



# **PEPPOL Deliverable D2.1**

## **Functional and non-functional requirements specification for the VCD, including critical synthesis, comparison and assessment of national vs. pan-European needs**

*Version 1.0 – pending EC approval*

PEPPOL WP2 2009-05-19

**Borderless eProcurement**

**Let's make it happen!**



## Version, List of Contributors

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P e n d i n g

The following organisations have contributed to Deliverable D2.1:

- **UKL: University of Koblenz-Landau, Germany,** <http://www.uni-koblenz.de/agvinf/>
- **Peppol.at: Federal Ministry of Finance, Austria,** <http://www.bmf.gv.at/>
- **InfoCamere, Italy,** <http://www.infocamere.it/>
- **Adatef: Ministry of Economy, Finance and Employment, France,** <http://www.minefe.gouv.fr/>
- **Difi: Norwegian Agency for Public Management and eGovernment, Norway** <http://www.difi.no>
- **BeschA: Beschaffungsamt, Germany,** <http://www.beschaffungsamt.de/>

The following persons (grouped by organizations) have contributed to the work:

Ansgar Mondorf (co-editor)	UKL	Markus Schett	PEPPOL.AT	Bruno Deschemps	Adetef
Maria A. Wimmer (co-editor)	UKL	Erik Stabentheiner	PEPPOL.AT	Elisabeth Sundholm	DIFI
Markus Müller	UKL	Saskia Vymazal	PEPPOL.AT	Sverre Bauck	DIFI
Daniel Schmidt	UKL	Piero Milani	InfoCamere	Trygve Laake	DIFI
Josef Makolm	PEPPOL.AT	Paola Fumiani	CNIPA	Sabine Seidel	BeschA

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## List of Acronyms

BRITE: Business Registers Interoperability Throughout Europe  
CEN: European Committee for Standardisation  
CEN BII: CEN Workshop on “Business Interoperability Interfaces on public procurement in Europe”  
CIP: Competitive Innovation Programme  
ECRIS: European Criminal Records System  
EIF: European Interoperability Framework  
ICT: Information and Communication Technology  
ID: Identifier  
ISO: International Standardisations Organisation  
MOREQ: Model Requirements for the Management of Electronic Records  
MS: Member State  
NPPA: National Public Procurement Act  
OWL: Web Ontology Language  
PEPPOL: Pan-European Public Procurement OnLine  
RDF: Resource Description Framework  
TSE: Tender Structure Element  
UBL: Universal Business Language  
UN/CEFACT: United Nations / Centre for Trade Facilitation and Electronic Business  
VCD: Virtual Company Dossier  
WG: Working group  
WP: Work package  
XBRL: extensible Business Reporting Language  
XML: Extensible Markup Language

## Executive summary

According to the Description of work of PEPPOL, the overall aim of work package 2 (Virtual Company Dossier – VCD) is “to provide interoperable solutions for economic operators in any European country to utilise company information already registered somewhere and to submit this information electronically to any public sector awarding entity from a different Member State when these economic operators decide to apply for public contracts”.

As a first step to specify and implement such interoperable solutions for economic operators, work package 2 investigated existing studies and solutions, as well as legal frameworks at European and national levels which may frame such a VCD specification and implementation. Therefore, the first activities of WP 2 comprised the analysis, synthesis and assessment of existing company dossier structures of individual Member States (countries investigated were: AT, DE, FR, IT, NO) along with the achievements of previously run studies from DG Markt or other relevant EU bodies, and initiatives like the EU-co-funded BRITE project with its BriteCBD (Common Business Dossier for eProcurement take-up) and other standard specifications. The initial investigation kept going with understanding what already exists and what the legal, organisational and semantic requirements are. Based on that, a concept for the overall VCD was defined and elaborated.

This report documents the results of these activities as follows:

The **first chapter** motivates the need for a comprehensive interoperable VCD solution. It describes the status quo procedure of collecting evidences to prove selection and exclusion criteria in public tenders and details the objectives, benefits and success criteria of a pan-European interoperable VCD solution. Apart from that, the risks, challenges and potential barriers of a VCD are outlined.

**Chapter 2** describes the conceptual solution of the VCD, i.e. the vision and scope of the Virtual Company Dossier as well as the four-stage approach developed to take into consideration different maturity levels for accessing evidences in different Member States. The four stages (pre-VCD-mapping, VCD simple package, VCD advanced package and VCD network package) are described along a vision statement, a use-case description, major features, requirements and quality attributes, expected benefits for stakeholders and the scope, limitations, assumptions and dependencies.

To put the VCD concept as introduced in chapter 2 into the proper legal, organisational and semantic framework, **chapter 3** details these aspects along the respective objectives, the approaches and the suggested ways forward. Likewise, the specific requirements derived from detailed considerations are outlined. The chapter also investigates the technical and infrastructure-specific framework including requirements for security, records management and metadata. The alignment with activities of CEN and with the work package 8 (PEPPOL infrastructure) are argued within the technical framework, too. Finally, related methodical frameworks such as ISO development standards are assessed in order to ensure high-sophisticated development quality for the subsequent VCD specification and implementation.

In **chapter 4**, high-level concepts for pilot implementations are introduced. This includes an initial outline for the pre-VCD mapping tool implementation, which is necessary for realising the pre-VCD mapping of stage 1 of the VCD vision (cf. chapter 2). Furthermore, concepts for solutions are detailed along a description of operating environments of the pilots. According to the description of work, two pilots will be implemented to run interoperable solutions for economic operators to submit evidences to prove exclusion and selection criteria in public tenders according to directive 2004/18/EC. Hence, the partners from Austria and Italy will introduce their plans for VCD pilot infrastructures and solutions.

In **chapter 5**, we detail major requirements for VCD interoperability and assess the vision and scenarios of the four-stage VCD concept along their strengths, weaknesses, opportunities and threats (SWOT). We furthermore argue and outline the plans for the next steps, i.e. the subsequent technical, legal and organisational specification of the VCD.

**Chapter 6** concludes the report at hand with some reflections and lessons learnt in respect of the analysis, challenges, constraints, results and potentials of the VCD specification and subsequent implementation.



The work in phase 1 of the VCD development formed the crucial basis for understanding and conceptualisation. Hence, it is complemented with a **glossary** which forms the common terminology developed in the course of the Virtual Company Dossier analysis and requirements specification phase.

Instruments of analysis are attached in the **Annexes** such as a questionnaire for contracting authorities, a questionnaire for legal analysis and a template for stakeholder analysis.

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## 1 Introduction: Motivation for a Virtual Company Dossier

The effective use of Information and Communication Technology (ICT) to enable interoperability in public procurement is an area of great significance for achieving the Lisbon objectives, i.e. to become the most competitive and dynamic knowledge-based economy in the world (EC 2005). However, the current European public eProcurement infrastructure is inappropriate because it is characterized by a high market fragmentation and a lack of interoperability. Hence, a major objective of the European Commission is to enable European-wide eProcurement across borders by creating common principles and technical solutions that are applied within all Member States. eProcurement requires efforts to be done by public administrations, in particular to exploit new technologies for interoperability that enable easy information accessibility, improving the availability of pan-European services and interaction among citizens and businesses (European\_Dynamics\_S\_A 2004).

Governments are the largest buyer in the European Union which purchase at a level of approximately 15-20% of GDP (Ministerial\_Declaration 2005). Governments are lagging behind major industries in exchanging relevant data with key actors such as suppliers. Common standards for electronic data exchange seem to be a key element for companies to participate in public eProcurement. A European-wide eProcurement infrastructure could save governments up to 5% on expenditure and the transaction costs for both buyers and suppliers could be reduced by 50-80%. A greater competition and efficiency in eProcurement will influence the whole economy and may also play an important role in achieving the Lisbon objectives, e.g. to become the most competitive and dynamic knowledge-based economy in the world (Commission\_of\_the\_European\_Communitites 2004).

The Manchester ministerial declaration of 24 November 2005 defines the target that ((Ministerial\_Declaration 2005) p.4): “By 2010 all public administrations across Europe will have the capability of carrying out 100% of their procurement electronically, where legally permissible, thus creating a fairer and more transparent market for all companies independent of a company’s size or location within the single market. By 2010 at least 50% of public procurement above the EU public procurement threshold will be carried out electronically. Over the period 2006-2010 Member States will focus their efforts on delivering those high impact services in Europe which will contribute most to the achievement of the Lisbon Agenda.”

It is expected that an interoperable eProcurement infrastructure ensures equal treatment and non-discrimination and that it facilitates fairer and more effective competition in the European market by enabling suppliers to compete in an open and transparent way. However, current eProcurement infrastructures are inappropriate to reach this ambitious aim since these are characterized by a high market fragmentation. A lack of interoperability – different, non-operable and incompatible technical solutions – hinders suppliers in accessing eProcurement systems and discourages their participation cause of additional difficulties or increased costs (Commission\_Staff\_Working\_Document 08.07.2005).

Across Europe, eProcurement systems have already been developed with a focus on the automation of different eProcurement procedures. Current systems reflect various country-specific public procurement needs and national laws, priorities, and practices. Systems are either centrally oriented or designed to reflect federated systems demands. In addition, varying terminologies are used within the European Member States. The lack of a unified eProcurement terminology is a major barrier which affects the possibility of a smooth collaboration between Member States and their eProcurement systems (Commission\_of\_the\_European\_Communitites 2004). Legal, technical and organisational barriers prevent the development of a common Procurement infrastructure and are one of the greatest challenges to be solved by politics, governments, ICT industry and research (European\_Dynamics\_S\_A 2004).

To facilitate EU-wide interoperability in public eProcurement, the European Commission co-funds the PEPPOL project in the ICT Policy Support Programme within the Competiveness and Innovation

framework Programme (CIP). PEPPOL<sup>1</sup> aims at setting up pan-European pilot solutions that jointly exist with national infrastructures.

Among the building blocks the PEPPOL consortium develops, the Virtual Company Dossier (VCD) focuses on an interoperable solution which contains the documents required from economic operators to evidence their qualification as well as qualitative selection or exclusion according to the directive 2004/18/EC.

## 1.1 Need for a Virtual Company Dossier

A VCD will facilitate electronic Tendering by providing cross-border data and document solution that contains the necessary attestations and certificates typically required in eTendering. Thus it can be seen as a container for documents. Yet up to now, the tendering documents such as attestations and certificates required in public procurement procedures differ between Member States. When a contracting authority publishes a contract notice, it shall include the selection, qualification and non-exclusion criteria. The economic operators have to submit evidence and proof in respect of these criteria. Hence, during the preparation of the tender an economic operator needs to collect the respective evidences (i.e. certificates and qualification documents) from a number of issuing bodies (e.g. public registries, banks, pre-qualification bodies, etc.) to prove conformance with the given selection and exclusion criteria.

The overall aims and expectations of a virtual company dossier solution as set out in the description of work can be described as follows:

1. The VCD will support any authorised entities (economic operator, intermediary, contracting authority or IT service such as an eTendering system) in creating an electronic information package consisting of the required documentation, evidences, proof, attestations, certificates, declarations and metadata.
2. In order to create the VCD, an implemented IT system will have to collect certificates and attestations from existing registries. It also enables the economic operator to add self-declarations or other documents of formal qualification.
3. Furthermore, the VCD solution supports economic operators in producing a VCD and in enabling them to submit the required documentation (assembled as an information package) to any contracting authority in Europe.
4. In the same way the VCD as an implemented IT system will enable contracting authorities or their eTendering systems to interpret and accept the documentation submitted by the economic operator.
5. Therefore the contracting authority must either specify the documentation that has to be submitted by economic operator or the criteria of qualitative selection and exclusion that have to be fulfilled by the economic operator.
6. For all parties (economic operator, intermediary, contracting authority, issuing bodies) it will be of high importance that the VCD Service Providers are trustworthy; this implies that the services are precise, up-to-date, available and reliable.

A major challenge of PEPPOLs' work package 2 is to integrate various stakeholders in the development process and to set up an IT system which supports a common set of evidences based on electronic business certificates and qualification documents that are most frequently required. The criteria must be consistent with directive 2004/18/EC (EC 30.04.2004):

- **Article 45 - Personal situation of the candidate or tenderer:** e.g. absence of conviction, bankruptcy, fulfilment of payments of social security contributions or taxes, etc.
- **Article 46 - suitability to pursue a professional activity:** e.g. certificate of registration from the commercial register

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<sup>1</sup> [www.peppol.eu](http://www.peppol.eu)

- **Article 47 - economic and financial standing:** e.g. balance sheets
- **Article 48 - technical and/or professional ability of economic operators,** e.g. certificates of satisfactory execution of past works
- **Article 49 - quality assurance standards,** e.g. ISO certificates
- **Article 50 - environmental management standards**
- **(Article 51 - Additional documentation and information)**

Criteria are listed in the Directive and can be established by the contracting authority within the contract notice. A key aspect in the VCD development is to support a common set of criteria for qualitative selection and exclusion derived from the directive and their fulfilment through evidences. Work package 2 will not implement a common set of attestations. Thereby it must be taken into account that some countries do not issue such documents or certificates (e.g. in Norway extracts from the judicial record may be produced in respect of economic operators, but not in respect of private persons, for the purpose of a tender procedure) and this hinders economic operators to evidence certain criteria. In such cases, economic operators can only provide similar evidences that fulfil the same criteria. Where the country in question does not issue such documents or certificates, or where these do not cover all the cases they may be replaced by a declaration on oath, a solemn declaration, a notary or a competent professional or trade body, in the country of origin or in the country whence that person comes. So the link between individual evidences and the respective criteria they may approve for (as listed above) must be precisely indicated and mapped in order to support economic operators in their activity.

Besides the mapping of criteria and evidences in a respective country, directive 2004/18/EC indicates also the need for accessibility of "Official lists of approved economic operators and certification by bodies established under public or private law" (cf. Article 52). Article 52 indicates a potential solution which may be addressed in the VCD development too.

## 1.2 Status quo of evidencing selection and exclusion criteria in generic tendering procedure

The status quo concerning the tendering process, observed in the European countries of this work package, is depicted in a generic status-quo procedure as shown in Figure 1.

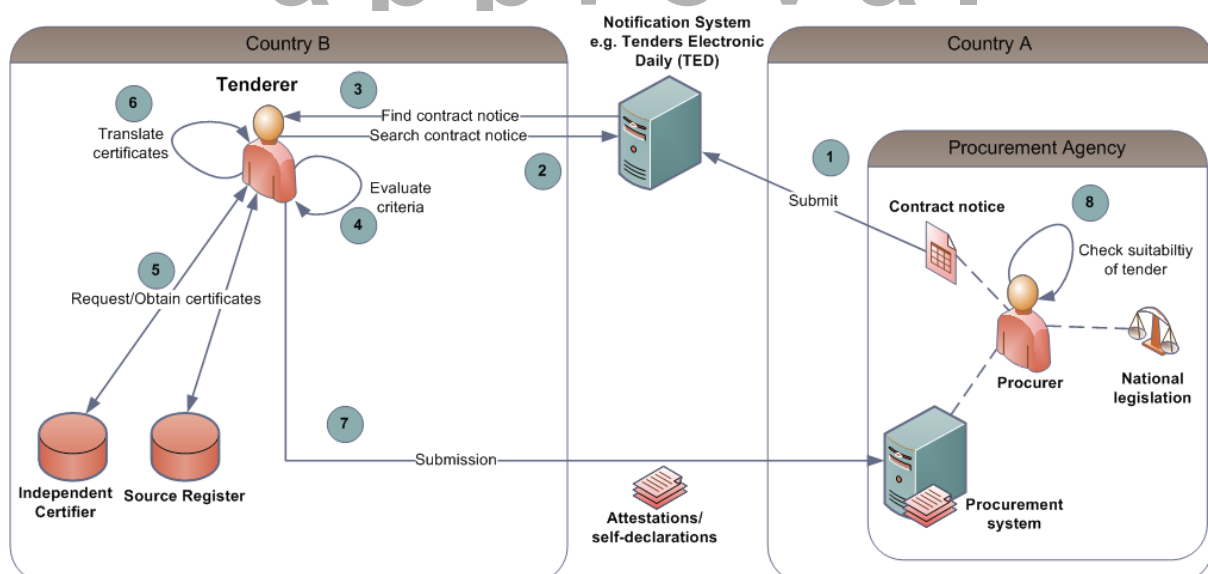


Figure 1: Generic status quo picture of public tendering procedures

The procedure can be described as follows: A **Contracting Authority** prepares a call for tender based on a set of documents, usually consisting of a) the publication of a contract notice b) the tender contract documentation c) the (technical) specifications, d) additional documents. The contract notice

is produced and transmitted to the official gazette such as the Tenders Electronic Daily (TED) when due. It should be noted that for public tenders above a certain threshold, the publication in the Official Journal of the European Union (TED) is mandatory. Public tenders below that threshold can use other channels for the contract notice (depending on national legislation; e.g. contract notices may be mandatory in national official gazettes). Also tendering platforms can be used by the contracting authority (1). The steps of publishing the contract notice are part of “eNotification”<sup>2</sup>.

An **Economic Operator** can use means such as the TED system, existing tendering platforms or official national gazettes to search for contract notices (2) and to retrieve the relevant information about active tenders (3). The online TED system provides broad advertising and presence of “contract notices” within the TED database. TED publications of contract notices usually contain the tender and contract documentation including detailed criteria, specifications and conditions. Almost all the TED’s contract notices have a summary of the requirements in other languages set by the Contracting Authority. The mandatory publication of contract notices in TED is a means to ensure transparency for public procurement throughout Europe and to enable a well functioning inner market. For contract notices below threshold, TED can also complement existing national sources through widespread information across borders. Sometimes, the information on a contract notice provided in TED is not complete. Hence, the Economic Operator must directly get the authentic contract notice and exact conditions from the Contracting Authority in order to avoid a failure on interpreting the requirements for participation.

If an Economic Operator decides to participate in a public tender across border, the appropriate selection and exclusion criteria have to be evaluated. This means that the Economic Operator has to match these criteria set out in the contract notice of another country with the evidences (attestations, statements and certificates) of his or her own country in order to prove compliance (4). The attestations can be retrieved from the appropriate issuing bodies such as certifiers, source registers, banks, public authorities, etc. in the country where the Economic Operator is established (5).

The step of retrieving proofs of suitability and non-exclusion and collecting documents for the receiving entities becomes a necessary task and may take place at different times. In some European Member State countries the “self-declaration” (a statement issued by the Economic Operator) is adopted to claim an initial suitability for applying and attending a tender. In this case, Economic Operators may retrieve their proofs of suitability only at a later stage if necessary at all.

In most cases an official translation of the documents submitted by the Economic Operator is required (6). Some European countries are also imposing the submission of legally attested documents. In this case, accredited official translators, lawyers or notaries have to issue such legally attested translations of evidences.

The following flows of documents have to be considered specifically:

- documents that cannot be generated in the target language by the originating authority;
- documents produced by the Economic Operator such as self declarations;
- documents that must be accessed by the contracting authority from the official source.

Finally, the translated documents are submitted to the contracting authority (7) which checks their compliance with the appropriate (legal) requirements (8). Steps (7) and (8) are performed through separated incremental cycles according to the established practice in the country of execution. In some countries, the initial submission covers only the application with its set of declarations (two-phased tendering). At a later stage and under an explicit request there is the real submission of the requested documents.

To give a flavour of diverging procedures in regards to document handling (6) in WP 2 partner countries:

European Member States such as France and Germany accept legally binding self-declarations.

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<sup>2</sup> See: <https://www.cen.eu/CENORM/BusinessDomains/sectors/isss/activity/2officeintnotification.pdf>

- Commission regulation: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2005:257:0001:0126:EN:PDF>

In Austria the current status is that each Economic Operator has to perform the full delivery of documents. In the case of a two-phased tendering (e.g. when negotiating with the Economic Operators), the submission of the documents is performed in the first phase. Each Economic Operator usually has to submit a full set of documents proving his suitability. Currently a new version of the Austrian Federal Procurement Act is elaborated which will probably change the necessity for the Economic Operator to just give a declaration on oath concerning the Economic Operator's suitability. The contracting authority will demand the full list of documents (depending on the procurement process) just from those Economic Operator which either are selected for the second phase or which are selected as the winner(s) in a one-phase process. Summing up the document handling of different countries, in most countries the management of documents that bear legal validity falls into the general arena of public documents handling - that means: outside the pure procurement context.

France follows a two step approach: the Economic Operator first sends his offer and the self-declarations (no bankruptcy, no conviction, compliance with employment obligations, etc.); the second sub-step concerns only the contractor and consists in sending social and fiscal attestations and, if necessary, the copy of the decision of the judicial procedure.

Italy adopts the "DirectAccess" to documents and information records managed by public administrations. This solution removes from the Economic Operator the duty and burden to get and submit these specific attestations.

Countries such as Norway may follow yet another approach by requesting a set of formal documents (i.e. those regulated by law) to be submitted by the Economic Operator at the time of the tender. Other documents, e.g. a bank guarantee if this is asked for, can be delivered later on in the procurement process.

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## 2 Vision and Scope of the VCD

### 2.1 Vision, Objectives and Maturity of the VCD

#### 2.1.1 Overall Vision of the VCD

A major point of discussion is a sustainable and reliable long-term vision for exchanging attestations among Member States. In the long-run the VCD should be able to adequately fulfil the contracting authorities' need to prove suitability and non-exclusion of economic operators according to certain criteria while reducing the burden of proof for the economic operator. This requires a paradigm shift towards electronic exchange of evidence and a next generation of attestations and certificates that are currently just barely available in electronic form. The creation of uniform infrastructure in this heterogeneous domain will take some time as several different environments and stakeholders need to be involved, and change may not be enforceable to all of them. In this respect the VCD should support current practices of exchanging evidence in the short run and lead towards smooth, reliable and sustainable exchange of electronic evidences among Member States in the long run.

In order to reach these goals we propose an approach with different stages of maturity that may be applied dependent on the readiness for the individual Member State. The aim is to support basic interoperability and exchange of documents on the lower maturity levels and leading towards direct electronic exchange of evidence in the higher maturity levels. Thereby each maturity level is built upon the lower ones thus allowing integration and step by step advancement.

In the following we will introduce the staged maturity model for the VCD as depicted in Figure 2.

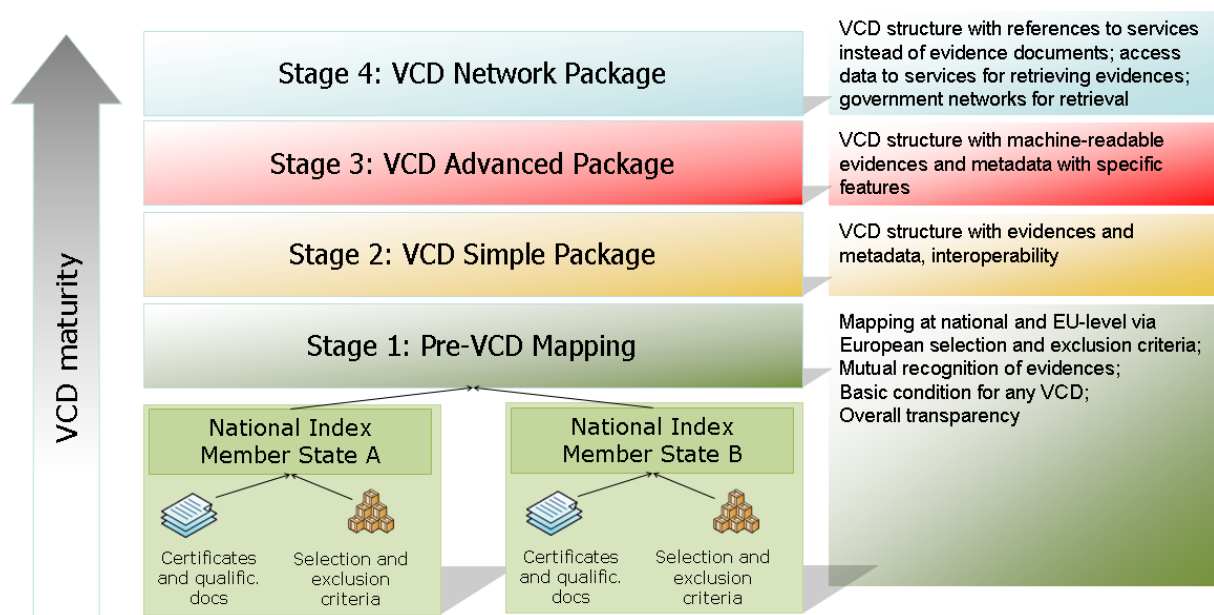


Figure 2: Vision of VCD (staged maturity model)

The stages express different levels of maturity with respect to interoperability. A staged implementation approach is necessary in order to handle the complexity of the domain and to take into account the needs of the Member States. Every Member State should develop a solution that meets the demands of basic interoperability. Basic interoperability can thereby be defined as a state where organisational transparency of cross-border tendering requirements is established (stage 1- pre-VCD mapping tool). The efforts and expenses to develop a solution that ensures basic interoperability ought to be manageable and affordable.

Member States, who would like to advance their solution towards a higher level of interoperability, can do so by adopting subsequent VCD maturity levels. The VCD specification must be generically and semantically extensible in order to reach a sustainable and fully-fledged solution in the final stage. An eTendering system and a contracting authority must be able to interpret a VCD package assembled by a VCD application regardless of the implementation stage of the VCD application and the eTendering system. Figure 2 illustrates the staged maturity model of the VCD that has been designed to show the different stages of implementation and development.

In terms of construction and implementation, the VCD may be seen as a solution focusing on the European interoperability on the basis of European/national requirements and legislation. It is therefore necessary to ensure national transparency by gathering national requirements on certificates and qualification documents. The first implementation level (stage 1) is dependent upon these national requirements and will define a basic semantic interoperability model that supports the mutual recognition of certificates and qualification documents (pre-VCD mapping tool).

The next step then is to define the structure of a VCD by adding several types of (meta)data into it (e.g. evidences, structural data of the evidences, translations etc.) and to build an application that is able to compile VCDs and enabling economic operators to submit this information electronically to contracting authorities (Stage 2).

Stage 3 includes one of the most critical parts of a VCD which consist of making the evidences contained in a VCD comparable with regard to their contents to enable automated processing and understanding of its contents across borders (stage 3 – VCD advanced package). Beside this, stage 3 will focus on additional services such as maintaining a VCD or composing a VCD from different economic operators in case of bidding consortia.

Stage 4 (VCD networked package) will then provide a sophisticated method for changing the overall process from push to pull. A contracting authority will receive a VCD on the basis of stage 2 and 3 (push) but the documents itself will not be submitted anymore. Instead a contracting authority can request those documents on demand from a database (pull) at national service provider who hosts VCD services, or directly from the very registration authority. The VCD networked package will provide the basis for further developments towards an electronic exchange of evidence.

The stages follow a generic approach and may be seen as the evolution or development according to an underlying maturity model. The model as presented in Figure 2 is further described in the following subsection with the purpose to detail the various stages.

For a future maturity path of a VCD Service one has to take into consideration the most important points of the vision and the goals of a VCD, which are:

- Compiling a VCD Package is a service **supporting** Economic Operators and/or Contracting Authorities in procurement procedures
- Future vision means a **paradigm shift** from handling of documents **to the handling of information and the electronic exchange of information** in order to establish interoperability on the basis of mutual recognition
- The real benefit could be gained when the **VCD Package** (which may be seen as a container for documents – structured or unstructured – and additional information) is **complete** and accurate.

## 2.1.2 Objectives of the staged maturity level

The following preconditions and assumptions that define the context of VCD Services and VCD Packages should be taken into consideration:

- Criteria for qualification and selection are in accordance with the Directives 2004/18/EC<sup>3,4</sup> (public procurement) and 2004/17/EC<sup>5</sup> (utilities), and are used to map among national requirements.

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<sup>3</sup> Directive 2004/18/EC of the European Parliament and of the Council on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts



- Attestations give evidence for the fulfilment of one criterion or more criteria.
- One criterion may require one or more attestations in order to be proved
- Documents may be machine readable (digital copies, unstructured contents) or machine interpretable (structured content, thus can be processed by machines)
- An attestation is made up of one (or more) document(s) including machine interpretable data that describes these attestation (e.g. issuing date)
- VCD can provide direct access to attestation if there is a mandatory rule for it in law.
- VCD systems provide single point of contact to attestations from public sources and information necessary to prove conformance to a given call for tender.
- A VCD Package may be linked to exactly one call for tender thus it is tender specific
- A VCD Package may contain self-declarations and several other documents provided by the economic operator.
- The contracting authority analyses the evidences provided by the economic operator

### 2.1.3 Level of Support and Level of Completeness (maturity model)

In accordance to the above mentioned major visions and requirements two important dimensions are to be considered in order to assess the benefits of a VCD Service and a VCD Package (cf. Figure 3):

1. The Level of support
2. The Level of completeness

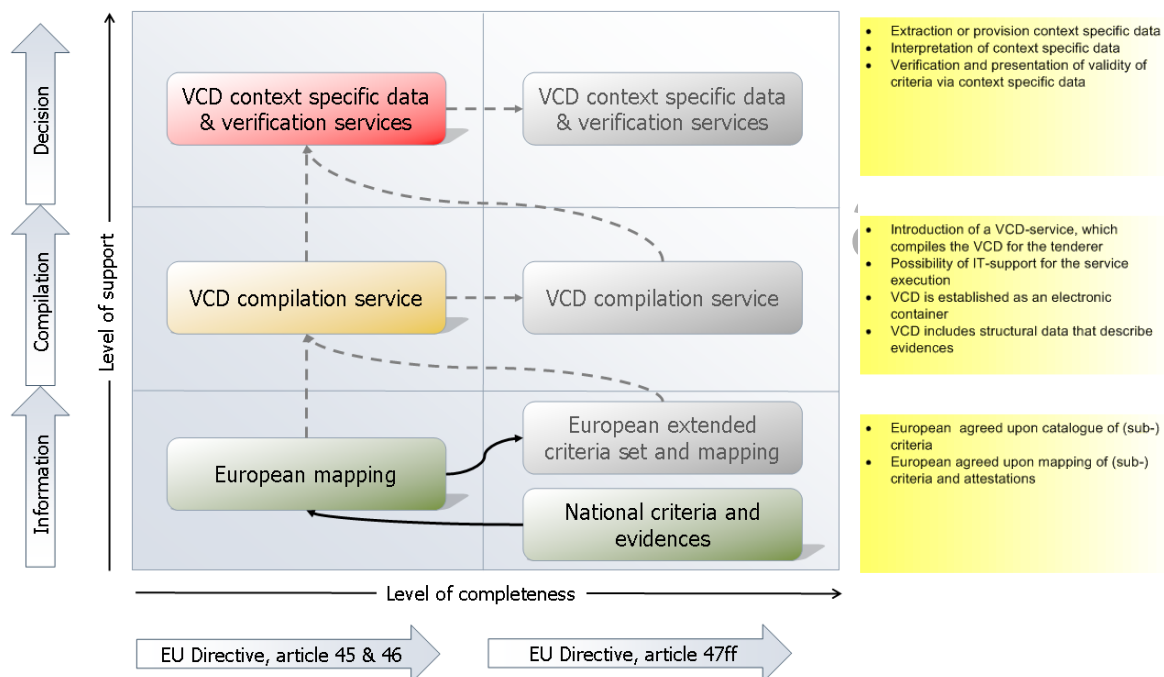


Figure 3: VCD maturity landscape

<sup>4</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:134:0114:0240:EN:PDF>

<sup>5</sup> Directive 2004/17/EC of the European Parliament and of the Council of 31 March 2004 coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors

Presenting these two dimensions in a matrix-chart may give an understanding of possible, pragmatic and practical development paths. The level that will be reached by a Member State and the path to go will depend upon the goals and decisions of each single Member State.

### 2.1.3.1 Level of Support given to economic operators and contracting authorities

The different levels of support address both the maturity of the service and the maturity of the VCD package, where the latter corresponds to the semantic richness of the provided information. On the Peppol/WP2 strategy there is explicit interest to have parallel increments on both sides, assuming that the semantic enrichment of the VCD package requires a corresponding enriched supporting system. This means, the higher the level of support, the higher the interoperability between the Member States (enabled by richer semantics of the information provided in the VCD Package).

**Information Support:** Provides information about criteria and attestations including

- Which attestations, certificates or statements provide evidence for which criteria (making up the mapping), including the possibility of using self-declarations;
- How (i.e. the service) and from whom (e.g. issuing authority) the evidences are provided. Services can be human beings, organisations as well as IT-services.

On this level of support the VCD rule set is defined as a reference model which is manually or semi-automatically consulted by the economic operator and/or the contracting authority. There are no VCD Services established which compile, validate or deliver VCD-Packages.

**Compilation Support:** Helps the responsible player (in most cases the economic operator) to compile a VCD Package according to the defined definitions/regulations/rule set/model by means of a specialized VCD Service (not necessarily implying an IT-System):

- The evidences included in the VCD Package are digitally represented, yet the contents are not necessarily machine-processable;
- The individual evidences are enriched with additional descriptions/metadata (adding structural data of evidence);
- The VCD Package as a whole contains additional metadata, describing the VCD package itself (VCD package data, e.g. compilation date).

On this level of support, the VCD Service can deduce from the provided structural metadata, whether the VCD Package is complete or not and if its evidences are valid or outdated.

**Decision Support:** Decision Support enhances the compilation support by processing content- and context-specific data:

- Evidences are provided in a structured and machine interpretable form, at least those that can be easily transformed in such representation;
- The contracting authority may control whether or not the evidences prove the required criteria (as opposed to the level of compilation support, where one only could check if the VCD is complete and the attestations are valid).

On this level of support, ALL necessary information (structural data of evidence and context specific data) of the included evidences are provided and the contracting authority is able to make a decision about the suitability of the economic operator.

### 2.1.3.2 Level of Completeness

A VCD Package will show its full potential when all the requested evidences (all that are necessary to prove all requested criteria) are contained in it. The range of evidences varies from self-declarations to official attestations or certificates issued by public authorities (see Figure 7 for a categorization). From a pragmatic point of view, it seems reasonable to focus on a subset of evidences in a first step and to complete the VCD Package later on. It is also reasonable to define a default package list that has to be provided in most public tenders by economic operators independently of particular criteria mentioned by the "Call for Tender". This would reduce the burden of reading or interpreting the Call for

Tender but would increase the need for interpreting other requirements and would not ensure a high level of completeness of a VCD. From these considerations we can derive the following approach:

1. Create a VCD package;
2. Focus on the evidences of criteria according to Articles 45 - 46 in the Directive 2004/18/EC<sup>6</sup> first;
3. Create a tender-specific VCD Package through interconnection of VCD and call for tender;
4. Develop possibilities to map and add other documents (self declarations or statements from banks etc.) needed to proof criteria according to Articles 47 - 50 in the Directive 2004/18/EC later on in order to create a complete VCD-Package.

#### 2.1.4 Criteria for qualification and selection and non-exclusion

The criteria for qualitative selection and non-exclusion as defined in the Directive 2004/18/EC are the common ground for building a cross border VCD service. The figure below shows the relevant criteria as defined in Articles 45-50 as these are regarded the most common ground when mapping any national criteria to the European ones.

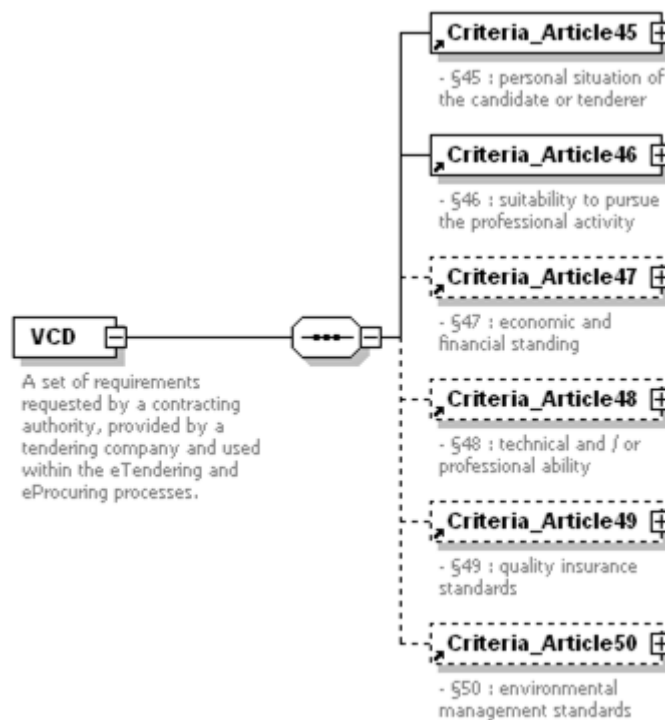


Figure 4: Criteria evaluation by the contraction authority structured according to MOREQ II (ISO 15489)

Mapping evidences to the criteria stated in Articles 45 and 46 may be regarded as sufficient for a first step since these can be further described within sub criteria and related atomic criteria . The personal situation of a candidate (Article 45) can be for example further described by:

- Sub criteria: Personal situation with regard to absence of conviction (sec. 45 §1 and §2 (c, d, g))
  - Atomic criteria: has been convicted by final judgment of the participation in a criminal organisation

<sup>6</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:134:0114:0240:EN:PDF>

- Atomic criteria: has been convicted by final judgment of corruption
- Atomic criteria: has been convicted by final judgment of fraud
- Atomic criteria: has been convicted by final judgment of money laundering
- Atomic criteria: has been convicted of an offence concerning his professional conduct by a judgement which has the force of res judicata
- ...
- Sub criteria: Personal situation with regard to non-bankruptcy and financial status (sec. 45 §2 (a-b))
- Sub criteria: Personal situation with regard compliance with fiscal and social obligations (sec. 45 § 2 (e-f))

A detailed mapping between those criteria mentioned in Articles 45 and 46 will enable a precise comparison between different tender specific requirements within the Member States enabling wide information support for both, economic operators and contracting authorities. The mapping of other criteria (Article 47 to 50) may only be done on a high level (criteria and sub criteria) since these requirements typically differ too much. So there will be basic information and compilation support provided in a first step.

Names, contents and qualities of VCD vary between countries, and in many cases economic operators are using the options of Article 51 to add additional up-to-date information from public registries.

### 2.1.5 Steps on the path of development

- National criteria and attestations: The first step delivers information on all the national attestations as well as on where and how to get them.
- European mapping, economic operator specific: The second step provides a mapping of national attestations which evidence criteria defined by Directive 2004/18/EC<sup>7</sup>, and with a particular focus on Articles 45 and 46. This is a first move towards cross-border interoperability.
- Extended European criteria set and mapping: The third step completes the information support by adding all the other criteria in Articles 47 to 50 of the Directive 2004/18/EC on a high level and where possible on sub criteria/atomic criteria level. At this step the economic operators are supported with all the necessary information for participating in cross border tenders.

The third step is a minimum requirement to meet for all Member States participating in the PEPPOL-VCD-project thus it can be defined as a common goal. It is a precondition to guarantee cross border interoperability. The reason to make this third step as a mandatory requirement to all is that the parties involved will now get a complete picture of all the necessary information (criteria, attestations and ways to get them) and the pilots can work in countries where the mapping has been defined even if there is no pilot existing. The mapping is necessary for a correct system specification and further development according to the overall maturity model enabling improvements with regard to level of support. A Member State may reduce the level of completeness with regard to compilation and decision support with regard to their Pilot, but information support should be provided to all criteria at least on a high level.

Beyond the third step, every MS may decide which path to follow and which level to achieve. The path of development provides an idea of how to structure the national VCD project. One may decide to settle for the second level of support, but focus on the most commonly used attestations (a minimum for this level of support). A MS may next decide to stay there (no move), or to complete his service (move to the right) or to keep the narrow focus and head for the highest level of support (move upwards) (cf. Figure 2).

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<sup>7</sup> Can be found at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2004:134:0114:0240:EN:PDF>

## 2.2 Pre-VCD mapping tool (Stage 1)

The pre-VCD mapping tool introduces a procedure to collect information about the evidences for specific Call for Tenders. Thereby the Status quo procedure of section 1.2 remains unchanged, except that a pre-VCD mapping exists which is implemented and provided through a European service provider<sup>8</sup> (see Figure 5). The mapping tool provides information to the economic operator on which national attestations of his or her country fulfill the criteria set by the procuring agency in the respective country (steps 4, 5). Likewise, the contracting authority can check evidences and authorizations provided by economic operators via the pre-VCD mapping tool (step 9).

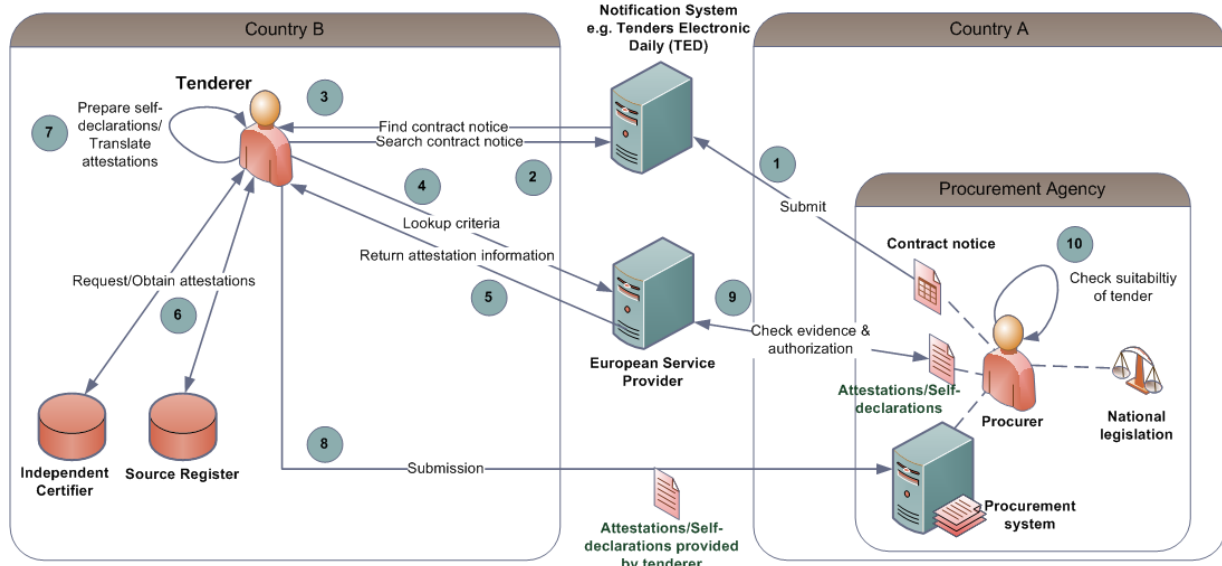


Figure 5: Stage 1 – pre-VCD mapping with pre-VCD mapping tool

To fulfill a first precondition for a VCD package as introduced in Stages 2 and beyond, the pre-VCD mapping tool is the proposed function and the process that allows for its execution. It consists of a tool and of a data structure representing different contexts. These contexts are linked to the national public procurement domains and a single European common domain. For every domain we suppose to get a representation of a national index which provides an overview of national criteria demanded in public procurement, and how these are evidenced (i.e. which attestations and/or statements provide what evidence). This index also indicates structural data of evidence for example the issuer of the individual attestations or statements and the service it may activate for public or reserved access. In this respect, the European selection and exclusion criteria, which are derived from the European Directive 2004/18/EC, can be considered the reference criteria, while the national criteria which are the basis for individual public tenders in respective countries are considered the local criteria. Figure 6 depicts the general taxonomy for the pre-VCD mapping concept, while Figure 7 shows a detailed taxonomy of the concept “evidence”. With this taxonomy, it is possible to map the fact that evidences can either be provided by the candidate himself (e.g. self-declaration, declaration on oath, solemn statement) or specific issuers as certified authorities and/or [authorized] third parties.

<sup>8</sup> At this point of deliverable development the term “European Service Provider” is used as a concept that may be implemented with the following options: a) a single European service Provider; b) multiple European service Providers; c) qualified Service Providers, regardless of where and what they are; d) no providers as independent entities, however with provision of the requested services by the procuring agency systems and organizations; e) other eventually emerging options.

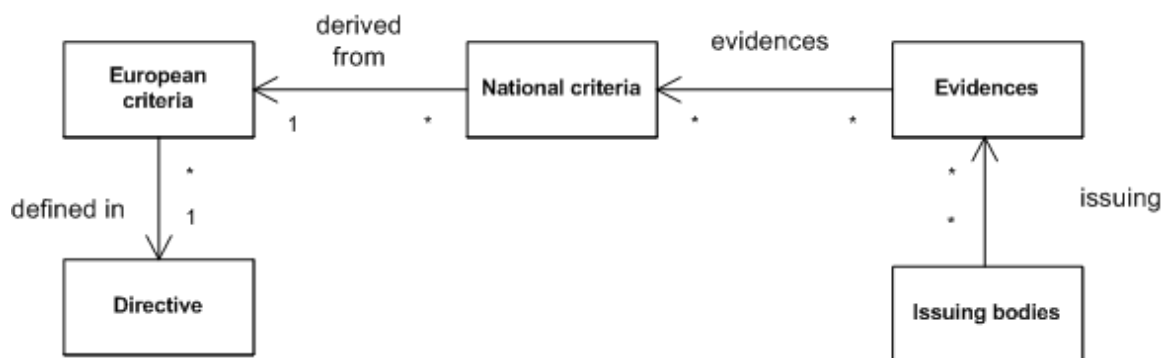


Figure 6: Stage 1 – general Taxonomy for pre-VCD mapping

Furthermore, evidences may be of different type such as statements, attestations or certificates, as indicated in Figure 7.

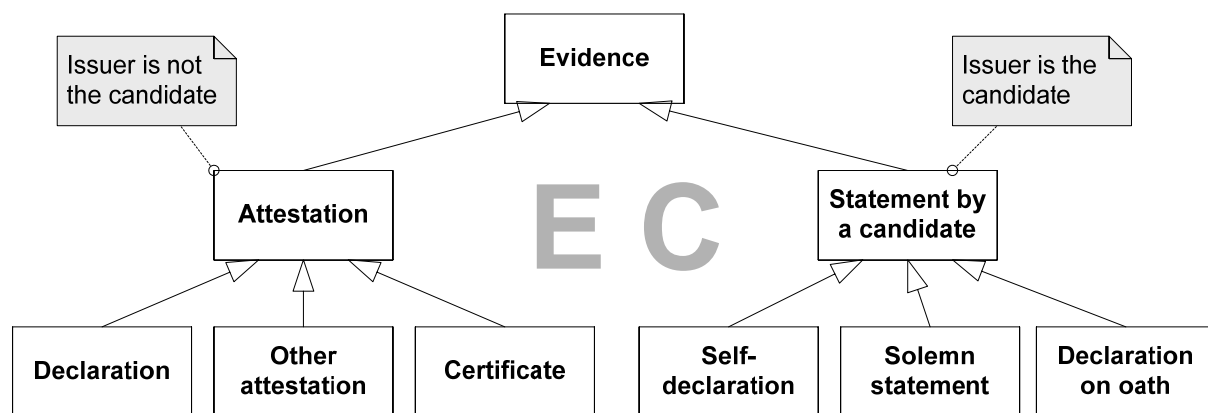


Figure 7: Detailed Taxonomy for a VCD

Overall, the pre-VCD mapping tool supports in the proof of compliance of evidences of one country to the requested selection and exclusion criteria of another country via a mapping to the European exclusion and selection criteria.

The respective retrieval of attestations and statements (6) and the subsequent steps (7-8) remain the ones as described in the status-quo description of section 1.2 above.

## 2.2.1 Vision statement

**Stage 1:** Stage 1 can be seen as a minimal construction level. It implies the design and rolling out of a tool for supporting the basic interoperability between different legal conditions for providing evidence in public procurement procedures. As stated in the introduction, it can be seen as a minimum requirement for all Member States participating in the PEPPOL VCD work package.

At this stage, a semantic model is introduced that supports guidance in applying the relevant community rules on mutual recognition of evidences (e.g. diplomas, certificates or other evidences of formal qualifications) in cross-border procurement procedures. The semantic model especially requires and provides for:

- a mapping between available national attestations and the selection and exclusion criteria set by the contracting authority through European criteria. These European criteria of selection and exclusion are directly derived from Articles 45-50 of directive 2004/18/EC;
- a provision of alternative means for evidencing criteria, when foreign economic operators are considered;
- a tool to facilitate identification of evidences needed across countries, and the respective up-to-date mappings.

The starting point for stage 1 is the mapping of common European criteria of qualitative selection and exclusion to the national criteria and the attestations giving evidence to these criteria. As European criteria are the same for all Member States, they act as the pivot element for the mapping. The semantic model therewith is able to clarify the relationship between national attestations of similar type and the kind of criteria those documents refer to.<sup>9</sup>

The pre-VCD mapping is implemented through a respective pre-VCD mapping tool, which supports a tendering interaction in the following ways:

- An economic operator participating in a tender of a foreign country can quite easily understand the requirements (what criteria have to be fulfilled) and decide which are the best national attestations (self declarations included) to prove the criteria requested by the contracting authority.
- The contracting authority can check through the same mapping mechanism whether the submitted attestations express fulfilment with the relevant criteria or requirements.
- The contracting authority can activate a direct access to attestations that are exposed through open services, including the international cross-linking.

Table 1 provides an overview of the outcome, approach, benefits and necessary efforts or limitations of the pre-VCD mapping.

Table 1: Major outcomes of Stage 1

Outcome	Approach	Benefit	Necessary efforts and Limitations
Superset or evidences: Basic semantic interoperability model of European criteria and evidences available in a Member State	Mapping between national attestations, national criteria of qualitative selection and exclusion and “European” criteria according to articles 45-50 of directive 2004/18/EC	Transparency on cross border tendering requirements  Support for mutual recognition of qualification documents for economic operator and contracting authority  Low implementation efforts	No support for collecting attestations  No translation support  No compilation support  Not yet a VCD package
Subset of evidences: Formal representation of relevant criteria and evidences of a particular call for tender	Relevant criteria and evidences should be specified either in the call for tender or should be directly retrievable from the contracting authority.  Definition of a strategy for common structures (2004/18/EC_Art. 45-46) and specific structures (2004/18/EC_Art. 47-50)	The economic operator doesn't have to type in the relevant criteria or evidences to retrieve the mapping because the contracting authority uses a formal specification in an electronic format to define the relevant selection or exclusion criteria. Hence, these data can further be processed electronically. This reduces nasty data entries and errors.	Specification and application of new procedure to provide the criteria in a formally specified format.  Expansion of call for tender notices with the formal representation of selection and exclusion criteria.
pre-VCD mapping tool	A facility activated and operated by a European service provider to provide a widely available mapping tool which	Transparency for economic operators and contracting authorities through semantic mapping  Indication of mutual	Such pre-VCD mapping tool needs to be implemented  Agreements and decisions to be found

<sup>9</sup> Activities to collect, implement and maintain an up-to-date pre-VCD mapping (i.e. mapping among European criteria and national evidences in the individual Member States) are planned to be closely coordinated with DG MARKT.

	contains the up-to-date mappings of European criteria and evidences at national context of member states	recognition of evidences across Member States First step – and precondition – towards more advanced VCD packages	among Member States on who hosts and implements the pre-VCD mapping tool as a service  Member States are requested to frequently maintain their data to keep the service up-to-date
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### 2.2.2 Use Case description

The use case diagram in Figure 8 shows the main actors and functions of stage 1 (pre-VCD mapping) in the context of a public tender.

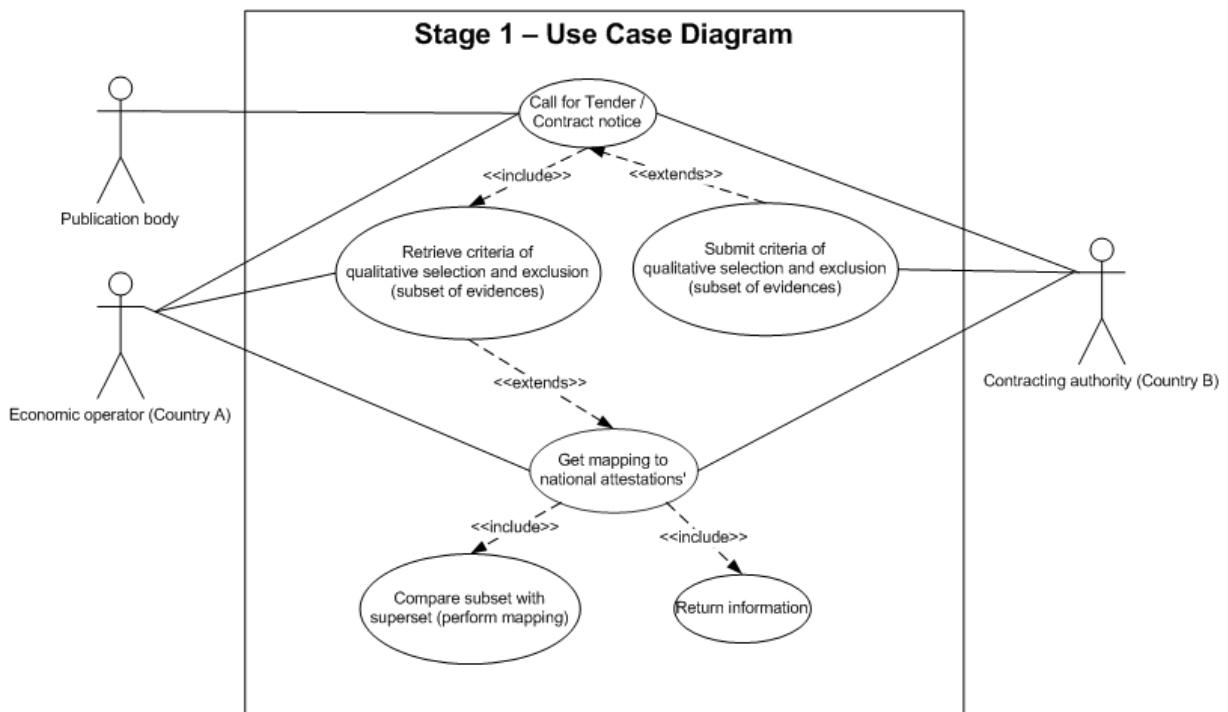


Figure 8: Main actors and functions in public tendering foreseen in stage 1 – pre-VCD mapping

A contracting authority sends a notification on a Call for Tender to a Publication body that publishes the call. The Call for Tender contains the definition of evidences and the specific criteria on qualitative selection and exclusion that are relevant to this particular call.

If an economic operator decides to participate in a particular Call for Tender he can directly retrieve relevant information about evidences and criteria by using the information published in the Call for Tender. In cases below threshold or in the cases where the public notice is partial, the economic operator might send a direct request to the contracting authority in order to retrieve the required information. Having the relevant criteria in place the economic operator will be enabled to get a mapping to the national attestations that refer to those criteria via the pre-VCD mapping tool. The same process can be performed by the contracting authority in order to check whether the submitted attestations adequately fulfil certain criteria asked for.

The pre-condition to the above flow of events is represented by the formal representation of imposed criteria, in particular for the qualification segments affecting, the technical, the financial and the quality criteria (as per directive 2004/18/EC\_Arts. 47-50). Such formal representation has to be addressed along with the setting of the tool.



Besides the use of the pre-VCD mapping in actual tendering and procurement procedures, a “system” needs to be maintained which implements the mapping of European and national laws, and the agreements of mutual recognition among Member States (see use-case diagram depicted in Figure 9).

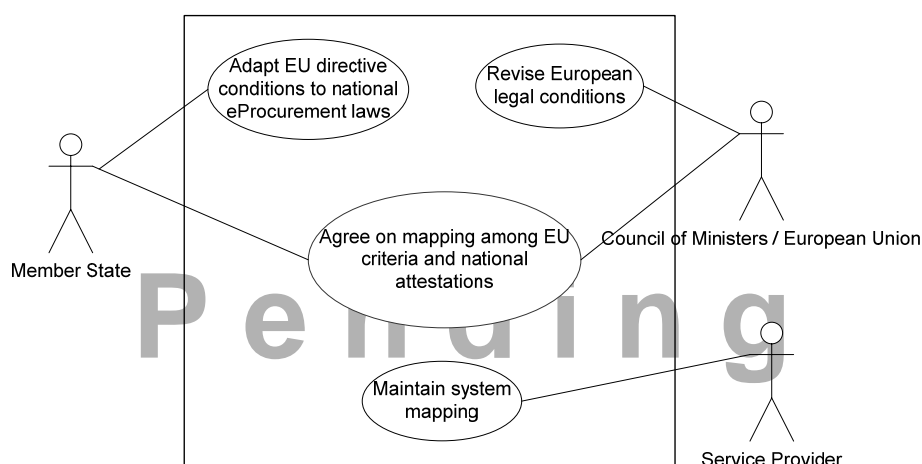


Figure 9: Main actors and functions to be implemented to provide the relevant information and conditions to run a pre-VCD mapping tool

## 2.2.3 Major Features, Requirements and Quality Attributes

### Major Feature: pre-VCD mapping tool

The first feature to be addressed in this stage is the mapping between the criteria of qualitative selection and exclusion derived from Articles 45-50 of the Directive 2004/18/EC and the national attestations giving evidence to these criteria. To handle the large set of ruling articles, which may especially vary in the national implementations (articles 47-50), arts 45 and 46 shall get a higher priority for a smooth implementation at first hand, while arts 47 to 50 will only be selectively implemented on the basis of specific and deeper analysis in the PEPPOL pilot contexts. Due to the diversity and variability of evidences according to Art 51, this criterion will receive least priority in the implementations (if at all taken into consideration).

This mapping includes at first hand an overview and transparency among national evidences and European criteria as shown in Figure 6 and Figure 7 above, including information about who issues specific evidence. Further on, this mapping needs to be implemented in the pre-VCD mapping tool as depicted in the use-case diagram in Figure 9, i.e. a list of criteria to be matched is submitted to the entity performing the mapping. Using the underlying technology, the mapping is done and its results, consisting of a list of the attestations giving evidence to the demanded criteria, can be transferred to a requester in case of a public tender.

### Requirements for the pre-VCD mapping tool

The following requirements can be derived for stage 1:

#### 2.2.3.1 Create standard representation of European criteria of qualitative selection and exclusion

A major precondition for the enforcement of stage 1 is the definition of a standard representation of European criteria for qualitative selection and exclusion. These criteria should be derived directly from the Articles 45-50 of the Directive 2004/18/EC in order to ensure employment in Pan-European public procurement procedures. The right granularity and consistency of criteria will be important to ensure legitimacy and to retrieve adequate mapping results. Thus the criteria may have to be iteratively re-defined according to the results given by specific mappings.

- A standard representation of common criteria of qualitative selection and exclusion MUST be defined according to Articles 45-50 of Directive 2004/18/EC.

- The right granularity and consistency of criteria **MUST** be found through testing and iterative re-definition in order to ensure legitimacy and to retrieve adequate mapping results.
- Input will come from the Articles 45-50 of Directive 2004/18/EC

### **2.2.3.2 Appearance of European criteria within Call for tenders (Notification)**

- Superset of evidences: The formal representation will become necessary as a reference data set for the mapping operations showing the relationship between all attestations.
- Subset of evidences: The input for the current function (mapping) comes from specific “Calls for Tenders” which therewith represent tender-specific requirements.

### **2.2.3.3 Correspondence between national criteria for qualitative selection and exclusion and European criteria of qualitative selection and exclusion**

National requirements of qualitative selection and exclusion for qualitative selection and exclusion have to adequately represent the national legal conditions. They have to be formulated in a way that they can be mapped to common European criteria for qualitative selection and exclusion mentioned by the Articles 45-50.

- National requirements for qualitative selection and exclusion **MUST** correspond to the EC criteria given in Article 45-50.
- National criteria for qualitative selection and exclusion **SHOULD** have the right granularity and should be consistent among themselves.
- Input for the current function is taken from the National Public Procurement Acts.

### **2.2.3.4 Define a mapping template, perform mapping and ensure legitimacy**

In a first step, all member states do have to establish a mapping of the criteria defined in the relevant EU directive 2004/18/EC to the national attestations giving evidence to these criteria. To ensure a degree of comparability and reliability among the results, the mapping should be based on a common template. For the overall activity it will be important to have the appropriate legal support in order to ensure legitimacy of mappings.

- A template that ensures comparable and reliable mappings between criteria for qualitative selection and exclusion and national attestations **MUST** be defined.
- The members of this work package **MUST** perform the mapping between national attestations and European criteria of qualitative selection and exclusion.
- The resulting template has to be computable by machines and readable by humans allowing the assembly of VCD packages through manual and/or automated operations.

### **2.2.3.5 Ensure legitimacy and trust of mapping**

In order to achieve trust and an agreement on the mutual recognition of qualification documents as demanded in the directive, all artefacts and mapping results that relate to the mapping of evidence have to be approved from a legal point of view. Compliances to national and European conditions must be ensured in particular for the definition of a standard representation of common criteria of qualitative selection and exclusion, the definition of a mapping template and the mapping between national attestations and the common criteria for qualitative selection and exclusion.

- Legitimacy of standard representation of common criteria of qualitative selection and exclusion **MUST** be ensured.
- Legitimacy of standard mapping template **MUST** be ensured.
- Legitimacy of mapping between national attestations and common criteria for qualitative selection and exclusion **MUST** be ensured.

**2.2.3.6 Ensure compatibility of the “mapping template” with existing check and verification procedures.**

- Contracting authorities approaching the tool have to assess the compatibility of the “mapping template” with their inspection procedures and code of practice.

**2.2.3.7 Put in place a formal adoption and approval procedure for compliance and mutual recognition**

- The mapping rules require formal approval and adoption by the National Bodies governing the public procurement activity;
- The European Commission as well as the National Bodies have to update the mapping model in case the legal grounds change or the mapping of European Criteria to national Evidences and issuing bodies change.
- Hence, adoption and approval procedures have to be defined and enacted in order to install the pre-VCD mapping and pre-VCD mapping tool as an official mapping model.
- Precondition: The adoption of the model requires a parallel effort from the legal side to compare whether the provisions of existing NPPAs can get a harmonization through the referencing to the EU directive. This is a major requirement to drive the action of contracting authorities that have strict obligations to follow while performing in a tendering procedure.

**2.2.3.8 Specify an infrastructure and facility that provides the mapping service**

The commonly approved national mappings have to be made accessible to the different stakeholders as especially economic operators, contracting authorities and national VCD service providers. For that purpose, a basic infrastructure or system architecture or a mapping facility has to be defined. The mapping facility, independent of how such as “system” is actually implemented, has to provide the services with regard to the pre-VCD mapping tool

- **Centralized or decentralized infrastructure?** Will there be one centralized system on a European level hosting and providing the mapping or a decentralized system consisting of interconnected national systems? In the latter case, one could define that each national system only hosts the national mapping or that each one hosts all the different national mappings which would make a synchronization of the different systems necessary.

A decision to deploy either a centralised or a decentralized infrastructure that provides the mapping service **MUST** be made.

- **By which technical means will the mapping be provided?** The technical means to provide the mapping service has to be defined in dependence on the choice of the pilot solution. The simplest form without any technical support could for example consist in the one-time distribution of mapping tables in paper-based form. Another solution could consist of a web-based access to a system providing the mapping by querying an underlying database which contains the mapping table. A more advanced solution would be an automated processing of the mapping according to the relevant criteria that therefore have to be specified by the contracting authority in a dedicated electronic format. Also the higher maturity levels defined in this vision (stage 2-4) can use the mapping service in order to retrieve the mapping information.

It **MUST** be defined by which technical means the mapping service will be provided.

- **Which entity will host the mapping facility?** In dependence of the choice of infrastructures (centralised – decentralized) and the organisation that governs the infrastructure and mapping facility it has to be defined who will be responsible to host the mapping facility.

An entity that hosts the mapping facility **MUST** be defined in dependence of the type of infrastructure and the dedicated governing model.

**2.2.3.9 Define governing model with the necessary status and power to ensure fulfilment of functions like liability, sustainability and maintainability**

A governing model has to be defined in order to deploy the infrastructure, to maintain its state and sustainability over time. In this respect the composition, structure and scope of the governing model has to be formally defined to ensure fulfilment of functions like liability, sustainability and maintainability. The dedicated governing model should have the necessary status and power to govern its assigned functions.

A governing model with the necessary status and power **MUST** be formally defined in order to ensure fulfilment of functions like liability, sustainability and maintainability.

- **Liability:** In law a legal liability is a situation in which a person or organisation is financially and legally responsible. The liability of the organisation that governs infrastructure and mapping facility has to be defined in order to ensure trust into the system and particular mapping results?
- The Liability of organisation that governs the infrastructure and mapping facility **MUST** be defined
- **Sustainability:** Sustainability is the capacity to maintain a certain process or state into the future. The governing model must ensure that the state of the mapping system will be kept over time. Therefore the mapping system has to be based on the commonly agreed mapping and no changes are allowed without a common agreement.
- The mapping facility **MUST** ensure sustainability of the system over time based on commonly agreed mapping schemes.
- **Maintainability:** The mapping has to be easily maintainable which could be of interest in the case of changes of the legal basis on national or European level. A formal procedure has to be found how changes are applied to the system. Moreover an organisation or institution that governs the process of change management has to be defined.
- A formal procedure to make changes to the system **MUST** be defined.

**2.2.3.10 Accessibility of mapping facility**

Stage 1 is the key concept for ensuring interoperability between the different national systems of evidence provision in public procurement procedures. Every higher stage will be depended on the mapping model defined in this stage. Thus this stage will ensure the integration of different stages and interoperability as such. Therefore each national service provider that provides a VCD (stage 2-4) and all relevant key other stakeholder such as economic operators, contracting authorities and certifiers must be able to retrieve the latest mapping information from the mapping facility.

The mapping facility **MUST** be accessible to all relevant key stakeholders such as economic operators, contracting authorities, certifiers and national service providers.

**2.2.3.11 Define the interaction among Publication Body and Contracting Authority**

In order to derive sufficient mapping information the economic operator has to provide the criteria that are relevant to a particular call for tender. The overall procedure would be simplified dramatically when the relevant criteria for a particular call for tender could be fetched either from a publication body or directly from the contracting authority. The interaction with either the publication body or the communication with the contracting authority therefore has to be further defined.

The interaction between mapping facility and Publication Body / Contracting Authority **SHOULD** be defined in order to simplify the procedure to retrieve the relevant criteria for a particular Call for Tender.

**2.2.3.12 Requirements regarding a Pre-VCD mapping tool**

Attention has to be paid to a number of requirements such as reliability, accessibility, usability, maintenance, authenticity, actuality, compliance of mapping to laws and national structures, etc. The pre-VCD mapping tool has to be accredited by the European Union and the Member States.

A number of functionalities of the mapping tool are:

- Provision of an update mechanism maintained by the individual Member State.
- The pre-VCD mapping tool is openly accessible for economic operators and contracting authorities etc.
- The tool interface is available in the official languages of the European Union.
- A powerful search mechanism is implemented to deliver good results when economic operators query the pre-VCD mapping tool in order to understand what evidences he can deliver to confer to the selection and exclusion criteria set in a public tender in another Member State.
- The results are delivered in a format simple to use for the economic operators; e.g. a check list of evidences he can collect from respective issuing bodies in his country, which fulfil the selection criteria and prove the non-conformance with exclusion criteria set by the contracting authority from a different Member State.

Besides such functionalities of the tool, some general requirements regarding the operation of the pre-VCD mapping tool have to be implemented:

- The Member States shall agree on a common representation format for the information they intend to supply into the knowledge base supporting the tool's operations.
- The Member States shall supply the information generated from the analysis of the national context they represent.
- The Member States need to update the mapping in case of any change within a short time frame (e.g. five days after a legal change has been put into force).
- The European service provider for the pre-VCD mapping tool has to ensure that European legal changes are implemented quickly (e.g. within five days after enforcement).
- The European service provider takes responsibility of the operative implementation and compliance of the mapping model implemented in the pre-VCD mapping tool with the respective European and national conditions. Hence, it must be established and funded with clearly defined responsibilities for maintenance and conformance assessment between national solutions.
- The European service provider sets up a formal definition of the tool generated results.
- The European service provider defines the criteria for a "service contract" to be formally agreed with "users".

## 2.2.4 Expected Benefits for stakeholders

The pre-VCD mapping is the prerequisite for the VCD packages described in the subsequent stages. It requires that the European criteria and national criteria have to be elaborated and agreed upon by the different Member States. The major advantage and benefits of stage 1 are as follows:

- The major benefit for **economic operators** lies in the fact that an automatic mapping of criteria to national evidences is provided through a pre-VCD mapping tool, thus omitting the need for a manual and error-prone selection of appropriate evidences for a particular Call for Tender. The mapping guarantees that the submitted attestations are mutually recognized if they correspond to the mapping information given by the system. The mutual recognition implies a formal commitment by contracting authorities that take part of the service chain, or alternatively by a legal enforcement operated by qualified entities. The formal commitment must in turn specify what is taken as pure guidance or qualified template.
- The **contracting authority** can as well use the mapping in order to check if the attestations handed in by an economic operator of another country are sufficiently evidencing those selection and exclusion criteria defined for the tender.
- Through the pre-VCD mapping model, it will also be possible to identify the major issuing bodies of particular evidence. Nevertheless this function will not be available for all kinds of attestation

since there may be too many issuing bodies that provide attestations of the same type (e.g. for criteria to prove the economic standing of a candidate or economic operator).

- Through the pre-VCD mapping tool, both the economic operator and the contracting authority save time and money because they need not to find out by themselves
  - how the attestations and statements existing in the economic operator's country can fulfill the criteria demanded by the procuring agency of another country.
  - how the attestations and statements provided by the economic operators of different countries fulfill the criteria demanded in the contracting authority's tender.
- Through the pre-VCD mapping and pre-VCD mapping tool, higher transparency and better information quality is provided for both of the actors, economic operator and economic operator).

Overall, the pre-VCD mapping tool supports in the proof of compliance of evidences of one country to the requested selection and exclusion criteria of another country via a mapping to the European exclusion and selection criteria.

## 2.2.5 Scope, Limitations, Assumptions and Dependencies

As mentioned in the vision statement, this stage focuses on the preconditions for a VCD package, and hence provides only limited functionality. A mapping system is introduced, allowing the mapping of criteria to national evidences, thus omitting cumbersome manual and potentially error-prone selection of attestations/evidences by the economic operator across borders.

The following statements describe the limitations of this stage, i.e. the functions that are not covered by this stage:

- The economic operator is not supported in retrieving and collecting the required attestations from the appropriate bodies;
- A translation of the documents is not provided. All documents to be transferred to a foreign contracting authority still have to be translated by a certified translator into the appropriate target language, if requested by the contracting authority.
- In this stage the economic operator is not supported in creating a VCD package that follows a common logic. The VCD package compilation has to be performed by the economic operator himself (it is offered in the next stage of the VCD four-stage-model).
- There is a quality issue to be addressed concerning the acquisition of data for the knowledge base, i.e. the data supporting the operations of the tool. Qualified input sources are temporarily defined and approved within a close group of stakeholders.

The following statements reflect assumptions made for stage 1 and dependencies with other stages:

- Every higher stage depends on the mapping model defined in the pre-VCD mapping stage. Thus this stage will ensure the integration of different stages and semantic interoperability in terms of mutual recognition.
- The contracting authority and economic operator can only retrieve information about the issuing bodies of particular evidences when a Member State has specified accredited public issuing bodies and recognized private issuing bodies within the national part of the pre-VCD mapping.
- Existing national procedures and infrastructures in requesting, issuing, exchanging, collecting, assembling, proving and submitting evidences are applied and remain unchanged.

## 2.3 VCD simple package (Stage 2)

### 2.3.1 Vision Statement

Stage 2 requires the establishment of a national VCD service provider which hosts the VCD system in order to provide economic operators with the services necessary to create an early VCD package. Thus, in stage 2, the concept of a VCD package is introduced. The national VCD service provider

operates the VCD system and takes the role of a trusted third party (TTP) whose services can be partially trusted by contracting authorities. The VCD package relies on a set of automated, semi-automated and manual issuing services which are collected by the VCD system. Thereby issuing services that are automated through a direct access to national issuing bodies are reliable to the contracting authority while manual and semi-automated issuing service that have to be provided by the economic operator are not under control of the national VCD service provider. The VCD system wants to ensure completeness of a VCD package by acting as a single-point of contact for the economic operator that supports him in creating a VCD package from various sources.

The VCD system in stage 2 will be capable to compile a VCD package from different types of data. Stage 2 defines the basic structure of a VCD package by including these types of data that give evidence for the suitability of an economic operator. Therewith the contracting authority will be enabled to check the validity of the evidences contained within the VCD and whether the requested evidence adequately represents the fulfilment of the demanded criteria. Thereby translation of evidences may be still necessary and has to be performed by the economic operator in dependence on national legal and organizational requirements because the VCD package does not provide any standardised context-specific data which provide common semantics. Checks concerning the content of the evidences are therewith not possible in this stage, as there is no context specific data available. Nevertheless a VCD simple package provides a set of other types of data that are introduced in the list below:

- Structural VCD package data: Data that describes the VCD-Package as a whole, e.g. VCD Unique Identifier, VCD issuing time, VCD service provider etc.
- Tender specific evidence: Data that describe tender specific aspects e.g. TED id of the tender, criteria fulfilled by the evidence contained etc.
- Economic operator evidence: Data describing the individual situation of the economic operator e.g. name of economic operator, commercial register number, VAT number, etc.
- Structural data of evidence: Data generically describing evidence on a level detached from the semantic of its content e.g. DocName, DocLanguage, DocIssue date, DocExpiration date etc.
- Evidences: Attestations and candidate statements in form of files included in the VCD package e.g. excerpts from the commercial register, criminal records, self-declarations etc.
- Translations: Translations of attestations included within the VCD e.g. official translation of the excerpt from the commercial register, translation of criminal record etc.

The types of data listed above have to be defined and agreed by the members of this work package in order to create a common structure of a VCD package. Furthermore the VCD package needs to provide the ability to be human readable thus a VCD viewing system is introduced in this stage too. In order to enable the economic operator to send the VCD simple package to any contracting authority stage 2 introduces the VCD transportation system which is strongly connected to the PEPPOL infrastructure proposed by WP8. The implementation of interfaces to tendering platforms, which typically should be capable to receive VCD packages, therefore should be encouraged. All activities above need to be adequately monitored through identity and access management since a lot of sensitive data is exchanged between the actors involved, thus stage 2 defines major requirements in this context.

Table 2: Summary of VCD simple package Vision

Outcome	Approach	Benefit	Necessary efforts/Limitations
VCD package	Define the structure of a VCD package	One package contains the data necessary to give evidence for the suitability of an Economic Operator  Check of existence and validity of the requested evidences in the VCD package is possible  The implementation of interfaces to tendering systems, which are capable	Additional effort for defining and agreeing upon a common VCD package structure  Translation of evidences may be still necessary, depending on national legal and organizational requirements  Checks concerning the content

		of receiving VCD packages is possible Electronic exchange of VCD packages within the contracting authorities is possible	of the evidences are not possible, as there is no context specific data available
VCD system	Establish systems which consist of VCD services, hosted by a VCD service provider	A system which acts as a single point of contact for economic operators in order to use VCD services VCD service providers act as trusted parties, which can be trusted by contracting authorities	A VCD system has to be constructed in each MS (A) VCD service provider(s) which host(s) the VCD system have/has to be established in each MS
VCD creating service	Establish a service that is capable of compiling VCD packages	A service compiles the VCD package for the economic operator The service supports the economic operator in checking the existence and validity of the requested evidences	The processes of receiving the evidences from issuing authorities have to be defined and implemented

### 2.3.2 Use Case description of VCD simple package (Stage 2)

The use case description of stage 2 contains several sub-diagrams that describe interactions that are needed firstly to authenticate to the systems and secondly to create, transport and view a VCD simple package. Figure 10 contains a general overview of the following systems and actors affected within the use case VCD simple package of stage 2 (VCD simple package):

- Identity & access management: Economic operator; Officer,
- VCD system: Economic operator, Issuing body
- VCD transportation system: Economic operator, Contracting authority
- VCD translations system: Translator
- VCD viewing system: Economic Operator, Contracting authority

It is important to emphasize that the systems described by the use case diagrams are systems that are logically different but not necessarily physically different. For example the VCD viewing system and the VCD system may be implemented as a single physical unit; they are logically different as shown in the use case diagram below. In contrast, if there are physically different systems a single-sign-on functionality should be used in order to increase the usability of the connected systems for the user. For example the logical systems identity & access management is strongly connected to the VCD system, to the VCD viewing system and the VCD transportation system and in particular refers to PEPPOL infrastructure proposed by WP8 and to already existing infrastructures within the Member States. In order to increase the overall usability for the actors, a single-sign-on should be implemented in order to connect authentication among different systems affected by identity and access management.



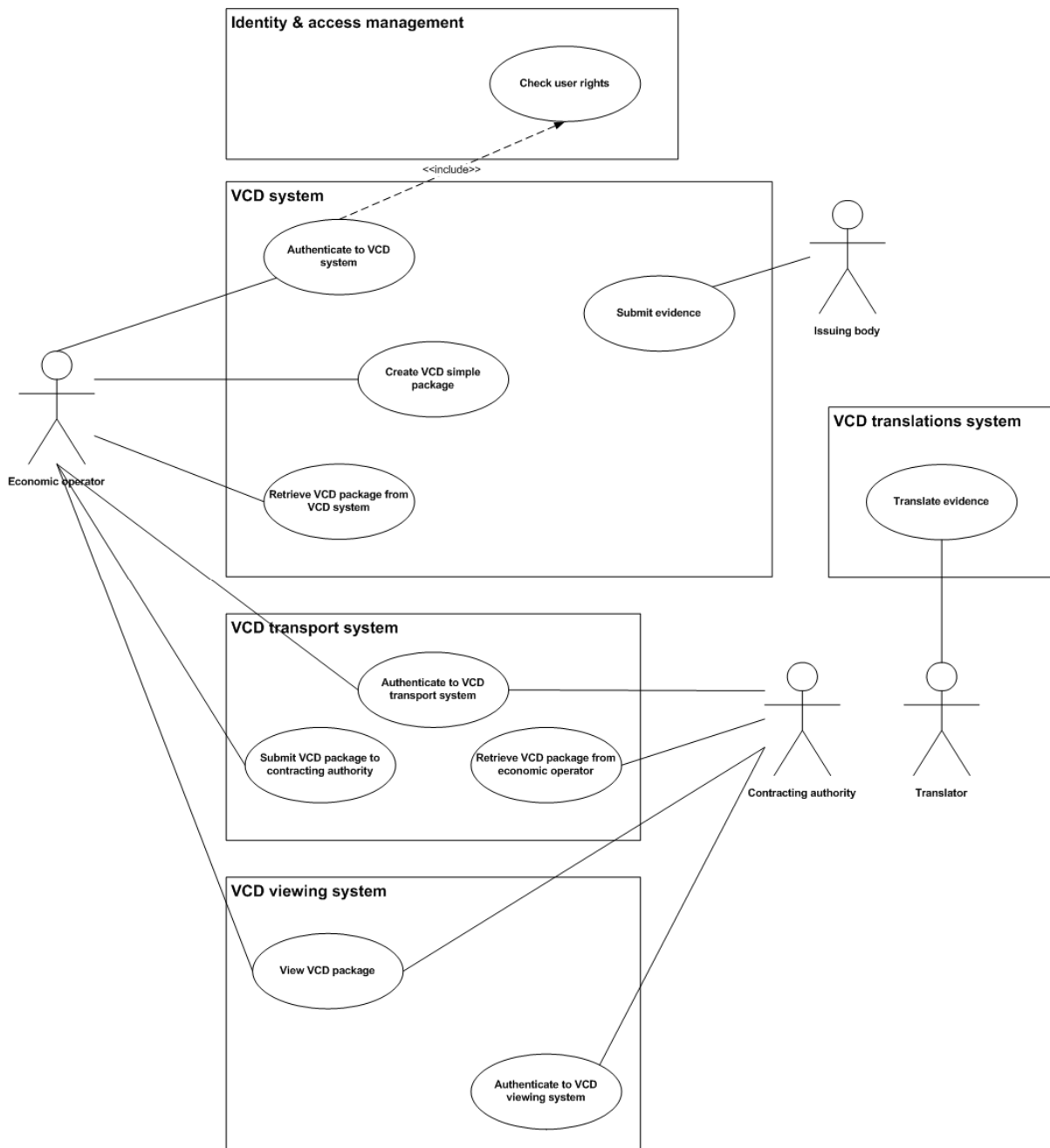


Figure 10: Use case diagram for stage 2 – VCD simple package

Members that do already have system in place (e.g. for identity & access management) should utilize these infrastructures in order to lower the implementation efforts and to increase the acceptance among stakeholders affected by these systems. Thus the systems below do not require to be implemented in a uniform manner and several implementation variations may be possible.

The use case VCD package is affected by four different systems. The overall pre-condition to access the VCD system is that the Economic Operator has previously been authenticated so that the VCD system can check appropriate user rights within identity and access management. Identity and access management is required to be done externally in a manual process that will verify the requestor's identity before providing user rights and access. The VCD system itself involves two major actors. Economic operators act as requestors by authenticating to the VCD system, creating/recompiling a VCD simple package and retrieving this package from the VCD system. In contrast issuing bodies provide evidences to the system. Most Member States require that evidences are provided in the target language, thus a translator may have to translate evidences within the external VCD translation

system. The VCD transportation system is used to submit the VCD to the contracting authorities. Contracting authorities can then authenticate and use the VCD viewing system to access and view the VCD package.

### 2.3.2.1 Identity and access management

The Identity and access management is an official procedure that handles roles for authorisation external to the VCD system and involves three actors, the economic operator, an officer and the VCD system itself as shown in Figure 11.

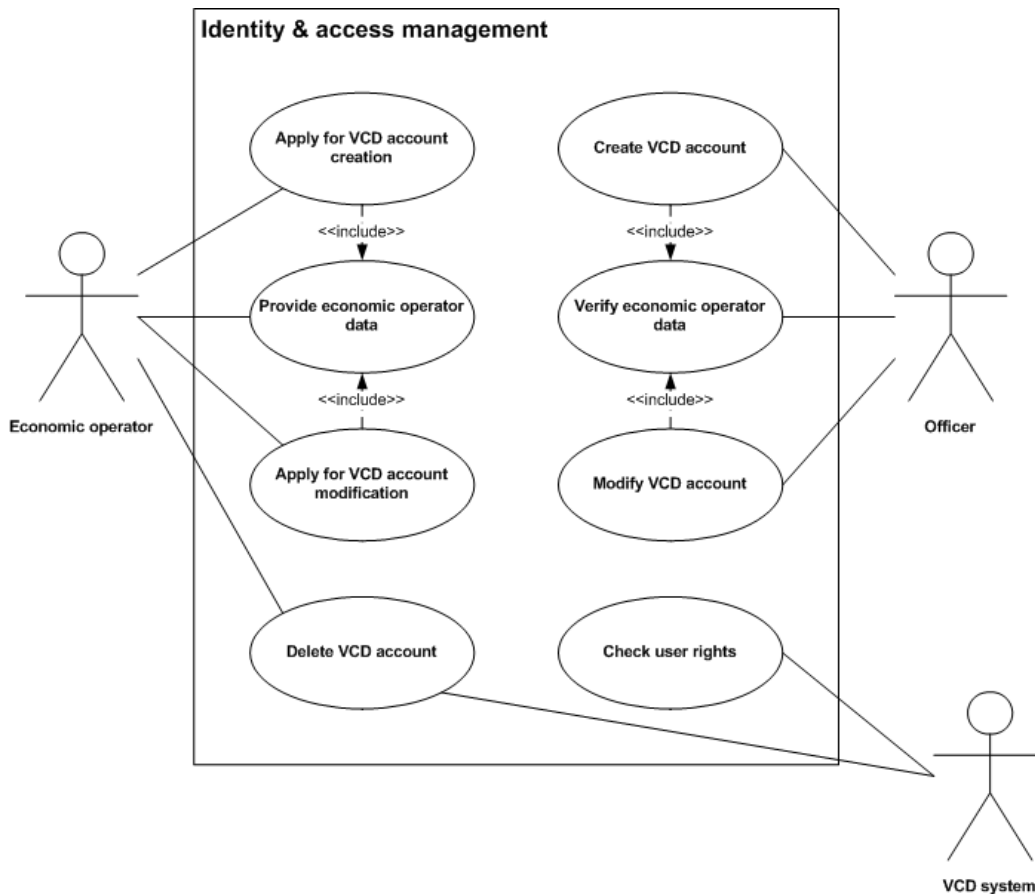


Figure 11: Identity and Access Management

Economic operators have to apply for a VCD account and therefore they have to provide sensitive economic operator data (for example by uploading attestations to verify these data). Sensitive economic operator data must initially be provided by an economic operator (e.g. company registration number, VAT number, social insurance number of the company etc.) in order to create an account and to start any VCD packaging service. An officer has to verify whether the provided data belongs to the economic operator and has to assure its correctness because either the VCD packaging service would not work or would deliver incomplete or wrong results. After verification the officer creates a VCD account where sufficient data about the economic operator is stored. In addition, identity and access management requires the possibility to delete an account within the VCD system and an official procedure to apply for a modification of the VCD account. An economic operator can authenticate to the VCD system only when the economic operator has sufficient user rights (e.g. authorized representative of economic operator) provided by identity and access management as shown in Figure 12.

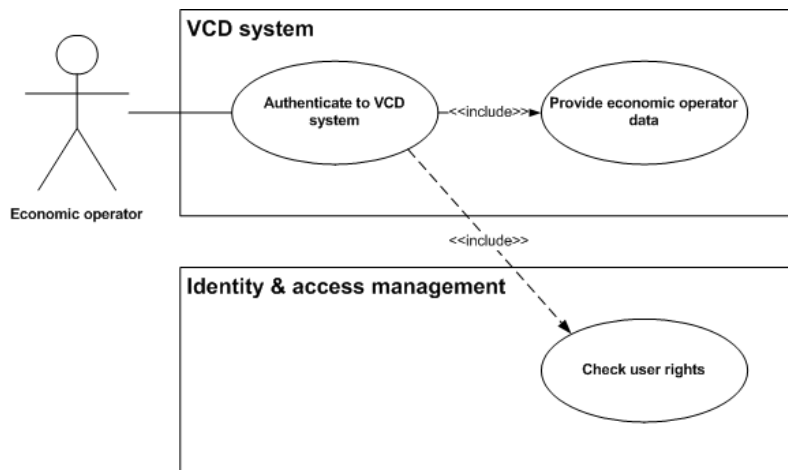


Figure 12: Interrelation between identity and access management and VCD system

### 2.3.2.2 VCD system

After authentication the economic operator can provide further tender specific data to the VCD system (e.g. TED ID) in order to start the creation of a VCD simple package. The VCD system creates a suggestion for compilation according to the results provided by the pre-VCD mapping tool and in turn the economic operator can edit and confirm the compilation suggestion that is given by the VCD system as shown in Figure 13.

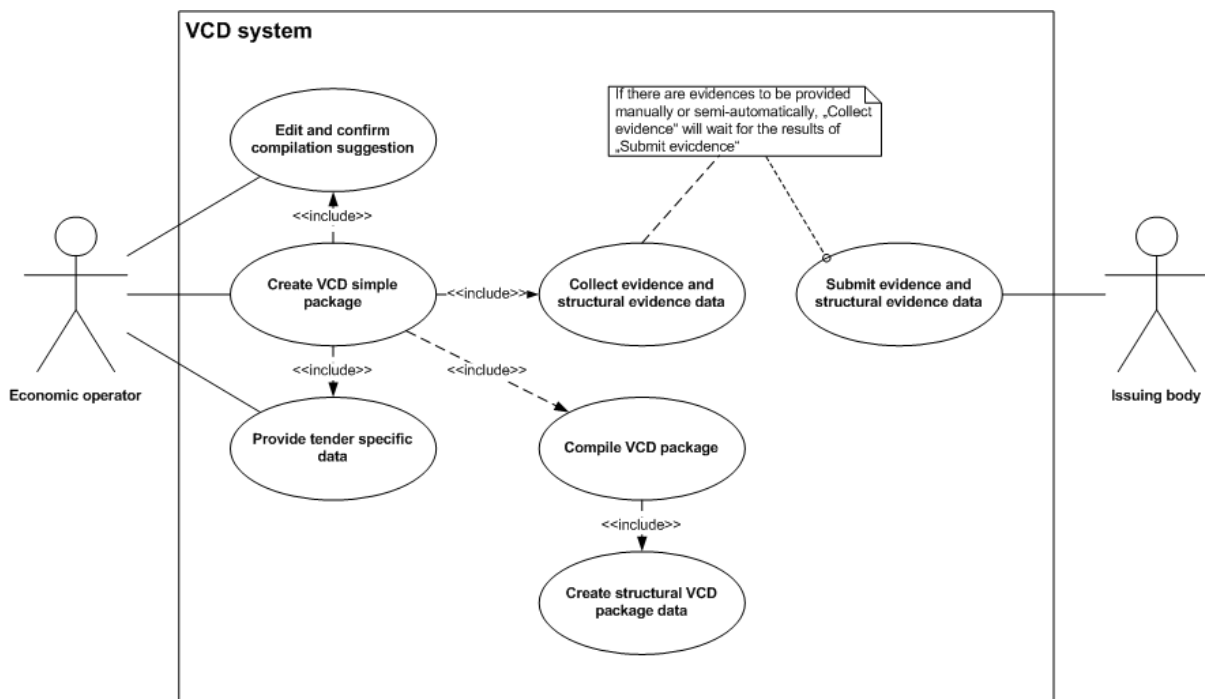


Figure 13: Creating a VCD simple package within the VCD system

The function of creating a VCD package includes the collection of evidence (including translations) and structural evidence data through several sources. Evidence and structural evidence data is provided by issuing bodies which can submit evidence and structural evidence data to the VCD system via an interface. An important remark therefore is that economic operators can take the role of an issuing body by submitting for example candidate statements, manually collected evidence or translations of evidence. The interface to submit evidence is defined through a service definition that allows adding specific structural evidence data that belongs to that evidence. The collection of evidence is finalized when all required evidences are submitted and this requires waiting for those

evidences that have to be provided manually or semi-automatically. The VCD system can now compile the VCD package and creates a set of structural VCD package data that belong to the compilation process.

### 2.3.2.3 VCD transportation system

The economic operator can submit the VCD simple package to the contracting authority by using the VCD transportation system which is part of the PEPPOL infrastructure. For using the VCD transportation system of WP8, both economic operators and contracting authorities have to authenticate to have access. An important remark hereby is the usage of procurement platforms where bids are typically uploaded according to a given Call for Tender. The transportation system of WP8 used by the VCD should be able to provide a possibility to send the VCD package directly to the contracting authority either by utilizing the upload functionality of a procurement platform or by directly sending the VCD to the contracting authority by using other means provided by the transportation system or typically used by the contracting authority. It is also important to state that the transportation system does not necessarily have to be used by the economic operator. The economic operator receives a VCD package by the VCD system and it is up to his choice how to submit the VCD package to the contracting authority.

### 2.3.2.4 VCD viewing system

After retrieving the VCD package from economic operators, contracting authorities may have to authenticate to the VCD viewing system in order to view the VCD package. In contrast economic operators do not have to authenticate to the VCD viewing system because they are taking the role of an owner of the VCD package.

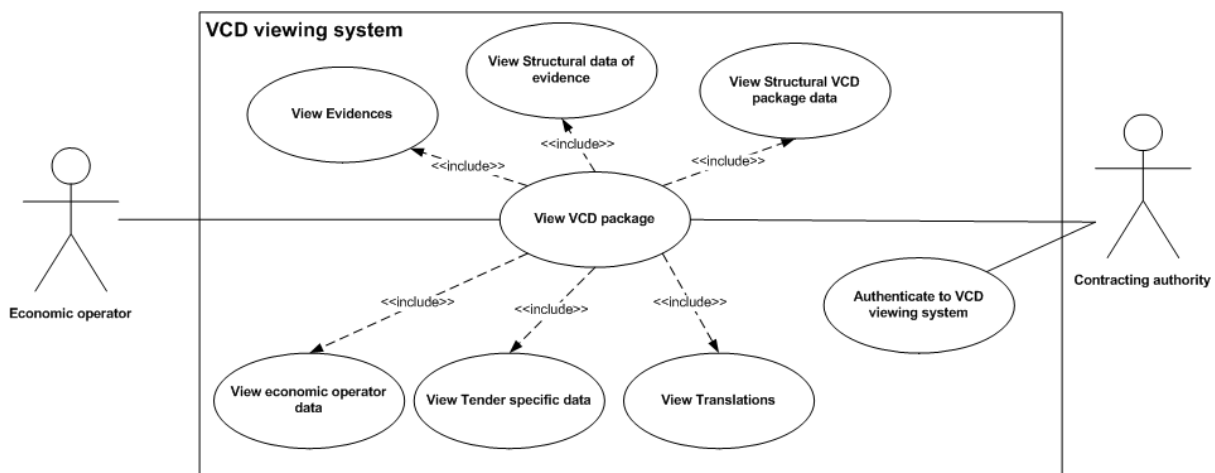


Figure 14: VCD viewing system

The VCD viewing system has to fulfil certain sub-functionalities for displaying the different kinds of data that are contained within a VCD package. In stage 2 the viewing system should provide the possibility to view the following types of data (see Figure 14):

- Structural VCD package data (e.g. the creation date of the VCD),
- Tender specific evidence (e.g. the TED ID to which the VCD package is related to),
- Economic operator data (e.g. name of an Economic Operator),
- Structural data of evidence (e.g. document name)
- The evidences (e.g. criminal record)
- A translation of the evidences (e.g. certified translation of a criminal record)

At this stage, the semantic model is enhanced through structural VCD package data, economic operator data, tender specific data and structural data of evidence.

The structural VCD package data describes the package (e.g. VCD issuer, VCD issuing time, schema version etc.) and is provided by the VCD service provider. Economic operator data is data that can initially be provided by an economic operator (e.g. company registration number, VAT number, social insurance number of the company etc.) to start the VCD packaging service. We suggest that the provision of economic operator data for economic operators that represent a consortium will be covered in stage 3. Economic operator data is the information needed to start the process and the economic operator thereby has to assure the correctness of its data because either the packaging service would not work or would deliver incomplete results. There needs to be a specific registration procedure where an economic operator provides economic operator data to the VCD service provider in order to create an account. The VCD service provider then creates an account for the economic operator where sufficient economic operator data is stored in order to retrieve attestations. An official procedure has to be defined to change this economic operator data to ensure updated economic operator data.

In contrast tender specific data provides data that is connected to a specific Call for Tender (e.g. TED id of the tender, Subset of criteria etc.) comes either from another system (e.g. TED) or has to be provided manually by the economic operator. Structural data of evidences describes attestations on a level detached of the semantic of its content itself (e.g. ItemName, DocName, DocTitle, DocLanguage, DocFormat, DocID, DocIssue date, DocExpiration date)

### 2.3.3 Major Features, Requirements and Quality Attributes

This subsection lists the major features, requirements and quality attributes that are significant for a VCD simple package. In particular the systems described above and their features are specified through requirements (functions and interfaces) as well as their quality attributes (non-functional requirements).

- System: Identity and access management
  - Feature 1: Application for VCD account
  - Feature 2: VCD account management
  - Quality attributes
- System: VCD system
  - Feature 1: Initialization of VCD request
  - Feature 2: Arrangement of VCD instance
  - Feature 3: Collection of Evidence
  - Feature 4: Compilation of VCD instance
  - Quality attributes
- System: VCD transportation system
  - Feature 1: Authentication to VCD transportation system
  - Feature 2: Exchange of VCD packages
  - Quality attributes
- VCD viewing system
  - Feature 1: Authentication to VCD viewing system
  - Feature 2: View VCD
  - Quality attributes

The different systems listed above correlate with the use case diagrams introduced in the previous subsection. The features summarize on or more use cases that are described through a diagram. Quality attributes are described system-specific.

### 2.3.3.1 Identity and access management

#### Feature: Application for VCD account

This feature describes the necessary functionalities and interfaces that are needed to apply for a VCD account.

#### Requirements: Application for VCD account

- Identity and access management **MUST** provide a functionality to register an economic operator in a formal procedure in order to create a VCD account.
- Identity and access management **MUST** provide an interface to submit sensitive economic operator data (for example by uploading attestations that verify sensitive economic operator data) in order to allow the economic operator to apply for the creation of a VCD account.
- Sensitive economic operator data **MUST** be verified through a formal procedure by an officer.

#### Feature: VCD account management

This feature describes the necessary functionalities and interfaces that are needed to manage a VCD account.

#### Requirements: VCD account management

- An officer has to create a VCD account for the economic operator.
- Sensitive economic operator data **MUST** be placed to a VCD account by an officer.
- Identity and access management **MUST** provide a functionality that enables the economic operator to receive his log-in data.
- The authentication within identity and access management **SHOULD** provide a single-sign on functionality that can be used across other systems.
- A change procedure **MUST** be defined in order to modify sensitive economic operator data that is connected to the VCD account.
- The economic operator **MUST** be able to delete his account.

#### Quality attributes of Identity and access management

- It **MUST** be clearly defined which economic operator data are sensitive and belong to identity and access management.
- A single-sign on **SHOULD** be implemented in order to allow identity and access management across different systems.
- The identity and access management procedures for creating a VCD account **SHOULD** be harmonized with the registration procedure of the overall infrastructure provided by WP8.

### 2.3.3.2 VCD system

#### Feature: Initialization of VCD Request

This feature describes the necessary functionalities and interfaces that are needed to request a VCD instance that is addressing a particular Call for Tender.

#### Requirements: Initialization of VCD Request

- The VCD System **SHOULD** make use of a single-sign-on interface and function in order to submit login data.
- The VCD system **MUST** provide a functionality to check through identity and access management whether an economic operator has sufficient user rights to access his account.

- The VCD system **MUST** provide an interface where the economic operator can provide non-sensitive economic operator data.
- The VCD system **MUST** provide an interface where tender-specific data can be either fetched from or be provided through (e.g. criteria of qualitative selection and exclusion).
- The VCD system **MUST** provide an interface where the economic operator can request the creation of a VCD package.

#### **Feature: Arrangement of VCD instance**

This feature describes the necessary functionalities and interfaces that are needed to arrange a VCD instance according to the needs of an economic operator.

##### **Requirements: Arrangement of VCD instance**

- The VCD system **MUST** have an interface to receive and process the information (mapping of evidence) provided by the pre-VCD mapping tool.
- The VCD system **MUST** provide a functionality that suggests a possible compilation of the VCD to the economic operator according to the tender-specific criteria.
- The VCD system **MUST** provide a functionality where the economic operator can decide which particular attestation services should be invoked and collected.
- The VCD system **MUST** provide a functionality that displays the attestation services that cannot be invoked automatically and that have to be manually added by the economic operator.

#### **Feature: Collection of Evidence**

This feature describes the necessary functionalities and interfaces that are needed to collect evidence from various sources.

##### **Requirements: Collection of Evidence**

- The VCD system **must** provide a functionality to request attestations that can be collected automatically via an issuing body.
- The VCD system **MUST** have an interface/technical access to retrieve attestations that can be automatically retrieved from issuing bodies.
- The VCD system **MUST** have a functionality to extract structural data of evidence from attestations that can be retrieved automatically.
- The VCD system **MUST** have an interface to submit/upload evidence that have to be provided manually by the economic operator.
- The evidence submitted to the VCD system **MUST** correspond to the mapping information suggested by the VCD system (or the pre-VCD mapping tool).
- The VCD system **MUST** provide an interface where an economic operator can add structural data of evidence that belong to specific evidence.
- The VCD system **SHOULD** provide an interface where a translator/economic operator can submit certified translations to specific evidence.
- The VCD system **MUST** provide and interface where the economic operator can initiate the compilation process.

#### **Feature: Compilation of VCD instance**

This feature describes the necessary functionalities and interfaces to compile a VCD instance out of different data formats from various sources.

**Requirements: Compilation of VCD instance**

- The VCD system **MUST** provide a functionality to compile various data formats from various sources (issuing bodies) into a single VCD package.
  - The VCD package **MUST** provide a functionality to add structural VCD package data to the VCD package and VCD system (e.g. log file) during the compilation process.
  - The VCD package **MUST** provide a functionality to add tender-specific data to the VCD package and VCD system (e.g. log file) during the compilation process.
  - The VCD package **MUST** provide a functionality to add economic operator data to the VCD package and VCD system (e.g. log file) during the compilation process.
  - The VCD package **MUST** provide a functionality to add tender-specific data to the VCD package and VCD system (e.g. log file) during the compilation process.
  - The VCD package **MUST** provide a functionality to add structural data of evidence to the VCD package and VCD system (e.g. log file) during the compilation process
  - The VCD package **MUST** provide a functionality to add evidences to the VCD package and VCD system (e.g. log file) during the compilation process.
  - The VCD package **MUST** provide a functionality to add translations to the VCD package and VCD system (e.g. log file) during the compilation process.
- The VCD system **MUST** provide a functionality to notify the economic operator when the compilation process is finished.
- The VCD system **MUST** provide interfaces to deliver the VCD to the economic operator.

**Quality attributes of VCD system**

- VCD system **MUST** be operated by at least one national VCD service provider
- The VCD system **MUST** have the status of a trusted system.
- The national VCD service provider that hosts the system must have the status of a trusted entity.
- Direct access to attestations issued by (national) issuing bodies **MUST** be established through organisational agreements (e.g. service level agreements).
- Technical access to the relevant attestations issued by (national) issuing **SHOULD** be supported through national law.
- The compilation suggestion that is given to the economic operator by the VCD system **MUST** be reliable with regard to fulfilment of tender-specific requirements.
- It has **MUST** be clearly defined which economic operator data are not-sensitive and belong to VCD system.
- User rights for the VCD system **MUST** be defined.
- Structural data of evidence **MUST** be defined.
- Semantic interoperability of structural data of evidence **SHOULD** be ensured through an agreement procedure among the WP partners.
- The evidence submitted to the VCD system **MUST** be eligible for the requirements mentioned by §§45– 46 of European Directive 2004/18/EC.

**2.3.3.3 VCD transportation system****Feature: Authentication to VCD transportation system**

This feature describes the necessary functionalities and interfaces to authenticate to the VCD transportation system.

**Requirements: Authentication to VCD transportation system**



- The VCD transportation system **MUST** provide a functionality that enables both parties involved, contracting authorities and economic operators, to authenticate to the VCD transportation system before using it.
- The authentication to the VCD transportation system **SHOULD** make use of single-sign-in interface and function in order to submit login data.

#### **Feature: Exchange of VCD packages**

This feature describes the necessary functionalities and interfaces to exchange VCD packages between the economic operator and the contracting authority.

#### **Requirements: Exchange of VCD packages**

- The VCD transportation system **MUST** provide a functionality that enables the economic operator to find an electronic address of a contracting authority for receiving VCD packages.
- The VCD transportation system **MUST** have an interface to connect to it in order to submit the VCD package to a contracting authority.
- The VCD transportation system **MUST** provide a functionality that supports the economic operator in submitting the VCD package to a contracting authority.
- The VCD transportation system **SHOULD** provide a functionality that supports the economic operator in submitting the VCD package to a contracting authorities' procurement platform where the tender/bid has to be placed.
- The transportation system **MUST** provide an interface that enables contracting authorities to receive a VCD.

#### **Quality attributes of VCD transportation system**

- Both parties involved, contracting authorities and economic operators, **MUST** have an electronic address for receiving/sending VCD packages.
- The transport of a VCD package **MUST** be initiated by the economic operator.
- The choice of how to submit the VCD package to the contracting authority **MUST** be the one that is preferred by the economic operator.
- Beside the transportation system (WP8) the economic operator **SHOULD** be able to use other electronic channels for submitting a VCD package to the contracting authority.
- It **MUST** be clarified which possibilities exist to utilize the infrastructure for submitting a VCD package directly to procurement platforms (e.g. via VPN).
- The transportation system **MUST** ensure that the VCD package is being delivered to the contracting authority
- The transport of a VCD package **MUST** be confidential.
- The transport of a VCD package **MUST** be reliable.
- The transport of a VCD package **MUST** be secure.
- The transport of a VCD package **MUST** ensure that the package has not been altered or modified during transportation or validation.
- Non-repudiation of origin of a VCD package **MUST** be supported.
- A VCD will carry a unique identifier and information about security and quality enhancing policies used by the certified VCD Service Provider when compiling the file.

#### 2.3.3.4 VCD viewing system

##### Feature: Authentication to VCD viewing system

This feature describes the necessary functionalities and interfaces to authenticate to the VCD viewing system.

##### Requirements: Authentication to VCD viewing system

- The VCD viewing system **MUST** provide a functionality to authenticate contracting authorities to view the data contained within a VCD package.
- The authentication to the VCD viewing system **SHOULD** make use of single-sign-on interface and function in order to submit login data.

##### Feature: View VCD

This feature describes the necessary functionalities and interfaces to view the data contained in the VCD package.

##### Requirements: View VCD

The VCD viewing system **MUST** provide an interface that adequately displays various types of data formats contained within a single VCD package.

- The VCD viewing system **MUST** display structural VCD package data contained in the VCD package
- The VCD viewing system **MUST** display tender-specific data contained in the VCD package
- The VCD viewing system **MUST** display economic operator data contained in the VCD package
- The VCD viewing system **MUST** display tender-specific data contained in the VCD package
- The VCD viewing system **MUST** display structural data of evidence contained in the VCD package
- The VCD viewing system **MUST** display evidences contained in the VCD package
- The VCD viewing system **MUST** display translations of evidences contained in the VCD package

##### Quality attributes of viewing system

- Member State of this work package **SHOULD** follow a common standard representation of the different types of data
- Member State of this work package **SHOULD** define a national version of the common standard representation of the different types of data.
- Any standard representation of the different types of data **MUST** be agreed upon the pilot partners.
- A method (e.g. reverse engineering) to develop a standard representation of the different types of data **SHOULD** be defined.
- A method for the versioning of the development of this common standard schema **SHOULD** be found.

#### 2.3.4 Expected Benefits for stakeholders

Table 3 shows the additional benefits of stage 2 (first stage in four-stage VCD concept containing documents):

Table 3: Summary of Expected Benefits (VCD simple package)

Feature	Benefits	for Economic	For Contracting
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		Operator	Authority
Application for VCD account	Access to VCD system and services and provision of sensitive economic operator data	yes	no
VCD account management	Change management of sensitive economic operator data	yes	no
Initialization of VCD request	Compilation suggestion of the VCD that includes mapping of evidence to demanded criteria	yes	no
Arrangement of VCD instance	Arrange the compilation suggestion to specific needs and preferences Reduction of costs of arranging a VCD manually	yes	no
Collection of Evidence	Collection of data from various issuing services Reducing administrative burden and cost	yes	no
Compilation of VCD instance	Compile different types of data to a VCD simple package that ensures common structure Recognized evidence and other data	yes	no
Authentication to VCD transportation system	Assured, secured and reliable transport Usage of signatures across borders	yes	yes
Exchange of VCD packages	Submission and retrieval of the VCD simple package	yes	yes
Authentication to VCD viewing system	View of sensitive data only possible with sufficient authorization	yes	yes
View VCD	Check suitability and validity of the requested evidences in the VCD	yes	yes

### 2.3.5 Scope, Limitations, Assumptions and Dependencies

The major aim of stage 2 is to draft logical systems that enable economic operators to create simple VCD packages and to submit them to contracting authorities. Thereby stage 2 focuses on the necessary different logical systems that either provide major functionalities with regard to creating and viewing a VCD packages (VCD system) or which support the entire process such as authentication (Identity and Access management), transportation (VCD transportations system) or translation (VCD translation system). The general assumption of stage 2 is that the former pre-VCD mapping tool (stage 1) will be utilized as a module that is adequately integrated into the VCD system.

Stage 2 also introduces the idea of a national VCD service provider which operates the different services necessary to create and view a VCD package. The national VCD service provider will provide a single-point of access to several attestations and issuing services that are electronically available. Nevertheless it will be necessary to include other evidences that have to be provided semi-automatically or manually by the economic operator. It also cannot be guaranteed that each evidentiary document required according to the criteria stated in the Call for Tender by the contracting

authority can be pointed at with a particular mapping results of the pre-VCD mapping tool since some evidence diverge too much in their contents and scope. In those cases the VCD system will provide the possibility to add those documents into the VCD simple package through placeholders which may have a very generic grounding for mapping defined through an abstract class of documents (e.g. evidence with regards to environmental management standards). When summarizing those points it can be generally stated that a VCD at stage 2 and beyond still relies on several manual processes that have to be generated by the economic operator and which cannot be automated in short or medium term. However, a reduced scope of a VCD is necessary in order to provide the possibility to submit a VCD that has a sufficient level of completeness.

Another aim of stage 2 is to differentiate, define and structure the types of data that will constitute a VCD package. Stage 2 does not focus on the re-development of existing evidentiary documents but on their extension through a common standard representation within a VCD. The VCD package contains similar structural fields which likewise describe the evidences contained in it in similar manner, order and style. Having similar structural layout of a VCD it will be easier to understand the contents of it and potentially to translated those structural key information from the language of the issuer or economic to the language of the contracting authority. Nevertheless a translation of the contents of evidentiary documents is not focussed at in this stage and has to be provided manually by the economic operator through adding translations into the VCD simple package.

Stage 2 lays the ground for the further development of a VCD package towards an advanced package within stages 3. The VCD package only focus on major functions that are necessary to create such a package and doesn't make use of other service that are introduced in the subsequent phases such as, recompiling an existing VCD package, usage of context-specific data and merging VCD packages of different economic operators into a single one. The recompilation of existing VCD packages increases the maintainability of a VCD for the economic operator by for example indicating which evidence has to be replaced by a new one and which evidence has to be additionally provided in case preparing a bid for a different Call for Tender. The usage of context-specific data thereby is an important pre-condition since these data can provide real-time information about the status of contents of the VCD which is needed in terms of making update proposals. Also the merging of different VCD packages into a single unit to be used when consortia which prepare a bid as a multi-party group is not addressed in stage 2.

## 2.4 VCD advanced package (Stage 3)

### 2.4.1 Vision Statement

Stage 3 represents a further step towards an optimised support for economic operators and contracting authorities. It is based on the features and functionalities of stage 2 and adds additional main features:

- recompiling an already existing VCD package
- merging data of several consortium members into one VCD package
- embedding of context-specific data

With regard to the idea of increasing the "level of support" for the actors (as explained in the introduction chapter) it is clear that the functionalities "Merging" and "Recompiling" enhance the capability of a VCD system of stage 2 in terms of compilation support while the new functionality "Embedding context specific data" is a tremendous improvement in terms of decision support.

#### Recompiling an already existing VCD package

Recompilation services provide functionalities that enable the reuse of evidences as well as their additional data of already existing VCD packages. This functionality is useful for several reasons:

- *Updating an existing VCD package* whenever one or more evidences are outdated. This could be done by checking whether evidences are outdated or not, retrieving the outdated evidences again

and creating a new VCD package, which then contains the newly obtained evidences and those evidences from the original VCD, which are still valid.

- *Creating a new VCD package* on the base of an already existing VCD package of the same economic operator for a different tender.

### Merging data of several consortium members into one VCD package

Stage 2 concentrates on cases with a "single legal entity" as the economic operator. For more complex constructions like consortiums, syndicate, joint ventures, contractor-subcontractor-relationships and so on, a merged VCD would be sufficient. Stage 3 introduces the functionality of providing a single VCD package for the economic operator regardless of whether the economic operator is a "single legal entity" or consists of several legal entities like a consortium, syndicate or joint venture.

To create a single VCD package for consortia requires that additional information has to be provided by the economic operator: based on the fact whether a consortium partner acts in the form of a subcontractor for a very specialised task or as a partner having equal rights a different set of evidences might have to be provided for every partner/subcontractor.

### Embedding of context specific data

Stage 2 delivers a VCD package containing required evidences as well as different kinds of data such as structural metadata, economic operator data or structural VCD package data. Stage 3 enhances the level of support (as explained in the introduction chapter) and offers decision support describing the major content of an evidence through context-specific data. This gives additional support to the contracting authority when deciding whether an economic operator is suitable or not. This happens by adding context specific data i.e. relevant data extracted from the provided evidences.

The context specific data is provided by an issuing body through an interface in a machine interpretable form and displayed in a way the contracting authority (and the economic operator as well, of course) can see. This should happen by exposing the most relevant key information of a given evidence at one glance. In most cases the contracting authority does not have to view the delivered evidence in every detail to come to a decision. As context specific data follows a common and agreed schema, translation of evidences might be unnecessary. Generally speaking, we may say that the behaviour of contracting authorities cannot be driven or altered by the service solutions released by PEPPOL, so the checking strategy is part of their undisputable decision, nonetheless every newly added feature aiming at the simplification of their duties can really be welcomed.

When the context specific data cannot be provided by an issuing services in a machine interpretable form, there might be the necessity of contributions from the economic operator to complete context specific data or even the national VCD service providers who acts as intermediary (e.g. Trusted Third Party) and may approve those data (scope of stage 4). If the national VCD service provider takes the role of a Trusted Third Party who approves context specific data this will effect the cooperation and requires a specific management under a trust and liability schema.

At this stage the VCD service of stage 2 is enhanced by additional functionality ("Merging" and "Recompiling"). The compiled VCD package contains the digital copy of evidences (possibly in various formats) and structural data of evidences as in stage 2. But at the same stage the VCD service could offer additional support (decision support by embedding context specific data) that means a VCD package could contain the digital copy of evidences (possibly in various formats) and structural data of evidences as in stage 2 augmented by context specific data. So it has to be carefully elaborated what kind of additional functionality or support should be implemented and what will be the scope of context specific data in terms of a VCD package.

Table 4 gives a summary of introduced features by the current VCD Stage 3.

Table 4: Summary of VCD advanced package vision

Outcome	Approach	Benefit	Necessary efforts/Limitations
VCD re-	Designing &	Selective re-usage of VCD	Additional efforts with

compilation service	Implementing services that create a VCD package by reusing evidences from existing VCD packages	evidences, Reduction of cost	regard to service implementations for reuse- and re-compile functionalities and interfaces
Improved VCD creation functionality regarding VCD package merging	Design and implement improved VCD creation services which are able to merge VCD data from several entities	The VCD creation services are able to merge data from several VCD packages into a single VCD package in order to compile all the necessary information for a group of economic operators (as one candidate, e.g. a consortium, contractor-subcontractor-relationships)	Definition of possible legal constructions for syndicates  Definition of criteria suitable for the candidate-partners according to their role within the tender  Definition of a process to retrieve all the information of the economic operator necessary to compile a joined VCD package
Improved VCD creation service regarding context specific data	Design and implement improved VCD creation services which can handle context specific data	Transparency on the contents of individual evidences that are included within the VCD at one glance without the need to look at the evidences in detail  Translation of certain evidences that are described through sufficient context-specific data will <b>not</b> be necessary anymore.  Possibility to replace the full document translation with a "selective translation" of context specific data (keywords and major contents). The "selective translation" can arrange multiple languages in particular when context specific data belongs to a common agreed dictionary of expressions.  The VCD creation services are able to receive context specific data from issuing services and process this data into the VCD package.  Possibility for the National VCD service provider to take the role of a Trusted Third Party which approves the evidence formally.	Definition of a method to develop context specific data (e.g. reverse engineering)  Additional implementation efforts with regard to data analysis and design of a common context specific data schema and agreement on it  Decision on the way to display the context specific data within a VCD package  Additional efforts to design and implement the improved issuing service  The extraction/provision of context specific data may require a dedicated action and a specific role assignment.

### 2.4.2 Use Case description of VCD advanced package

Figure 15 shows the possible system interactions of the actors with the VCD system and the auxiliary systems.

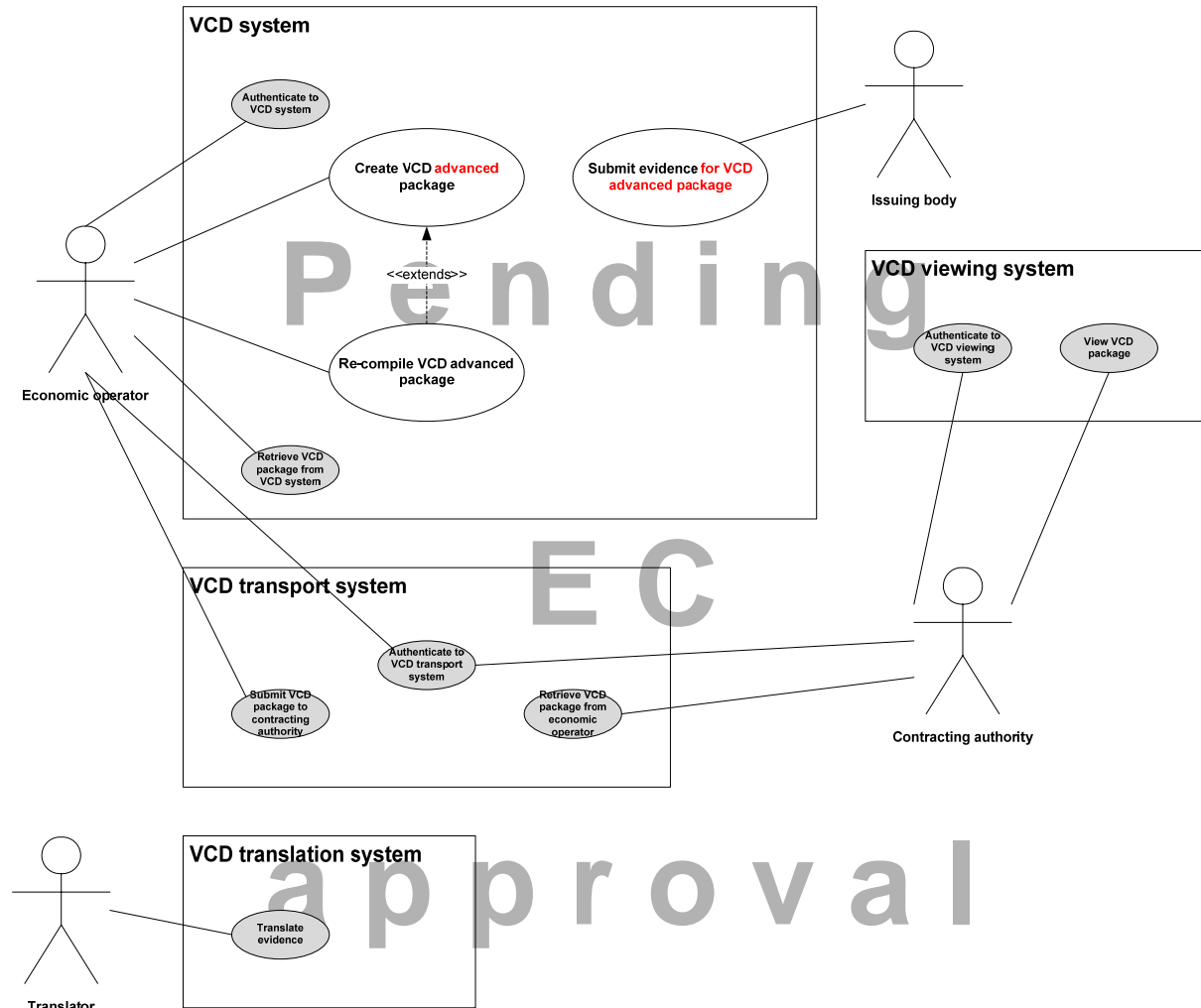


Figure 15: Use case diagram for VCD advanced package

Figure 16 shows the possible interactions of the actors with the VCD system concerning the creation of a new VCD advanced package.

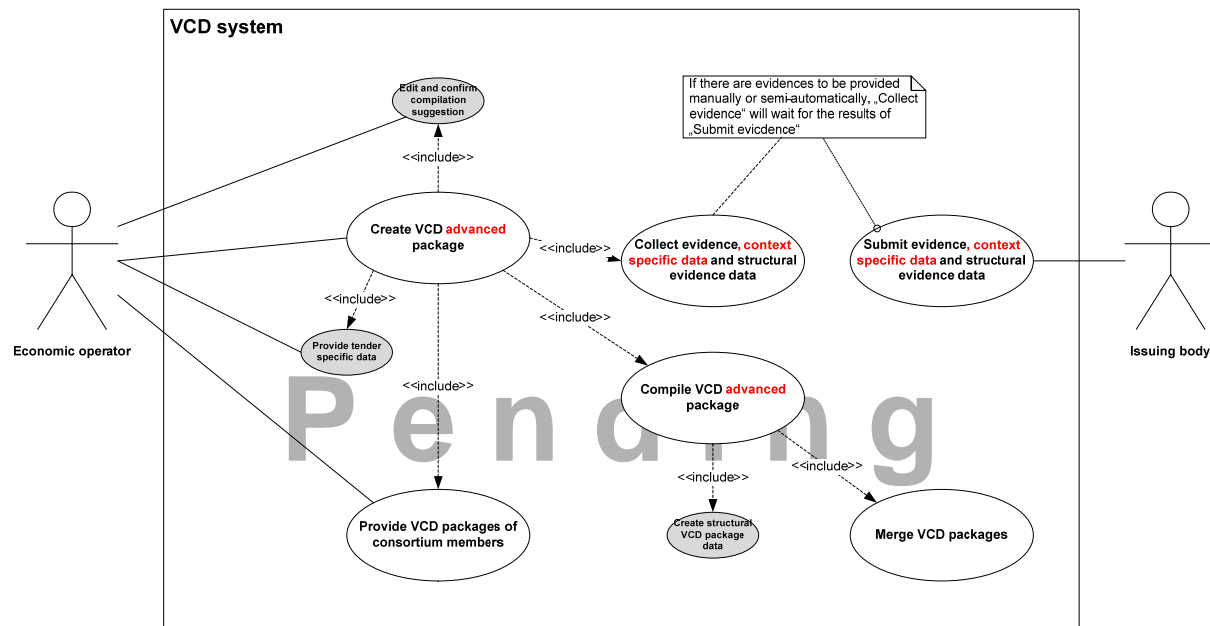


Figure 16: Use case diagram for VCD advanced package creation

Figure 17 shows the possible interactions of the actors with the VCD system concerning the recompilation of an existing VCD package into a new VCD advanced package.

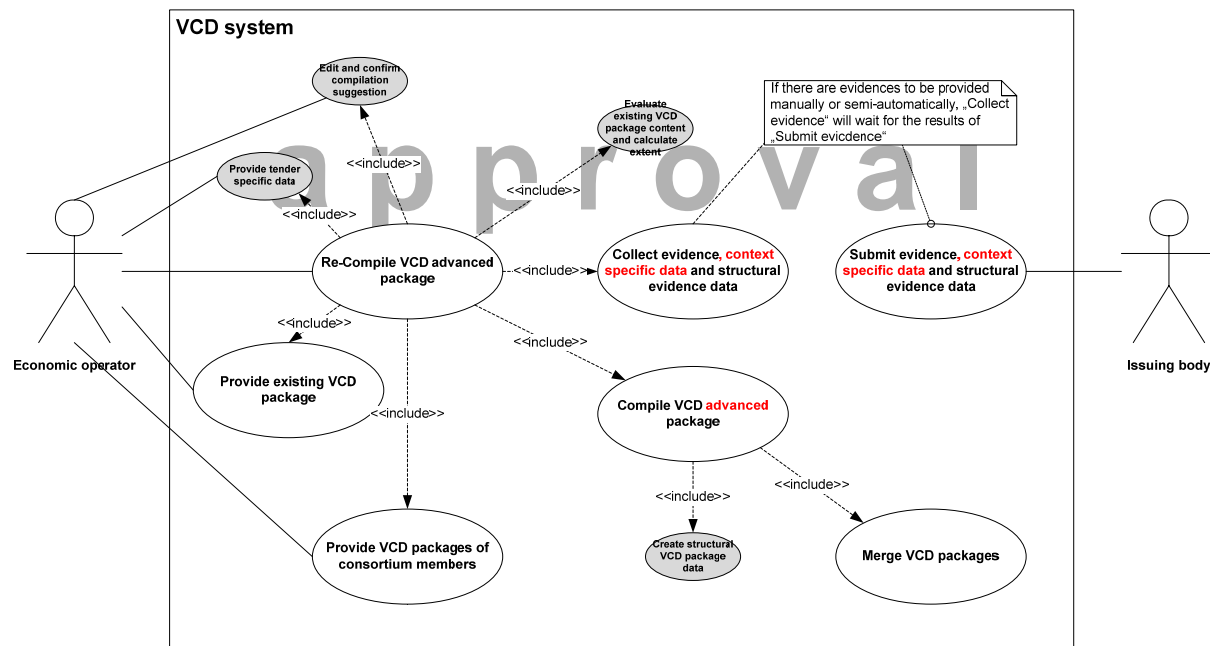


Figure 17: Use case diagram for VCD advanced package re-compilation

### 2.4.2.1 Create VCD advanced package

This use case contains the necessary steps an economic operator performs to create a new VCD advanced package. This use case is similar to the use case “Create VCD simple package” of stage 2 but adds the necessary functionality regarding context specific data and merging existing VCD packages into the new VCD advanced package.



#### 2.4.2.2 Re-Compile VCD advanced package

This use case contains the necessary steps an economic operator performs to re-compile an existing VCD package into a new VCD advanced package. This use case contains the necessary functionality regarding context specific data and merging existing VCD packages into the new VCD advanced package.

#### 2.4.2.3 Provide VCD packages of consortium members

In order to merge VCD packages of several economic operators, acting as one economic operator (e.g. a consortium, contractor-subcontractor-relationships) into one VCD package, the economic operator has to be able to provide these VCD packages to the VCD system.

#### 2.4.2.4 Collect evidence, context specific data and structural evidence data

The stage 2-collection process for evidence and structural evidence data has to be extended to include the collection and processing of context specific data. It is important to understand that context specific data cannot be automatically extracted from unstructured data as scanned copies or text documents as this could lead to incorrect results due to the non-deterministic behaviours of such extraction mechanisms (OCR, etc). Valid deterministic approaches of providing (obtaining) context specific data are:

- Automated context specific data provision: extraction of data from structured evidence artefacts which are machine interpretable (e.g. XML) and which have been generated by an IT-system, if the structure is consistent with an agreed upon schema.
- Semi-automated context specific data provision: data is provided by a human being of the issuing service by filling in values in a structured, pre-defined template. This template can be a web-form, an XML-file consistent with an agreed upon XML-scheme, or other structured data sheets. The availability of an adequate user interface for providing the data values is an important issue of this approach
- Manual context specific data provision: data is provided by the issuing services in any unstructured format (e.g. scanned copies, text documents). A human being of the national VCD service provider manually extracts the data and provides it to the system using the mechanisms described in "Semi-automated context specific data provision". This approach requires an additional level of trust into the national VCD service provider acting as Trusted Third party as he will be responsible for the correctness of the context specific data itself and not just only for the compliance of the processes, which are executed by the VCD services.

#### 2.4.2.5 Merge VCD packages

In order to merge VCD packages of several economic operators, acting as a single economic operator (e.g. a consortium, contractor-subcontractor-relationships) into one VCD package, the VCD system has to be able to consider data from several existing VCD packages in the compilation process.

#### 2.4.2.6 Compile VCD advanced package

In order to be able to compile a VCD advanced package, the VCD compilation process must be extended to be able to process data from existing VCD packages of other economic operators and to process the context specific data that are included.

### 2.4.3 Major Features, Requirements and Quality Attributes

This chapter contains the major features, requirements and quality attributes which are derived from the vision statement and the use-case descriptions of stage 3 and which extend the major features, requirements and quality attributes of a stage 2 VCD simple package.

The major features of the VCD in stage 3 are:

- Context specific data

- Improved VCD creation service
- VCD re-compilation service

#### 2.4.3.1 Context specific data

A major feature of a stage 3 VCD advanced package is the introduction of context specific data. These data fields are specified in an agreed upon data schema and describe the content of an evidence or parts of its content under a predefined selection schema. The benefit of using context specific data is to avoid the necessity to read through the original version or a translated version of an evidence in order to obtain the information which is necessary to decide, whether a criterion is satisfied or not and thereby having a structured overview of the important key data or information of the evidences contained in a VCD. This overview – the data representation – can be implemented either language independent or in multiple languages, so there is no need to translate the evidence any more if it is sufficiently described through context specific data. The enhanced and automated documents' readability that comes from the context specific data must be compared to the local legal provisions and document checking practice adopted by contracting authorities. Whether to use context specific data as substitute of a certified translation of an evidences or as decision support belongs to the contracting authority's decision.

##### Requirements: context specific data

- A VCD system MUST provide functionality to collect and process context specific data for evidence that has to be provided manually or semi-automatically by the issuing body, by the economic operator or any trusted third party.
- A VCD system MUST provide functionality to collect and process context specific data for evidence that has to be provided automatically by the issuing body.
- A VCD system MUST provide IT-interfaces to issuing bodies which provide evidences in machine interpretable format.
- A VCD system MUST interact with the issuing bodies which provide evidences in machine interpretable format through IT-interfaces.
- A VCD system MUST provide a user interface to the issuing body to provide context specific data for an evidence in a structured form (e.g. web-interface, XML-file-upload).
- The VCD system MUST provide a functionality to validate the provided context specific data during the submission process of context specific data to ensure the data is consistent with the VCD advanced package schema.
- Interfaces MUST be defined to retrieve context specific data from issuing bodies either automatically or semi-automatically.
- Interfaces SHOULD be defined that enable national VCD service providers to approve context specific data if they decide to take the role of a trusted third party.
- The rule set derived from legal requirements concerning "evidence checking" MUST be defined.
- The rule set allowing for a Stage 3 mapping among concepts expressed by the "context specific data" MUST be defined.
- The rule set derived from legal requirements concerning subcontracting and other consortium constellations MUST be defined
- A functionality to display context specific data SHOULD/MUST be included within any VCD.

##### Quality attributes: context specific data

- Any VCD advanced package MUST follow a common standard schema of context specific data that summarize and structure major information contained within context specific evidences.
- Context specific data MUST be machine interpretable

- Evidences that have a simple structure and limited variety of contents MUST be included into the common standard schema first.
- WP2 SHOULD provide easy solutions for transforming the contents of context specific evidence into simple context specific representations (e.g. a Balance sheet can have several values but an easy representation could be the fulfilment of certain ranges for example below 1 Million / from 1 Million to 10 / ...).
- A semantic definition of each element/class of the common standard schema of context specific data MUST be created and has to ensure a common understanding.
- A semantic definition of each element/class of the common standard schema of context specific data MUST ensure that these data is mutually recognized as replacement of the official translation of an evidences included.
- A method and agreement procedure to develop a common standard schema of context specific data MUST be defined. This procedure must cover the technical aspects of data analysis (e.g. reverse engineering) as well as the organizational aspects (e.g. which context specific data is required from contracting authorities or under which circumstances would they would replace certified translation of evidence by context specific data).
- Any common standard schema of context specific data classes MUST be agreed upon the pilot partners.
- Representation of context specific data SHOULD be available in multiple languages
- Every pilot partner MUST follow the common standard schema of context specific data by defining a national version of it.
- A method for versioning the development of common standard schema of context specific data SHOULD be found.

#### 2.4.3.2 Advanced VCD creation service

The VCD creation service of stage 2 VCD simple package has to be improved in order to include the functionalities for considering context specific data and VCD merging.

##### Requirements: Advanced VCD creation service

- A VCD system MUST provide a user-interface to the economic operator to initiate the creation of a VCD advanced package.
- A VCD system MUST provide a user-interface to the economic operator to provide existing VCD packages of other economic operators when specific disclosure options have been activated.
- A VCD system MUST provide a functionality to check, whether the structural VCD package data of existing VCD packages of other economic operators are consistent with the VCD advanced package schema of other economic operators, or not
- A VCD system MUST provide a functionality to check, whether the tender specific data of existing VCD packages are consistent with the tender specific data of other VCD packages.
- A VCD system MUST provide functionality to merge the following data from several existing VCD packages of other economic operators:
  - Structural VCD package data
  - Structural data of evidence
  - Tender specific data
  - Economic operator data
  - Context specific data
  - Evidence
  - Authorized translation of evidence

- A VCD system **MUST** provide functionality to compile the data which result from the evidence collection process and the data provided by the economic operator in the VCD advanced package creation. The types of data which have to be compiled into a VCD advanced package are therefore:
  - Structural VCD package data
  - Structural data of evidence
  - Tender specific data
  - Economic operator data
  - Context specific data
  - Evidence
  - Authorized translation of evidence

#### **Quality attributes: Advanced VCD creation service**

- Merging of VCD simple packages and VCD advanced packages into a VCD advanced package **SHOULD** be possible

#### **2.4.3.3 VCD re-compilation service**

In stage 3, the functionality of the VCD system has to be extended in order to provide a VCD re-compilation functionality. Re-compiling a VCD package means using evidence data from an existing VCD package, validating which of the evidences are outdated, retrieving actual versions of the outdated evidences and creating a new VCD package which contains the not-outdated evidences from the original VCD package and the newly obtained evidences. The re-compilation process considers only those evidences which are necessary in be compliant to the criteria which have to be addressed in the new VCD package. The re-compilation can be invoked to re-compile a VCD package for a different Tender.

#### **Requirements: VCD re-compilation service**

- A VCD system **MUST** provide a user-interface to the economic operator to initiate the re-compilation of an existing VCD package into a VCD advanced package.
- A VCD system **MUST** provide a user-interface to the economic operator for uploading an existing VCD package
- A VCD system **MUST** provide a functionality to decompose an existing VCD package
- A VCD system **MUST** provide a functionality to identify outdated or obsolete evidences
- A VCD system **MUST** provide a functionality to retrieve actual instances of outdated evidences

#### **Quality attributes: VCD re-compilation service**

- Re-compiling a VCD simple package into a VCD advanced package **MUST** be possible
- Re-compiling a VCD advanced package into a VCD advanced package **MUST** be possible
- A VCD service provider **SHOULD** be trusted to correctly process unstructured evidences into (structured) context specific data by manual means in order to create context specific data using the semi-automated approach.

#### **2.4.4 Expected Benefits for stakeholders**

Table 5 shows the additional benefits of stage 3 compared to the previous stages.

Table 5: Summary of Expected Benefits (VCD advanced package)

Feature	Benefits	For economic operators	For contracting authorities
Context specific data	<ul style="list-style-type: none"> <li>• Availability of context specific data in VCD advanced packages</li> <li>• Transparency of the contents at a glance, therefore reduced time effort and cost within the tendering process.</li> <li>• Check the correctness /suitability of content quickly with the possibility to react when necessary.</li> <li>• Technical possibility for automated decision support which enables the analysis of relevant context specific data out of the evidences without the need to view those → Reduced time and cost for validating the suitability of an economic operator.</li> <li>• Avoiding to translate evidences that are available in a machine interpretable and context specific format</li> </ul>	<input checked="" type="checkbox"/>     <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>     <input checked="" type="checkbox"/>
Advanced VCD creation service	<ul style="list-style-type: none"> <li>• Possibility to provide more complex VCD packages, which contain data from several economic operators acting as one candidate (e.g. a consortium, contractor-subcontractor-relationships) provides a larger coverage of cases in practice</li> </ul>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
VCD re-compilation service	<ul style="list-style-type: none"> <li>• Re-usage of an existing VCD package and its evidences to reduce cost and effort</li> </ul>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

## 2.4.5 Scope, Limitations, Assumptions and Dependencies

Stage 3 will include the features depicted in chapter 2.4.3. Providing context specific data leads to an additional support for the economic operator and for the contracting authority addressing the need to evaluate the contents of evidences across borders. An economic operator is able to verify the correctness of the provided context specific data. The contracting authority in turn can check the suitability of an Economic Operator by having a sufficient summary of the contents of a VCD in the required language. The provision of context specific data avoids the need for translating certain evidences that are available in electronic format and allow the description of its contents using the common standard schema of context specific data. This approach follows again the idea to ensure the completeness of the VCD on the one hand and the level of support on the other hand by stepwise including more electronic evidences to the VCD.

An important point to ensure the acceptance of this approach is to establish or expand the trust in national VCD services cross borders:

- In stage 1 contracting authorities are required to trust the provided evidences, issuing bodies, translators and the correctness of the international mapping
- In stage 2 contracting authorities are required to trust the national VCD service providers as they are responsible for the compilation of VCD packages containing **valid** (not outdated) evidences or other evidences which are suitable to give evidence for the required criteria
- In stage 3 contracting authorities are required to expand their trust into the national VCD service providers as they are responsible for the compilation of VCD packages containing **context specific data** which augment the evidence content. On the side of the VCD service providers, composing a VCD package is a more or less complex task depending on national country abilities, willingness, etc.

Stage 3 as a concept does not predetermine a solution where all evidences are provided electronically in machine interpretable form. Therefore stage 3 is flexible enough to be implemented in countries where issuing bodies provide their evidences either in paper form, as scanned copies, as unstructured electronic documents or as fully structured electronic documents.

One key requirement is the definition of a common schema of context specific data out of given evidences through reverse engineering methods and to agree on such a definition. The definition of national occurrences of the context specific schema has to be done by each member state on its own. One limitation which will be faced in the specification phase of the current project will be that it is unlikely, that a common and agreed upon standard schema of context specific data should be established across context specific networks (e.g. Business Registers). Thus the long term goal should be the development of this unified set of context specific data which is necessary to provide all the information a contracting authority wants to get out of evidences. One reasonable way to achieve this goal is to put this work on the agenda of context specific networks (e.g. BRITE, ECRIS) and standardisation organisations (e.g. CEN). Nevertheless, WP2 would like to approve whether it is possible to use simplified representations of evidences expressed as context specific data to provide a unified representation of major contents. If a specific criminal record for example does not have any entry inside it can be represented in context specific format by having a code-list saying "nothing or no entry". Another example could be for example a Balance sheet which can have several different values but an easy representation could only be expressed through definition of certain ranges e.g. below 1 Million / from 1 Million to 10 / etc.

In any case the usage of context specific data cannot prevent and exclude specific needs from contracting authorities that may require concurrence of both, the original evidence including certified translation and context specific data. The behaviour cannot be influenced since it is dependent on national requirements and legislation but the provision of context specific data within the VCD may lead to a change of current practices across borders.

## 2.5 VCD network package (Stage 4)

### 2.5.1 Vision statement

Stage 4 introduces a set of ideas and possibilities how further value can be added to a Virtual Company Dossier. The key idea of Stage 4 is to create a network for the VCD that allows retrieving attestations in a more flexible way. Potentially a direct exchange from trusted attestation services to contracting authorities could therefore be implemented. The Virtual Company Dossier then consists of some references to attestation services which mandate a contracting authority to obtain information directly.

A direct exchange between trusted attestation services and a contracting authority would provide many opportunities with regard to an increase of the actuality of evidence, to lower the transaction costs of the parties involved and to reduce the time to create a VCD. Nevertheless such direct exchange is very difficult to implement technically because a lot of entities and attestation services have to be federated. This raises costs and other technical questions such as access policies to trusted attestation services and therewith also legal uncertainties such as data privacy, data security and data protection. Also from a political point of view there might be several objections to give a direct access to source registers and issuing bodies. Finally a semantic pre-condition would be that evidence is provided in a common electronic format that allows an automated transformation into the requestor's target language. Such a solution would then be also depended on mutually recognized, context-specific data formats provided by some specific networks such as BRITE or ECRIS (Siemens\_and\_Time.lex 2008).

In order to avoid some of the above mentioned complexity we propose some first steps that might help to combine the ideas of a VCD and a federated network in medium term allowing further improvements of a VCD. To avoid political and technical questions with regard to federated networks, the access to attestations services should be done indirectly through the national VCD service provider. We suggest that a national VCD service provider uses a temporary storage to hold the attestations instead of compiling them directly into a VCD. The VCD then only consists of a number of flags that denote an evidence as well as structural data of evidence and context specific data plus a reference to retrieve the attestation on demand at the time of awarding. Therefore it would be

important that the evidence requested is valid at the time of awarding or when the call for tender is closed. Also mechanism for maintenance of evidence could potentially be implemented in order to keep the information up to date. Such model of indirect exchange would also make it easier for a national VCD service to establish an official list of approved economic operators in accordance with Article 52 (1) of Directive 2004/18/EC. The national VCD service provider could use the information within its storage to maintain such lists. Evidence that is sufficiently described through context specific data could then for example be automatically validated by a national VCD service provider by putting validation values into a VCD.

Stage 4 therewith improves the level of support for the economic operator since the need and burden to present specific attestations to the contracting authority will be eliminated. Stage 4 therewith fulfils the paradigm shift where a contracting authority only asks for the fulfilment of certain criteria and not for the delivery of specific evidence. It changes the general approach of providing attestations at the time of the bid but consequently performs all the related functionality of stages 2 and 3 (e.g. provision of structural data of evidence and context specific data). Stage 4 introduces the "on-demand" idea which allows retrieving evidence directly from the national VCD service provider on individual basis. In order to ensure the level of completeness, the VCD network package needs to be extended stepwise by including evidences which are sufficiently described through agreed and standardised context-specific data and structural data of evidence (and which can easily be validated by the national VCD service provider when he accredits economic operators according to Article 52). We propose the following major building blocks to establish a VCD networked package:

- Compilation of evidence within a VCD is based on structural and context specific data. The compiled VCD network package only contains both data types and provides references to retrieve attestations when necessary (i.e. "on demand"). The VCD contains references in the meaning of processing instructions for the contracting authority to retrieve the requested attestations on individual basis at the time of awarding. The reference or processing instruction includes a mechanism to grant access rights to the contracting authority in order to retrieve these attestations within a certain period of time.
- The national VCD service provider still handles the data retrieval from attestation services and holds evidence within a temporary storage. When the National VCD Service Provider receives a valid request at the time of awarding from a contracting authority mandated by the economic operator he delivers the requested evidence to the contracting authority.
- Stage 4 will provide a good opportunity to establish an official list of approved economic operators in accordance with Article 52 (1) of Directive 2004/18/EC. Evidences (and in particular those that are sufficiently described through context specific data) could be validated by a national VCD service provider by putting validation values into a VCD. Mechanisms for maintenance of evidence could potentially be implemented in order to keep the information up to date and respectively maintain a state of accredited economic operators.

The difference between Stage 3 and 4 lies in the moment at which specific evidence will be requested or delivered. The VCD network package will include all the data that is necessary to qualify an economic operator according to the methods, rules and functions described in stages 2-3. The only difference is that some of these evidences are not directly included into the VCD but can be retrieved through references in order to allow the contracting authority to retrieve the evidence on individual basis or "on-demand". Stage 4 allows further implementations towards federated networks and provides opportunities to establish lists of approved economic operators in accordance with Article 52 (1) of Directive 2004/18/EC<sup>10</sup>.

Table 6 provides an overview of the VCD network package outcome, approach, benefits and necessary efforts and/or limitations of the proposed concept.

Table 6: Summary of VCD network package vision

Outcome	Approach	Benefit	Necessary
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<sup>10</sup> The lists of Article 52 Annex IX A, B and C cover EU Member States only; the EFTA Member States of EEA are reflected in listing annexed to the decision 68/2006 of the EFTA EEA Committee.

			<b>efforts/Limitations</b>
“On-demand” retrieval of attestations that are sufficiently described through context specific data	Contracting authority can demand attestations through National VCD Service Provider on individual basis if context specific data and structural data of evidence are not sufficient for approving an economic operator.	<p>Lowers the efforts to transform and translate attestations.</p> <p>Contracting authority can have selective access to specific attestations</p> <p>Contracting authority can potentially request updates on specific attestations more easily</p>	<p>Mechanisms of authorizing contracting authorities need to be implemented into the VCD system or the VCD itself</p> <p>Higher requirements on data confidentiality, data availability, non-repudiation and data integrity</p> <p>Standardization and agreement on well working context specific data</p> <p>Mechanisms to identify economic operators, national VCD service providers and contracting authorities in order to indentify / authenticate them and to grant access to retrieve attestations.</p> <p>Requires higher collaboration and technical amendments between key stakeholders such as public and private certifiers.</p> <p>Interfaces, protocols and temporary storage to obtain “on demand” VCD network packages</p>
Opportunity for a national VCD service to establish an official list of approved economic operators in accordance with Article 52 (1) of Directive 2004/18/EC.	VCD is compiled in the same way as in stages 2-3 but contains validation values derived from context specific data which are approved by the national VCD service provider	<p>VCD service provider can maintain a list of approved economic operators.</p> <p>VCD can be easier used in cross-border procedures</p> <p>High support for economic operators</p> <p>Multiple re-usage of evidences stored by the national VCD service provider</p>	<p>Clarification of legal issues such as liability</p> <p>Changes in national procurement law may be required and have to be implemented according to the Article 52 (1) of Directive 2004/18/EC</p> <p>National and local political commitments needed</p> <p>Implementation of validation points within National Service Provider to ensure contextual validity of statements</p>

## 2.5.2 Use Case description

Stage 4 does not contain a modelled use case diagram that clarifies the system interaction and a detailed description of requirements because it mainly relies on the functions introduced in the previous stages and there are no pilots yet for this stage. Nevertheless the use case description provides a short textual explanation and major requirements of this stage are mentioned. Functions in round brackets ( ) are new to this use case:



The economic operator requests a VCD on the basis of stages 1, 2 and 3 at the National Service Provider. The National Service Provider starts the VCD creation process by requesting attestations from Trusted Attestation Services that are connected to context specific networks. Trusted Attestation Services provide requested attestations to a local database or repository that is owned by the National VCD Service Provider (store attestation). The VCD system enables the economic operator to mandate the contracting authority to access his attestations within the VCD system if the attestations are sufficiently described through context specific data (mandate to request attestation through VCD specific reference) and the VCD system creates a specific reference into the VCD itself (set reference to attestation to VCD).

When all attestations are compiled by the VCD system the economic operator can submit its VCD to the contracting authority. The contracting authority can now request attestations through the reference that is specified in the VCD (request attestation on individual basis). The VCD System checks whether the contracting authority has sufficient access rights and has been mandated by the economic operator to retrieve that attestation (check access rights). Afterwards the VCD system delivers the attestation to the contracting authority (retrieve attestation) or informs the economic about a request that cannot be handled adequately (conflict resolution). The economic operator than may have to provide an additional translation to the contracting authority within a certain period of time.

### 2.5.3 Major Features, Requirements and Quality Attributes

This chapter contains the major feature, requirements and quality attributes which are derived from the vision statement and the use-case description of stage 4 and which extend the features, requirements and quality attributes of the previous stages.

#### **Feature: Mandate contracting authority**

- The VCD system **MUST** provide functionality and an interface to the economic operator that enables him to mandate a certain contracting authority to request attestations on demand.

#### **Feature: Storing attestations and referencing to it**

- The VCD system **MUST** detect which attestations can be used by this feature (e.g. they have to be sufficiently described through context specific data and structural data of evidence).
- The VCD system **MUST** provide a functionality that enables National VCD Service Providers to store attestations.
- A functionality for referencing to attestations **MUST** be implemented within the VCD system.
- The VCD system **MUST** ensure that a contracting authority is able to request attestations via the provided reference (including time-restrictions).
- The functionality for referencing to attestations within the VCD **MUST** be implemented, either VCD-specific or contracting authority-specific, in order to approve whether the contracting authority has sufficient rights for requesting the attestations.
- VCD-specific or contracting authority-specific reference to attestations **MUST** be stored within the VCD system (processing instructions).

#### **Feature: Retrieving attestations on demand**

- The VCD system **MUST** provide a functionality to check whether a contracting authority has sufficient rights and has been mandated by the economic operator to retrieve attestations.
- The VCD system **MUST** provide a functionality and an interface that enables contracting authorities to retrieve the attestation from the storage.
- The VCD system **MUST** ensure that the attestation that is requested by the contracting authority is still valid at the time of awarding or when the Call for Tender is closed.

#### **Feature: Conflict resolution**

- The VCD system **MUST** provide a functionality that initiates a conflict resolution process between economic operator and contracting authority if errors occur or when certain attestation or a translation cannot be delivered on demand.

**Feature: Implementing Article 52 of directive 2004/18/EC and EFTA EEA Committee decision 68/2006**

- The VCD system **SHOULD** provide a functionality to approve attestations through validation data and to make this approval visible within a VCD networked package when a National VCD Service provider takes the role of a national validation point in accordance with Article 52 (1) of Directive 2004/18/EC and EFTA EEA Committee decision 68/2006.

**Quality attributes of VCD networked package**

- There **MUST** be an access policy that is issued by the economic operator that mandates a contracting authority to request attestation from the national VCD service provider on demand.
- A general reference structure and syntax **MUST** be defined. This may include creating contracting authority specific or VCD specific references in order to identify a mandate that has been given by the economic operator to this contracting authority for retrieving attestation or even updates on it.
- National and local political commitments and service-level agreements **MUST** ensure that consensus on roles and responsibilities are built with regard to this solution and in particular the National Service Providers who delivers attestations on demand.
- There **MUST** be a service-level agreement between the parties involved (Economic Operators, Contracting authorities, National Service Providers, and Trusted Attestation Service) about the response time of a delivery of attestations and data availability.
- There **MUST** be a service-level agreement between the parties involved (Economic Operators, Contracting authorities, National Service Providers, and Trusted Attestation Service) about conflict resolution that describe what to do when errors occur or when attestation or translations cannot be delivered “on demand”.
- The attestations where an agreement on context specific formats can be reached most easily **SHOULD** be included first into the network.
- WP2 **SHOULD** provide easy solutions for displaying context specific data and should enable their validation through validation values
- Legal systems **MUST** ensure that context specific data and validation values have an equivalent value to the provision of conventional / traditional attestations. (Scope of mutual recognition).
- The National Service Providers **SHOULD** establish validation points in order to approve an economic operator in accordance with Article 52 (1) of Directive 2004/18/EC.
- The national procurement law **MUST** ensure that National Service Provider can act as national validation points in accordance with Article 52 (1) of Directive 2004/18/EC for economic operators.
- Liability issues of the National Service Providers **MUST** be clarified when they act as national validation points in accordance with Article 52 (1) of Directive 2004/18/EC for economic operators.
- National procedures with regard to Article 52 (1) of Directive 2004/18/EC **MUST** be mutually recognized and trusted in across borders.

## 2.5.4 Expected Benefits for stakeholders

Table 7 shows the additional benefits of stage 4 compared to the previous stages.

Table 7: Summary of Expected Benefits (VCD networked package)

Features	Benefits	for economic operators	For contracting authorities

Mandate contracting authority	<ul style="list-style-type: none"> <li>Enables economic operator to provide selective access to his data and to avoid misuse of it.</li> </ul>	<input checked="" type="checkbox"/>	
Storing attestations and referencing to it.	<ul style="list-style-type: none"> <li>Technical possibility for validating context specific data which enables the analysis of relevant criteria without the need to view the attestations themselves.</li> <li>Reduced time for validating the suitability of an economic operator</li> <li>Avoid translation (e.g. Boolean answers that represent the validation of context specific data)</li> </ul>	<input checked="" type="checkbox"/>          <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>          <input checked="" type="checkbox"/>
Retrieving attestations on demand	<ul style="list-style-type: none"> <li>VCD evidence can be retrieved "on demand" if context specific data is not sufficient for approval.</li> </ul>		<input checked="" type="checkbox"/>
Conflict resolution	<ul style="list-style-type: none"> <li>Ensures that errors can be handled and solved manually between the parties involved</li> </ul>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Implementation of Article 52	<ul style="list-style-type: none"> <li>Stage 4 provides a good opportunity to implement Article 52 of directive 2004/18/EC</li> <li>Reduction of burden for economic operators.</li> <li>Possibility for the economic operator to maintain a state of permanent qualification.</li> <li>Easy approval of economic operators</li> </ul>	<input checked="" type="checkbox"/>          <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>          <input checked="" type="checkbox"/>

## 2.5.5 Scope, Limitations, Assumptions and Dependencies

Stage 4 relies on several functionalities or concepts that have been already addressed and described in previous stages. Basically the VCD network package relies on most of the features and functionalities already described in the previous stages. Nevertheless some of them take a particular role for implementing stage 4:

- Stage1: Mapping of evidence through pre-VCD mapping tool.
- Stage2: Compiling a VCD from several different kinds of data.
- Stage2 and 3: Implementation of direct access to issuing bodies and further description of interfaces to provide structural data of evidence and context specific data.
- Stage 2 and 3: The provision of data of evidence and context specific data of electronic attestations in order to approve attestations easily.
- Stage 2 and 3: Agreement on structural data of evidence and context specific data and description of national subsets of it in order to avoid the delivery of translations.
- Stage 3: A semantic standardisation of context specific data that describe the major contents of attestations which have a relatively uniform structure and uniform contents. WP2 should also provide easy solutions for transforming complex information contained in attestations into simple representations. For example a balance sheet could be much more easily represented

electronically if a specific tender would only demand to fulfil a certain range of capital (e.g. until 1 Million / from 1 Million to 10 / ...) that has to be met by the economic operator.

- Stage 3: Possibilities to update a VCD and therewith enabling the national VCD service provider to take the role of a validation point in order to implement Article 52 of directive 2004/18/EC.

In addition, Stage 4 will introduce the “on-demand” approach. Providing “on-demand” access to evidence requires the necessity to establish a National VCD Service Provider which is electronically connected to all attestation providers in the economic operator’s country. In order to avoid the necessity to establish a connectivity matrix from all contracting authorities to all attestation providers, the national VCD service provider has to act as a proxy. Depending on the implementation mechanism, the retrieval of “on-demand” data can either be realized:

- By enacting highly available, high performing online interfaces from the proxy to all attestation providers in the economic operator’s country. This first approach is extremely ambitious but the only way to always access actualised data.
- By caching the attestations at the proxy. This second approach could be implemented with lower efforts but leads to the situation that the data provided by the VCD package is in the end as actual as the data provided by a VCD package that is compiled using the concept from stage 3.

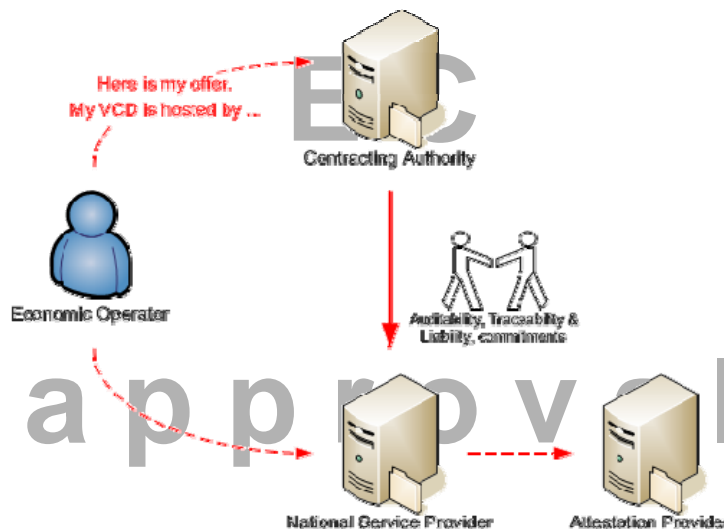


Figure 18: VCD network package – relation between entities

The relations between entities shown in the figure above imply to set up and share common access policies. They will be based upon technical, functional and organisational commitments related to authentication, mutual recognition, granting actors access rights, traceability and auditability of information and trust mechanism.

On this basis updating functionalities and access mechanisms can be easily implemented. They could be performed within a “Pull model” between contracting authorities and national service provider as well as between national service providers and attestation providers. The definition of pull models between those entities would allow several opportunities and flexibilities for example to update expired evidence or to request evidence on individual basis.

In a “perfect world” a contracting authority could directly access to the latest attestation, but this is difficult to implement because a lot of entities and attestation providers have to be federated. To avoid this and several political as well data protection and privacy issues, the access to attestations should be done through a temporary storage hosted by the National Service Provider. We assume that the attestation must be valid when the call for tender is closed instead of pre-serving permanent validity of attestations at the temporary storage of the national VCD service provider.

An organisational solution is necessary to solve conflicts that may appear when a contracting authority requesting attestations on individual basis and does not believe on the validation value given by the

VCD. This could potentially include conflict resolution in cases of errors or when an economic operator has to produce a translation of the attestation in a certain period of time and to send it to the contracting authority via the national VCD service provider.

Thinking about the future, we can imagine a scenario assisting the contracting authorities in lowering burden of validating attestations and lowering the burden for economic operators to provide attestations. A real added value in eTendering processes would be to reach a state where contracting authorities could only focus on the offer and where the main purpose of a VCD networked package is in trusting in its status ensured by a National VCD Service Provider.

Stage 4 will provide a good opportunity to implement Article 52 of directive 2004/18/EC. Article 52 provides guidance in making proof of exclusion and selection criteria much easier for the contracting authority. The interaction between the economic operator and the contracting authority can then be summarized by “trust in my National VCD Service Provider who holds the attestations for me”. Obviously, there are several difficulties for such a model that include political considerations, auditability, traceability, liability, mutual recognition of procedures with regard to Article 52, trust between national VCD service providers etc. All those circumstances have to be solved before implementing a VCD networked package on the basis of Article 52. Nevertheless stage 4 provides guidance in how to connect both ideas in an easy way.

EC  
approval

### 3 Legal, organisational and semantic framework and requirements

Interoperability is a major topic being discussed in eGovernment for a while now. Already in 2003, the EC has published a working document, the European Interoperability Framework (EIF), where the authors defined IOP as “the means by which the interlinking of systems, information and ways of working, whether within or between administrations, nationally or across Europe, or with the enterprise sector, occurs” (IDABC 2004), pp. 6). The document recalls IOP needs on technical, semantic and organizational layer with a rather wide understanding of IOP (IDABC 2004). In late 2008 a draft for a revised European Interoperability Framework was published by IDABC extending the requirement for IOP to five levels<sup>11</sup>:

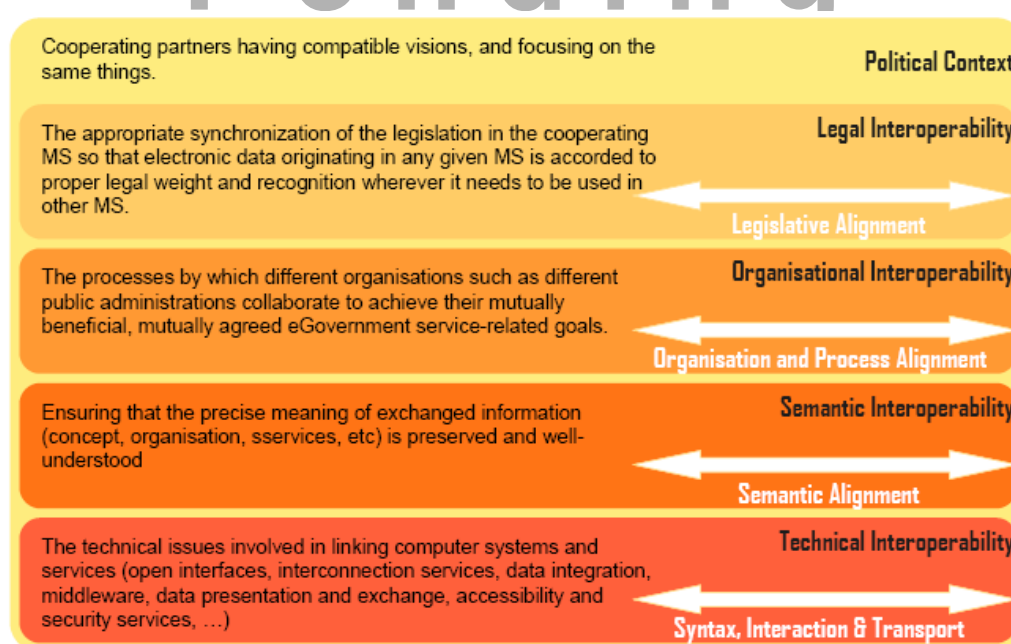


Figure 19: Level of Interoperability according to EIF2 draft

The aim of this chapter is to draw a picture about the current situation applied in the countries with regard to potentially placement of a VCD in the MS according to the European Interoperability Framework version 2 (EIF2):

- The legal framework thereby refers to appropriate synchronization of the legislation in the cooperating MS so that electronic data originating in any given MS is accorded to proper legal weight and recognition wherever it needs to be used in other MS. This includes rules with regard to tendering, submission and awarding including certificates and attestations that are typically required and their mapping to evidences and exclusion and selection criteria from a legal point of view.
- The organizational framework then refers to the processes by which different organizations such as different public administrations collaborate to achieve their mutually agreed eGovernment service-related goals. This includes best practices for tendering, submission and awarding derived from activities such as stakeholder analysis and stakeholder questionnaires that have been developed.

<sup>11</sup> <http://ec.europa.eu/idabc/en/document/7728>

- The semantic framework ensures that the precise meaning of exchanged information (concepts, organization, services, etc) is preserved and well understood. It includes data aspects of the target solution with regard to common understanding, agreement procedure on shared definition of terms and mapping of evidence.
- The technical framework refers to technical issues involved in linking computer systems and services (interfaces, interconnection services, middleware, data exchange, accessibility, security services, and validation service...). It specifically includes aspects with regard to the PEPPOL infrastructure for submitting a VCD across borders.

Each chapter results in a framework for the application of a VCD, which is described through a set of requirements that haven been derived from the activities mentioned before.

## 3.1 Organisational Framework

### 3.1.1 Overview about organisational framework

The organisational framework for the VCD has several dimensions. The use cases of the stages above show the actors that are involved and have to be addressed through the organisational framework e.g. economic operators, contracting authorities, issuing bodies, national service providers etc. Within the project it will be necessary to manage these different kinds of stakeholders by adequately integrating them into the project. Thereby it will be of importance to define their specific role and their importance for our work package within the lifetime of the project. Networks of gathering evidences are complex to handle because there are several stakeholders to consider. To avoid problems of involvement a clear approach of stakeholder analysis is needed. WP2 can only provide guidance to this since it will be a national responsibility. Austria for example has set up a physical stakeholder forum that informs key stakeholder in regular time intervals about the results of PEPPOL. Next to this the WP2 team of Austria is building up a participation platform<sup>12</sup> where latest results are presented and can be further discussed within forums and mini surveys. Each member state has to define its own strategy to involve stakeholders during the lifetime of the project. WP2 has developed a template for stakeholder management that may provide guidance for this. It can be found in ANNEX IV: Template for stakeholder analysis.

To ensure a wide acceptance of the solutions provided by WP2 among stakeholders we have to prevent changes in national procedures and infrastructures but to utilize them as much as possible. In stages 2, 3 and 4 it will be necessary to establish a national service provider who will take care about critical VCD processes and therewith ensure legitimacy, trust and appropriate change management. Any VCD solution should provide universal support for economic operators of any size. Testing of a VCD solution will be very important and should be done by reprocessing historical tenders in order to avoid problems of disqualification due to errors of applications.

Another important part of the stakeholder analysis is the identification of recognized public and private issuing bodies. This may be done through the support of DG Markt's study (Siemens\_and\_Time.lex 2007) report on national country profiles<sup>13</sup> and additional national analysis. These entities then need to be included into a list of recognized private and public issuing bodies which will be an important part when defining structural data of evidence (e.g. issuer, availability, delivery time etc). A national VCD application may list several different issuing bodies that provide the same attestation. These may have different characteristics as for example price, availability or delivery time. However the choice which attestation is most appropriate should be left to the economic operator but this decision may be supported through displaying these different characteristics. If an economic operator for example decides to rely on a manual issuing service that cannot be directly invoked by a national service provider it is the responsibility of the economic operator to provide this attestation and act as issuing body by uploading it to the system of the national service provider in order to create a VCD package.

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<sup>12</sup> [www.egosta.at](http://www.egosta.at)

<sup>13</sup> [http://ec.europa.eu/internal\\_market/publicprocurement/docs/eprocurement/ecertificates\\_country\\_en.pdf](http://ec.europa.eu/internal_market/publicprocurement/docs/eprocurement/ecertificates_country_en.pdf)

Each national service provider provides a national VCD solution in accordance to the key principles mentioned in the use cases. National solutions therefore may vary due to freedom of implementing national solutions but conformance to key issues should ensure their interoperability. A key issue for example is the pre-VCD mapping tool and it should be integrated into any national solutions either as a module or as interface to query results for the mapping of evidences among member states. To enable automated information processing on the basis of the pre-VCD mapping tool within national solutions additional structured information has to be defined within the Call for Tender that enables the retrieval of qualification and selection criteria from contracting authorities. A contracting authority therefore has to specify a relevant criteria subset within a Call for Tender which can then for example be referred to by an economic operator by providing the ID of a Call for Tender to the national solution.

Two phased tendering is not explicitly foreseen by the VCD even if it might be used for this purpose. In most cases we do not see great efforts for economic operators in two-phased since many countries only required the submission of self-declarations.

None of the above mentioned solutions explicitly requires implementing Article 52 of directive 2004/18/EC. Thus the VCD itself provides support for the proofing of conformance but it does not provide any information whether an economic operator is conform. In stages 3 and 4 a higher "level of decision making" is promoted and we see especially the provision of context specific data (stage 3) and the on demand approach (stage 4) as a pre-conditions that ease the establishment of lists of approved economic operators across borders. However if there is a country that wishes to enable such a proof in the VCD it can be done before but will require several manual efforts. Although such proof of conformance should rely on Articles 45 and 46 of directive 2004/18/EC first.

### 3.1.2 Organisational requirements

The requirements listed in the subsequent section have been identified and are essential for any WP2 solution. They are independent of a particular stage or show interrelations between them thus they are called high-level organisational requirements. The requirements have to be fulfilled or further analysed and specified in the project lifetime in order to further draft the organisational framework for a VCD to a greater extend.

#### 3.1.2.1 List of recognized public attestation bodies

##### Description

Article 52 describes that Member States may introduce either official lists of approved contractors, suppliers or service providers or certification by certification bodies established in public or private law.

##### Requirement

A list of recognized public authorities that are able to issue certain attestations in a particular Member State MUST be established.

##### Measurement

List of recognized public attestation bodies in VCD index

#### 3.1.2.2 List of recognized private attestation bodies

##### Description

Article 52 describes that Member States may introduce either official lists of approved contractors, suppliers or service providers or certification by certification bodies established in public or private law.

##### Requirement

A list of recognized private entities that are able to issue certain attestations in a particular Member State SHOULD be established.

##### Measurement

List of recognized public attestation bodies in VCD index



### 3.1.2.3 Utilization of existing national procedures and infrastructures

#### Description

Widely accepted national procedures and infrastructures in requesting, issuing, exchanging, collecting, assembling, proving and submitting evidence should be utilized wherever possible in order to improve acceptance of a solution and in order to lower the complexity of the domain.

#### Requirement

Widely accepted national procedures and infrastructures SHOULD be utilized wherever possible.

#### Measurement

Acceptance of the solution among stakeholders

### 3.1.2.4 Increasing trust through national authority

#### Description

A national authority (e.g. national service provider) should ensure legitimacy in critical VCD processes of requesting, issuing, exchanging, collecting, assembling, proving and submitting evidence in order to increase the trust between the entities involved.

#### Requirement

A national authority MUST support critical processes in order to increase the trust between the entities involved.

#### Measurement

Establishment of legally regulated national service provider for the VCD

### 3.1.2.5 Conformance of national solution with pre-VCD mapping tool defined in stage 1

#### Description

The common ground for WP2 is the establishment of national pilot solutions that ensure interoperability of attestations across Member States. Therefore WP 2 has defined a pre-VCD mapping tool described in stage 1. Any national pilot solution that will be developed using resources of PEPPOL must use the pre-VCD mapping tool in order to achieve the desired objectives.

#### Requirement

Any national pilot solution that will be developed in the context of PEPPOL WP2 has to follow the pre-VCD mapping defined in stage 1.

Conformance between the processing of different national VCD services has to be ensured, monitored and surveyed by a European VCD service provider that needs to be set up with defined responsibilities and procedures. The European VCD service provider will maintain the common descriptions and monitor the development of the national solutions and assess their conformance to a common European interface (i.e. the pre-VCD mapping tool).

#### Measurement

VCD packages need to provide mapping functionality with the pre-VCD mapping tool

### 3.1.2.6 National Freedom of implementing pilot solutions

#### Description

The implementation of a national VCD solution in stages 2, 3 and 4 requires a wide degree of freedom in implementing this solution according to national conditions and requirements. Specific national functionalities of pilot solutions therefore are not subject to discussions and agreements between

different WP partners as long as they follow the common interoperability guidelines of the specification.

#### **Requirement**

National implementations of VCD systems and their functions are no subject to discussions and agreements between WP partners as long as they follow common interoperability guidelines that will be monitored by the European VCD Service Provider.

#### **Measurement**

Conformance with common interoperability guidelines that will be monitored by the European VCD Service Provider.

### **3.1.2.7 Scope with regard to Article 52**

#### **Description**

Article 52<sup>14</sup> describes that EU Member States may introduce either official lists of approved contractors, suppliers or service providers or certification by certification bodies established in public or private law.

Pilots implemented in stages 1, 2, 3 and 4 produce VCD artefacts that enable matching between attestations and certain criteria across borders and the implementation of the VCD package. This does not include that any check or proof of conformance is performed by any national service provider who provides a VCD package with regard to the contents of the package and its attestation as for example describe in Article 52 of the directive ("official lists of approved contractors, suppliers or service providers"). In stages 1, 2, 3 and potentially also in stage 4 the check and proof of conformance belongs to the economic operator himself. Nevertheless any stage may be implemented according to Article 52 if there is adequate legal basis within a country and if there is political commitment for doing so. Stage 4 is providing a good opportunity to implement Article 52.

#### **Requirement**

A national pilot solution may implement attestation validation feature but proof of conformance and checking is not a mandatory feature that has to be fulfilled by a national service provider.

#### **Measurement**

National Service Provider does not have to approve the documents submitted by economic operators

#### **Requirement**

Any of the proposed stages SHOULD be applicable within a Member State who wishes to apply Article 52 and EFTA EEA Committee decision 68/2006.

#### **Requirement**

A Member State MUST formally define an authority that is able to provide a proof of conformance to certain criteria if the Member State wishes to implement Article 52 or if Article 52 is already implemented.

#### **Measurement**

Authority that takes the role of validation point and Article 52 implemented.

### **3.1.2.8 Specification of subset of evidences and related criteria by the contracting authority**

#### **Description**

A contracting authority sends a notification on a Call for Tender to a Publication body that publishes the call. The Call for Tender contains the definition of relevant evidences and specifies the relevant criteria on qualitative selection and exclusion. If an economic operator decides to participate in a particular Call for Tender he can directly retrieve the relevant criteria and evidences by using the

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<sup>14</sup> The EFTA EEA Committee decision 68/2006 gives similar lists for the EFTA countries.

information published in the Call for Tender. In cases below threshold the economic operator might send a direct request to the contracting authority in order to retrieve the required information. Having the relevant criteria in place the economic operator will be enabled to get a mapping to the national attestations that refer to those criteria via the pre-VCD mapping tool.

**Requirement**

The contracting authority has to specify a subset of the superset of criteria that is relevant to a specific Call for Tender so that any VCD application can perform the mapping later on

**Measurement**

Development of standard template for specifying criteria as part of tender-specific data

**3.1.2.9 Provision of subset of evidences and criteria by the Economic Operator****Description**

If an economic operator decides to participate in a particular Call for Tender he can directly retrieve information about relevant evidences and related criteria by using the information published in the Call for Tender. In cases below threshold the economic operator might send a direct request to the contracting authority in order to retrieve the required information. Having the relevant evidences and criteria in place the economic operator will be enabled to get a mapping to the national attestations that refer to those criteria via the pre-VCD mapping tool. The economic operator therefore has to provide a subset of the superset of evidences that is relevant to a specific Call for Tender to its National Service Provider or VCD system.

**Requirement**

Any VCD system must have an interface to provide tender-specific data and (in particular the relevant criteria subset) in order to perform the mapping.

**Measurement**

Interface for providing tender specific data and in particular the relevant criteria subset.

**3.1.2.10 Scope of VCD application with regard to two-phased tendering****Description**

The VCD is subject to the main submission of attestations and not to any pre-submission typically required in two-phased tendering. A national pilot VCD solution may support the pre-submission of evidence as well.

**Requirement**

The main subject of the VCD is the final submission of evidence to the contracting authority

**Measurement**

VCD package supports final submission of evidence

**3.1.2.11 Principle for selecting issuing body****Description**

There are often multiple issuing bodies available which provide evidence of the same kind but with different characteristics such as cheap issuing services and fast issuing services. The requestor has to decide by himself which issuing service is most appropriate to satisfy his needs. A pre-selection of issuing services could be provided by the VCD system.

**Requirement**

If there are multiple ways to provide evidence the choice of selecting a specific issuing service is left to the requester.

**Measurement**

Functionality and interface to select issuing services

### 3.1.2.12 Economic Operators that act as Issuing Bodies

#### Description

Any VCD system relies on issuing services that cannot directly invoked electronically. Often the VCD system will have the possibility to specify the issuing services that are needed to evidence certain criteria e.g. candidate statements or attestations from third parties that are not available in electronic format. An Economic Operators must take care of collecting and preparing these evidences and to submit them to the VCD system.

#### Requirement

An economic operator **MUST** be able to act as an issuing body for candidate statements or other evidence that cannot be directly or electronically retrieved by the VCD system.

#### Measurement

Functionality and interface that enable economic operator to upload any kind of evidence to the VCD

### 3.1.2.13 Universal support

#### Description

*“E-business is relevant to organizations of any size. Traditionally only larger organizations have been able to take advantage of e-business primarily due to the cost barrier. The evolution on the Internet has shown that as soon as the barrier for entry is lowered enough – even the smallest organizations will take advantage of the new technology. It is therefore important that when new technology is established that the barrier for taking up the technology is sufficiently low.” (Bausa O. and Boujraf A. 2009)*

#### Requirement

The electronic procurement framework **MUST** support organizations of any size and industry.

### 3.1.2.14 Testing of VCD solution

#### Description

WP2 concentrates on pre-awarding issues where requirements and procedures are often strict due to principles like equal treatment, non-discrimination, transparency, competition etc. Although a VCD does not include the offer itself it provides several documents that are of great importance for the award of contracts and therewith critical for the success of an economic operator for example in cases of disqualification because of late delivery of a VCD. To avoid those problems testing of VCD should be done by reprocessing historical tenders.

#### Requirement

The VCD solutions **MUST** be tested in specific cases by re-processing historical tenders. The testing **SHOULD** be repeated regularly and especially after up-dating of software. A national solution will only be authorized to operate cross-border when all tests are passed; the testing has to be maintained and monitored by the European VCD Service Provider.

Stakeholder **MUST** be found in order to re-process historical tenders.

#### Measurement

Test results.

## 3.2 Semantic framework

### 3.2.1 Overview of semantic framework

Today's work in public administration is still strongly based on the work with documents and files. With the consideration of data object and document flow, a disambiguation of the terms used is reasonable to clarify the concepts.

Electronic documents can be text, tables, images or a combination of these and are available in digital form. Generally, this comprises each potentially permanent recording of data on a data carrier. Many European states allow the use of electronic documents as a replacement for documents in written form. Such documents find also application in tendering procedures and shall be part of VCD. Thus the electronic document is the central means for Public eProcurement and for the usage of a VCD on pan-European level.

The characteristics of a document are combined from physical shape (paper or electronic file), formal properties (e.g. structure and style), organisational properties (functional relation, version, indexing in a filing plan), content, document type (storage obligations, legal character, editability), time stamping (creation, expiry, last access), editors (sender, creator, author) and users (receiver, (last) editor, reader).

Official documents need to fulfil specific requirements like completeness, integrity and transparency. Apart from this, they also need to conform to the legality principle of administrative actions and to audit trails. A file (record) is a factual and task-related arrangement and collection of documents which belong together. The goal is to keep the content available and traceable at any time. Files are recorded with a unique identification.

This chapter describes the semantic framework of work package 2 that comprise solutions for the VCD from the data perspective. Section 3.2.2 therefore provides a brief overview about general patterns for data representation and utilisation. Thereby different data perspectives have to be separated that comprise a VCD:

- Structural data of VCD-Package: Data that describe a VCD package
- Economic operator data: Data that describe an economic operator
- Tender specific data: Data that describe a specific Call for Tender
- Structural data of evidence: Data that describe the structure of an attestation
- Context specific data: Data that describe the content of an evidence.
- Validation data: Data that describe the validation of a certain criteria.
- Evidences: Attestations and candidate statements
- Translations: Translation of attestations

In order to provide solutions for these different perspectives each one needs to be analysed and further defined. Important information for defining those types of data can be derived from already existing studies, reports and literature. A VCD than will have to consider several standards and methodologies that relate to record management and metadata development. Beside we will build upon the results provided by CEN/BII. Relevant standards and methodologies are mentioned in section 3.2.3.

Section 3.2.4 then provides a list of requirements that are important for the VCD and its pre-VCD mapping tool. This includes for example the level of completeness of a VCD and a pre-VCD mapping tool, principles for including attestations, the use of placeholders for evidences that cannot be further classified, the specification of semantics and the visualization of a VCD package.

### 3.2.2 Patterns for Data Representation and Utilisation

The Vision of the VCD comprises several different concepts such as visualization of data (e.g. stage2: visualisation of a VCD), sending / receiving data elements (e.g. stage 2: collecting evidence or stage 4: requesting attestation on demand), transferring data (e.g. stage 2: submission of a VCD) and routing of data (stage 4: exchange of validation values). To further clarify their interrelation we take the research by (Russel N., Hofsteded A.H.M. et al. 2005) of data occurrences in systems into account that characterize following categories:

- Data visibility
- Data interaction
- Data transfer
- Data based routing

**Data visibility** refers to the context in which data can be defined and utilised. The binding to specific constructs directly influences the way in which data may be used (e.g. intermediate results at task level or global data storage during execution of a specific case). Crossing the borders of one system and organisation, means have to be available to ensure the needed visibility.

**Data interaction** patterns investigate on the different passing of data between components. Most data interaction appears on two forms (see Table 8 for more details):

- One component sends data unscheduled to another one (Push)
- One component receives data unscheduled (Pull)

Table 8: Cross-organisational data interaction

Workflow constr.	Interaction description	Cross-org interaction
Task to Task	Communicate data from one task to another within the same case	a) Data communication along with the control-flow b) Dedicated data transfer c) Shared environmental data
Environment to Case	Push: A case receives data unscheduled from the environment  Pull: A case requests data from the environment	A task can handle unforeseen reception of data from collaboration partners or can request data from its partner organisations.

**Data transfer** adds the view on how to pass data between components to the dimension of data interaction. The way of communicating data depends on given access rights, a shared common data space, on the kind and type of data and the design of the workflow, which takes the before mentioned factors into account. A more detailed view on cross-organisational data transfer is given in Table 9.

Table 9: Cross-organisational data transfer

Workflow constr.	Transfer description	Cross-org analysis
By value	A workflow component send or receives required information by having only data values transported	No need for a common naming, a common structure of data elements or common address space
By Reference	A reference to a commonly accessible location is used to communicate data elements.	Access for all involved parties has to be granted, concurrency restrictions may be applied

**Data based routing** considers the influence of data in the workflow on the control-flow. Descriptions include control-flow decisions on existence, appearance or the value of data. This set of patterns is the cross-link of data patterns and control-flow patterns. Though it is question of data visibility and data interaction if data-based routing is applicable in respect to interoperability.

### 3.2.3 Relevant standards, methodologies and initiatives for the VCD package

The following subsections contain major standards and methodologies that shall be used for creating a VCD package. The mentioned metadata standards and the standards for record management are currently investigated for the purpose of our work package. Beside this CEN BII<sup>15</sup> develops a VCD profile that can be interpreted and used by systems based on both UN/CEFACT and UBL.

<sup>15</sup> [http://www.cen.eu/cenorm/businessdomains/businessdomains/iss/activity/ws\\_bii.asp](http://www.cen.eu/cenorm/businessdomains/businessdomains/iss/activity/ws_bii.asp)

### 3.2.3.1 Records Management

A selection of such documents will be included in any VCD; they will be produced by national units according to national legislation. This means that their content of data and information will vary. Both manual and automated cross border evaluation processes will require information about the legal validity of the documents, record by record.

This means that the records of these documents need to be tagged for the processing. The label can give access to contextual information, like a country's legislation and constraints valid for the very document.

Methods are specified in ISO 15489-1<sup>16</sup> "Records Management", and European requirements are detailed in MOREQ II<sup>17</sup>. Application of the standard will ease manual processing of such documents across borders and it will prepare for the use of automation.

### 3.2.3.2 Metadata standards

Tagged records, information and data can be processed by independent systems and applications only if the constraining tags or metadata are recognized by the different processing parties. ISO 11179<sup>18</sup> offers such a methodology that is widely accepted.

The purpose of ISO/IEC 11179 is to give concrete guidance on the formulation and maintenance of discrete data element descriptions and semantic content (metadata) that shall be used to formulate data elements in a consistent, standardized manner.

### 3.2.3.3 CEN BII

CEN BII is addressing the convergence between UN/CEFACT and UBL by working out neutral descriptions called profiles that are describing business operational units of business functionality, like the VCD. The CEN BII VCD profile will be a document that can be interpreted and used by systems based on both UN/CEFACT and on UBL. The process of a cross-border submission of the VCD will be done co-jointly with the CEN BII workshop. Hence, the use of ISO 15489 and ISO 11179 leads to standardised records and information management that can be automated in existing structures.

### 3.2.3.4 Methodical Framework

PEPPOL WP2 is investigating how to apply ISO 15489 to describe the structure and content of:

- Evidence of a company's identity (Extracts of commercial records or equivalent documents)
- Evidence of compliance with fiscal obligations (Declarations from fiscal services or equivalent documents)

Both record by record according to the said standard; the goal is to obtain agreed descriptions that are applicable in participating states. The descriptions will be valid in all the defined stages, and it will prepare for fully automated processing.

The processing of records, information and data requires standardised metadata; the metadata themselves need to be agreed between existing and potential users. The methodology of ISO 11179 will be used for specifications that can be used to detail the profiles developed by CEN BII WG 1.

This means that the VCD can be developed from a collection of paper documents to a file that can be processed according to agreed CEN BII profiles by the use of the two standards. The CEN BII description of a VCD will be neutral when it comes to semantics, and it will be helpful for systems based on both UBL and UN/CEFACT; applications can accordingly be set up by use of any of them.

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<sup>16</sup> [http://www.iso.org/iso/iso\\_catalogue/catalogue\\_tc/catalogue\\_detail.htm?csnumber=31908](http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=31908)

<sup>17</sup> [http://ec.europa.eu/transparency/archival\\_policy/moreq/](http://ec.europa.eu/transparency/archival_policy/moreq/)

<sup>18</sup> <http://metadata-stds.org/11179/>

### 3.2.4 Semantic Requirements

The requirements listed in the subsequent section have been identified and are essential for any WP2 solution. They are independent of a particular stage or show interrelations between them thus they are called high-level semantic requirements. The requirements have to be fulfilled or further analysed and specified in the project lifetime in order to further draft the semantic framework for a VCD to a greater extend.

#### 3.2.4.1 Semantic interoperability

##### Description

Semantic interoperability refers to the exchange of information in an understandable way within and across organizational borders.

*“To run real electronic business transactions without human intervention, semantic interoperability must be achieved. Deliverables from CEN BII are addressing semantic interoperability for some business documents relevant in electronic procurement. Outcomes from CEN BII are syntax neutral, which means that different syntaxes can be bound to the semantic requirements for the documents to be exchanged meaningfully despite their syntax.*

*Even if syntax interoperability is not achieved in a pan-European framework, it has to be possible to transform from a syntax vocabulary to another one without loosing.*

*Semantic interoperability should apply to all documents related with electronic procurement. It is required to work on the semantic interoperability for electronic attestations and certificates that requires not only semantic alignment but legal alignment in Europe.”(Bausa O. and Boujraf A. 2009)*

##### Requirement

Evidential documents exchanged between parties **MUST** be semantically harmonized in order to be processed electronically.

#### 3.2.4.2 Correspondence between national and European criteria

##### Description

National criteria for qualitative selection and exclusion should be formulated in a way that they can be mapped to European criteria for qualitative selection and exclusion mentioned by the Articles 45-50.

##### Requirement

National criteria for qualitative selection and exclusion **MUST** correspond to European criteria which are derived from Article 45-50 and which are partially described in the Eligibility of Tenders.

##### Measurement

Specialization Relationship

##### Requirement

National criteria **SHOULD** be consistent among themselves and with European criteria.

##### Measurement

Qualitative Evaluation and mapping

#### 3.2.4.3 VCD specific characteristics

##### Description

Any instance of a VCD requires to be defined for a particular economic operator. Next to this it is the aim of the work package to make each VCD specific to a particular Call for Tender. The pre-VCD mapping tool therefore will provide sufficient support and has to be integrated into a VCD system.

##### Requirement

Any VCD instance **MUST** be specific with regards to a certain economic operator.



Any VCD instance SHOULD be specific with regards to a certain tender.

A unique VCD identifier needs to be established.

#### **Measurement**

VCD can be applied to a specific tender and economic operator.

### **3.2.4.4 Method for ensuring “Level of completeness”**

#### **Description**

A VCD package will show its full potential only when all requested evidences (all that are necessary to prove all the requested criteria) are contained within it. The range of attestations varies from self-declarations to official attestations/certificates issued by public authorities. From a very pragmatic point of view it seems reasonable to focus on a subset of attestations in a first step and to complete the VCD Package later on. It is also reasonable to define, where and when permitted, a default packaging list of tender independent criteria to be served without the burden of reading or interpreting the “Call for Tender”. Several requirements can be derived.

#### **Requirement**

When implementing any tool, system or service WP2 MUST focus on mandatory requirements and evidences mentioned in Articles 45 and 46 first since these Articles are not tender-specific and therewith relevant for nearly all tenders.

#### **Measurement**

Any definition, specification, modelling or implementation will first focus on Article 45 to 46

#### **Requirement**

The mapping between evidences via requirements MUST have set a primary focus on the mandatory requirements and evidences of a VCD.

#### **Measurement**

The definition, specification, modelling or implementation of the pre-VCD mapping tool will focus on Articles 45 to 46

#### **Requirement**

Articles 47 to 50 open a wide range of different criteria which are tender- and country-specific thus they MUST be added stepwise to the pre-VCD mapping tool (which may require a higher-level mapping).

#### **Measurement**

Any definition, specification, modelling or implementation of Articles 47 to 50 will be done on a higher level.

#### **Requirement**

Any VCD system SHOULD provide the opportunity to the economic operator to produce a complete VCD even if there are several issuing services that are not under control of a national service provider, do not have specific mapping to other documents defined in the pre-VCD mapping tool and have to be provided by the economic operator manually.

#### **Measurement**

The VCD solution includes a concept of placeholders.

### 3.2.4.5 Placeholders in VCD packages

#### Description

Since the completeness of a VCD package should be ensured but a complete mapping of evidence may not be provided as especially the criteria of Articles 49 to 50 of the directive are unstructured and much dependent on tender-specific requirements it has to be possible to define placeholders where a contracting authority may complete the mapping on individual basis through uploading evidence to these placeholders.

#### Requirement

Any VCD system provides the functionality to add additional documents through placeholders.

#### Measurement

Conceptual definition of placeholders with the VCD system and mapping

### 3.2.4.6 Semantics of evidence

#### Description

The VCD system should provide a functionality that allows issuing bodies to submit evidence to it. Therefore interfaces to submit evidence to the VCD system have to be defined. Those interfaces should also provide the possibility to describe structural data, context specific data and where applicable validation values of the evidence along with common semantics. Thereby manual, semi-automated and automated interfaces have to be separated

#### Requirement

Interfaces to submit evidence to the VCD system have to be defined along with common semantics in order to allow issuing bodies to further specify evidence with regard to structural data, context specific data and validation values.

#### Measurement

Interface to upload evidence or to retrieve evidence contains possibility to specify structural data manually or automatically

### 3.2.4.7 Visualization of the VCD package

#### Description

Any VCD package that is created by a VCD system should be an artefact that can be interpreted without using specific technology. Thereby the VCD requires a sufficient format in order to be presented and displayed to other systems and users.

#### Requirement

Develop a format that allows the presentation and displaying of the contents of a VCD package.

#### Measurement

Visualization of the VCD package

### 3.2.4.8 Implementation approach with regard to stages of maturity

#### Description

The implementation of different stages of maturity requires a general approach that defines which parts are mandatory and ensure semantic interoperability of VCD packages. The below mentioned requirements provide guidance for and further explain where mandatory and optional requirements can be found.

#### Requirement

The pre-VCD mapping tool (Stage 1) **MUST** be filled with instances (defined) by every Member State since Stage 1 is a precondition for any other stage.

#### **Measurement**

Pre-VCD mapping tool filled with national instances

#### **Requirement**

The VCD simple package (Stage 2) lays the basic ground for the creation of VCDs and the implementation of other services mentioned in stages 3 and 4 so the key concepts of Stage 2 **MUST** be implemented in each Member States.

#### **Measurement**

Key concepts such as structural data of evidence applied to VCD package

#### **Requirement**

Stage 3 (VCD advanced package) and stage 4 (VCD networked package) introduce a set of optional functions that **SHOULD** be considered by each Member State when implementing a VCD.

#### **Requirement**

The stages are logically built upon each other **but it MUST** be possible to implement certain features of stage 4 if the necessary requirements for this are fulfilled in the lower stages even if maybe not all requirements are fulfilled in stage 3.

### **3.2.4.9 Principle for including attestations in stage 3 and 4**

#### **Description**

Stage 4 implies the exchange of certified validation values (e.g. certified “Yes/No” statements) instead of delivering an attestation. The attestations can be requested by the contracting authority on individual basis at the time of awarding and selection of candidates.

Validation values (e.g. certified “Yes/No” statements) should only be applied to networks where sufficient context specific data is available in order to approve this value. The validation value should be able to prove conformance to criteria of qualitative exclusion and selection unambiguously. This principle should be applied wherever possible for example:

- The economic operator has to prove that he paid fiscal taxes according to national regulations – in this case a “Yes/No statement” will be sufficient.
- The economic operator has to provide balance sheet or extracts from it in order to proof its economic or financial standing – in this case the whole attestation (balance sheet or extracts of it) has to be delivered.
  - If sufficient context specific data format for representing those information unambiguously is available it may be applied for stage 4.

#### **Requirement**

PEPPOL WP2 is not focussing on the creation of context-specific data of attestations or candidate statements in multilingual versions. If context-specific data is provided in multilingual versions (e.g. XBRL, ECRIS etc.) this has a high priority to be included into stage 3 and stage 4.

#### **Requirement**

If attestations are described sufficiently in multiple lingual versions they **SHOULD** be included first to stages 3 and 4.

#### **Requirement**

If the prove concentrates on qualitative aspects (e.g. provide balance sheet or extracts from it in order to proof its economic or financial standing) then the validation value cannot be applied. Instead such an attestation can be included into VCD stages 3 and 4 if it is sufficiently described through context specific data in multilingual versions (e.g. XBRL, ECRIS etc.).

### Measurement

Evaluation of context-specific specific standard representations for evidences

#### 3.2.4.10 Classification schemes awareness

##### Description

*"A classification scheme is the descriptive information for an arrangement or division of objects into groups based on characteristics that the objects have in common"<sup>19</sup>.*

*"Classification schemes and code lists conveys semantics to the objects so they are a key factor to achieve semantic interoperability.*

*Different industries provide specific classification schemes for their products or services. As it is quite complex to establish a common and unique classification scheme cross-border and cross-sector, business document instances should be carry metadata about classification schemes they use." (Bausa O. and Boujraf A. 2009)*

##### Requirement

Classification schemes for goods, services and code lists SHOULD be publicly available and identified in the document objects.

## 3.3 Legal framework

### 3.3.1 Overview of legal framework

Public procurement requires strict compliance with the legal frameworks provided by the procurement directives. Supporting pan-European procurement and implementing services to enable pan-European deployment of evidences is the major goal of PEPPOL WP2. Any WP2 solution therefore needs to comply with the legal requirements concerning selection and exclusion criteria in public procurement defined by the European procurement directives and in national implementing legislation.

Compliance with these regulations will ensure acceptance of a solution and will ensure and help to establish a "level of trust" between the parties involved. Therefore a comprehensive analysis of the relevant legal regulation has to take place. To get an overview on the legal requirements and regulations on different levels the following sources have to be analysed:

- European level (e.g. directive 2004/18/EG)
- National level (e.g. national procurement acts, other related regulations)

The recommended process to extract the legal requirements of a VCD service or VCD service provider follows the maturity path, defined within WP 2, starting with the "Status quo" and ending up with "Stage 4". At each level limitations and requirements have been identified with respect to legal requirements.

Any technical VCD solution requires legal interoperability in order to being used without doubts. Legal interoperability of a VCD requires the comparison of legal conditions within the Member States. National procurement legislation implements the directives 2004/17/EC and 2004/18/EC but vary due to different national conditions and practices. In cross-border procurement the national law often has to be enriched through principles mentioned in the relevant directives. When developing a solution the differences between national procurement acts and the European Directive has to be taken into

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<sup>19</sup> Wikipedia [http://en.wikipedia.org/wiki/Classification\\_scheme](http://en.wikipedia.org/wiki/Classification_scheme)

account in order to define a solution that is conform to national law and can be applied on a pan-European level.

The comparison of legal aspects has been done by comparing the national legislation on eTendering with respect to the European legislation. A set of 40 legal questions has been developed in order to describe the national legal environment with regard to the relevant Articles of the above mentioned directive and to draw conclusions from it. Those legal questions often target critical aspects for a potential VCD solution as for example the role and use of self declarations as replacement for documents that can not be issued within one Member State.

The legal analysis provides guidance in analysing the national legal frameworks and their principles with regard to cross-border tendering, submission of evidence and the awarding of contracts within Member States. The legal analysis thereby discusses in particular the following topics:

- Proof of suitability and exclusion criteria
- Types, formality and processing of evidence
- Implications of different procedures, services, thresholds and bidding syndicates
- Other issues like data protection and storage, use of signatures, liability

The entire set of legal questions can be found in ANNEX III: Questionnaire concerning the legal analysis.

### 3.3.2 Legal Requirements

The requirements listed in the subsequent section have been identified as essential for any WP2 solution. They are independent of a particular stage. The requirements have to be fulfilled or further analysed and specified in order to further draft the legal framework for a VCD to a greater extent.

#### 3.3.2.1 Equal treatment of foreign economic operators

##### Description

The principle of equal treatment is often mentioned by the directive 2004/18/EC for example in connection with contracts that should be awarded on the basis of objective criteria which ensure compliance with the principles of transparency, non-discrimination and equal treatment and which guarantee that tenders are assessed in conditions of effective competition. The VCD package should ensure equal treatment of foreign economic operators by providing a tool to submit evidence from one member state to another. Therefore Article 52(5) states that "*economic operators from other Member States may not be obliged to undergo such registration or certification in order to participate in a public contract. The contracting authorities shall recognise equivalent certificates from bodies established in other Member States. They shall also accept other equivalent means of proof*" [(EC 30.04.2004),p. 134].

##### Requirement

The VCD SHOULD support that economic operators from foreign member states may not be treated harder than own member state's economic operators.

##### Measurement

Tests and usability checks of historical tenders with contracting authorities and economic operators

#### 3.3.2.2 Minimum period of validity of VCD package

##### Description

A VCD package contains information with different validities. It has to be defined whether a VCD package can have its own validity or if its validity is only based on the contained information.

##### Requirement

The possibility of a definition of a minimum validity of a VCD package has to be defined

## Measurement

Data type in Structural VCD package data which specifies validity for the whole package

### 3.3.2.3 Equivalence between automated transformation and official translation of attestations

#### Description

The use of context-specific formats that include multi-lingual versions of attestations should ensure that an automated transformation from one language version into another language version delivers results that have from the viewpoint of official translations, a similar legal status.

#### Requirement

The provision of attestations that are available in context-specific formats including multi-lingual versions and their transformation into any target language has to guarantee similar legal status and effect is reached compared to official translation.

#### Measurement

The evaluation of relevant legal regulations

### 3.3.2.4 Legal effect of subset criteria and evidences specified by the contracting authority

#### Description

A contracting authority sends a contract notice to a Publication body that publishes the call. The Call for Tender should contain the definition of specific criteria on qualitative selection and exclusion that are relevant to this particular procurement.

If an economic operator decides to participate in a particular procurement procedure he can directly retrieve the relevant criteria by using the information published in the contract notice. In cases below threshold the economic operator might send a direct request to the procurer in order to retrieve the required information. The economic operator will be enabled to get a mapping to the relevant national attestations via the pre-VCD mapping tool. (cf. subsection 3.1.2.8: "Specification of criteria subset by the Procurer"; and subsection 3.1.2.9: "Provision of criteria subset by the Economic Operator")

#### Requirement

The contracting authority SHOULD specify a subset of evidences from the superset evidences that are relevant to a specific Call for Tender.

#### Measurement

Definition of the legal basis

### 3.3.2.5 Scope of mutual recognition

#### Description

Article 52(5) states "*that contracting authorities shall recognise equivalent certificates from bodies established in other Member States. They shall also accept other equivalent means of proof*" (EC 30.04.2004). This specifically points to the relevant Community rules on mutual recognition of diplomas, certificates or other evidence of formal qualifications. The scope of mutual recognition needs to be clearly defined by legal experts. This requirement in particular targets the following topics

- Does the scope of mutual recognition include the acceptance of foreign procedures of providing evidence with regards to Article 52 (1) (e.g. national service provider proofs conformance of attestation with given criteria and confirms this proof by including validation values into the VCD) or only the acceptance of foreign documents?
  - Which role trusted third parties (TTP) must take in this respect (e.g. national service provider)?
  - Which role takes liability in this respect?
- In most Member States conventional scanned copies are accepted as proof. Does mutual recognition requires acceptance of scanned copies? Does mutual recognition provide support to

submit scanned copies to other Member States which require official scans that are produced by dedicated public authority?

#### **Requirement**

The scope of mutual recognition needs to be further clarified with regard to acceptance of foreign procedures and the role and liability of trusted third parties.

#### **Requirement**

The scope of mutual recognition needs to be further clarified with regard to the provision of official scans.

#### **Measurement**

Qualitative legal specification on the scope of mutual recognition

##### *3.3.2.5.1 Mutual recognition and candidate statements*

#### **Description**

Which roles do candidate statements take in general and specifically as replacement for attestations that cannot be provided? Which roles take candidate statements with regard to mutual recognition and which conditions have to be fulfilled to provide candidate statements instead of attestations within public procurement procedures? Is mutual recognition and the use of candidate statements bound to those cases where equivalent documents are missing or can mutual recognition of candidate statements cover other conditions or conventions as well (e.g. increased usage of candidate statements in pan-European public procurement procedures)?

#### **Requirement**

The scope of mutual recognition needs to be further clarified with regard to the role of candidate statements.

#### **Measurement**

Qualitative legal specification on the scope of mutual recognition

##### *3.3.2.5.2 Equivalence of missing attestations*

#### **Description**

Not every Member State provides all attestations that are necessary for an economic operator to prove conformance with given criteria specified by another Member State. Thus only the economic operators from Member States where such attestations are available can provide these attestations. Other economic operators have to provide similar evidence instead (e.g. a candidate statement). The working group has to provide a concept of how each possible attestation has to be fulfilled (mapping of evidences defined in the directive with national implementation). Thereby the evidences provided by economic operator should be considered of equal value as evidences provided by a traditional issuing body if equivalence is missing

#### **Requirement**

It has to be defined which method and concept should be applied if there are missing attestations.

#### **Measurement**

Qualitative legal specification on the scope of mutual recognition

##### **3.3.2.6 Correct implementation of directives into national procurement law**

#### **Description**

Articles 45 to 50 of directive 2004/18/EC are the basis of our mapping strategy and for the development of the pre-VCD mapping tool. In order to achieve good mapping results it has to be

checked whether these articles are sufficiently implemented into national procurement law. This in particular covers the semantic requirement: correspondence between national and European criteria of qualitative selection and exclusion (cf. ANNEX III: Questionnaire concerning the legal analysis)

**Requirement**

It has to be guaranteed whether the directive is correctly implemented in national procurement law with regard to VCD relevant articles 45-52.

**Measurement**

National procurement existing

**3.3.2.7 Legal basis for exchanging validation data****Description**

In case a MS decides to exchange validation values (e.g. certified “Yes/No” statements) instead of delivering an attestation physically (stage 4 specific) it **MUST** ensure that this provision is legally allowed. Directive 2004/17/EC and Article 52 of Directive 2004/18/EC may provide a legal basis for such decision. The legal foundation in the country will provide a basis to accept these statements across borders according to the principle of mutual recognition of diplomas, certificates or other evidence of formal qualifications. The requirement is strongly related to the organisational requirement: “Scope with regard to Article 52”.

**Requirement**

The legal foundation for exchanging validation values **SHOULD** be given in the home Member States in order to support mutual recognition across Member States.

**Measurement**

Related regulations within national procurement law.

**3.3.2.8 Legal requirements regarding service providers****3.3.2.8.1 European Service Provider**

This section contains requirements concerning a European Service Provider who may host services necessary to ensure sustainable interoperability between VCD solutions in long terms. In particular a European Service Provider refers to the pre-VCD mapping tool which will provide a basis for all other VCD application in the subsequent stages. Especially responsibilities and services like hosting, maintaining and governing pan-European processes will be important. Several formal legal requirements have to be answered previously in order to define the scope of such European Service Provider

**Requirement**

The legal status and legitimacy of the European Service Provider **MUST** be defined.

**Measurement**

Formal establishment of the European Service Provider

**Requirements**

The responsibility of the European Service Provider **MUST** be defined (e.g. definitions, rule-set).

The liability of the European Service Provider **MUST** be defined.

**Measurement**

Definition of the legal basis for the establishment of such a Service Provider



**Requirements**

The legal regulation applicable for the European Service Provider MUST be defined.

**Measurement**

Definition of the legal basis for the establishment of such Service Provider

**Requirements**

A suitable way to establish the relevant regulation for the European Service Provider MUST be defined.

**Measurement**

Necessity for amendments of existing regulations has to be proofed

Pending

**3.3.2.8.2 National Service Providers****Description**

This section contains requirements concerning a National Service Provider who may host services necessary to ensure sustainable interoperability of a national VCD solution in long term. In particular a National Service Provider refers to any VCD system and VCD package that is developed within a Member State. Especially responsibilities and services like hosting, maintaining and governing the national processes with regard to a VCD solution will be important. Several formal legal requirements have to be answered previously in order to define the scope of such a National Service Provider

**Requirement**

The legal status and legitimacy of the National Service Provider MUST be defined.

**Measurement**

Formal establishment of the National Service Provider

**Requirements**

The responsibility and the related processes of the National Service Provider MUST be defined (e.g. mapping activity, compilation of VCD package).

The liability of the National Service Provider (depending on its legal status) MUST be defined.

**Measurement**

Definition of the legal basis for the establishment of such Service Provider

**Requirements**

The legal regulation applicable for the National Service Provider MUST be defined.

**Measurement**

Definition of the legal basis for the establishment of such a Service Provider

**Requirement**

A suitable way to establish the relevant regulations for the National Service Provider MUST be defined (e.g. special legal regulations concerning VCD service provision).

**Measurement**

Necessity for amendments of existing regulations has to be proofed.

approval

**Requirement**

Regulations concerning monetary aspects of the VCD service provision MUST be defined, therefore related legal regulations (e.g. competition protection act) MUST be considered.

**Measurement**

Definition of the legal basis for the establishment of such Service Provider.

**3.3.2.9 Legal requirements regarding the collection of evidences****Description**

In many countries there are certain regulations with regard to evidences that have to be considered. For example in some countries it is not allowed to directly issue an extract from the register of conviction to the economic operator but to directly deliver these evidence to the requesting authority.

**Requirement**

Special legal regulations for evidences MUST be considered (e.g. for extract from the register of conviction).

**Measurement**

Results of analysis of legal basis.

**Requirement**

Regulations for handling the non-existence of selected evidence requested in a MS MUST be defined and made operational.

**Measurement**

Results of analysis of legal basis.

**3.3.2.10 Legal requirements regarding data protection****Description**

Data protection defines a legal basis for the handling of information relating to people or entities. Data protection is the main piece of legislation that governs the protection of personal or entity related data in a way in which individuals or entities can enforce the control of information about themselves. Although data protection does not directly refer to principles like data privacy, data confidentiality, data availability, non-repudiation of data, data integrity and data security these principles are strongly connected to data protection. Thus data protection plays an important role for a VCD.

**Requirement**

Relevant regulations of national data protection acts MUST be analysed and considered.

Additional requirements for cross-border data exchange MUST be analysed and considered.

**Measurement**

Results of analysis of legal basis.

**3.3.2.11 Separation of VCD package and tender****Description**

The VCD package is just one part of a bid that an economic operator may submit to a contracting authority. Therefore the rules and regulations in each Member State have to be analysed with regard to the prospects of separating these two parts from each other. This may also include for example to

submit a VCD package via the PEPPOL infrastructure while submitting other parts or the bid itself via secondary channels or whether tendering platforms enable such separation.

**Requirement**

It **MUST** be clarified which prospects and limitations exists within a Member State to separate a VCD package from the tender itself.

**Measurement**

Results of analysis of legal basis.

**3.3.2.12 Trust model between the entities involved****Description**

There are several actors that are involved in the processes related to WP2 and these processes have to be defined with regard to trust between the entities involved (e.g. European service provider, national service providers, issuing bodies, economic operators, contracting authorities).

Trust models have to be defined for each process in order to clarify roles and responsibilities during transactions. This may include on a national level the definition of trust with regard to roles and responsibilities between national service providers and issuing bodies (public/private). On the European level it may include the “scope of mutual recognition” for example the trust between the national service provider who provides a VCD simple package and the European service provider who provides a particular mapping facility.

**Requirement**

A trust model and trust system **MUST** be defined from a legal point of view for every process which includes the roles and responsibilities of the entities involved.

**Measurement**

Ensuring trust through suitable legal regulations about roles, responsibilities and processes.

**3.3.2.13 Legal Validity****Description**

*“Some documents exchanged during the electronic procurement process have to be legally valid following EU Directives.*

*Directive 2004/18 states that the public procurement procedures and the rules applicable to service contests require a level of security and confidentiality higher than that required by Directives. Accordingly, the devices for the electronic receipt of offers, requests to participate and plans and projects should comply with specific additional requirements. To this end, use of electronic signatures, in particular advanced electronic signatures, should, as far as possible, be encouraged. Moreover, the existence of voluntary accreditation schemes could constitute a favourable framework for enhancing the level of certification service provision for these devices.” (Bausa O. and Boujraf A. 2009)*

**Requirement**

Electronic signature, with the same legal meaning of handwritten signature, **SHOULD** be encouraged in cross-border scenario.

**Requirement**

The regulations concerning the use of electronic documents, the exchange or download of electronic documents (e.g. mandatory usage of an e-signature) **MUST** be considered (especially regulations from national procurement act and directive 2004/18/EC).

**Measurement**

Results of analysis of legal basis for exchanging evidences and data.

**Requirement**

A process for document handling compliant with the relevant legal regulations **MUST** be defined (especially with respect to the data protection acts).

**Measurement**

Agreed process definition for document handling compliant with the relevant legal regulations.

## 3.4 Technical Framework (Infrastructure specific)

### 3.4.1 Overview of technical framework

This chapter shall include technical requirements that are essential for submitting a VCD via the PEPPOL infrastructures. In particular this refers to the proposed infrastructure of WP8 and the interrelation with our work package. The PEPPOL infrastructure of WP8 is dedicated in particular to the exchange of electronic business documents in a secure and reliable manner. Thereby it connects to existing e-business frameworks and value added networks and is being built on existing technologies and standards that have been tested and which have proven to be reliable and secure for enterprise use. WP2 takes a specific role within the project by concentrating on pre-awarding issues where requirements and procedures are often stricter due to principle like equal treatment, non-discrimination, transparency, competition etc. Although a VCD does not include the offer itself it provides several documents that are of great importance for the award of contracts and therewith critical for the success of an economic operator for example in cases of disqualification because of late delivery of a VCD.

An overall pre-condition for using the infrastructure and WP2 solutions in long term is that they are governed even after the project lifetime by maintaining and sustaining its functions. Therefore the governing models of WP8 and WP2 should be aligned.

Authentication is an essential feature of WP2 as a Virtual Company Dossier contains several documents that contain sensitive data about an economic operator. Hence, it has to be ensured that only those persons that have sufficient rights are able to access and retrieve these data. Authentication of origin is also an important feature with regard to non-repudiation, for example when submitting a VCD to a contracting authority.

Authentication is a verification of evidence of identity; for individuals and companies identifiers are used to process authentication. Such identifiers are national and in many countries specific and maintained within sectors, like tax, health, health insurance, employment, registration authorities, etc. PEPPOL will need to design an authentication system that serves its purposes. Hence, collaboration with WP 1 will be strengthened in the second phase of WP 2.

Time-stamping shall ensure that the submission of a VCD is adequately documented for example to verify that it has been sent or received previously to the closure of a call for tender. In order to obtain trust, the VCD services should use certified time stamps.

Moreover there are several actors involved in the WP2 scenarios which need to be connected to the PEPPOL infrastructure thus a sufficient allocation of identifiers, in connection with the identity an actor claims to have, has to be ensured. This shall ensure that unauthorized usage of an individuals' identity is avoided. Overall we see a need for commonly monitored identity and access management in particular for all national VCD solutions and for the PEPPOL infrastructure thus both approaches should be aligned and should make use of the same mechanisms through for example single-sign-on functionality.

Apart from functionalities like addressability and discovery, the infrastructure should provide access points to support the actors or services to connect to the infrastructure. The PEPPOL infrastructure will make it possible to exchange electronic business documents in a secure and reliable manner. Thus also the VCD should be able to be submitted through the PEPPOL infrastructure. We also assume that a VCD in stages 2 and 3 can be potentially submitted through other means but this is up to the choice of an economic operator and should not be promoted because bypassing the infrastructure is

critical from the viewpoint of using validation services to ensure confidentiality of a VCD and its contained documents (WP1) and secure and reliable transport ensured through the PEPPOL infrastructure (WP8). During transportation the integrity of a VCD has to be ensured when for example validating it.

Usage of the Infrastructure will require that national access points to the infrastructure (e.g. national service providers, contracting authorities) will be implemented but also direct access points that support SMEs in connecting to it. We also see a potential need to access web services via the infrastructure that enable client-side code generation in SOAP frameworks for example for the retrieval of attestations on demand, connecting to tendering platforms or viewing the VCD on some platform at the national service provider.

### 3.4.2 Technical Requirements

The requirements listed in the subsequent section have been identified and are essential for any WP2 solution. They are independent of a particular stage or show interrelations between them thus they are called high-level technical requirements. The requirements have to be fulfilled or further analysed and specified with in conjunction with WP1 and WP8 in order to further draft the technical framework with regard to the VCD.

#### 3.4.2.1 Interrelation of governance models of WP2 and WP8

A governing model has to be defined in order to deploy the WP2 systems and tools and to maintain their states and sustainability over time. In this respect the composition, structure and scope of the governing model has to be formally defined to ensure fulfilment of functions like liability, sustainability and maintainability (e.g. especially to maintain and sustain a pre-VCD mapping tool in long term and therewith to ensure (re-)liable functions) The dedicated governing model should have the necessary status and power to govern its assigned functions.

##### Requirement

It MUST be clarified how the governance model of WP2 fits into the overall governance model of WP8.

##### Measurement

Governing model of WP2.

#### 3.4.2.2 Authentication of PEPPOL Actors

##### Description

The identity and access management of systems for company evidential documents is regulated by local procedures and could become part of the WP2 proposed systems (cf. stage 2 description). Economic operators have to apply for a VCD account in order to become authenticated. An officer has to verify whether the data that is necessary to apply for an account belongs to the economic operator and has to assure its correctness. An economic operator can authenticate to the VCD system only when the economic operator has sufficient user rights provided by identity and access management. Thereby WP2 has to take into account which natural person has the power to act as authorized representative of the economic operator.

##### Requirement

WP2 stakeholders MUST be authenticated to the VCD system and for the PEPPOL infrastructure.

##### Measurement

Formal authentication mechanism.

##### Requirement

The identity and access management procedures for creating a VCD account SHOULD be harmonized with the registration procedure of the overall infrastructure provided by WP 8.

### **Measurement**

Single-Sign-On functionality.

### **Requirement**

A single-sign-on SHOULD be implemented in order to allow identity and access management across different systems.

### **Measurement**

Single-Sign-On functionality.

#### **3.4.2.3 Allocation of identifiers**

##### **Description**

Work package 2 will use the PEPPOL infrastructure for discovering addressing information which is typically stored in a registry. Therefore we need to find a method how addresses can be allocated and being provided to the WP 2 stakeholders so that they can use the PEPPOL infrastructure for exchanging VCDs and access related services.

##### **Requirement**

A method MUST be found how to allocate identifiers to the participants that use the infrastructure for transportation of VCDs and related services.

##### **Measurement**

Joined strategy and method with WP8 how to allocate identifiers among stakeholders and WP2 related services.

#### **3.4.2.4 Identity**

##### **Description**

*“Member States are building electronic identity management systems as a key element in their national strategy to deploy electronic services. Those national based systems are evolving without taking into account the requirement for interoperability that is needed in a cross-border scenario, resulting in a fragmented service that prevents the deployment of pan-European electronic services.*

*In the public procurement business process, as in other electronic business processes, electronic identity is a key element for two main purposes:*

*Avoiding unauthorized use of individuals identity*

*Assuring to administrations that individuals are the persons they claim to be and have the mandate they claim to have” (Bausa O. and Boujraf A. 2009)*

##### **Requirement**

Every party participating MUST be uniquely identifiable.

#### **3.4.2.5 Addressability**

##### **Description**

*“As per the wide deployment of the Internet and the web, most electronic Government services have been focused on the provision of services through websites. However, using websites is not a good approach when dealing with services that affect business processes in both ends of a collaboration. Those business processes, such as the public procurement processes, can be run between applications, so no human intervention should be enforced to those organizations with automated procurement systems.*

*In such cases, every partner in the collaboration needs to be addressable so electronic documents can be exchanged from end to end through the underlying transport infrastructure.” (Bausa O. and Boujraf A. 2009)*

### **Requirement**

Every party participating SHOULD have a secure and verifiable electronic address.

#### **3.4.2.6 Discovery**

##### **Description**

*“To exchange electronic documents between parties in a cross-border environment, a major challenge is to find out the other party’s address and to understand what are his systems’ capabilities and requirements.*

*Different levels of maturity and implementation of electronic business interfaces on public administrations and economic operators across Europe obliges to create mechanisms for discovering the supported standards, documents and endpoints for trader partners.” (Bausa O. and Boujraf A. 2009)*

##### **Requirement**

In stage 4 it MUST be possible to discover the verified electronic address for an identified party.

#### **3.4.2.7 Access Points to the PEPPOL infrastructure**

The PEPPOL infrastructure will make it possible to exchange electronic business documents in a secure and reliable manner. It connects existing frameworks and networks, but also allows small businesses to participate in the electronic business processes if they have Internet access and can be securely identified. The PEPPOL infrastructure is being built on existing technologies and standards that have been tested and which have proven to be reliable and secure to use. For WP2 it will important to access the infrastructure from different perspectives. An economic operator for example has to submit a VCD via the PEPPOL infrastructure. A contracting authority may require access to a database hosted by a national service provider to receive an attestation by using a direct reference to it. Some web services may be connected to the infrastructure to add additional functionalities to a VCD or for example to receive mapping information from the pre-VCD mapping tool. Therefore different access points to the PEPPOL infrastructure may be necessary in particular:

- National connection points
- Direct access points for SMEs
- Web services and client-side code generation in SOAP frameworks

##### **Requirement**

It MUST be clarified which are the best access points for economic operators to use the infrastructure for transportation of a VCD package.

##### **Measurement**

Definition of access point within PEPPOL infrastructure and definition of VCD transportation system.

##### **Requirement**

It MUST be clarified whether the possibility exist to have access to web clients via the infrastructure in order to have access to specific web services which depend upon functionalities provided by the infrastructure.

##### **Measurement**

Discussion with WP8.

### 3.4.2.8 Use of PEPPOL infrastructure to submit a VCD (next to a bid)

#### Description

The VCD is just one part of bid that an economic operator may submit to a contracting authority. Therefore the systems in each Member State have to be analysed with regard to the prospects of separating both parts from each other. This may include for example to submit a VCD via the PEPPOL infrastructure while submitting other parts or the bid itself via secondary channels or whether tendering platforms enable such separation.

#### Requirement

It MUST be clarified whether tendering platforms enable a separated submission of a VCD and the bid itself.

#### Measurement

Result of national system analysis.

#### Requirement

The PEPPOL infrastructure MUST have the capability to submit a VCD to a contracting authority or tendering platform.

#### Measurement

Functionality for submitting VCD to a contracting authority or tendering platform.

#### Requirement

The PEPPOL infrastructure SHOULD have the capability to submit a bid which contains a VCD.

#### Measurement

Discussion with WP8 about the prospects to have a functionality for submitting a bid to a contracting authority or tendering platform that includes a VCD.

### 3.4.2.9 Confidentiality

#### Description

*“Ensuring that information is accessible only to those authorized to have access and in a predefined date is mandatory by the European Directive in some public procurement processes. Specifically, contracting authorities must provide a way to receive electronic tenders and ensure those electronic tenders are not accessed until the prescribed time for opening them. Annex X of the Directive 2004/18/EC lists the requirements relating to devices for the electronic receipt of tenders, requests for participation and plans and projects in contests.” (Bausa O. and Boujraf A. 2009)*

#### Requirement

It MUST be possible to guarantee confidentiality for specific documents.

### 3.4.2.10 Usage of validation service provided by WP1

#### Description

WP1 assumes that all actors can sign inside their corporate infrastructure. The e-tendering platform must offer download functionality for forms and other material to be filled in, signed, and returned by an economic operator. A validation service may be a technical service or a Validation Authority (VA) that takes on liability and acts as a trust anchor of its own. Validation services may be chained in order to serve requests that cannot be handled by the “local” validation service. The VCD essentially relies on such validation service in order to guarantee data integrity and confidentiality of a VCD (cf. PEPPOL WP1-D1.1).



**Requirement**

It MUST be possible to apply the validation service provided by WP1 to a VCD in order to enable economic operators to guarantee data integrity and confidentiality of a VCD.

**Measurement**

Testing of validation service with VCD within the PEPPOL infrastructure.

**Requirement**

It MUST be clarified whether the VCD can use the validation service of WP1 if the transportation infrastructure is not used by an economic operator.

**Measurement**

Discussion with WP1.

**3.4.2.11 Reliability****Description**

*“The purpose of an e-business transport infrastructure is to transport business documents between business partners. The transactions must be performed with high level of security and reliability. E.g. it must be ensured that business documents are actually delivered to the recipient party.” (Bausa O. and Boujraf A. 2009)*

**Requirement**

Transport mechanisms between party's addresses MUST be reliable.

**3.4.2.12 Security****Description**

*“The e-business transport infrastructure is to transport business documents between business partners. The transactions must be performed with high level of security. E.g. it must be ensured that third parties cannot intercept and read or modify the business documents.” (Bausa O. and Boujraf A. 2009).*

**Requirement**

Transport mechanisms between party's addresses MUST be secure.

**3.4.2.13 Data Integrity****Description**

*“Data integrity ensures data has not been altered or modified during any operation such as transport or storage. Integrity can be compromised both by malicious intervention from a third party or by errors in the transport or storage mechanisms. Despite legal issues about the integrity of certain documents such as the electronic invoices, it should be a general rule to assure the integrity of all documents exchanged between partners.” (Bausa O. and Boujraf A. 2009).*

**Requirement**

It MUST be assured that business document instances are consistent and correct during transportation, validation or transformation operations.

**3.4.2.14 Non-repudiation of origin****Description**

*“In electronic procurement, some processes require to ensure that the sender of an electronic document cannot repudiate its validity“ (Bausa O. and Boujraf A. 2009).*

**Requirement**

Authentication of origin for business document instances **MUST** be supported.

**3.4.2.15 Time stamping**

**Description**

*“In electronic procurement, some processes require to ensure that the documentation (attestations, tenders, etc.) is delivered before a time limit set.” (Bausa O. and Boujraf A. 2009).*

**Requirement**

Time stamping **SHOULD** be applied in some processes to certify relevant date and time.

**3.4.2.16 Audit trail**

**Description**

*“In electronic procurement it is fundamental to create a trust “environment” for the economic operator. A trust “environment” is needed in several phases of the eProcurement process (e.g. awarding a contract notice). It could be also a good deterrent against insider.” (Bausa O. and Boujraf A. 2009).*

**Requirement**

The electronic procurement process **MUST** have an audit trailing to ensure transparency for both parties.

Pending  
EC  
approval

## 4 High-level concepts for pilot implementations

### 4.1 Pre-VCD mapping tool

#### 4.1.1 Preliminary study on the electronic provision of certificates and attestations usually required in public procurement procedures

The first interim report – national country profiles – of the preliminary study of DG Markt comprises a list of qualification documents typically used in tendering procedures in the Member States. The report documents various attestations of the Member States which are arranged according to the Articles 45 to 50 of Directive 2004/18/EC (Siemens\_and\_Time.lex 2007):

- Evidence of the Economic Operator's identity (e.g. Extracts of commercial records or equivalent documents)
- Evidence of absence of conviction for natural persons (e.g. Extracts of judicial records or equivalent documents)
- Evidence of absence of conviction for legal persons (e.g. Extracts of judicial records or equivalent documents)
- Evidence of non-bankruptcy and financial status (e.g. Declarations from commercial courts or equivalent documents)
- Evidence of compliance with fiscal obligations (e.g. Declarations from fiscal services or equivalent documents)
- Evidence of compliance with social security obligations (e.g. Declarations from social security services or equivalent documents)
- Evidence of economic and financial standing (e.g. Bank statements, turnover sheets or equivalent documents)
- Evidence of professional qualification (e.g. Extracts from professional registers or equivalent documents)
- Evidence of technical and/or professional ability (e.g. Diplomas, descriptions of goods and services or equivalent documents)
- Evidence of adequate insurance (e.g. Insurance certificates or equivalent documents)
- Evidence of quality assurance (e.g. certification by auditing bodies of goods and services or equivalent documents)
- Evidence of environmental compliance (e.g. certification by auditing bodies of environmental practices or equivalent documents)

The study may follow up with a “proposal for a tool for a mutual information mechanism on the electronic provision of certificates and attestations usually required in public procurement procedures” which shall be aligned with our approach of a pre-VCD mapping tool. The above mentioned evidences thereby will be further described by templates that define the structural data of evidence for example the:

- Type of document
- Name of document
- Issuing entity
- Source reference
- Validity period

- Time of issuance
- Mandatory or optional
- Frequency of use
- Flexibility of submission
- Semantic characteristics
- Technical characteristics
- Validation requirements

#### 4.1.2 Certificates issued on the eligibility of tenderers and official lists of economic operators

Furthermore the Commission Service designed a questionnaire “Eligibility of tenderers”<sup>20</sup> in order to facilitate access to information related to some of the above mentioned evidences. The questionnaire contains a set of European criteria and requirements derived from directive 2004/18/EC and connected to specific evidences in order to make them comparable among Member States. Besides that, results from the “Study on the proposal for a tool for a mutual information mechanism on the electronic provision of certificates and attestations usually required in public procurement procedures” and the country profile templates developed by Siemens Time.lex commissioned by DG MARKT have been Stage 1, the pre-VCD mapping tool, will be built upon this information by providing automated mappings and comparisons between the defined documents via the mentioned exclusion criteria (cf. Table 10).

<i>[Member State or, if applicable, subdivision of Member State]</i>						
Exclusion criterion for a candidate or tenderer who <sup>1</sup> :	Availability of a(n)			Designation of the extract of the judicial record, the equivalent document or other means of proof	Entity(ies) - issuing the extract of the judicial record, the equivalent document or - certifying other means of proof such as declarations on oath or solemn statements	Do these extracts, documents or other means of proof relate to company directors or any legal person having power of representation, decision-making or control?
	extract of the judicial record	equivalent document	solemn statement Declaration on oath			
a) has been convicted by final judgment of the participation in a criminal organisation				<i>[Designation of the extract of the judicial record, the equivalent document or other means of proof]</i>	<i>[Issuing entity(ies)] [If only declaration on oath or solemn statement possible, please indicate who is entitled to take an oath or to certify a solemn statement]</i>	<i>[If yes, please specify the title of legal persons under national law who are covered by the relevant means of proof]</i>
b) has been convicted by final judgment of corruption				<i>[Designation of the extract of the judicial record, the equivalent document or other means of proof]</i>	<i>[Issuing entity(ies)] [If only declaration on oath or solemn statement possible, please indicate who is entitled to take an oath or to certify a solemn statement]</i>	<i>[If yes, please specify the title of legal persons under national law who are covered by the relevant means of proof]</i>

Table 10: Extract of a questionnaire on “Eligibility of tenderers” issued by the Commission service to facilitate access to information on evaluation criteria

Combining structural information about evidence and the criteria mentioned in the “Eligibility of Tenderers” they are referring to, it will be firstly possible to set up a database with common definitions that referring to evidences and secondly to define precise mapping between those evidences via the templates. Every partner of this work package should therefore fill the pre-VCD mapping tool with national instances and define the mapping to European criteria. This will also enable VCDs of the piloting country to work on a wider scope. Even if a country hasn’t defined a pilot implementation for a

<sup>20</sup> [http://ec.europa.eu/internal\\_market/publicprocurement/2004\\_18/index\\_en.htm](http://ec.europa.eu/internal_market/publicprocurement/2004_18/index_en.htm)

VCD it can receive and interpret a VCD according to the information provided by the pre-VCD mapping tool.

The next section provides an overview of relevant technologies that may enable such a mapping of evidence.

### 4.1.3 Relevant technologies and standards for pre-VCD mapping tool

This section provides an overview about relevant technologies that can be applied for a pre-VCD mapping tool. The pre-VCD mapping tool is depending upon formal semantics that describe how evidences related to each other. Therefore WP 2 proposes to derive criteria from the European directive 2004/18/EC as shown for instance within the “Eligibility of Tenderers”. Using formal semantics with the proposed technologies as presented in section 4.1.3 below enables several advantages (Fensel, Lausen et al. 2007):

- Enable mapping: This involves the creation of certain rules and axioms that define how terms or evidences within one Member State map to terms and evidences within another Member State
- Enable alignment: Refers to the commitment that has to be made in order to determine correspondences between concepts. Alignment is used to find classes of data that are semantically equivalent, but indeed not necessarily logically identical (e.g. Extracts of judicial records or equivalent documents).
- Enable translation: Refers to syntactic rewriting and semantic rewriting to support the translation between two different representations of data.
- Enable merging: Describes the creations of a common model that is used instead of the national models. Merging different national models into a unified one is an approach for semantic integration which is particularly used when national models overlap significantly over a common domain.

The usage of formal semantics is an extension which allows annotating syntactical contents in a format that is machine-understandable. Formal semantics enables users to share and integrate information easily by using descriptive technologies like the Resource Description Framework (RDF), the Web Ontology Language (OWL) and the data-centric Extensible Markup Language (XML). These languages provide a foundation for semantic interoperability. They are combined to give a well-defined meaning to the information and data exchanged in order to provide machine-readable descriptions and to enable machine-to-machine communication. The semantic theory derives information from data through the interpretation of symbols and allows formalizing the meaning of symbols by connecting the relevant terms in logical means. The semantic theory therewith provides mechanisms to enable semantic interoperability between heterogeneous systems. The key technologies for enabling semantic interoperability are shown by the semantic web layer cake in Figure 20 (Shadbolt, Hall et al. 2006).

Each layer is based and depends on the layer below, but lower layers do not depend on higher layers. The layers can be developed relatively independently. Each layer has a greater level of specialization and tends to be more complex than the layers below it. Most of the technologies that are shown in the diagram are W3C developed or endorsed. Thus there are potential alternatives for some of the layers (Passin 2004), (Shadbolt, Hall et al. 2006), (Fensel 2001):

- For enabling machines to process data directly, database objects have to be mapped into a system of URIs. URIs using a global naming convention to identify resources thus they are central for semantic interoperability. Resources are associated with a URI so that anyone can link / refer to it and may access an appropriate representation of it.
- XML provides a standard serial syntax for exchanging data and it is becoming the standard for data interchange on the web. However, XML and its schema languages do not express the meaning of the content but rather structure, e.g. nesting information. XML documents are usually based on different schemas but they may represent data with similar semantics.
- RDF is a general method for modelling metadata, through a variety of syntax formats. RDF provides a standard form for representing semantics of data which can be processed by

machines. The RDF metadata model allows to define statements about resources by using so called triple stores (subject-predicate-object expressions). Resources in RDF are connected to specific URIs that allow to derive information about the resource and its meaning. RDF is an application of XML thus it provides an XML-based syntax for recording and exchanging RDF information.

- OWL is designed to enable applications to process the content of information instead of just presenting information to humans. OWL facilitates greater expressivity and machine interpretability of content than that supported by XML and RDF by providing additional vocabulary (e.g. relationships between entities) along with a formal semantics. The main idea of OWL is to support an efficient representation of ontologies as well as the support of decision procedures. OWL allows to refer to terms in other ontologies and it uses the linking provided by RDF to enable the distribution of ontologies among different systems
- Logical reasoning is needed to ensure the consistency and correctness of data sets. It is used to infer conclusions that are not explicitly stated but are consistent with and required by a known set of data. Proofs are needed in order to trace the steps of logical reasoning<sup>21</sup>.
- Trust aims at the provision of authentication mechanisms and the evidence of the trustworthiness of data, services, and agents.

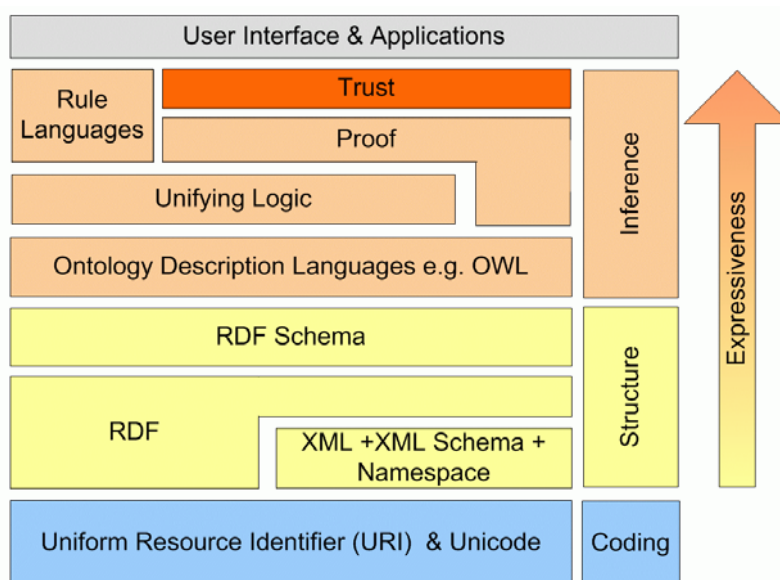


Figure 20: An architecture for semantic interoperability [adapted from (Berners-Lee 2000)]

RDF is the basic layer for data representation because it is designed to allow data from different sources to be written in the same form and therefore distributed between different systems. RDF is based on existing standards such as XML and URI. On top of RDF, the ontology layer is being developed under use of OWL or any other ontological language. The layers above RDF are the subject to many prototype systems that are built to enable a higher degree of semantic interoperability between heterogeneous systems.

Depending on further detailed specification of the pre-VCD mapping, WP 2 partners will make a decision to use either a simplified ontology mapping based on XML or to embark on more powerful technologies such as RDF or OWL in order to ensure wider interoperability and provide mapping and translation features as indicated above.

<sup>21</sup> <http://www.codeproject.com/books/GuideSemanticWeb.asp>

## 4.2 Overall approach for the pilot implementations (stages 2+)

Implementing the VCD concept as introduced in this report has cross-border as well as national and/or regional dimensions. Figure 21 depicts the overall concept of the VCD system implementations. As shown in the figure and introduced before, the key technical elements of the VCD implementation are:

- on one hand the European Service Provider, who ensures the functioning of the pre-VCD mapping (stage 1 - mapping tender qualification, selection and non-exclusion criteria of a contracting authority in Country B to the evidences existing for an economic operator in Country A and corresponding to the demands of the contracting authority in Country B) – cf. section 4.1;
- on the other hand, the VCD Service Provider in a respective country, who communicates with the European Service Provider for the mapping, and who implements the compilation of a VCD for the economic operator in his/her country (supporting stages 2 – 4 of the VCD concept introduced).

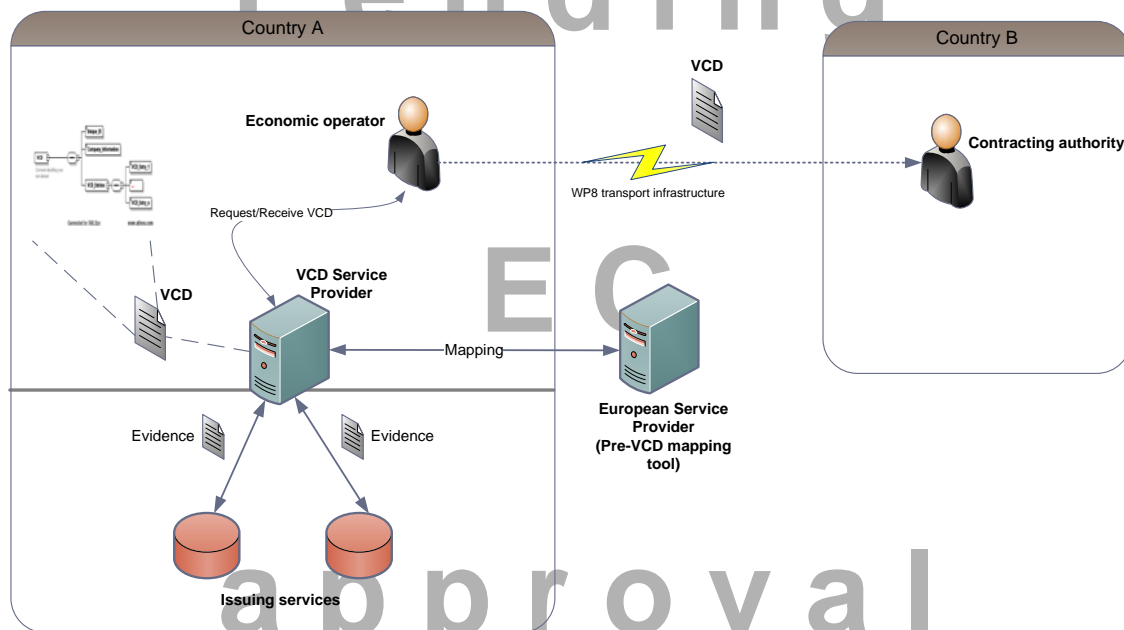


Figure 21: Overall concept for the PEPPOL VCD implementation – European vs. national scope of pilot implementations

The European Service Provider and the VCD Service Provider serve cross-border submission of evidences via the VCD packages (simple / advanced / network). Hence, these implementations are part of PEPPOL WP 2 pilot implementations. In the initial Description of Work, Austria and Italy have planned pilot implementations of stages 2+ (see subsequent sections 4.3 and 4.4 for more detailed descriptions of the Austrian and Italian pilot implementations). Through an enlargement of PEPPOL, further pilot implementations are aimed at, including:

- France and Norway intend to implement stage 4;
- Belgium, Czech Republic and Greece aim to implement VCD packages of stages 2-3;
- Sweden intends to implement stage 1.

Besides these pilot implementations in the context of WP 2, the WP 2 project partners also aim at collaborating intensely with potential activities of the EC (DG MARKT) to implement the pre-VCD mapping tool.

With a total of eight pilot implementations plus the European Service Provider implementation of the pre-VCD mapping tool, the WP 2 will reach a wide geographical spread as well as a profound proof of the overall VCD concept.

Since the VCD implementation also touches national demands for existing infrastructures to access and retrieve evidences from issuing bodies (see the lower part of Country A in Figure 21), such infrastructures and required identity and access management for accessing local issuing bodies are

considered as parts of national infrastructures where PEPPOL will embark on. Hence, individual Member State countries will already have such infrastructures and access mechanisms in place or will have to implement them within national scope. The PEPPOL pilot implementations will give indications of technical implementations at national level and how the PEPPOL pan-European VCD systems may interact and be interconnected with national and/or regional systems of issuing bodies for further rollout of the VCD concept in Europe.

## 4.3 Austrian implementation and piloting proposal

### 4.3.1 Implementation approach

Austria will implement and pilot a VCD service based on the VCD concept introduced in this report. The intention is to create a system, which can handle all functions of a stage 3 VCD advanced package solution, and thereby achieve:

- full pan-European interoperability,
- flexibility to meet the dynamics of the organisational and legal changes and
- advanced support of SMEs participating in pan-European purchasing processes.

The Austrian VCD system will give a living proof of concept of complex pan-European constellations, where interoperability is a key success factor for the whole VCD concept.

Figure 22 demonstrates the scenario for an example of a complex pan-European tendering process with stakeholders of different nationalities to be handled by the VCD solution: a consortium of economic operators (either equal bidding partners from AT and IT, or Austrian main bidder with Italian subcontractor) responds to a tender of a Norwegian contracting authority.

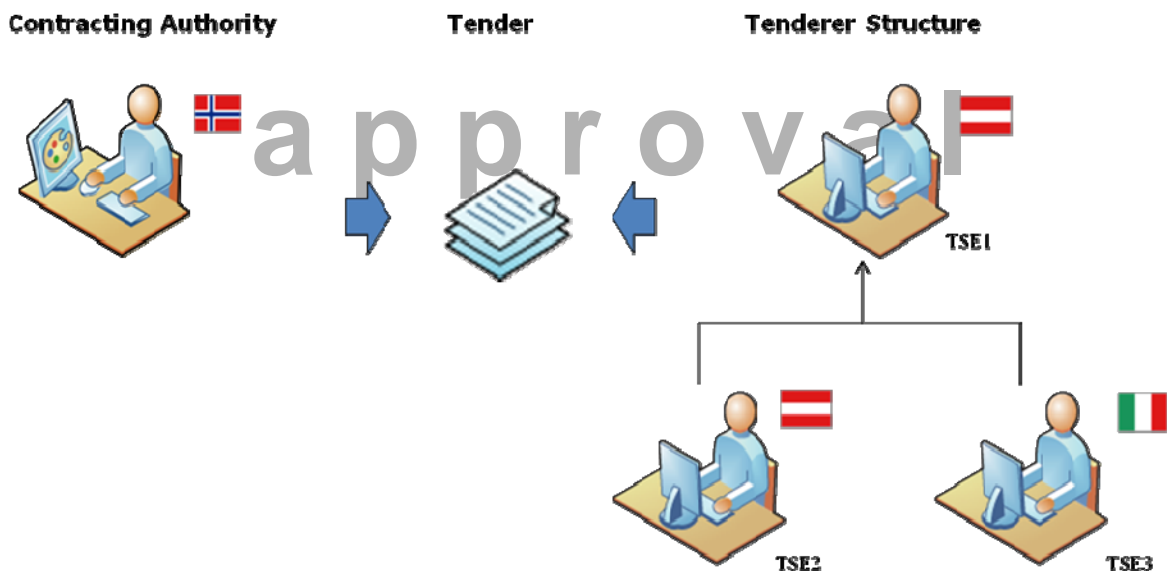


Figure 22: International scenario containing several countries involved in a tendering process

In order to understand, which qualification, selection and non-exclusion criteria have to be evidenced, the Austrian Tender Structure Element 1 (TSE1) consults the pre-VCD mapping tool provided by an European VCD service provider. Based on the information retrieved, the Austrian VCD implementation will deliver a VCD package containing all the evidences that are necessary to prove the selection and qualification criteria requested by any contracting authority regardless of its nationality (i.e. in the case of the scenario example provided in Figure 22: all evidences and declarations to be provided by TSE1, TSE2 and TSE3 to fulfil the requests of the Norwegian contracting authority).



With this design concept, the Austrian pilot will implement a complex rule set that reflects the legal requirements regarding criteria and evidence selection determined in the EU-directive 2004/18/EC as well as in national implementations of this directive. This way, the Austrian VCD implementation will ensure full pan-European interoperability and will lead to a dynamic situation regarding the legal rule set and its flexibility to adapt to legal and organisational changes.

In its implementation, the Austrian VCD pilot makes use of an execution engine directly interpreting an ontology representing the internationally agreed upon rules (coding of the rule set is avoided altogether). This ontology is the logic basis in order to orchestrate the necessary services collecting the required evidences for a given tender. Changes in the rule set will directly result in changes in the orchestration logic without any coding tasks and are executed immediately. Consequently, the implementation will be highly flexible and dynamic.

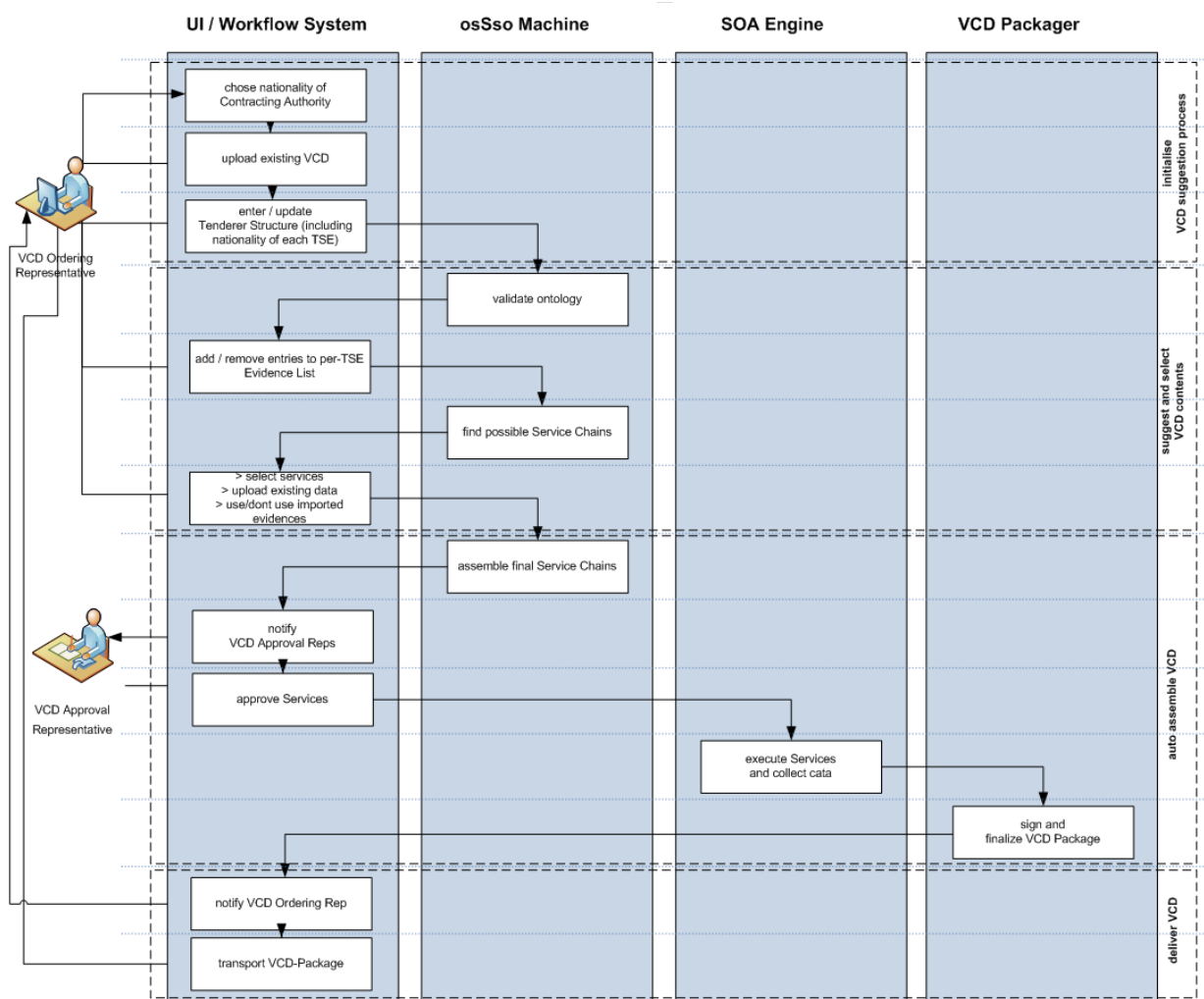


Figure 23: Architectural sketch of the Austrian VCD service

Figure 23 gives an overview of the components (architectural sketch) of the Austrian VCD implementation, which will consist of four building blocks:

- **UI/Workflow-System**  
This component handles the interaction with the users of the system (e.g. requester of the VCD package) and copes with the necessary pan-European requirements regarding criterion selection, evidence selection and issuing service approval (including the interaction with the European VCD service provider regarding the pre-VCD mapping). The UI-component will provide the users with a web-client interface in order to support SMEs the best way possible.

- **osSso Machine**  
This component interprets the international rule set (ontology), generates a list of service to be called in order to furnish the required evidences for the given criteria and passes the resulting service chain to the SOA engine. The osSso machine is the core component of the Austrian VCD implementation and ensures the required flexibility described above through direct interpretation of the ontology without the need of programming. This component will be funded nationally outside the PEPPOL project.
- **SOA Engine**  
This component is in charge of calling the issuing service following the service chain, which has been constructed by the osSso machine. Part of the implementation will be the creation of issuing service profiles, which enable the integration of manual, semi-automated and automated Austrian issuing services. Due to the requirements of stage 3 regarding context-specific data this SOA-engine strictly follows the design of the VCD advanced package data structures. To be as flexible as possible the data interchange protocols between the issuing services and engine itself will be based on international standards. The implementation of the SOA execution engine will also be an Austrian contribution to the WP2 implementation work funded nationally outside the PEPPOL project.
- **VCD packager**  
This component constructs the physical VCD package following the internationally agreed upon VCD advanced package design.

The piloting approach is to change as few existing evidence issuing processes as possible in a first step, in order to quickly bring the VCD implementation into production. In a subsequent step, issuing services should be sequentially adapted to support automated data retrieval. This adaption will take place after the PEPPOL project.

### 4.3.2 Piloting approach

The piloting phase of the Austrian VCD implementation will include several selected stakeholders, which take up key positions in the Austrian procurement landscape. The following stakeholder groups will be represented in the Austrian pilot:

- Contracting authorities
- Economic operators
- Issuing bodies
- Intermediaries (the VCD service provider)

The VCD service provider for the piloting phase will be the Austrian Federal Computing Center (BRZ), which will establish and maintain the VCD service.

## 4.4 Italian implementation and piloting proposal

### 4.4.1 Implementation approach

Italy plans to adapt its current company's dossier builder to the design and implementation principles set by PEPPOL WP2. This requires a set of actions in order to conform to the adopted standards and interoperability agreements of PEPPOL WP2. The interoperability dimension represents the challenge at the moment as very few transactions take place across borders and when they are performed they represent a heavy burden for those attending their execution.

Italy is pressing on this by adopting different measures, i.e., by improving the organizational infrastructure, by offering better visibility of the involved organizations, by designing and developing policies that increase the trust among national and European organizations, by improving the information processing environment in order to reach the requirements set by the PEPPOL community.

The conformance to PEPPOL's WP2 interoperability standards will be approached by following the project agreed roadmap that includes the design and management of a dynamic knowledge base, known as the pre-VCD mapping tool and by implementing VCD services that conform to a multi-stage approach. For PEPPOL's project runtime, Italy is planning to reach Stage 2 as ultimate stage in its system and services evolution along with solid contributions for the analysis and design of the upper level stages.

The Italian implementation approach includes a long preparation activity that focuses more on legal investigation rather than technical engineering. Currently, the major challenge on interoperability across Europe comes from the persistent non homogeneous legal background and the reluctant attitude towards digital objects, mostly on electronic documents, digital identities and public registries. We see the two aspects, i.e. the legal and technical closely related, and aim at treating them with equal priority.

Effort will be spent on refining and consolidating the document's acquisition infrastructure that represents a multi-site networking system to reach the different certification authorities that are the authoritative suppliers of documents essential to the VCD package construction. A specific set of tasks will also address the transformation of evidences from the conventional form into an electronic form for computer assisted handling and management.

As part of the interoperability dimension, there will be a supporting action for digging into existing certificates and dragging out of them the most valuable information.

#### 4.4.2 Piloting approach

The piloting phase of the Italian VCD service will include the technical actions identified by the implementation plan and some interfacing events to reach selected stakeholders and define through their input the driving conditions for the VCD setup. This interfacing activity will precede the final design and the real pilot implementation. The VCD service provider for the piloting phase will be the Italian Business Registers System.

pending  
EC  
approval

## 5 Synthesis: Major interoperability requirements, SWOT and next steps

### 5.1 Major requirements for VCD interoperability

This section provides an overview about the deliverable and in particular about major requirements for VCD interoperability.

The requirements and contents contained in chapters 2, 3 and 4 can be aggregated according to the following aspects:

**Level of support:** The different levels of support address the maturity of the service and the maturity of the VCD package, where the former correspond to the functionalities (e.g. compilation support vs. recompilation support) provided and the latter corresponds to the semantic richness of the provided information (e.g. information support vs. decision support).

**Level of completeness:** A VCD Package will show its full potential when all the requested attestations (all that are necessary to prove all requested criteria) are contained in it. The VCD promotes a step wise approach in order to reach a sufficient level of completeness by concentrating first on evidences with regard to Articles 45 – 46 and afterwards on evidences with regard to Articles 47 – 50.

**Paradigm shift:** The paradigm shift refers to the handling of documents to handling of information and electronic exchange of information in order to establish interoperability on the basis of mutual recognition. The VCD should encompass this change.

**Criteria for qualification and selection and non-exclusion:** The criteria for qualitative selection and non-exclusion as defined in Article 45 to 50 of Directive 2004/18/EC are the common ground for building a cross border VCD service. Evidences will be connected to these criteria by further defining and grouping them into sub criteria and atomic criteria.

**Pre-VCD mapping tool:** Provides a widely available tool which contains the up-to-date mappings of European criteria and evidences. The tool is build upon a basic semantic interoperability model consisting of relationships between evidences available in the Member States and European criteria of qualitative selection and exclusion (Superset). Tender specific requirements then have to be stated by contracting authorities according to the European criteria during notification phase in order to derive tender specific mapping results on evidences required to submit at tendering (Subset).

**VCD simple package:** Establishment of a VCD system which consist of VCD services, hosted by a VCD service provider. VCD services are capable to collect evidences from different sources and compiling VCD packages from it. VCD simple package defines the structure of a package with regard to types of data.

**Types of data contained in a VCD:** Provide the basis for a common structure of a VCD. Includes several data types (cf. ANNEX I – Glossary) to build the VCD from different sources and formats (e.g. tender specific data that refer to a particular Call for Tender, the evidences itself as electronic file or scanned copy and structural data of evidence that describe the evidences according to generic aspects).

**VCD advanced package:** Introduces several additional VCD services that increase the level of support for the entities involved. Economic operators are for example enabled to maintain their data through re-compilation of a VCD or to merge their VCD with VCDs' from other economic operators in order to create groups of economic operators for bidding consortia. VCD advanced package also introduces context specific data as additional type of data that describe the content of an attestation in a machine interpretable format.

**VCD networked package:** Introduces “on-demand” retrieval of attestations that are sufficiently described through context specific data. The VCD networked package offers a good opportunity for a national service provider to establish official list of approved economic operators as foreseen in Article

52 (1) of Directive 2004/18/EC. Therefore national service providers have to store attestations and referencing to it within the VCD. Contracting authorities are mandated to request attestations in individual cases (“on demand”) if they do not trust on the list of approved economic operators. The VCD networked package needs conflict resolution in cases of failure or system errors during “on demand” requests.

**Organisational Framework:** Lists the requirements forming the organisational basis for implementing any of the VCD stages. They are independent of a particular implementation or stage thus they are called organisational requirements for a VCD.

**Legal Framework:** Lists the requirements forming legal basis for any VCD stage. They are independent of a particular VCD implementation or stage thus they are called legal requirements for a VCD.

**Semantic Framework:** Lists the requirements which form the semantic basis for any of the VCD stages. They are independent of a particular implementation or stage thus they are called semantic requirements for a VCD.

**Technical Framework:** Referring to the PEPPOL infrastructure. The technical framework lists several requirements that are essential to specify the technical (transportation & validation) basis in order to submit any WP2 solution across borders. They are independent of a particular implementation or stage thus they are called technical requirements for a VCD.

In a next step these results will be transformed into a SWOT Analysis identifying the Strengths and Weaknesses of the proposed concept and its market opportunities.

## 5.2 VCD concept and its Strengths, Weaknesses, Opportunities and Threats

SWOT Analysis is a strategic planning method used to evaluate the Strengths, Weaknesses, Opportunities, and Threats of a project or intention. A SWOT analysis usually starts by defining an end state or objective which has been done for WP2 in chapter 2 and subsequent chapters. The aim of any SWOT analysis is to identify the key internal and external factors that influence the achievements of this objective. SWOT analysis thereby groups key pieces of information into categories:

- Internal factors: The internal strengths and weaknesses of the proposed project.
- External factors: The opportunities and threats presented by the external environment to the project.

The internal factors may be viewed as strengths or weaknesses depending upon their impact on WP2 objectives. What may represent strengths with respect to one objective may be weaknesses for another objective. The external factors may include market opportunities and threats, technological change, legislation, and political considerations<sup>22</sup>.

### 5.2.1 Strength of the VCD concepts

The major objective of this deliverable is to develop a concept for a VCD and to define major requirements that shape this VCD concept. Therefore we have defined different scenarios and a vision that contains several different levels of maturity. With the staged maturity model we intend to reach a wide flexibility and openness of such a solution encompassing all Member States to implement their individual preferences. Nevertheless the concept provides common grounds such as the pre-VCD mapping and structural data of evidences which ensures interoperability of evidences and their perception across borders. Beside we defined a set of requirements on organisational, semantic, technical and legal level that clarify general aspect of VCD development and deployment.

To support the mutual recognition of evidences across border the VCD requires an underlying semantic model that enables a standardized classification and mapping between them (pre-VCD

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<sup>22</sup> [http://en.wikipedia.org/wiki/SWOT\\_analysis](http://en.wikipedia.org/wiki/SWOT_analysis)

mapping tool). If the contracting authority specifies the relevant evidences which are related to criteria, the data can be processed automatically in order to look-up the evidences required within another Member State. The standard structure of the VCD, with the semantic enrichment of its structure then provides a European-wide understanding and format of company formal evidence.

The different levels of maturity can be applied in dependence on the willingness and readiness of every Member State. The aim is to support basic interoperability and exchange of documents on the lower maturity levels and leading towards direct electronic exchange of evidence in the higher maturity levels. Thereby each maturity level is built upon the lower ones thus allowing integration and stepwise advancement.

The VCD shall ensure that a significant part of the public procurement processes can be made through electronic cross-border transactions. Therefore the national focus of a VCD needs to be enhanced through a cross border perspective. The VCD will provide the possibility to utilize evidences used in one Member State and to submit them across borders to any European contracting authority.

A VCD provides a single point of contact for an economic operator that enables him to invoke and manage different services to create a VCD. A service (re-)compiles the VCD package for the economic operator or even a group of economic operators. The VCD services merge data from several sources into a single container and make this data available and understandable to the actors involved. Economic operators will be enabled to perform checks with regard to the existence and validity of the requested evidences in the VCD package. Structural data of evidence will provide guidance for foreign contracting authorities to understand the evidences contained within a VCD and they can trust that general information since it is provided by national VCD service providers that take the role of trusted parties. Context specific data will be provided on the higher levels to increase decision support.

## 5.2.2 Weaknesses of a VCD

There are also some weaknesses that can be identified for the overall concept. These weaknesses are mostly derived from the complexity of the domain and how the VCD solution reacts on this domain. One of the biggest weaknesses is probably the development of context specific data for the evidences within a VCD. The development of context specific data shall ensure the automatic processing of electronic attestations without regard to linguistic barriers. The development of standards and context specific vocabularies is time consuming and requires long term involvement of user groups that will make use of these standards. The VCD contains several different kinds of evidences and to develop common standards for each one cannot be a major task and focus of this work package and should be done by initiative such as CEN BII, BRITE, XBRL or ECRIS. Since CEN BII workshop is close to an end it will probably not work out to do this development within its scope. Nevertheless we will start to develop common representations (context specific data) for evidences that have an, easy structure, low quantity of contents and marginal variances in their contents. Furthermore we rely on structural data of evidences that describe and characterize evidence from a more generic point of view.

The possibility to replace the full document translation with a “selective translation” through context specific data (keywords and major contents) bares certain risks. The “selective translation” could be arranged in multiple languages in particular when context specific data belongs to a common agreed dictionary of expressions. Nevertheless the acceptance of those selective translations instead of certified translations may be questionable for contracting authorities. Thus the resolution of language barriers and linguistic issues cannot be completely managed by a VCD in short term and may require adding official translations beside selective translations.

Provision of context specific data is a precondition to establish direct information exchange between attestation providers and contracting authorities. This direct information exchange would provide many opportunities with regard to increase the actuality of evidence, to lower the transaction costs of the parties involved and to reduce the time to create a VCD. Nevertheless such direct exchange is very difficult to establish because a lot of entities and attestation services have to be federated, access policies have to be developed, legal uncertainties have to be resolved and political guidelines have to be considered. To circumvent these problems the VCD provides in particular in stage 4 a guideline on how to move forward in order to reach this ambitious aim but it will not be a major focus of a VCD as such.

The VCD will be dependent on a number of services that rely on manual and semi-automated input. Thus the VCD system will be primarily a tool for the economic operator to arrange a VCD package instance which is conform according to the requirements stated in particular call for tender which he can fill through additional inputs. A direct access to attestation via the national VCD service provider can only be provided for those public attestations that are already available in electronic format. The VCD will not enforce any development of electronic attestation on a national level as this is a clear national duty and is depended upon the development of context specific data. Nevertheless existing attestations may be extended through additional annotations that describe these documents generically (structural data of evidences).

Unclear yet is the role of Member States that have already implemented Article 52<sup>23</sup>. The scope of mutual recognition needs to be further clarified with regard to acceptance of these procedures across borders and the liability of those trusted third parties across borders. It needs to be further defined how a VCD can support countries that have implemented Article 52 but since there are currently no pilots in our work package that have such procedures already implemented we have left this out of scope. Nevertheless we see a great opportunity to combine both ideas as shown in stage 4.

### 5.2.3 Opportunities for a VCD in public procurement

A major point of discussion in the domain is a sustainable and reliable long-term vision for exchanging attestations among Member States. In the long-run the VCD should be able to adequately fulfil the contracting authorities' need to proof conformance to certain criteria for qualitative selection and exclusion while reducing the burden of proof for the Economic Operator. The costs of transaction of economic operators can be reduced through a single point of contact and through automatic arrangement of a VCD package instance according to the given criteria. Therewith manual comparison of tender specific requirements is being omitted. The same burden lays on contracting authorities who have to check for each evidence whether the issuer has appropriate rights within that country to provide evidence. Furthermore the possibility to re-use evidences that are still valid (time) and the maintenance of a VCD will again provide possibilities for cost reductions at the side of the economic operator.

A paradigm shift towards electronic exchange of evidence and a next generation of attestations and certificates that are currently barely available in electronic form may be promoted by a VCD. At least the structural representation of attestation will provide benefit for the entities involved by providing transparency about the tendering requirements and the evidences that have to be submitted in cross border procedures. The pre-VCD mapping tool in particular will ensure transparency on cross border tendering requirements and will give indications about mutual recognition of evidences across borders. In contrast a VCD package contains the data necessary to prove the suitability of an economic operator according to these requirements. Therewith the VCD ease the overall procedure, may raise the number of cases of cross border procurements and may raise possibilities for greater competition across borders.

### 5.2.4 Threats for a VCD in public procurement

Challenges to be dissolved when facing in particular the European perspectives of a VCD are mentioned by (Siemens\_and\_Time.lex 2008):

- **organisational complexity** e.g. the diversity of business certificates and attestations and the large amount of market players
- **technical complexity** e.g. several interoperability issues including standardisation, provision of agreed semantics, ease of deployment and the cross-border use of eSignatures, formats and protocols.

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<sup>23</sup> The Norwegian "ELI"-project can be considered as an Article 52 implementation. Its approach will be studied in the next phase to building the PEPPOL VCD as a tool for interoperability between national VCD solutions established according to Article 52. Likewise, new pilots may come in through the enlargement of PEPPOL.

- **legal issues** e.g. validity of certificates and attestations, data protection, proof of authenticity and general legal requirements
- **language barriers** e.g. translation of business certificates and documents into the target language
- **financial consequences** e.g. infrastructure changes may raise the expenditures for the public sector
- **political consideration** e.g. procurement competences of Member States are often allocated on a decentralised level

The creation of uniform infrastructure in this heterogeneous domain will take time since several different environments and stakeholders need to be involved and change may not be enforceable to all of them. In this respect the VCD should support current practices in exchanging evidence in the short-run and lead towards smooth, reliable and sustainable exchange of electronic evidence among Member States in the long-run.

### 5.3 Next steps in specification

The requirements specification at hand lays the ground for further development towards a VCD. The report lists requirements that scope a potential solution according to the different levels of maturity and generic requirements. These requirements now have to be taken further into account in order to specify the VCD and implement the various stages. To facilitate management of the requirements, they will be transformed into a spreadsheet with information as shown in Table 11. A distinction will be made among functional requirements, non-functional requirements and requirements that specifically refer to the development process.

No.	Name the requirement	Description	Priority			Relevance for stage in VCD model				Measurement indicators	References and further comments
			Must-have	Should-have	Nice-to-have	1	2	3	4		

Table 11: Structure of Requirements spreadsheet

The spreadsheet will be used in the project in order to maintain, adapt and perform change management to the requirements over the project lifetime. Maintaining them over the project lifetime will ensure that the requirements are complete, explicitly defined, clearly described, numbered and referenced. Further characteristics to evaluate the quality of requirements will be considered such as their determinability (atomic character), verifiability (well defined measurement towards the fulfilment of a requirement), traceability (tracking of complete fulfilment as well as of where a requirement emerged from) and consistency (conflicts between requirements such as contrary features or quality aspects).

The requirements will be the basis for further development and will provide guidance and reference to subsequent activities. Taking the PEPPOL development infrastructure guidelines, SCRUM<sup>24</sup> or the waterfall model (McDermind\_and\_Rook, 1991) as reference models, the next phase focuses now on the detailed design of the VCD concept as presented above. This phase will further detail the requirements through explicit models and artefacts that describe relevant process flows, data characteristics and software.

Drafting agreed models requires interdisciplinary work between participants with different skills. Software engineers thereby may design a software model for the mapping of evidences together with legal experts that ensure the legitimacy of such a model. Furthermore we intend to work closely together CEN BII workshop and DG Markt (including Siemens & Time.lex) when drafting these models in order to ensure long term sustainability of the solution envisaged. The shared artefacts then can

<sup>24</sup> Cf. Philip Helger, Patrik Johansson, Gert Sylvest: PEPPOL WP8 development environment and guidelines, PEPPOL consortium (internal report, section 4.2)



provide the basis for the implementation stage. They will also be fed back to the requirements and may enforce change to them.

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## 6 Conclusions

The report at hand aimed at documenting the functional and non-functional requirements for a Virtual Company Dossier. Departing from a description of the current procedure when economic operators collect the necessary evidences as proofs of selection and exclusion criteria in public tenders, the team of work package 2 has elaborated a four-stage vision for the VCD. This four-stage concept takes into consideration different strategies and levels of development in the provision of evidences within Member States. With the implementation of stage 1, the pre-VCD mapping, a first level of interoperability and facilitation to collect the necessary evidences for a public tender in another Member State is supported. The VCD concept, however, fosters higher maturity degrees, i.e. interoperability and facilitation for both, economic operators and procuring agencies through machine-readable and computable VCD packages containing the individual evidences.

Throughout the analysis, elaboration and definition of the VCD concept plus the necessary research affiliated with this activity, fruitful insights could be collected about dependencies and interrelationships, which make this domain rather complex.

The project team is aware of the fact that the VCD concept conceptualised in this report is rather generous – especially if we attempt to implement stage 4 of the VCD vision. A big step towards interoperability and cross-border facilitation in the collection of company information of economic operators can already be made when implementing the pre-VCD mapping tool.

Consequently, a recommendation is given to focus implementation on the pre-VCD mapping tool for widespread application of a VCD at first hand. This very first level of interoperability and semantic mapping is the basis for the subsequent stages. Nonetheless, the big potentials of interoperability, of facilitation, of cost savings and of reduction of administrative burden lay in the implementation of stages 3 and 4. The two pilots scheduled within WP 2 will concentrate their efforts on these latter stages, and hence will evidence the potentials of these stages. They form the test cases for a wider rollout of the VCD concept as developed throughout phase 1 of work package 2 within PEPPOL.

a p p r o v a l

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P e n d i n g

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## ANNEX I: Glossary

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### *Attestation*

Any document originating from a party other than the candidate intending to demonstrate a quality or fact pertaining to the candidate. This includes inter alia documents traditionally referred to as certificates, other attestations, declarations or statements from third parties.<sup>25</sup> An attestation gives evidence that a criterion has been satisfied.

**Call for tender**

A formal request to prospective economic operators soliciting price quotations or bids; contains, or incorporates by reference, the specifications or scope of work and all contractual terms and conditions. The official public available document describing the Call for Tender can also be referred as Contract Notice.<sup>26</sup>

**Candidate**

An economic operator who has sought an invitation to take part in a restricted or negotiated procedure or a competitive dialogue shall be designated a “candidate”.<sup>27</sup>

**Candidate Statement**

Any document originating from the candidate intending to demonstrate a quality or fact pertaining to the candidate. This includes inter alia documents traditionally referred to as statements of compliance, declarations under oath, and solemn declarations.<sup>28</sup>

**Certificate**

A certificate is a special type of attestation. See section “Connection between evidence, attestation and candidate statements” for a taxonomy of commonly used qualification documents.

**Connection between evidence, attestation and candidate statements**

An attestation gives evidence that a certain criterion has been satisfied. A statement given by a candidate can give evidence to a certain criterion under certain conditions.

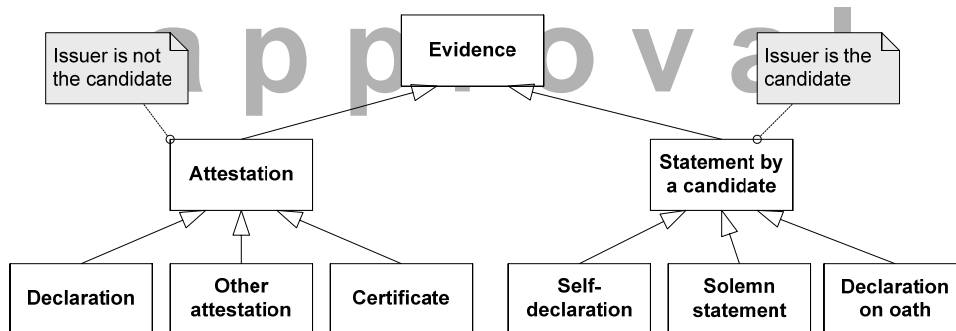


Figure 24: Connection between evidence, attestation and candidate statement

<sup>25</sup> Source: [http://ec.europa.eu/internal\\_market/publicprocurement/docs/eprocurement/ecertificates-study\\_en.pdf](http://ec.europa.eu/internal_market/publicprocurement/docs/eprocurement/ecertificates-study_en.pdf)

<sup>26</sup> Source: <https://services.txt.it/sets/>

<sup>27</sup> Source: Directive 2004/18/EC, Article 1

<sup>28</sup> Source: [http://ec.europa.eu/internal\\_market/publicprocurement/docs/eprocurement/ecertificates-study\\_en.pdf](http://ec.europa.eu/internal_market/publicprocurement/docs/eprocurement/ecertificates-study_en.pdf)

**Contract Notice**

A Contract Notice is an official, publicly available document describing a tender opportunity.

**Contracting authority (Purchasing authority)**

Contracting authorities means the State, regional or local authorities, bodies governed by public law, associations formed by one or several of such authorities or one or several of such bodies governed by public law.<sup>29</sup>

**Data types contained in a VCD**

Table 12: Overview of data types contained in a VCD

Type of data	Description	Provider of data
<b>Structural VCD package data</b>	Data which describe the VCD-Package as a whole, e.g. VCD unique identifier, VCD issuer, VCD issuing time, schema version, ...	VCD service provider
<b>Tender specific data</b>	Data that describe tender specific aspects (e.g. TED id of the tender, ...)	Contracting authority, tendering system, tenderer
<b>Economic operator data</b>	Data describing the individual situation of the economic operator (e.g. legal state, name, organizational structure of the economic operator)	Economic operator (in some cases services)
<b>Structural data of evidence</b>	Data generically describing attestations on a level detached of the semantic of its content itself (e.g. ItemName, DocName, DocTitle, DocLanguage, DocFormat, DocID, DocIssue date, DocExpiration date). These data are necessary to validate the up-to-dateness and completeness of a VCD-Package.	issuing service
<b>Context specific data</b>	Data specifically describing attestations on the semantic content level (e.g. names of the members of the board of directors). These data are necessary to establish automated decision support and providing a short summary of the contents of an evidence in multiple languages.	Issuing service
<b>Validation value</b>	Data necessary to provide validation results which are either directly extracted by manually checking an evidence or which are automatically derived from context specific data (Boolean value). These data facilitates decision support since a national VCD service provider validates an evidence (concept could be possibly used for example to implement article 52 of directive 2004/18/EC – List of qualified suppliers)	VCD service provider, Issuing service
<b>Evidences</b>	Attestations and candidate statements in form of files included in the VCD package	Issuing service
<b>Translation of evidence</b>	Attestation that is translated by an authorized translator.	Translator

<sup>29</sup> Source: Directive 2004/18/EC, Article 1

### ***Declaration on oath***

A statement equivalent to a self-declaration. The difference lies in the presence of a public officer or notary at the time the declaration is produced. This third entity can become the submitter on behalf of the entity that produced the declaration.

### ***Economic operator***

The terms “contractor”, “supplier” and “service provider” mean any natural or legal person or public entity or group of such persons and/or bodies which offers on the market, respectively, the execution of works and/or a work, products or services. The term “economic operator” shall cover equally the concepts of contractor, supplier, candidate and tenderer. It is used merely in the interest of simplification.<sup>30</sup>

### ***European criteria***

European criteria are directly derived from Directives 2004/18/EC respectively 2004/17/EC. The eligibility of tenderers in a tendering procedure is checked against these criteria<sup>31</sup>.

A criterion is generally referred to as fulfilled if

- It is a selection criterion and the criteria is met
- It is an exclusion criteria and the criterion is not met

### ***Evidence***

An evidence is a proof of compliance to a certain criterion usually supplied by an attestation or statement.

### ***Issuing Service***

A service issuing attestations and statements. This service can be provided by a public issuing body, by a private issuing body or by an economic operator.

### ***Level of completeness***

One of the two axes of the VCD matrix model. The term completeness refers to the number of criteria covered by the VCD-package.

A two step approach is proposed:

1. The VCD-package contains attestations and candidate statements giving evidence to the criteria defined in articles 45 and 46 of directive 2004/18/EC.
2. The VCD-package contains attestations and candidate statements giving evidence to additional criteria as those defined in articles 47 to 50 of directive 2004/18/EC.

### ***Level of support***

The Level of support is one of the two axes of the VCD matrix model. It refers to the semantic richness of the VCD-package.

Three different levels can be distinguished:

1. Information support
2. Compilation support
3. Decision support

---

<sup>30</sup> Source: Directive 2004/18/EC, Article 1

<sup>31</sup> Eligibility of tenderers: [http://ec.europa.eu/internal\\_market/publicprocurement/2004\\_18/index\\_en.htm](http://ec.europa.eu/internal_market/publicprocurement/2004_18/index_en.htm)



**List of approved economic operators**

Refers to Article 52 of Directive 2004/18/EC: An approval of economic operators is usually performed by a specialized third-party, a so-called pre-qualification agency. It checks the suitability of an economic operator based on the submitted documents. If the suitability is confirmed, the economic operator is included in a list of prequalified economic operators which can be referred to when following tenders, omitting the need to submit the evidences again. Contracting authorities can request evidences on individual requests.

**Mapping**

Mapping in the context of PEPPOL mainly depicts the activity of assigning criteria for qualitative selection & exclusion on European level as defined in 2004/18/EC to the appropriate national criteria. In a second step, attestations and candidate statements are assigned to those European and national criteria for which they serve as proof of compliance. Two activities can be understood as mapping:

- Creation of a mapping table: This denotes the initial, one-time mapping activity during which each country participating in PEPPOL has to define which national evidences can serve as proof of compliance for which criterion on national level. The different national criteria are then mapped to the appropriate European criteria.
- Retrieving information about needed evidences: The mapping table created in step 1 can later on be used by economic operators to retrieve information about the evidences serving as proof of compliance for certain qualitative selection/exclusion criteria defined by a contracting authority during a tender. This is done by comparing the available mapping tables and reason about it.

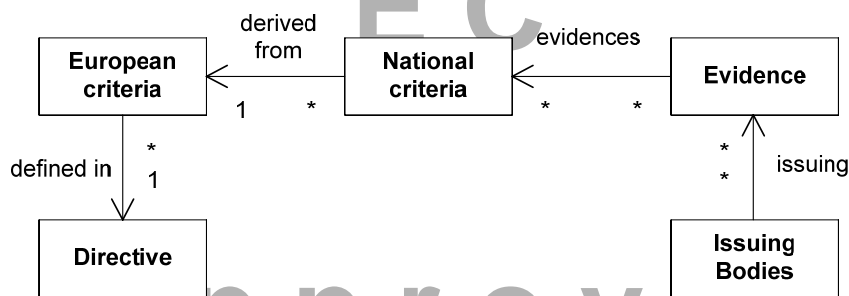


Figure 25: Mapping activity

**National criteria**

National criteria are derived from the European criteria without enlarging these.

**Official translation**

An official translation is a translation which is performed by an authorized translator who is empowered to translate for legal equivalence, meaning that the resulting translations are acceptable by a jurisdiction.

**Pre-VCD mapping tool**

A system supported service capable to map certain evidence to criteria (cf. glossary: mapping)

**Self-declaration**

A statement produced by an economic operator which states compliance to some fact, qualification requirement or criteria of exclusion and selection. In Public Procurement the self-declaration is often adopted during the pre-qualification processes but it is also use to state other facts when submitting a bid.

### **Stage**

A Stage defines a certain level of maturity including the stage of the pre-VCD mapping tool. A VCD solution can fulfil several stages at the same time

### **Tenderer**

An economic operator who has submitted a tender shall be designated a “tenderer”.<sup>32</sup>

### **Virtual Company Dossier (VCD)**

The VCD provides a "Single Point of Contact" solution for collecting business certificates and attestations into a package. The Virtual Company Dossier shall enable suppliers to collect evidences from existing registries and to submit those evidences electronically and assembled as information package to any public sector awarding entity in Europe. Therefore the VCD is composed by different types of data (cf. glossary: data types contained in a VCD). The VCD composition is typically done by a VCD service provider.

Different stages have been identified to denote different level of maturity of a VCD-package:

- pre-VCD mapping (Stage1)
- VCD simple package (Stage2)
- VCD advanced package (Stage3)
- VCD network package (Stage4)

### **VCD lifecycle**

The VCD lifecycle describes the different states a VCD-package can have. Up to now, three different phases in the lifecycle of a VCD have been identified:

- Creation of a VCD-package: This comprises the initial creation of a VCD-package.
- Valid VCD package: After its creation, the VCD-package is valid for some time.
- Invalid VCD package: The VCD package respectively the included documents become invalid after a certain amount of time.

### **VCD package**

A VCD package denotes an electronic container for the different types of data needed for the participation in a tender (cf. glossary: data types contained in a VCD). Further information can be found in the definition of Virtual Company Dossier.

### **VCD service**

VCD service is a specific internal or external functionality to establish, modify, issue etc. a VCD. The VCD service does not specifically refer to a technical service.

### **VCD service provider**

An entity providing different kinds of VCD services and pre-VCD services related to a Virtual Company Dossier (VCD) as for example the compilation of a VCD or the operation of the pre-VCD mapping tool. The entity works on a national level. Any VCD system is hosted by a VCD Service Provider.

### **VCD system**

A VCD system is a system providing one or more different VCD services. The VCD system does not specifically refer to a technical system.

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<sup>32</sup> Source: Directive 2004/18/EC, Article 1

## ANNEX II: Questionnaire for contracting authorities

The following invitation letter and questionnaire was sent to contracting authorities and used for personal interviews performed by WP 2 partners:

*"Dear participant,*

*The following questionnaire has been worked out by the working group "Virtual Company Dossier" of the project: Pan-European Public Procurement Online (PEPPOL). The vision of PEPPOL is that any company and in particular SMEs in the EU can communicate electronically with any European governmental institution for the entire procurement process. To facilitate interoperability in eTendering the European Commission demands for a Virtual Company Dossier (VCD) as an electronic cross-border document solution that contains several formal certificates and attestations required for eTendering. This questionnaire intends ...*

- to clarify the national processing of attestations and certificates*
- to clarify the handling of foreign attestations and certificates with regard to mutual recognition of certificates and attestations (directives 2004/18/EC and 2004/17/EC)*
- to discuss and identify major requirements with regard to mutual recognition of certificates and attestations (e.g. translation of certificates and attestations)*
- to discuss the scope and potentials of a VCD"*

### Introduction

To facilitate interoperability in eTendering, the PEPPOL project will develop a Virtual Company Dossier (VCD), an electronic document solution that contains several documents (e.g. attestations, certificates, self certifications or declarations, declarations on oath, solemn statements) required for the pre-qualification and qualification of suppliers. The VCD can be seen as a container to evidence the conformance to certain exclusion and selection criteria required for public tendering procedures. It should support economic operators, i.e. the "Tenderers" to utilise certificates and attestations (e.g. company profile, criminal records etc.) already registered in some source register (e.g. commercial register) in the home country and to submit these certificates and attestations electronically cross-border to any procurement agency in Europe.

The vision here is to create a container holding documents that are seen as valid evidence in the contracting authority's country of origin. The creation of a VCD must be motivated by clear potential benefits for each stakeholder. Therefore, a common set of rules has to be established, determining the structure and content of the documents that will be contained in a Virtual Company Dossier.

The duty to compose and supply such dossier can be assigned to different organizations across the different countries once that it takes an agreed structure.

The purpose of this questionnaire is to clarify the national processing of attestations and certificates during public tendering procedures and to identify major requirements that derive from public procurement law. Thereby the cross-border focus and the mutual recognition of certificates and attestations between Member States are major fields of interest. It is important for us to gain in-depth knowledge of the domain and you can help by filling out the questionnaire. Whenever you identify conditions and requirements from your practical experience you should name them explicitly. The last part of the questionnaire introduces a potential solution for the VCD and the questions to this solution aim at identifying the potential and acceptance of that proposal from your point of view.

### Personal details

**Please select your country and region details where applicable**

Germany

- Austria
- Italy
- France
- Norway

**Please add your region details where applicable**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

P e n d i n g

**the name and location of your organization**

**Please provide**

Name:

Location:

Major Function/Role/

Responsibility :

E C

**Please indicate your experience with foreign economic operators**

- we receives 2-10 offers of foreign economic operators every month
- we receive more than 10 offers of foreign economic operators every month
- we receives 1-12 offers of foreign economic operators every year
- we do not receive any offers of foreign economic operators

## Questions related to national peculiarities

The following set of questions aim at collecting some general information about the processing of certificates and attestation.

**Which format of certificates and attestations do/would you accept?**

- 1 - paper-based certificates or attestations
- 2 - scanned copy of certificates or attestations (as electronic image)
- 3 - electronic version of certificates or attestations, in editable format (PDF, RTF, Word, HTML, Text Based documents)
- 4 - processable electronic version of certificates or attestations, based on tagged elements (XML documents)
- 5 – relevant key-information of certificates or attestations

- qualified electronic information package containing relevant certificates or attestations in any mix of the above formats 2 – 4.
- makes no difference

Please clarify conditions

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**Is it generally accepted to use foreign attestations and certificates from all / other member states?**

P e n d i n g

- Yes
- Under certain conditions
- No

Please clarify conditions

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**How do you accept and handle signed self-declarations / declarations on oath?**

(Remark: If the slightly different meaning of self-declaration and declaration on oath is relevant for your answer, please make a short note in the field for comments below.)

- declarations on oath can be used on preliminary applications to be reinforced by real attestations
- declarations on oath can be used as equivalent to real attestation
- declarations on oath can be used as equivalent to real attestation if there is no existing equivalent in another country
- declarations on oath can be used as equivalent to real attestation if there is no existing equivalent in a Member State but additionally a public authority of that Member State has to verify the non-existence of that certificate
- declarations on oath are generally not accepted

a p p r o v a l

Additional comments to the handling and acceptance of self-declarations/declarations on oath.

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**Questions related to the Mutual recognition of certificates and attestations between Member States**

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The principle of mutual recognition is explicitly mentioned in the directives 2004/17/EC. Article 42 states that diplomas, certificates or other evidence of formal qualifications required for participation in a procurement procedure or a design contest should be mutually recognized. The following set of questions aims at collecting requirements with regard to the mutual recognition of submitted qualification documents in a cross-border tendering procedure. The mutual recognition of certificates and attestations is an important starting point for our solution and will be crucial for the success of the Virtual Company Dossier.

**According to the directives 2004/18/EC and 2004/17/EC, attestations from foreign member states have to be mutually recognized and accepted even in case they are not fully identical regarding their content. Imagine that the transmission of original documents is not obligatory in a countries tendering procedure because for example some third party is dedicated to proof the qualification documents. Would you insist on the transmission of these original documents or would you accept the country-specific procedure for qualification?**

- The declaration of the appropriate institution is sufficient in case original documents can be requested if necessary
- The declaration of the appropriate institution is sufficient in case copies of the original documents are submitted
- Solely the declaration of the appropriate institution is sufficient

Additional comments and further clarification: \_\_\_\_\_

**Which conditions need to be fulfilled in order to accept a foreign certificate from another Member State from the viewpoint of mutual recognition of certificates and attestations among member states?**

\_\_\_\_\_

\_\_\_\_\_

**Do certificates and attestations from other Member States have specific requirements (e.g. they have to be accredited by either an public authority or notary, they have to be electronically signed, the issuer of the certificate has to be addressable, the integrity and the authenticity of the information have to be ensured etc.)?**

Please describe the specific requirements if those exist.

\_\_\_\_\_

\_\_\_\_\_

**Which criteria are important when proving attestation or certificate from other Member States?**

Criteria	Very	Important	Less	Unimportant
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	Important		important	
The provision of data (e.g. VAT number, Registration number etc.) about the supplier and the accurate display of that information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The provision of identifiers to verify the issuer/origin of a certificate.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The evidence given by a professional certificate in order to verify (non-) conformance to exclusion and selection criteria.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The evidence given by a certificate in order to verify (non-) conformance to legal requirements (environment, social dumping)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The authenticity and integrity of the information guaranteed through the issuer of the document.(validity)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sustainability and actuality of the attestation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Which other criteria are important during examination of attestations and certificates?

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**From your practical experience: Does the examination procedure differ when attestations and certificates are submitted from other Member States?**

**a p p r o v a l**

Yes

No

In some cases

Please clarify the differences and specialities

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## Questions related to the translation of certificates

Mutual recognition of certificates and attestations among European Member States in fact will require stronger usage of agreed semantics than a paper-based approach. This may be done by providing key data about a supplier (e.g. name of certificate, validity of certificate VAT number, company code, authorized representative, legal status etc.) and translating these data into the target language. Thereby we have to stress the fact that many qualification documents are only available in paper based format. These circumstances make it difficult to extract that supplier data into appropriate semantics for automated translation. The following questions aim at identifying national requirements with regard to the translation of contents comprised in certificates and attestations.

**Do attestations and certificates from other Member States have to be translated?**

- Yes all certificates have to be translated
- Most certificates have to be translated
- No certificate has to be translated

Please clarify conditions

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**If a translation is necessary, ...**

**...is this because ...**

- a translation is mandatory given by local law / regulations?
- it is up to the decision of the contracting authority whether a translation is necessary or not?

Please clarify conditions

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**... what is the accepted target language?**

- Language of the contracting authority's Memberstate
- English
- Other: \_\_\_\_\_



**Do you accept English versions of certificates in certain cases, for example for the provision of (technical) ISO specifications?**

- Yes
- No
- In some cases

Please clarify the cases where English versions can be submitted

\_\_\_\_\_ **P e n d i n g** \_\_\_\_\_

**Is there any necessity to have an official translation of a certificate or attestation if the certificate is already approved against the exclusion criteria by an authorized authority or procurement agency in the Member State of origin?**

- Yes
- No, under certain conditions this is not necessary
- No

Please clarify conditions

\_\_\_\_\_

**Would it be sufficient if the VCD provides a translation of key data about a supplier extracted from certificates and attestation and to use pre-defined code lists for simple entries in the body of an attestation, for example in criminal records there is typically an entry saying something like “nothing”, “none” or “empty”?**

- Yes
- Under certain conditions
- No

Please clarify conditions and give reasons your judgement

\_\_\_\_\_

**Would you be interested in using an electronic attestation/certification package (VCD) on a national, local or regional level?**

- Yes
- Maybe
- No

Which functionality would you desire of a VCD?

Pending

EC

approval

## ANNEX III: Questionnaire concerning the legal analysis

The following questionnaire was used internally by the project partners to investigate specific legal aspects together with legal experts in their countries. The following questions helped to gather proper understanding of legal circumstances in collecting evidences:

- Who may be an economic operator? List of the possibilities provided by national law, taking into account the requirements of the national procurement act.
- What does the suitability check prove?
- What are the reasons for exclusion?
- By what evidence is the contracting authority able to verify that no reasons for exclusion exist?
- What principal provisions does your national public procurement act set forth for definition of evidence and, subsequently, for actual requesting of evidence by the contracting authority?
- What are the conditions under which the contracting authority may require production of evidence? Is there a distinction according to contract values or thresholds in this respect?
- At what time must or may evidence be required and produced?
- What formal requirements does the national public procurement act provide for evidence?
- What requirements does the national public procurement act provide regarding electronic evidence?
- At what time does suitability have to exist?
- What are the statutory requirements regarding keeping references up-to-date?
- Does the law provide for a possibility/obligation to furnish evidence of suitability regarding authorisation, reliability and capacity also through a third-party register?
- What requirements for suitability (criteria) exist with respect to authorisation and by means of what evidence must or may suitability be proven? Detailed list of documents/evidence.
- What requirements for suitability (criteria) with respect to reliability does the Act provide for and by means of what evidence must or may reliability be proven? Detailed list of documents/evidence.
- What requirements for suitability (criteria) with respect to financial and economic standing does the national public procurement act provide for and by means of what references must or may such standing be proven? Detailed list of documents/evidence.
- What requirements for suitability (criteria) with respect to technical capacity are provided by the national public procurement act and by means of what references must or may such capacity be proven? Detailed list of documents/evidence.
- Chart showing implementation of the suitability criteria defined in the EU Directives in national public procurement act and national evidence by which fulfilment/non-fulfilment of the relevant criteria is proven:

Criteria with regard to EU-directive	Implementation in national public procurement act	National evidences/ references/ documents

- What types of procedures exist under the national procurement act?
- Does the type of procedure have an impact on the suitability check?

- What types of services (types of contracts) are provided in the national public procurement act?
- Does the type of service affect the suitability check?
- What thresholds does the national public procurement act provide for? What limits have to be observed?
- What role do thresholds play in the suitability check?
- In what way were the EU Directives implemented in national law with regard to suitability, if any?
- May capability also be proven by other entrepreneurs?
- How can capability be proven in the case of bidding syndicates?
- For how long must evidence be retained?
- Are there any aspects of data protection law that have to be considered in connection with production/retrieval of evidence (for assessment of suitability) without use of a VCD or the like?
- What aspects of data protection law have to be considered with regard to data processing for a VCD and the different stages? (Use/processing/storage of data)
- What data protection law aspects are to be observed when transmitting/sending data (electronic evidence/documents) in your country and abroad?
- From a legal point of view, does any requirement for a VCD to archive evidence exist (to be able to reconstruct a specific information status on a specific reference date) or is it sufficient to keep up-to-date information?
- What requirements exist with respect to powers of attorney? For what scope and for what term may a power of attorney be granted?
- May an excerpt from the register of convictions also be requested and obtained by an attorney-in-fact?
- To what kind of liability is an operator subject for accuracy and up-to-dateness and availability of data of a VCD if it is operated as an officially operated VCD solution?
- Do national regulations exist that constitute a legal basis for setting-up and operation of a VCD application? (For Austria: is it possible in Austria, for example, to refer to Section 16 of the Austrian E-Government Act for this purpose?)
- Is the VAT number suitable as proof of a natural person's or legal entity's identity? Is the VAT number suitable as an identifier; what does the VAT number do? Or: what must be changed for it to become suitable?
- Are there any statutory requirements according to which specific evidence must be signed electronically or does the Act permit that the signature of the entire package is also sufficient?
- Does the Act provide for use of an electronic signature for validity and authenticity of electronic evidence/an electronic document?

## ANNEX IV: Template for stakeholder analysis

Table 13: Template for stakeholder management

Template Stakeholder analysis	
General information about the stakeholder	
Abbreviation of Stakeholder	<i>[please insert abbreviation of stakeholder if available]</i>
Name	<i>[please insert the name of the stakeholder]</i>
Description of Stakeholder	<i>[please provide a short description of the stakeholder with regards to the VCD]</i>
Location / address	<i>[please insert the address of the stakeholder]</i>
Key personal/ contact persons	<i>[please insert any contact person for the VCD]</i>
Degree of outreach	Please select... <i>[national]</i> <i>[regional]</i> <i>[local]</i> <i>[international]</i> <i>[Europe-wide]</i>
Type of Stakeholder	Please select... <i>[Certifier</i> ○ <i>Public</i> ○ <i>Private]</i> <i>[Users &amp; Consumers</i> ○ <i>Contracting authority: Types of Contracting authorities (national, regional, local, Private and Public administrations, EC and European public bodies)</i> ○ <i>Economic operators]</i> <i>[Third Parties</i> ○ <i>intermediaries</i> ○ <i>proxies]</i> <i>[Representatives of stakeholder groups</i> ○ <i>Chambers of commerce</i> ○ <i>Trade Unions</i> ○ <i>Association of Municipalities]</i> <i>[Political stakeholders</i> ○ <i>Coordinating stakeholders (National or European, standardization bodies)</i> ○ <i>Governmental stakeholders issuing laws (Regulators, Administrations)]</i> <i>[Any other...]</i>
Stakeholder Analysis	

Categories	Description	Rating (high / medium / low)
Degree of Affect and Involvement	<p><i>Please select...</i></p> <p><i>[Stakeholders should be involved in decision making] (high)</i></p> <p><i>[Stakeholders group should be consulted] (medium)</i></p> <p><i>[Stakeholder group should be informed only] (low)</i></p> <p><i>[others]</i></p>	
Power	<p><i>Please select...</i></p> <p><i>[high power, interested people](high)</i></p> <p><i>[high power, less interested people] (high)</i></p> <p><i>[low power, interested people](medium)</i></p> <p><i>[low power, less interested people](low)</i></p>	
Type of legitimacy	<p><i>Please describe the kind of stakeholder legitimacy (e.g. public or private) and select his abilities to...</i></p> <p><i>[set public rules/laws](high)</i></p> <p><i>[implement public rules/laws](medium)</i></p> <p><i>[verify accordance to public rules/laws](medium)</i></p> <p><i>[obey public rules/laws] (low)</i></p>	
Degree of Urgency	<p><i>Urgency is the degree to which stakeholder claims call for immediate attention and participation. Please select and describe...</i></p> <p><i>[Stakeholder participation in whole project]</i></p> <p><i>[Stakeholder participation in parts of project (which parts?)]</i></p> <p><i>[Temporal participation of Stakeholder (when?)]</i></p>	
Degree of Engagement	<p><i>Please select...</i></p> <p><i>[Active engagement based on decisions](high)</i></p> <p><i>[Active engagement based on work](high)</i></p> <p><i>[Active engagement based on communication] (medium)</i></p> <p><i>[Passive engagement based on interest] (low)</i></p>	
Economic interest to improve processes	<p><i>Please briefly describe in your own words.</i></p>	
Overall Rating	<p><i>Please provide a brief summary of the stakeholder</i></p>	<p><i>Please summarize each rating with 3 points for (high) 2 points (medium) 1 point (low)</i></p>

Result of Stakeholder Analysis	
Expectation of Stakeholder and strategy for stakeholder involvement	<i>Please briefly describe in your own words the main expectations of this stakeholder with regard to the VCD and the stakeholder can be involved (if necessary).</i>
Final Role for WP2	<i>Please select or describe in our own words...</i> <i>[Supportive key stakeholder ]</i> <i>[Key stakeholder]</i> <i>[Supportive stakeholder]</i> <i>[Interested stakeholder]</i> <i>[Other...]</i>

# EC

# approval