



European Commission

Taxation and Customs Union DG

**Digital Delivery of customs and taxation policies Directorate
Unit B1 Processes & data, customer relationship and planning**

Guide for the Integration and Harmonisation of Certificates and Licences in the EU Customs Single Window CERTEX (EU CSW-CERTEX)

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1. Executive Summary

EU CSW-CERTEX is the first project of the EU Customs Single Window Programme from DG TAXUD's electronic customs Multi-Annual Strategic Plan (MASP). The main objective is to enable economic operators to lodge electronically all the information required by customs and non-customs legislation for EU cross-border movements of goods. It is also the evolution of the pilot project EU CSW-CVED for centralized automatic validation of certificates that support the customs declaration. The need for presenting paper certificates together with the custom declaration will be reduced along with the processing time for goods clearance.

Initially the solution covered the Common Veterinary Entry Document (CVED) for animals and products of animal origin and the Common Entry Document (CED) for food and feed of non-animal origin. The scope of EU CSW-CERTEX is gradually expanded by the addition of new certificates and licences as described in the Business Case ["EU Customs SW Business Case_Certificates Exchange_v1.2"], which has been approved by the Member States at the Electronic Customs Coordination Group (ECCG) and by the DG TAXUD IT Steering Committee and Commission IT Board. Besides expanding the documents that EU CSW-CERTEX operates with, the functionalities of the solution are also being built up by enabling quantity management, return of pdf, replication, etc. For the time being DG TAXUD is in cooperation with four partner DGs: DG SANTE for the CVEDA, CVEDP, CED and CHED-PP certificates, DG ENV for the FLEGT certificate, DG AGRI for the COI certificate and DG CLIMA for the ODS and FGAS licences. With the growing potential for expansion of EU CSW-CERTEX with new certificates and licences, there are several documents already on the radar: EU Dual-Use (DG TRADE), EU IUU Catch (DG MARE), Products Safety and Compliance (DG GROW), Cultural Goods (DG TAXUD), Waste (DG ENV), Alien Species CITES (DG ENV),.

A project group is working on the EU Single Window environment for customs legal framework definition. The possibilities and further perspective for expansion of EU CSW-CERTEX and also the establishment of a legal framework for the quantity management are part of the main topics under discussion there.

The aim of this document is to outline the activities that are required and to summarize the interaction between DG TAXUD and partnering DGs for the expansion of the EU CSW-CERTEX. The following chapters will describe step by step how a certificate or a licence can be successfully integrated.

2. EU CSW-CERTEX Functioning

The EU CSW-CVED is now used voluntarily by the customs administrations of nine Member States. The Member States integrate the services provided by the EU CSW-CVED into their national customs IT systems. With the use of it they are able to automatically validate several types of EU certificates that may be indicated as supporting documents to a customs declaration. In the course of 2018-2019 EU CSW-CVED will be gradually phased out and taken over by EU CSW-CERTEX, which will cover more certificates and provide enhanced functionalities.

There is a two-step flow of business information between Member States national IT system, EU CSW-CERTEX and the certificate/license system. First the national customs IT system sends a request for information for a certain certificate to EU CSW-CERTEX. This request is processed by EU CSW-CERTEX and transmitted to the corresponding system where the certificate is stored. The request by customs for certificate information may come either for general purpose (i.e. during audit) or this may be during the actual processing of a customs declaration. In the latter case there will be a quantity reservation on the source database. As a result, the source certificate/licensing system must retrieve and send back a response with the certificate information. EU CSW-CERTEX then applies certain business and technical transformation and sends back to the Member State national IT system the appropriate information in customs-compliant format. This is due to the fact that certificate information is received in EU CSW-CERTEX in the format and language that is specific to the competent authority which has issued it. In order to provide to national customs IT systems a set of

data to be automatically cross-checked with the customs declaration, EU CSW-CERTEX must apply the following types of transformation of the information:

- **Technical Transformation:** this is the modification of the format of data elements, in order to match the formats that are used in the customs declaration;
- **Business Transformation:** to "translate" the language of the competent authority into the customs; in order to achieve fully automated validation there must be a precise match between the authority statement on the certificate and the appropriate goods treatment by customs (i.e. the applicable customs procedures for the consignment).

When the certificate information is received in the Member State national IT system, customs may proceed with automatic cross-check and validation of the certificate.

The second part of exchange of information is triggered when the decision on the customs declaration is taken – i.e. goods are released or not released. At this stage a feedback message from MS customs to the certificate/licence source system is triggered through the EU CSW-CERTEX platform. Again, there is certain transformation applied by EU CSW-CERTEX and upon receipt of the customs feedback, the source certificate/license system must either write-off the quantities that have been released or cancel the reservation that has been made previously. Finally, the outcome of the quantity management must be sent from the source certificate/license system to the national customs IT system through the EU CSW-CERTEX platform.

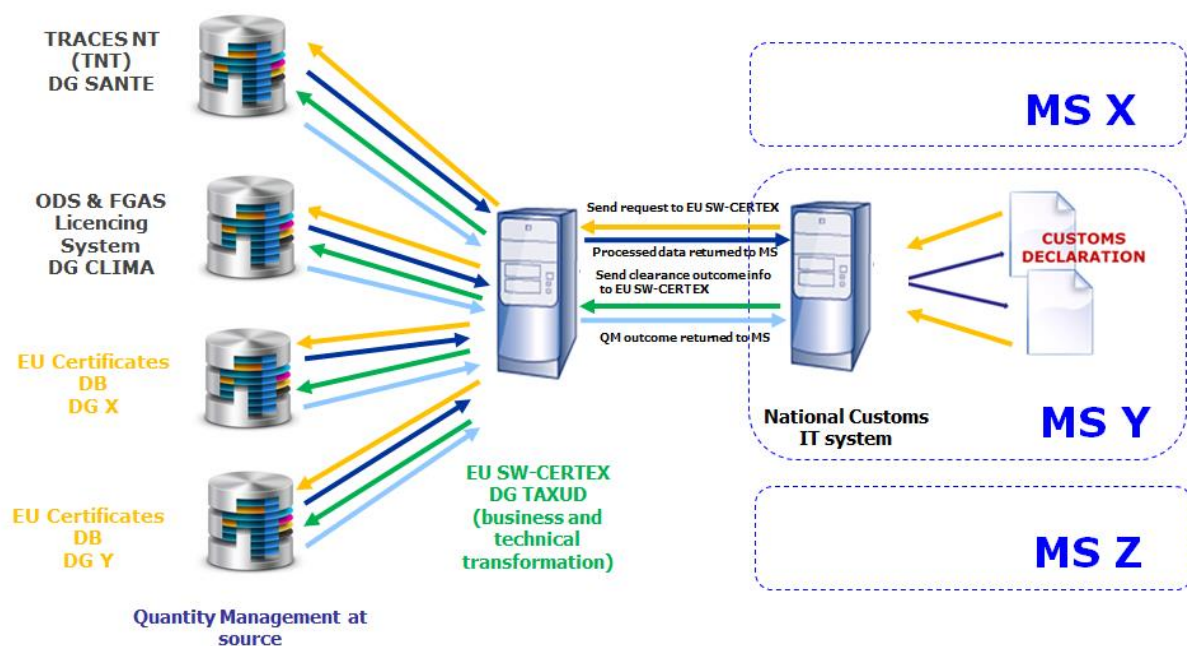


Figure 1: EU CSW-CERTEX Process Flow

The certificates and licences that are so far included in EU CSW-CERTEX are listed in the following table. The categorisation of their schema complexity is based on the practical experience of DG TAXUD with the integration of these certificates, taking into consideration the time and effort invested, complexity of the certificate per se and its relevance to customs (i.e. only import, or import and transit, etc.).

Type	Description	Competent DG	Operational system	Schema complexity ¹	Annual volume
CVEDA	Common Veterinary Entry Document for live animals	DG SANTE	TRACES (TNT)	5	57.000 ²
CVEDP	CVEDP Common Veterinary Entry Document for products of animal origin	DG SANTE	TRACES (TNT)	4	468.000
CED	Common Entry Document (CED) for products of non-animal origin	DG SANTE	TRACES (TNT)	4	200.000
FLEGT	Forest Law Enforcement, Governance and Trade	DG ENV	TRACES (TNT)	3	50.000 ³
COI	Certificate of Organic Inspection	DG AGRI	TRACES (TNT)	3	60.000
CHED-PP	Common Health Entry Document for Plant Protection	DG SANTE	TRACES (TNT)	5	50.000 ⁴
ODS	Ozone-Depleting Substances Licence	DG CLIMA	ODS2	4	3.000 ⁵
FGAS	Fluorinated Greenhouse Gases Authorisation/Quota	DG CLIMA	ODS2	3	3.000

Table 1: Certificate and Licences in EU CSW-CERTEX

3. Collaboration Setup

The framework to manage the operational relationship between any partner DG and DG TAXUD systems and to measure the related level of service of the corresponding DG system is established through a Memorandum of Understanding. This document must be signed before any operational activities on the integration of a new certificate/license may start.

In the meantime, a close collaboration between DG TAXUD and each new partner DG is required and must be established from the beginning of the integration activities. As per DG TAXUD internal organisation of activities, first a Business Process Model (BPM) needs to be developed for the integration of the new certificate/license into EU CSW-CERTEX. Detailed description of the BPM activities and deliverables follows in the next chapter 4. The BPMs are maintained in ARIS – a dedicated tool for business process management and represent the functional specification for the subsequent IT development. DG TAXUD relies on the support of external consultants, for the creation and maintenance of the BPMs as well as for the support of producing additional documents to further

¹ Range from 1 to 5 (1 – very simple, 2 – simple, 3 – average, 4 – complex, 5 – very complex)

² Average potential volume

³ FLEGT and COI volumes estimated for 2017

⁴ Estimated potential volume

⁵ Estimated for 2018

analyse and detail the business specifics that are related to the growth and evolution of the EU CSW-CERTEX.

The access to the Acceptance and preferably also Production environment of the partner DG's system for these consultants is required to execute their activities. The confidentiality and data protection clauses are duly inscribed into DG TAXUD contract with the consultants and relate to all their activities with the Commission in the frames of the project.

A kick-off meeting must be held in the beginning of an integration cycle and representatives from both business and IT are needed. Then throughout the BPM elaboration stage working sessions must be regularly organised, involving mostly business representatives. The functional area from which the members of a working session would need to be depends much on the different topics that would have to be analysed and detailed. On an average basis there must be a 2-hours meeting per every two weeks. Below is an illustration of the engagement of different experts with relation to the different topics:

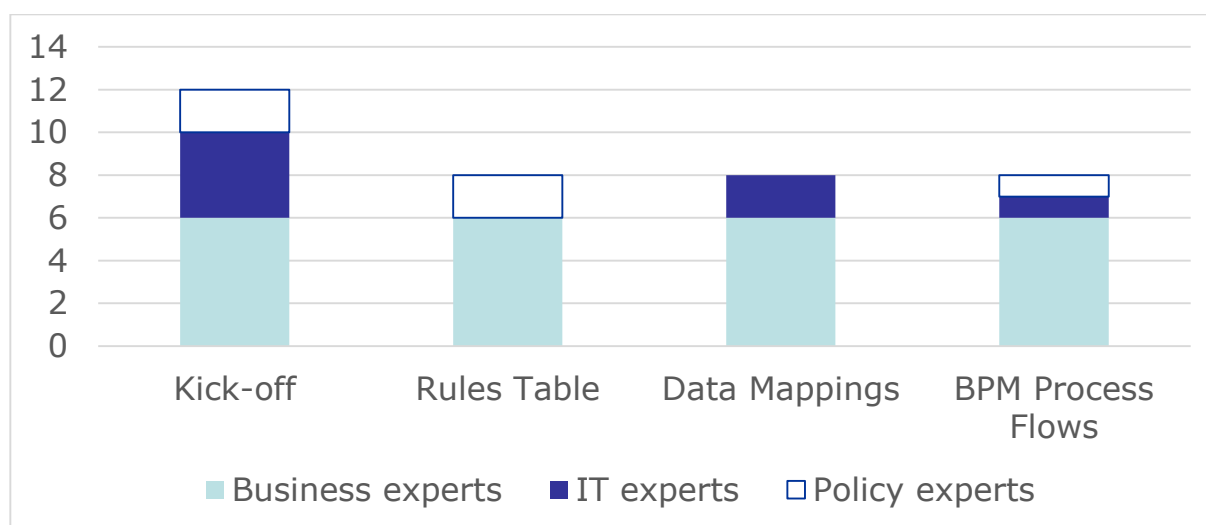


Figure 2: Example of Meetings Structure

Once the integration activities are initiated, the sessions must be carried out mostly with business experts and policy experts, and only in some cases involving IT. For example, when the data mapping topics are under discussion, IT is needed to support with xml schema definitions or to provide possibly with useful specifications for the system that is to be integrated with EU CSW-CERTEX. If no recognised data model exists at the partner end, IT is requested to check the possibility for alignment with customs data formats and requirements. For the BPM flows elaboration IT evaluation is required for any technical elements – if the type of message exchange needs to be specified (synchronous or asynchronous), if timers need to control the flow, etc. The need of IT presence at working sessions could be also limited, but still where their input is inevitable –business experts need to proceed with internal collaboration with IT at the partnering DG and ensure that crosscheck is performed and IT input is relayed.

The preparation of working documents for the meeting is done by DG TAXUD and its consultants. However, very active involvement of the partner DG experts is needed, to provide source information and documents, review the deliverables and accept them.

4. Integration Activities

4.1. Methodologies

The following methodologies and approaches are followed and applied throughout the execution of the EU CSW-CERTEX activities:

- **TEMPO:** DG TAXUD methodology to ensure the consistent and efficient management, set-up, development, operation, and support of projects and service management.
- **EU Customs BPM Methodology:** supports the specific needs of the DG TAXUD Business Units in terms of processes and data modelling, level 1-2-3-4 BPM approach, business and functional requirements identification and specification.
- **Waterfall-based approach** is used for the IT development of the EU Customs SW CERTEX.

4.2. Functional Specification

The number of applications and information systems – national, trans-European and EU-central - that are interlinked to enable and support import, export and transit-related customs activities is relatively high. Taking into account the amount of concerned entities in the processes, there is a justified comprehensive lifecycle for the development of new or the extension of functionalities of the IT components. Any IT development activities can only be carried out after a full cycle of BPM activities is completed. The latter one results in the production of the deliverables described in the table below. Each certificate/ licence has its own package of business information, comprised of the deliverables in the following table. They are stored on CircaBC and the tool ARIS and the access to these environments will be granted to partner DG experts once the cooperation is initiated.

Name	Details
Data Mapping	A link between the certificate/licence information and the Customs Declaration is made using Excel sheet tables and also with the support of a dedicated tool for developing and documenting the electronic form of business documents (GEFEG).
Rules Table	A certificate or licence contains a specific decision by the authority that has issued it. The "translation" of this decision into customs language is documented with the use of an Excel sheet.
BPM	Legal (level 3) and Functional (level 4) business process models. The functional BPMs show the interaction between DG TAXUD, national customs authorities and the partner DG from the perspective of the IT systems that support them. There is limited amount of technical details, as much as it is required in order to coherently specify functional requirements. In the package of the BPMs there are also the structures of the functional messages, defined through business data models. BPMs are designed in the ARIS platform and regularly published on the internet with controlled access. Accepted versions are published in the form of pdf reports and are stored on CircaBC.
BAC document	A Business Acceptance Criteria document which allows DG TAXUD Business unit to sign off on an implemented system. It includes detailed business test scenarios, cases and sample data sets covering all possible flows from the functional BPMs.
Guidelines document	Guidance document that provides support to the national customs administration of the Member States on the integration and application of EU CSW-CERTEX in their National Customs IT systems.
Quantity Management Requirements document	Description of the business requirements for a partner DG IT system in respect to the validation and quantity management process of a specific certificate or licence during customs clearance information passed through EU CSW-CERTEX.

Table 2: Business Deliverables

The following source information and documents are required to be provided by the partner DG to start BPM activities:

- the full legislation that defines the requirements and use for the certificate/licence;
- guidelines documentation – for the use of the certificate/licence and possibly the system itself;
- system/services specifications – if there is any existing integration with external systems up to the point in time when integration with EU CSW-CERTEX starts; XSDs are a suitable starting point for the analysis of data requirements in relation to the information exchange that needs to be established.

The activities on Data Mapping, Rules Table definition and initial drafting of the BPMs must start simultaneously after the kick-off for the integration. The **Data Mapping** is targeted towards the information from the certificate/licence that is valuable for customs, i.e. that relates in any way to any of the information provided in the customs declaration. To ensure adequate and effective final set of elements which are to be automatically validated by the IT systems of the national customs administration, the whole data from the certificate/licence must be analysed and mapped, where possible, to customs data. In order to enable automatic crosscheck between the certificate data and customs declaration data, sometimes data transformation is required. The logic of the data transformation is documented during the data mapping exercise. EU Customs IT systems and applications need to comply with the specifics of the EU Customs Data Model (EUCDM). For this purpose EU CSW-CERTEX needs to unify the information from the different certificates and licences when passing it to the IT systems of the national customs administrations.

A clear understanding of the licence purpose and terminology is required. It could be that wording of the issuing authority is similar to what is used in customs; however the definitions differ. Therefore, the cases occur when the same term has different definitions in the legislation of the partner DG as compared to customs legislation. The link between the terminology of the issuing authority and the terminology of customs regarding one and the same topic is not always straight forward. Therefore a data harmonization exercise is the starting point of the business analysis. The **Rules Table** gives unambiguous instructions how a certification of other authorities with a specific decision should be interpreted for customs purposes. In reality when an economic operator submits a customs declaration and the goods are subject to certificates/licences, it is up to the customs officer who revises these documents to decide whether they are sufficient for release of the goods. Then the customs officer's experience and knowledge are crucial for proper treatment. The rules table mapping establishes a strict "translation" of the decision by the issuing authority in relation to applicability of customs procedures, which can then be processed by the system, thus allowing full automation of the process.

Each certificate or licence has its dedicated set of **BPM flows** in the Business Process Architecture of the central and trans-European customs systems. The flows cover in detail how MS national customs IT systems communicate with EU CSW-CERTEX during a certificate/licence validation and on the other hand there is also the communication between EU CSW-CERTEX and the certificate/licence operating system. The leading point for a separate flow is the existence of a common XSD schema. First the BPMs are developed from a legislative perspective and on a higher level of detail (in the context of the EU Customs BPM Methodology). Then the lower level of detail is developed including data structures of the messages that are to be exchanged and specific functional requirements for the systems. The BPMs for each certificate/licence include the following flows:

- consulting the existence of a certificate/license ("Check Availability" process): general check of the certificate that may be needed for example for audit purposes;
- consulting the certificate for customs clearance ("Check Availability with Quantity Management" process): making reservation for the use of the certificate at the source database after lodgement of a customs declaration with reference to it;
- sending feedback to the source system ("Goods Clearance" process): informing the source database of the actual outcome when the customs formalities are complete.

In order to draw complete and demonstrative BPM there must be a clear understanding of the certificate lifecycle, the possible statuses, and how those statuses shall be treated by customs. There is also the need to know what the decision of the competent authority means for customs officers. The

set of BPM to be written targets to reach capabilities which would allow the automation of the process as much as possible. Ideally this means that the happy flow could run without any human intervention.

Also, from the moment a documentation or information is received for the data structures of the certificate/licence, the EU CSW-CERTEX team becomes very dependent on any changes that may occur in relation to the data of the partner DG. Such changes must be performed only after proper consultation, as part of the formal Change Management procedure.

An important document produced by DG TAXUD for the partner DG during the business analysis stage is the Quantity Management paper. It contains detailed business requirements for the controls of quantities in a certificate or a licence. Since the quantity management functionalities must be developed at the side of the partner DG IT system, where the business logic for the certificate/licence is maintained, this document must be elaborated in close collaboration with the partner DG IT experts.

4.3. Review of Deliverables

The business deliverables described in the previous chapter are bundled in a package and first they must undergo an internal (within the Commission) review cycle. After amendments and approval they are given for review by the customs administration of the EU Member States. After approval also by the Member States, the business deliverables packages are handed over to EU CSW-CERTEX IT for development.

The partner DG must also participate in the review and acceptance of the technical specification related documents for the integration of the related certificate/licence, i.e. the IT deliverables that are produced by DG TAXUD:

- Technical Specifications
- Test Design Specifications
- Integration Guide
- Conformance Test Plan and Conformance Test Organisation Document.

4.4. Change Management

Any change to the specification of how the validation of a certificate/licence should be accomplished with the support of EU CSW-CERTEX as provided in the business deliverables package must be additionally analysed, assessed, formalised in a Change Request and discussed at a meeting of the Change Advisory Board. The Change Advisory Board is organised and chaired by DG TAXUD. All involved parties can initiate the change by submitting a Request for Change to the Change Advisory Board.

Once the BPM flows are developed into the EU CSW-CERTEX application and prepared for operational use – requests for change may be raised by different parties: by the users (the customs administrations of the Member States), by DG TAXUD or by the partner DG that is in charge of the corresponding certificate/licence. Any change affecting the BPM and technical means of processing a certificate/licence of a partner DG within EU CSW-CERTEX requires the involvement of this DG business and/or IT experts in the assessment and approval of the change.

The Change Management Procedure for EU CSW-CERTEX requires that Change Requests get implemented in groupings for the BPM and the corresponding release of the EU CSW-CERTEX application. When implemented in the BPM – the review cycle for that BPM flow must be initiated again.

5. Harmonisation of Certificates Integration in EU Customs SW CERTEX

5.1. At the Side of Partner DG

One of the most substantial benefits that EU CSW-CERTEX provides to the national customs administration of the Member States is the receipt of the certificate/licence information in a filtered format and ready to be directly and automatically cross-checked with the customs declaration data. As described above, this is achieved by technical and business transformation of the information. Taking into account the diversity of certificates and licences and the complexity of their lifecycle management, this transformation is of a very high cost. This cost is shared between DG TAXUD and the respective DG, based on the Memorandum of Understanding, as described in Section 3. There are several ways that can diminish the amount of the transformation, and, respectively, the associated costs:

- Use of customs compliant terminology for definitions of data elements in the certificate/licence. All customs data definitions are defined in the Annex B of the UCC Delegated Act (Commission Delegated Regulation No 2015/2446). The easy reference is possible through the EU Customs Data model (<https://svn.taxud.gefeg.com/svn/Documentation/EUCDM/EN/index.htm>).
- Use of a globally recognised data standard. Ideally, if the database of the partner DG uses WCO Data Model, this means alignment with customs data requirements, as the EU Customs Data Model is derived from it. Compliance with the WCO Data Model would lead to minimum amount of technical transformation at the side of EU CSW-CERTEX as the customs declaration data is in compliance with this data model. DG TAXUD has also acquired some experience with the data transformation from another globally recognised data standard - UN/CEFACT, which makes data mapping activities less time and effort consuming. Both WCO Data Model and UN/CEFACT have subsets for certificates/licences purposes – LPCO (WCO DM) and SPS (UN/CEFACT).
- Use of a single template for different types of certificates that are stored in one and the same database. Having a common XSD facilitates, the analysis and data mapping are facilitated, which reduces the number of BPM flows. This would mean that the specifics of the separate certificates/licences can be maintained through subsets of values for certain fields and enabled/disabled boxes for data. Even partially unifying, e.g. use of the same lifecycle for different certificates/licences (same values for the Status of the document), is still a facilitation for the integration activities.
- The intensity/frequency of the change management at the partner's DG side directly impacts the change requests, review cycles and releases of the different flows in the EU CSW-CERTEX – and therefore also the costs of integration.
- The existence of a stable version of the XSD for a certificate/licence eliminates the maintenance of the message structures that are to be exchanged between customs administrations, EU CSW-CERTEX and the partner DG system. It is more cost-efficient to start BPM activities when the digital certificate is already developed and stable. Notwithstanding this, consultations with DG TAXUD prior to starting the development of digital certificates are highly recommended. Such consultations allow knowledge sharing, which can result in informed choices (e.g. of the data model, etc.) at the side of the partner DG, which lead to easier integration at the later stage.

A distinction must be made between the complexity of activities where the integration of a certificate/licence concerns a system already connected to EU CSW-CERTEX or it is a completely new system. Discovering the specifics of a new system is a challenge that intensifies the expectations from the business analysis tasks and also requires an IT Proof of Concept.

5.2. At the Side of DG TAXUD

As there is a great potential to expand the scope of the EU CSW-CERTEX both in the direction of adding new certificates and licences, and also expanding the functionalities, it is justified for DG TAXUD to consider the possibilities for optimisation of the adopted approaches for integration.

The first basic principle that allows for reuse of approved working solutions and already gathered knowledge is to shape new integrations as close as possible to certificates/licences that are already operational. There could be limitations or restrictions due to the nature of the new certificate/licence and the organisational uniqueness of the responsible authorities. However, the communication between the IT systems of the Member States and EU CSW-CERTEX needs to be as much as possible unified throughout the different certificate/licence streams. This would reduce the costs of maintenance, as well as the efforts for integration at the side of the Member States.

Currently certificates/licences validations are based on the “Pull” mechanism – each time when such supporting document to a customs declaration needs to be checked, a request is triggered to the database where it is stored. The possibility of “Push” must be considered in order to reduce polling, and, therefore, impact on the system.

Data harmonisation line is another field where common efforts could unify the structures and frameworks in which certificates/licences are maintained far prior to their inclusion in EU CSW-CERTEX. This implies then decrease of the efforts for integration of new documents that already follow international data standards. In regards to this DG TAXUD has initiated discussions with WCO and UNECE and must continue its efforts to advocate for bringing the WCO data model and UN/CEFACT to a common denominator. This initiative is carried out in close cooperation with the Data Integration and Harmonisation sector of Unit B1 in DG TAXUD.

There is a potential for alignment and improvement of the interactions between the business and IT units, thus reducing unnecessary overlapping:

- Re-use of BAC documentation for CTP purposes. The BAC document covers all possible business scenarios that must be supported by the developed application and includes sample data sets for this purpose. The same scope is represented in the conformance tests business scenarios. Possible modification of the BAC could make it closer in format and representation to the CTP and could ease the IT activities in relation to the maintenance of business scenarios and test data.
- The ARIS platform has capabilities for generation of xml schemas from the data models. In order to enable this capability from ARIS there is a need to modify the current methodology for modelling the information exchanges during BPM elaboration stage.
- The involvement of IT Unit (B2) through regular consultations already at BPM elaboration stage would facilitate the successful execution of the two undertakings described above and would boost the usefulness of the BPMs for the practical IT development.

Closer work is needed with the Policy Unit A5 to advance contacts with the partner DGs to the moment, when they draft their legislation and only start thinking of the new digital certificates. It is a strategic task from which partner DGs could benefit from since this would optimise their way of digitalising and would also facilitate further activities related to integration from both sides.

6. Acronyms and Abbreviations

Acronym	Description
ARIS	Architecture of Integrated Information Systems
BPM	Business Process Model
CED	Common Entry Document for feed and food of non-animal origin
CERTEX	Certificate Exchange
CHED-PP	Common Health Entry Documents – Plants and Plant Products
CIRCABC	Communication and Information Resource Centre Administrator
COI	Certificate of Organic Inspection

CVED	Common Veterinary Entry Document
CVEDA	Common Veterinary Entry Document – Live Animals
CVEDP	Common Veterinary Entry Document – Animal Products
CTP	Conformance Test Protocol
DG AGRI	Directorate General - Agriculture and Rural Development
DG ENV	Directorate General - Environment
DG SANTE	Directorate General - Health and Food Safety
DG TAXUD	Directorate General - Taxation and Customs Union
EU	European Union
EUCDM	EU Customs Data Model
IT	Information Technology
LPCO	Licences, Permits, Certificates and Others data set from the WCO data model v3.3
MASP	Multi-Annual Strategic Plan
MS	Member State
QM	Quantity Management
SPS	UN/CEFACT electronic data form (xml schema) for certificates
SW	Single Window
TRACES NT	Trade Control and Expert System – New Technology
UCC	Union Customs Code
UN/CEFACT	XML Schema Standard of the United Nations Centre for Trade Facilitation and Electronic Business
WCO	World Customs Organisation
XML	Extensible Mark-up Language
XSD	XML Schema Definition