocks. This solution is currently in production use in a number of Member
 1951 States. This solution, together with the experience gained in the e-CODEX project, is an
 1952 important input for e-SENS.

1953 In its first year, work on e-Delivery in e-SENS focused on taking stock of existing solutions
 1954 from previous LSPs, selected national solutions, standards from standards bodies such as
 1955 OASIS and ETSI, and the converged solution of e-CODEX. E-SENS has identified, and
 1956 recommends for use in e-SENS pilots, a 'Core e-Delivery' high-level building block, which
 1957 will be delivered as:

- 1958 • A set of architecture building blocks – defined technical specifications.
- 1959 • A solution building block that implements the specifications in a software product.

1960 The Core e-Delivery architecture building blocks are the following:

- 1961 • The recommended transport protocol is ebMS3, profiled for use in four-corner
 1962 topologies. For interoperability reasons, the e-SENS profile will align closely with
 1963 the AS4 profile of ebMS3, which is implemented by a growing number of
 1964 commercial and open source solutions and is also adopted by other large user
 1965 communities.
- 1966 • The recommended end entity addressing format for legal entities is the ebCore
 1967 Party ID type, which leverages existing party identification schemes. The project will
 1968 define a similar scheme for natural entities to support interactions with citizens.

1969 'Core e-Delivery' will be extended with two additional, optional building blocks:

- 1970 • An end-to-end service providing evidence to uphold assertions of acceptance (i.e.
 1971 of 'shipment'), of delivery/non-delivery, of retrieval, etc. of messages sent/delivered
 1972 through that service. This serves to provide control, proof or notification of the flow.
 1973 E-CODEX and SPOCS have used ETSI REM to provide this functionality. For e-
 1974 SENS, a generalization of this concept is under development.
- 1975 • Functionality that allows end entities to publish and enable discovery of service
 1976 metadata, such as the (corner 3) service provider that receives messages on their
 1977 behalf. The OASIS BDX Location specification is the recommended specification for
 1978 a service location. A complementary specification called SMP (Service Metadata
 1979 Publisher) is also part of the e-SENS target architecture. SMP has been submitted
 1980 for standardization to OASIS.

1981 E-Delivery can be used with other building blocks, such as container formats for payloads or
 1982 mechanisms for security and trust. The relation between these building blocks is visualized
 1983 in the following diagram:

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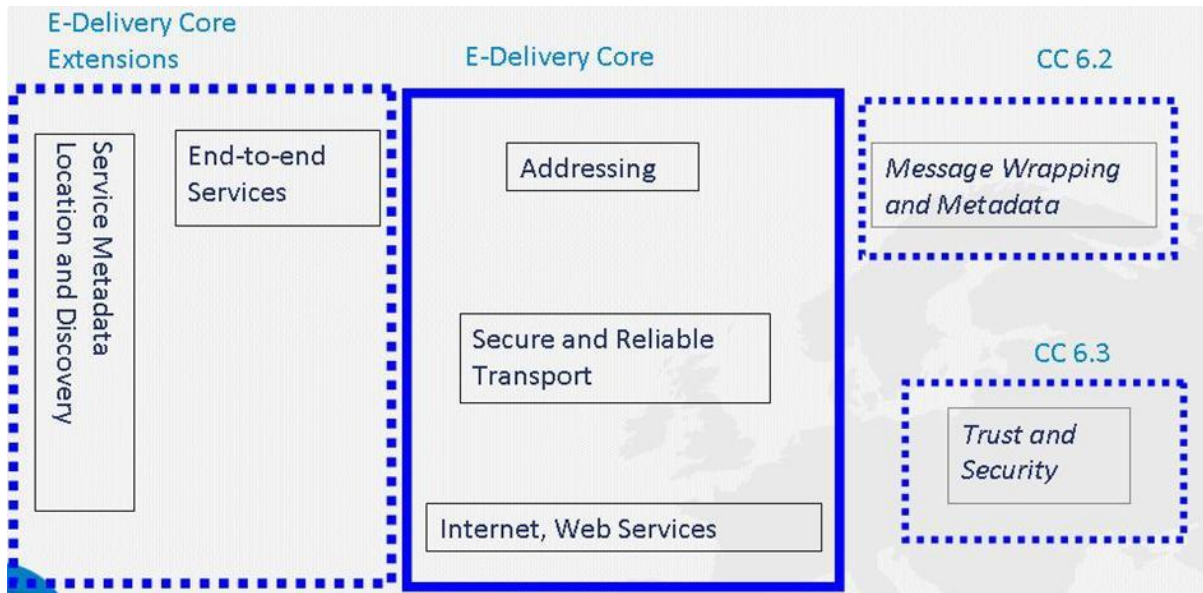


Figure 31 - e-Delivery

1984

1985

1986 In parallel to the architecture building blocks, e-SENS collaborates with the Directorate-
 1987 General for Informatics (DIGIT) and e-CODEX to deliver a solution building block, an
 1988 implementation that:

- 1989 • Implements Core e-Delivery
- 1990 • Is free and open source
- 1991 • Is mature and suited for production use
- 1992 • Is fully tested and supported.

1993 However, organizations may also implement e-Delivery using other solutions, such as
 1994 commercial messaging products.

1995 Current focus for e-Delivery is to support e-SENS pilots interested in using e-Delivery. This
 1996 support will cover both:

- 1997 • Adoption of e-SENS e-Delivery by communities that are not yet using e-Delivery.
- 1998 • Migration of communities that are already using e-Delivery to use e-SENS e-
 1999 Delivery.

2000 Noteworthy regarding e-Delivery is, that OpenPEPPOL¹¹² has recently signed¹¹³ an
 2001 agreement with the *European Commission for hosting a central service as part of the e-
 2002 Delivery Digital Service Infrastructure (DSI)*. The European Commission is in the process of
 2003 *establishing and operating* a number of DSIs and their core services as part of the
 2004 Connecting Europe Facility (CEF) Telecom programme.

2005 Under the terms of the agreement, the European Commission will host a central service of
 2006 the CEF e-Delivery network - the Service Metadata Locator (SML) - which allows
 2007 participants in the network to dynamically locate each other across Europe. The SML service
 2008 is a central component of the PEPPOL Transport Infrastructure, managed to date by
 2009 OpenPEPPOL.

2010 The service is being used in production by more than 90 service providers and public
 2011 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>

2012 network. The agreement ensures technical maintenance of the e-Delivery software sample
 2013 implementations, whereas OpenPEPPOL will continue to manage the business-related
 2014 governance of the network in the e-procurement domain.

2015 The agreement includes a service-level agreement for the availability of the SML service to
 2016 be provided by DG DIGIT, thereby ensuring and even increasing the reliability and
 2017 robustness of the PEPPOL e-Delivery network and the uninterrupted continuity of operations
 2018 for all OpenPEPPOL members. The actual transfer of operations and related migration of the
 2019 SML service is ongoing and is supposed to have been completed within June 2015.

2020 **This agreement marks the first instance of the European Commission becoming**
 2021 **directly involved in the hosting and support of a core service which originated in a**
 2022 **Large Scale Project (in this case, PEPPOL) and it will operate under the provisions of**
 2023 **the Connecting Europe Facility (CEF) Telecom Programme.**

2024 It is a testament to the maturity of the service, which is currently used for millions of real
 2025 business transactions, and paves the way for other services and building blocks from the e-
 2026 Procurement domain or other communities to be run as part of the CEF e-Delivery digital
 2027 service infrastructure (DSI).

2028 The agreement is an important milestone towards integration of PEPPOL results into CEF e-
 2029 Delivery DSI, harnessing the OpenPEPPOL governance model and strengthening long term
 2030 sustainability of the PEPPOL network.

2031 This development is a stepping stone on the sustainability roadmap of the PEPPOL
 2032 infrastructure, operations and specifications. Closer cooperation on other building blocks and
 2033 services with the European Commission is under discussion and further steps will be taken
 2034 in due course. The Connecting Europe Facility Programme will continue to support core
 2035 services in the e-Procurement domain and will also provide individual support through grants
 2036 which will be open to public administrations and private providers within the e-Procurement
 2037 domain. A series of Calls for Proposals that will support Generic Services in e-Delivery,
 2038 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.

2039

2040 **9.7 eIDAS Regulation**

2041 Electronic identification (eID) and electronic Trust Services (eTS) are seen by the European
 2042 Commission as key enablers for secure cross-border electronic transactions and central
 2043 building blocks of the Digital Single Market.¹¹⁴

2044 The Regulation (EU) N°910/2014 on electronic identification and trust services for electronic
 2045 transactions in the internal market (eIDAS Regulation¹¹⁵) adopted by the co-legislators on 23
 2046 July 2014 is a milestone to provide a predictable regulatory environment to enable secure
 2047 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

2048 The eIDAS Regulation, which is based on the Commission Communication ('COM(2012)
2049 238 Final' of 4 June 2012), will increase the effectiveness of public and private online
2050 services, eBusiness and electronic commerce in the EU.

2051 eID and eTS - namely electronic signature and electronic seal creation and validation, time
2052 stamp, electronic delivery service website authentication and related certificate issuance -
2053 are seen as inseparable by essence when analysing the requirements needed to ensure
2054 legal certainty, trust and security in electronic transactions. In this regard, the eIDAS
2055 Regulation

- 2056 • ensures that people and businesses can use their own national electronic
2057 identification schemes (eIDs) to access public services in other EU countries where
2058 national eIDs are available and notified to the Commission in accordance with the
2059 eIDAS Regulation procedures.
- 2060 • creates an European internal market for eTS by ensuring that they will work across
2061 borders and have the same legal status as traditional paper based processes. Only
2062 by providing certainty on the legal validity of all these services, businesses and
2063 citizens will use the digital interactions as their natural way of interaction.

2064 The European Commission puts a lot of effort in promoting the uptake of the eIDAS
2065 Regulation in the private sector¹¹⁶ in order to leverage eID as a key enabler of the Digital
2066 Single Market (DSM) by making cross-border electronic transactions more secure,
2067 convenient, and trustworthy.

2068 In that context, there are some aspects of the eIDAS Regulation that can be relevant for e-
2069 invoicing services and e-business in general. In short, the question is: should e-invoicing and
2070 similar services be considered Trust Service Providers and, in consequence, are they
2071 subject to the eIDAS Regulation rules ?

2072 Justification of this question comes from:

2073 TSP definition (from Article 3(16)):

2074 'an electronic service normally provided for remuneration which consists of:

- 2075 (a) the creation, verification, and validation of electronic signatures, electronic seals or
2076 electronic time stamps, **electronic registered delivery services** and certificates
2077 related to those services, ...

2078 Note: in bold the type of TSP of interest for within the scope of this document.

2079 In Article 3(36) the definition of 'electronic registered delivery service': *a service that makes it*
2080 *possible to transmit data between third parties by electronic means and provides evidence*
2081 *relating to the handling of the transmitted data, including proof of sending and receiving the*
2082 *data, and that protects transmitted data against the risk of loss, theft, damage or any*
2083 *unauthorised alterations.*

2084 This seems in line with an essential component of every e-invoicing provider and Article 43
2085 (Legal effect of an electronic registered delivery service) establishes a common legal
2086 framework so that '*Data sent and received using an electronic registered delivery service*
2087 *shall not be denied legal effect and admissibility as evidence in legal proceedings solely on*
2088 *the grounds that it is in an electronic form*' that is very useful not only for e-invoices, whose
2089 legal validity is a consequence of the VAT directive, but also for all the supporting
2090 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>

2091 So it is likely that the electronic delivery component of an e-invoicing service should be
2092 considered a TSP.

2093 The definition of e-seal in the eIDAS Regulation is: *'data in electronic form, which is attached*
2094 *to or logically associated with other data in electronic form to ensure the latter's origin and*
2095 *integrity'* (Article 3(25)).

2096 Unless the electronic invoice is printed and preserved on paper audit trail, EDI logs, etc. that
2097 allows to demonstrate integrity and authenticity falls in the definition of electronic seal.

2098 This seems in line also with Recital 59: *'Electronic seals should serve as evidence that an*
2099 *electronic document was issued by a legal person, ensuring certainty of the document's*
2100 *origin and integrity'* and Recital 61: *'This Regulation should ensure the long-term*
2101 *preservation of information, in order to ensure the legal validity of electronic signatures and*
2102 *electronic seals over extended periods of time and guarantee that they can be validated*
2103 *irrespective of future technological changes'*. Archival of document is subject to national
2104 legislation but the eIDAS Regulation provisions should be taken into account to guarantee a
2105 common legal basis in the Union.

2106 Also taking into account the subject matter [2] and the scope [3] of the eIDAS Regulation the
2107 conclusion seems to be that when a third party provides a delivery or an archiving service
2108 (normally for remuneration and not just a 'storage' service like Dropbox) for e-invoices it
2109 should comply with the minimal TSP requirements specified in the eIDAS Regulation such
2110 as article 19 *'measures to manage the risks and notification of any breach of security or loss*
2111 *of integrity'*.

2112 The eIDAS Regulation defines (like for any trust service):

- 2113 • a 'basic' level;
- 2114 • a qualified level, enjoying a legal presumption

2115 In short: in order to achieve the qualified status, a third party conformity assessment report is
2116 needed and the service must be under supervision. A qualified TSP is inserted in the EU
2117 Trusted List defined in the eIDAS Regulation.

2118 **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:

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'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.'

2119

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.

2120

2121 **9.8 Interpretation of Directives**

2122 Text in Directive 2014/55/EU, in particular Articles 6 and 7, needed clarification to allow
2123 Project Committee 434 to do its work efficiently.

2124 The interpretation provided by the Commission¹¹⁷ imposed requirements that are not within
2125 the remit of Project Committee 434; to put simply: Project Committee 434 'works' in the
2126 lower three layers of the EIF 2.0 model whereas the conditions introduced by the
2127 Commission are on the higher legal and political layer.

2128 The 'translation' of public sector policy objectives into measures in the lower three layers of
2129 EIF 2.0 must be done together with private sector stakeholders.

2130 If not, these situations hamper progress and must be avoided - given the strict timelines
2131 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.

2132

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

2133

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.

2134

2135 On 22 June 2015 a meeting has taken place between representatives of the European
2136 Commission, the Activity Group Leaders of the European Multi-Stakeholder Forum on e-
2137 Invoicing and CEN Project Committee 434 to discuss the hindrances for the Project
2138 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.

2139

2140

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2141 **10. Availability of / Participation in Project Committee 434**
 2142 **deliverables**

2143 In order to ensure wide acceptance in e-invoicing in the marketplace¹¹⁸ of the European
 2144 Standard under development in Project Committee 434, providing free access to (at least
 2145 some of) CEN Project Committee deliverables is crucial.

2146 Namely, all the global fora and consortia provide free access to their e-business standards,
 2147 so paying a fee to access the European Standard would certainly be a barrier.

2148 Of course, Intellectual Property rights must be protected, but if the European Standard
 2149 implementation should be mandatory in public procurement then also the access for
 2150 something legally required should be free.

2151 This probably means that some alternative way (business model) to paying fee to access the
 2152 European Standard deliverables should be found.

2153 Participation in the work of a CEN Project Committee is via the National Standardisation
 2154 Organisation in the CEN Member Country. The number of participants may suffer from the
 2155 general lack of interest that can be observed for standardisation work.

2156 This may lead to 'unbalanced participation', implying risks for the acceptance and
 2157 implementation at a later stage. It is important to involve as many of the relevant
 2158 stakeholders as possible, at the earliest moment in time.

2159 **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.

2160 **Trigger 30:** Initiative should be carried out to remove hindrances of participation fee (or
 2161 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 Business to Business domain; see 2.2 No special role for G and 3.3 Positioning

2162 11. Organising for implementation

2163 Copied from Background Document 1.0; topics maintained where relevant and reviewed and
2164 complemented / updated to get to actual status. The action items have been given a color
2165 code¹¹⁹:

2166 **Sub-Action x: GREEN** - completed

2167 **Sub-Action x: YELLOW** - in progress

2168 **Sub-Action x: RED** - not started yet

2169 The objective 'e-Invoicing predominant in 2020' focuses on electronic invoicing in the context
2170 of Europe 2020, the Digital Single Market, etc. Implementing measures to achieve this goal
2171 should also recognise the fact that 'out there' there is not a 'Greenfield' situation - electronic
2172 business is happening; trade is taking place and 'dematerialisation of business processes'
2173 (i.e. the replacement of paper used for the exchange of information in trade and its
2174 supporting processes by electronic messages) and already now several initiatives and
2175 solutions exist in and across various markets – both in the private and the public sector
2176 providing answers to many business requests from various communities.

2177 Respecting that these solutions have been implemented in order to address specific
2178 identified business needs relevant for that specific community, and to increase the uptake of
2179 e-Invoicing in general, is one of the main reasons for the recommendation to focus on
2180 semantic interoperability (see section 3.3) between communities.

2181 It is further suggested that such semantic interoperability is best achieved by focusing on the
2182 concept of a 'Core Invoice' (see section 2.4) and nominating a common point of reference –
2183 a semantic reference model (see section 5.2).

2184 In organizing for the implementation of these recommendations several aspects need to be
2185 considered, including:

- 2186 1. Establishing a 'European Core Invoice'
- 2187 2. Methodology for 'extending the Core'
- 2188 3. Nomination of the 'common point of reference'
- 2189 4. Statements of conformance
- 2190 5. Public sector engagement

2191 Each of these aspects are further elaborated in the following sub-sections.

2192 It is necessary to recognise that a 'business drive' is essential. Public sector initiatives tend
2193 not to experience a vivid market uptake, and may vanish from the scene again, if they are
2194 not adopted because of filling a need given by practical market requirements. Public sector
2195 initiatives need to exploit the special competences to provide help, where the private sector
2196 cannot achieve the required progress on its own or does not have the possibility to.

2197 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.

2198 The concept of a 'Core Invoice' as discussed in section 2.4 assumes 'that a (small) set of
 2199 information elements can be defined that supports the core invoice functions'. The concept
 2200 of a 'Core Invoice' has been adopted by e.g. the CEN WS/BII and the CEN MUG project,
 2201 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.

2202

2203 In order to achieve the goal of European-wide increase in the uptake of e-Invoicing it is
 2204 obvious that any actions to establish such a 'European Core Invoice' should take place
 2205 within an organizational structure that allow for an open and balanced representation of all
 2206 interests concerned at a European level with a view to achieve a wide agreement through a
 2207 consensus building process. Such an approach would also ensure that the Semantic Data
 2208 Model is not developed in isolation, just for the e-Invoice.

2209 Leaving the further definition and elaboration of activities to the stakeholders in trade also
 2210 reduces the risk of European Union local developments only. Trade, in general, is global and
 2211 a European Union dedicated solution would put global trade by private sector entities in
 2212 Europe in an exceptional position, hampering in the filling in of trade, i.e. the physical and
 2213 the financial supply chain with Europe while these may in fact be directed at emerging
 2214 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.

2215

2216 A key target group for the 'European Core Invoice' are the SMEs. SMEs typically depend on
 2217 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.

2218

2219 To support adoption by the SMEs the cost of obtaining information and relevant solutions
 2220 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'.

2221

2222 The associated costs could be covered from public sector funding, as for instance from CEF.

2223 Methodology for 'extending the Core'

2224 The concept of a 'Core Invoice' also recognises that the '... (small) set of information
 2225 elements ...' may, from the outset, not necessarily meet the specific requirements of a given
 2226 country or supply chain (see sections 2.5 and 2.6).

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2227 Thus supply chain specific or country specific extensions could be expected, especially in
 2228 the first years of adoption. It is however expected that, as experience is gained and the legal
 2229 landscape is further harmonised, especially the 'country specific extensions' will gradually be
 2230 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.

2231

2232 Nomination of the 'common point of reference'

2233 In order to secure global interoperability the information elements contained in the 'European
 2234 Core Invoice' should be mapped to a 'common point of reference'.

2235 The work of UN/CEFACT has a global scope and is based on the requirements of different
 2236 industries and sectors. As such it is well suited to serve as a global common point of
 2237 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.

2238

2239 Statements of conformance

2240 The availability of a 'European Core Invoice' and 'UN/CEFACT requirements reference
 2241 model' as a global point of reference to support semantic interoperability would also provide
 2242 a means for users to establish that their applications are conformant with it, to the degree
 2243 which will support interoperability. To achieve this, the idea of self-conformance is an
 2244 attractive one, as it avoids the high resource demands of proactive conformance testing.

2245 Self-conformance could be achieved by providing two resources: a methodology for
 2246 establishing and describing conformance; and a conformance registry, to provide visibility to
 2247 trading partners and other communities of users. The methodology would provide a standard
 2248 means of describing how business requirements and possibly existing syntaxes relate to
 2249 specific portions of the 'European Core Invoice' and 'UN/CEFACT requirements reference
 2250 model', including whatever qualifications for particular mappings might be needed. This
 2251 includes both high level statements of conformance, and granular detail. Without this full set
 2252 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.

2253

2254 The conformance registry is a simpler idea – effectively just a repository of conformance
 2255 information, accessible as a website or possibly programmatically. The conformance registry
 2256 would e.g. hold user's information in reference to the 'European Core Invoice' and
 2257 'UN/CEFACT requirements reference model', indicating where they are the same (that is,
 2258 where they conform) and where they may be differences (that is, where they are not
 2259 conformant).

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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 work' should be established.

2260

2261 Public sector engagement

2262 Public sector entities have two important roles in relation to the goals of increasing the
2263 uptake of e-Invoicing.

2264 Firstly as a user of e-invoicing, both as receivers of e-invoices and as issuers of e-invoices
2265 for services rendered to the market. In this respect a public sector entity as an actor in trade
2266 differs in nothing from a private sector entity in the same role - and does not justify any
2267 dedicated approach, standard, or measure. Based on business justification the public sector
2268 may however take the role as a 'launching or demanding customer' in order to boost
2269 developments. This would be especially true in cases where the special competences of the
2270 public sector may remove hindrances for which the private sector lacks these competences
2271 to be able to remove them.

2272 Secondly as a facilitator for the implementation of the actions outlined above. In this respect
2273 it is important to ensure that actions are consistently implemented across the public sector
2274 entities and initiatives involved. Uncertainty in the market about the implications of Directives
2275 and Regulation that are seemingly developed in isolation are likely to cause uncertainty in
2276 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. Uncertainty 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

2277

2278 Note that proper uptake of electronic invoicing should not lead to the distinction of artificial
2279 roles: a public sector entity as an actor in trade differs in nothing from a private sector entity
2280 in the same role in trade - and does not justify any dedicated approach, standard, or
2281 measure. That would lack the business rationale, jeopardise uniformity and hence never
2282 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.

2283

2284

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2285 **12. Table of Recommendations**

2286 The 'Triggers' mentioned will be grouped and converted in proposed Recommendations in a
2287 separate document.

2288

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2289 **ANNEX: References**2290 **ANNEX -1 - Invoice formats**2291 *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>

```

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```

    <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>

```

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```

    <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, Bridgston 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
        </cac:Address>
      </cac:FinancialInstitution>
    </cac:Address>
  </cac:PayeeFinancialAccount>
</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>

```

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```

    <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:InvoiceLine>

```

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```

<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>

```

2292 ANNEX 2 – Example UN/EDIFACT

2293 *Example of UN/EDIFACT invoice message (not the same invoice)*

2294 (Ref <http://www.edifactory.de/node/51>)

```

2295 UNA:+, ? 'UNB+UNOA:2+FHPELAL+HUBERGMBH+990802:1557+
2296 9908021557'UNH+INVOIC0001+INVOIC:D:93A:UN'BGM+380+
2297 9908001+9'DTM+3:19990802:102'RFF+ON:00010001'DTM+4
2298 :19999715:102'NAD+SE++Fahrradhandel Pedal++Waginge
2299 rstr. 5+München++81549'NAD+BY++Huber GmbH++Obstgas
2300 se 2+München++81549'LIN+1++4711.001'IMD+F++::Fahr
2301 rad, Damen'QTY+47:1:PCE'MOA+66:750'PRI+AAA:750'LIN
2302 +2++4711.002'IMD+F++::Luftpumpe, Stand-'QTY+47:1:
2303 PCE'MOA+66:19,9'PRI+AAA:19,9'LIN+3++4711.003'IMD+F
2304 ++::Ersatzventil'QTY+47:3:PCE'MOA+66:7,5'PRI+AAA:
2305 2,5'UNS+S'MOA+79:777,4'MOA+124:124,38'MOA+128:901,
2306 78'TAX+7+VAT+++::16+S'UNT+28+INVOIC0001'UNZ+1+990
2307 8021557'

```

2308 *Human readable version of the above:*

2309 Fahrradhandel Pedal, Wagingerstr. 5, 81549 München

2310

2311

2312 Huber GmbH

2313 Obstgasse 2

2314 81549 München

2315

2316 München, 02.08.99

2317

2318

2319 Rechnung: 9908001 Ihre Bestellung Nr. 00010001 vom 15.07.99

2320

2321 Pos	Artikel	Beschreibung	Anzahl	Einzelpreis	Gesamt
2322 1	4711.001	Fahrrad, Damen-	1	750,00	750,00

Disclaimer:

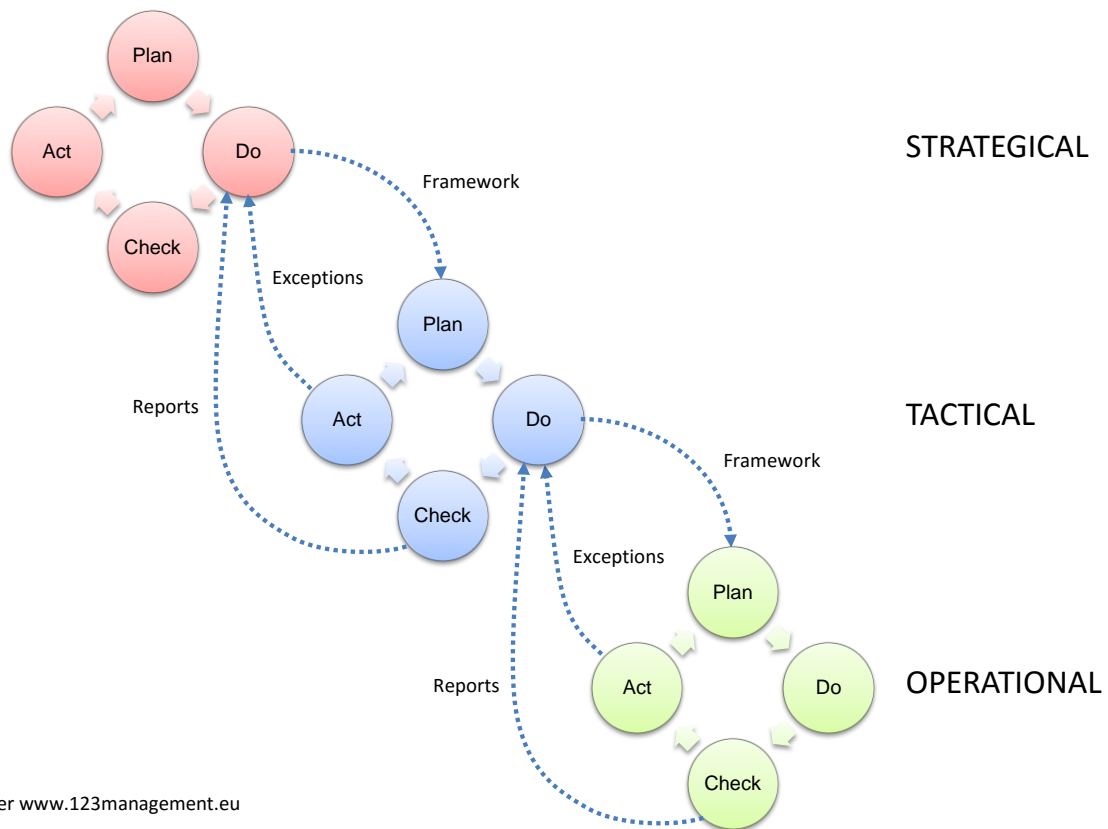
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2323	2	4711.002	Luftpumpe, Stand-	1	19,90	19,90
2324	3	4711.003	Ersatzventil	3	2,50	7,50
2325					-----	
2326			Gesamtsumme netto			777,40
2327			Umsatzsteuer 16%			124,38
2328						=====
2329			zu zahlender Betrag			901,78
2330						
2331						
2332						
2333	Alle Beträge verstehen sich in DEM					

2334

2335 **ANNEX 3 – Plan, Do, Check, Act**

2336 The figure below schematically depicts the use of Plan, Do, Check, Act on three hierarchical
 2337 levels for the benefit of structured project management.



2338

2339 Figure 32 – Plan, Do, Check, Act

2340 **ANNEX 4 – Mapping issues affecting interoperability**

2341 **The requirement**

2342 One of the objectives of the Standardisation Request is "to develop the mappings of the
 2343 listed syntaxes (formats) onto the semantic data model, to be given in a set of Technical
 2344 Specifications (TS)".

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2345 The idea is that if one syntax can be transformed into another then, in theory, a receiving
 2346 system need only to understand one of the syntaxes approved. This has obvious benefits
 2347 that both sender and receiver can chose their preferred syntax and when the receiver
 2348 receives the invoice a transformation is applied based on the published mappings to the
 2349 syntax. Therefore the receiver does not need to understand the other syntaxes, and avoids
 2350 related costs with no determinable loss of information.

2351 This is the ideal situation, but there are many issues that may affect some of the
 2352 transformations, resulting in (the need for) manual intervention and implying related costs.
 2353 Therefore, to avoid these costs, rules need to be created which are designed to ensure a
 2354 high success rate and a seamless exchange.

2355 According to the CEN/BII Workshop Agreement¹²⁰ 'on Conformance and Customisation
 2356 Methodology', interoperability is achieved primarily when the sender uses a more restricted
 2357 set and sends to a more open receiver. Applying this to the mappings would suggest that
 2358 provided the transformations are from the more restricted syntaxes then interoperability can
 2359 be gained. Also the requirements put on the sender for conformance must be stricter than
 2360 those on the receiver. For example the sender must not use ambiguous elements that are
 2361 used for Straight Through Processing. They must be clearly defined and data typed.

2362 **The conclusion**

2363 As can be seen in the section below (an interoperable approach for mapping syntax), it
 2364 should be accepted that the transformation should only be created in one direction and that
 2365 the sender has to be restricted to fully qualified elements.

2366 The unidirectional approach should be acceptable because the invoice is not expected to be
 2367 returned. It should also be considered that when designing the mappings the sender's
 2368 requirements should be more restrictive than the receiver. This could mean, for example,
 2369 that the receiver can combine elements together but should not be expected to split or parse
 2370 any piece of data (see examples). However creating further restrictions may cause more
 2371 complexity so there must always be checks to ensure each restriction is necessary.

2372 **An interoperable approach for mapping syntax**

2373 The CEN/BII Workshop Agreement 'on Conformance and Customisation Methodology'
 2374 states that a strictly conformant instance can send to a non-strictly conformant instance and
 2375 expect it to be interoperable.

2376 Similarly PC434's work in progress in Work Stream 5 states that "If syntax mappings are to
 2377 be complete and without information loss, the data type of an element must be defined
 2378 according to the most restrictive syntax. Only then invoices may be transformed between the
 2379 syntaxes without information loss."

2380 This can be expanded to state that it is desirable (for interoperability) that the sender is more
 2381 restricted than the receiver. For example UN/EDIFACT has specific size restrictions for
 2382 many of the elements. Therefore an Identifier can never be more than 35 positions, or many
 2383 text elements (e.g. an Address part) can never be more than 70 positions.

2384 The reverse does not work so well; a syntax with no specific restrictions e.g. size, would
 2385 probably have problems sending to one that has. For example if the sender sent a message
 2386 with an Identifier of 36 characters long and the receiving system used UN/EDIFACT it would
 2387 not accept those identifiers.

¹²⁰ Document reference to be published

2388 This also applies to the semantics; if a receiving system implemented a syntax which did not
2389 understand all the elements, then they would be lost. Sometimes it can contain the data but
2390 in another way e.g. Full name as opposed to First Name and Surname. It could be difficult
2391 sending a message with Full name and which needs to be split. Maybe the Full name is
2392 "Gray, Edmund" or "Edmund Gray". Whereas combining two (or more) into one is usually
2393 much easier.

2394 This will also apply to definitions of each of Information Elements or Business Terms. So if
2395 the sending system has a narrower definition, it should expect the receiving system to be
2396 able to transform it without loss of information. An example is unstructured address; if the
2397 receiver has Address1, Address2, Address3 and Address4, then it should have no problems
2398 with a sender who provides structured address as Street, City, Region and Country.
2399 However the reverse would not be possible unless the mapping rules mandated it.

2400 Therefore, in general, a more restricted/constrained message can be sent to a more open
2401 receiver with a high level of confidence that it can be transformed. As an example a sender
2402 could send an UN/EDIFACT message to a Public Body which has implemented UBL and
2403 expect it to be transformed. However if the Public Body adopts UN/EDIFACT then it would
2404 reduce the probability of it being transformed from a less restricted syntax. For the latter,
2405 either mapping rules or business rules would have to ensure the receivers system was the
2406 most strict.

2407

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2408 **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
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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.	

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