

DG TAXUD

Unit B3

Architecture Overview

**Centralised Clearance for Import (CCI)**

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# Introduction

## Purpose

The Centralised Clearance for Import (CCI) is the proposed system which aims to provide the functionality defined in the CCI Business Document [], while fully aligned with the UCC and its implementing and delegated acts.

The purpose of this document is to analyse and propose:

* The possible dependencies with other systems (external to CCI);
* The responsibilities regarding the different applications that could be part of the architecture of Centralised Clearance for Import system;
* The technologies that are needed to support the architecture.

This activity serves several purposes:

* It helps refining the timing and resources aspects of the project;
* It mitigates the risks related to the project;
* It can re-orient the project in case an envisioned architecture turns to be more complex than foreseen.

The architecture overview includes the description of the components, nodes, connections, data stores, users and external systems that play a role and how these architectural elements collaborate to achieve the goals of the CCI System.

## Scope

As the major business elements of CCI are described in [], the architecture overview will explore these elements in order to define the necessary abstract architectural baseline.

This architectural baseline will explore:

* The main decisions that influence the CCI architecture;
* The architectural elements of CCI;
* The common architectural elements applicable to CCI (Reusable components and guidelines);
* How CCI will interact with other systems (i.e. Centrally Developed Customs Applications (CDCA));
* How CCI integrates with the Commission networks and infrastructure (i.e CCN2).

The scope of this document is to analyse the architectural options, identify the components of CCI and map how these components integrate with the other existing systems and consequently how the CCI application will be used.

## Target Audience

Readers are assumed to have a good understanding of general IT architectural concepts and may belong to one of the following categories:

* CCI Specifications and Development team;
* IT Architects responsible for the integration of the CCI system in the e-Customs portfolio of IT systems;
* CCI Business Users;
* IT architects and staff responsible for the Operations and Administration of the system.

## Structure of this document

The present document contains the following chapters:

* **Chapter – :** describes the scope and the objectives of the document;
* **Chapter – :** presents an overview of the architecture of EU CCI system;
* **Chapter 3 – :** details any existing components that will be reused;
* **Chapter – :** presents ArchiMate notation used in this document;
* **Chapter – :** contains the figures of §2.3 and §2.4 as attachments for readability purposes;
* **Chapter 6 – :** provides some estimated volumetric data for envisioned CCI and the various assumptions for consideration.

## Reference and applicable documents

### Reference Documents

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Ref. | Title | Reference | Version | Date |
| R0 | Terms of Collaboration for the Customs Trans-European Systems | ToC-eCUST-TES | 4.80 | 03/11/2017 |
| R02 | UCC CCI Business Case | Ares(2017)5701946 - 22/11/2017 | 1.2 | 17/11/2017 |
| R03 | REGULATION (EU) No 952/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 October 2013 laying down the Union Customs Code | UCC 952/2013 | N/A | 10/10/2013 |
| R04 | COMMISSION DELEGATED REGULATION (EU) 2015/2446 of 28 July 2015 supplementing Regulation (EU) No 952/2013 of the European Parliament and of the Council as regards detailed rules concerning certain provisions of the Union Customs Code | 2015/2446 | N/A | 29/12/2015 |
| R05 | COMMISSION IMPLEMENTING REGULATION (EU) 2015/2447 of 24 November 2015 laying down detailed rules for implementing certain provisions of Regulation (EU) No 952/2013 of the European Parliament and of the Council laying down the Union Customs Code | 2015/2447 | N/A | 29/12/2015 |
| R06 | TSS-eCustoms Technical Architecture Specification | eCu-TAS | 1.00 | 13/05/2008 |
| R07 | CRS High-level IT Design | CD3-CD-CRS High level IT Design | 2.30 | 30/04/2015 |
| R08 | CS/RD2 High-level IT Design | CD3-CS/RD2 High level IT Design | 2.30 | 07/10/2016 |
| R09 | MASP Annex 6 – IT Strategy | MASP Annex 6 | 1.00 | 06/12/2012 |
| R10 | ArchiMate® 3.0.1 Specification, an Open Group Standard | http://pubs.opengroup.org/architecture/archimate3-doc/ | 3.0.1 | - |
| R11 | CS/RD2 - Design Document for Reference Data Administration | CD3-CSRD2-DDRDA | 2.20 | 29/01/2019 |
| R12 | CRS Member State Design Documentation Package | CD3-CD-CRS-MSP2 | 5.00 | 08/01/2018 |
| R13 | CCN2 Integration Manual | CCN2-CIMA-SC04-001-NA | 1 | 03/06/2015 |
| R14 | Service Level Agreement for  Availability and Continuity of  Customs Trans-European Systems  between National Administrations and DG TAXUD | SLA on Availability and Continuity (Customs) - Version 2.80 - Annual Revision 2017 | 2.80 | 03/11/2017 |

Table : Reference documents

### Applicable Documents

| Ref. | Title | Reference | Version | Date |
| --- | --- | --- | --- | --- |
| A01 | FSS-UCC CCI Phase 1 | EU Customs Functional System Specifications - CCI ADDENDUM (FSS-CCI) | 2.00 | 28/09/2018 |
| A02 | Vision Document | Vision Document – EU Centralised Clearance for Import | 1.20 | 14/06/2018 |
| Α03 | FRR-UCC CCI Phase 1 | EU Customs Functional Requirement BPMs for CCI (FRR-CCI) | 2.00 | 05/10/2018 |

Table : Applicable documents

## Abbreviations and Acronyms

For a better understanding of the present document, the following table provides a list of the principal abbreviations and acronyms used.

| Abbreviation/Acronym | Definition |
| --- | --- |
| CCI | Centralised Clearance for Import |
| CCN2 | Common Communication Network version 2 |
| CDCA | Centrally Developed Customs Applications |
| CN | Combined Nomenclature |
| CS/MIS | Central Services Management Information System |
| CS/RD | Central Services Reference Data |
| CSI | Common Systems Interface |
| CTA | Conformance Testing Application |
| DDS | Data Dissemination System |
| DTI | Direct Trader Input |
| ED | External Domain |
| EDI | Electronic Data Interchange |
| EO | Economic Operator |
| HTTP | HyperText Transfer Protocol |
| HTTP/s | HTTP over SSL |
| IP | Inward Processing |
| OP | Outward Processing |
| PCO | Presentation Customs Office |
| RPO | Recovery Point Objective |
| RTO | Response Time Objective |
| SCO | Supervising Customs Office |
| SSL | Secure Sockets Layer |
| TES | Trans European Systems |
| UCC | Union Customs Code |
| VAT | Value Added Tax |
| XML | eXtensible Markup Language |

Table : Abbreviations and Acronyms

## Definitions

|  |  |
| --- | --- |
| Term | Definition |
| Declarant | The person making the customs declaration in his own name or the person in whose name a customs declaration is made. |
| Project | Projects are performed by people, constrained by limited resources, and planned, executed, and controlled. A project is a temporary endeavor undertaken to create a unique product or service. Temporary means that every project has a definite beginning and a definite ending. Unique means that the product or service is different in some distinguishing way from all similar products and services. Projects are often critical components of the performing organizations’ business strategy. |
| Stakeholder | An individual who is materially affected by the outcome of the information system. Stakeholders of an information system (amongst others) are: the business units, the users of the system, the supplier of the system, etc. |

Table : Definitions

# Architecture Overview

## Architectural Goals

The philosophy of the **EU Centralised Clearance for Import (CCI)** System Architecture will be based on the **Distributed/Decentralised system approach** as per [R02]. Therefore, the CCI system is considered as part of the portfolio of distributed Customs Trans-European Systems and as such must be aligned to the TES organization principles. That means, the CCI architecture must reflect the subsidiarity principle on which existing TES are based.

Additionally, the CCI application architecture, must be based on the Service Orientation paradigm introduced in the design of the new IT systems for customs as depicted in MASP-Annex6 (IT Strategy) []. As such, the CCI architecture, must result in flexible and modular applications components that can adapt easier to the changes and can benefit from the reuse of existing functionality. This approach is in line with the European Interoperability Framework that recommends the development of a component-based service model allowing the establishment of European public services by reusing, as much as possible, existing service components. The adopted service-oriented methodology follows those recommendations.

The goals that the architecture needs to meet, are:

* The implementation of an IT system or the extension of the existing systems to deliver on the legal possibilities that exist for CCI;
* The harmonisation of information exchanges, on the basis of internationally accepted data models and message formats;
* The reduction of costs, by the reengineering of customs and customs related processes in view of enhancing their efficiency, effectiveness and uniform application;
* The facilitation of trade, by offering to economic operators a wide range of electronic customs services, enabling them to interact in the same way with the customs authorities of any Member State;
* Assuring business continuity, by not disturbing the current operations, by preserving the current distributed model of basing the development on specifications for the common domain created by DG TAXUD and by limiting the impact of the required changes on the traders and the administrations;

## Architecture Decisions

The proposed architecture intends to give an overview of the participating actors and the business functionality. Moreover, it will outline a logical model of several interoperable application modules that might put in place this business functionality. The architecture proposal is expanding outside common domain boundaries into national domain boundaries. It is to be noted that, what is proposed from the business point of view and the business functional blocks, is absolutely required for CCI system integration. On the other hand, the depicted logical application model is indicative and not bind to the Member State with respect to the national services and applications.

### Architecturally Significant Requirements

CCI introduces a new set of business processes as described in []. These processes can be implemented by a new system and/or by extending the existing National Declaration Processing Systems. The decision is upon to each Member State. Most of the required functions for CCI already exist at the national domain. CCI introduces variations of the existing flows that integrate both local and remotely provided functions. In the context of TES, a common set of principal specifications and requirements has been defined; refer to the Terms of Collaboration for the Customs Trans-European Systems []. These encourage the collaboration and guarantee the harmonization and common operation between the different actors. These common requirements must also be implemented in case of CCI so as to realize the overall architecture. Each National Administration is responsible for defining its own implementation, as far as it complies with the common specifications. Therefore, compliance with the common specifications is the most significant requirement.

Because of the dependencies between CCI @SCO and the CCI @PCO the availability of each instance of CCI influences the execution of the CCI processes. Therefore, the availability of CCI should be higher than those systems with only local dependencies.

CCI requires from Traders to submit supporting documents. In CCI Phase 1, this will happen outside of the system. However, specifying an EU level approach (for example the e-Delivery platform could support such exchanges) would be investigated in subsequent phases.

The high level CCI system architecture requirements are those specified in the Vision Document [] and are applicable to the complete target of the CCI technical systems specifications of phase 1, due in 2020.

#### Availability

In the terms of the availability, CCI is considered similar to NCTS and ECS systems:

* ***RTO***: 4 hours;
* ***RPO***: 48 hours;
* ***Availability***: Critical.

The ***RTO*** applies to the restoration of MSs workplace facilities, ICT infrastructure and users’ workstations where the IT Systems operates, implementing the exchange of information between each MS.

The ***RPO*** applies to e-Customs information and data that MSs exchange between each other. So, the MSs could deploy data availability measures such as backup, for ensuring the timely recovery of the information that participates in the exchange process.

The central assumption is that all National and Central Customs TES services are expected to be available on a continuous, 24/7/365 basis. To this end, two different pairs of values are set:

1. one target/limit pair for “Within Business Hours” operational availability and;
2. one target/limit pair for “Outside Business Hours” operational availability.

Notes:

* The ***Target*** values are recommended values to be achieved as often as possible (on a monthly or annual basis).
* The ***Limit*** values are values to be strictly respected (on a monthly or annual basis).

The Service Level Agreement for Availability and Continuity of Customs Trans-European Systems between National Administrations and DG TAXUD [] includes target and limit values for the availability of the communication network and the supporting applications. The document will be extended with values for National CCI Application, to be agreed with NA.

The non-functional requirements regarding CCN2 availability are depicted within CCN2 Platform System Functional and Non-Functional Requirements [].

#### Usability

Not applicable to the distributed Trans-European System.

#### Maintainability

As defined in the Terms of Collaboration for the Customs Trans-European Systems [].

### Architectural Constraints

The CCI architecture must be aligned with the established Trans-European systems (TES) principles. The main architectural constraints implied by this alignment are the following:

* Alignment of the processes to be implemented and the messages to be exchanged with the Common Specifications;
* Exchanges between SCO and PCO over CCN2;
* Improved availability of the National customs declaration processing systems.

One of the main architectural constrains applied on the common domain infrastructure is the CCN2 Platform, operated by DG TAXUD. The CCN2 Platform supports the cooperation between the involved governmental agencies. It offers added-value services around the SOA paradigm to achieve the technical interoperability across the EU Customs despite the environmental diversity. The CCN2 Platform mainly supports new integration paradigms using synchronous communications based on SOAP / REST Web Services, etc. At the same time, the CCN2 Platform offers the asynchronous communication paradigm which supports existing CSI facilities and provides additional interfaces including Web Services, JMS or other technologies.

The CCI implementation must consider the volumes of Table 24, with respect to the capacity requirements.

Other architectural decisions to be considered:

* DDS is out of scope of CCI system, no change and no interface or interoperability is foreseen;
* Statistics for CCI will be similar to those provided by CS/MIS for AES and NCTS. However, follow-up of CCI MRN is not foreseen and hence a DDS on EUROPA is not foreseen too.

#### Service Oriented Architecture

The philosophy of the application architecture of the CCI system is based on the Service Orientation paradigm introduced in the design of the new IT systems for customs as depicted in the MASP - Annex 6 (IT Strategy) [[R09](#R09)].

#### CCN2 Compliance

The CCI system must use the CCN2 platform as a communication component that implements reliable communication between the CCI systems. This platform ensures security as well, federated governance, monitoring and interoperability.

### General Findings and Recommendations

#### Architectural Decision AD-001

|  |  |  |  |
| --- | --- | --- | --- |
| **Subject Area** | Trans-European Systems | **Topic** | System introduction |
| **Architectural Decision** | Implement a system that will automate Centralised Clearance for Import (CCI) at EU level as required by UCC. | **ID** | AD-001 |
| **Issue or Problem Statement** | The requirements of UCC impose the introduction of CCI, a completely new trans-European system, which is prepared, developed and deployed by Commission and MS in agreement with each other. | | |
| **Assumptions** | The UCC concepts and the decisions of the Project Group consisting of Member State and Trade representatives and presented in a Final Report which was published on 7 July 2017. | | |
| **Motivation** | The automated electronic management of CC at EU level will replace the case by case solutions as is the case currently with SASP. | | |
| **Alternatives** | The continuation of SASP/CC procedures as an alternative, would mean no further harmonisation of procedures for CC at EU level and no central services to support the exchange of data between SCO and PCO in different MS. This is not a viable option as CCI is considered an important simplification under the UCC. | | |
| **Decision** | The interface of today's independent national import applications and the establishment of an IT system in the import domain, are required for this functionality.  For this purpose, the scope, functional blocks, common specifications and requirements must be defined similar to other already existing trans-European systems.  The whole architecture should be realized through the use of common services and the interconnection of national IT systems with harmonised data requirements. | | |
| **Justification** | CCI aims at allowing the centralisation of customs declarations for any given trader with one customs administration for imports carried out across the EU using electronic data-processing techniques. And as such, UCC provides the legal basis for it.  CCI is further justified by the digitalisation of customs processes that is envisaged from MASP planning. | | |
| **Implications** | DG TAXUD:   * The production of the common specifications; * The management of the common domain services.   National authorities:   * The update of the current customs clearance systems or the development of a new one; * The development of new messages based on common specifications for the exchange of information between the national authorities; * The update or development of new interfaces between national systems for the CCI specific purposes e.g. exchange information for VAT with the Tax authorities. | | |
| **Derived requirements** | CCI L4 BPMs need to be created.  A CCI Business Case needs to be created.  Inception activities for CCI need to be launched. | | |
| **Related Decisions** | *Architectural Decision AD-002* | | |

Table : Architectural Decision AD-001

#### Architectural Decision AD-002

|  |  |  |  |
| --- | --- | --- | --- |
| **Subject Area** | Trans-European Systems | **Topic** | System overall approach |
| **Architectural Decision** | CCI will be implemented according to a decentralised/distributed architecture. | **ID** | AD-002 |
| **Issue or Problem Statement** | The approach that will be followed by the new system (centralised, distributed or hybrid) is in question. | | |
| **Assumptions** | The second generation of Common Communication Network (CCN2) developed and deployed by the Commission. | | |
| **Motivation** | It is critical that the optimal approach in terms of availability, simplicity, reduction of costs, enhancement of existing investments and business continuity is chosen. | | |
| **Alternatives** | * Centralised system approach: From an abstract and isolated view this would be the ideal solution as it could lead to customs as working as one. However, this also requires fully harmonised legislation (for P&R) and harmonised competencies for customs authorities. From a practical point of view this is not acceptable or feasible to implement (interconnections with multiple national systems and processes); * Hybrid system approach: Allows MS who have the required resources to develop at national level the CC components and obliges the Commission to build a central system which serves those MS that do not have the required resources. An important feature of the hybrid approach is that both COM and MS must ensure that a seamless interaction is established between the central system and national components. As a result of the costs and the complexity involved, this is not considered a viable option. | | |
| **Decision** | The distributed/decentralised system approach as per [R02]. | | |
| **Justification** | The distributed/decentralised system approach is considered by Project Group as the most viable option to implement. It takes national policy into account and because the national systems need to be updated anyway it gives rise to a positive cost/benefit ratio. Also, considering previous experience with systems like ECS and NCTS this is the preferred option of the Project Group. | | |
| **Implications** | As described by *Architectural Decision AD-001*. | | |
| **Derived requirements** | Inception activities for the selected architecture. | | |
| **Related Decisions** | Specialization of *Architectural Decision AD-001*. | | |

Table : Architectural Decision AD-002

#### Architectural Decision AD-003

|  |  |  |  |
| --- | --- | --- | --- |
| **Subject Area** | Trans-European Systems | **Topic** | Communication infrastructure |
| **Architectural Decision** | The communication infrastructure of the common domain will be realized through the means of CCN2 and the supported integration paradigms. | **ID** | AD-003 |
| **Issue or Problem Statement** | A new generation infrastructure is recently in production. CCN2 will offer additional capabilities in terms of capacity, intrinsic interoperability and collaborative development. Therefore, the availability of forthcoming CCN2 capabilities have been considered for the CCI implementation. | | |
| **Assumptions** | CCN is the current communication infrastructure that supports the implementation of the existing Trans-European Systems (TES). | | |
| **Motivation** | The infrastructure must support the unobstructed communication thus, the effective cooperation between the national authorities in the best possible means. | | |
| **Alternatives** | CCN might be a fall-back option to CCN2. The CCN usability, performance, robustness and stability have been successfully proved on TES operations so far. | | |
| **Decision** | The CCI implementation will be based on CCN2. Therefore, National CCI Application will exchange messages with other National CCI Application on the Common Domain via CCN2 following the pattern of the one-way web service as explained in the CCN2 Integration Manual []. | | |
| **Justification** | A key goal of implementing the CCN2 Platform is that it should completely replace the CCN infrastructure. Moreover, CCN2:   * Is flexible to meet future development requirements; * Is scalable to meet projected volumes; * Is operable and maintainable in a cost-effective volume; * Is upgradable on a regular basis in a cost-effective manner. | | |
| **Implications** | DG TAXUD must extend CCN2 so that to put in place the necessary CCI nodes and the corresponding network elements.  National Authority needs to be registered on CCN2 platform and adapt the National CCI Application so that to provide and consume services over CCN2. | | |
| **Derived requirements** | Inception activities for the selected architecture. | | |
| **Related Decisions** | *Architectural Decision AD-002*. | | |

Table : Architectural Decision AD-003

#### Architectural Decision AD-004

|  |  |  |  |
| --- | --- | --- | --- |
| **Subject Area** | Communication | **Topic** | Interaction in the common domain |
| **Architectural Decision** | CCN2 Asynchronous Services | **ID** | AD-004 |
| **Issue or Problem Statement** | Decoupled and reliable communication in the common domain between the National CCI Applications must be ensured. | | |
| **Assumptions** | The communication between National CCI Applications and the use of Central Services by the National CCI Applications (where applicable) must be implemented through the use of CCN2. | | |
| **Motivation** | The interactions between the National CCI Applications must comply with the reliable communication, performance and availability requirements. | | |
| **Alternatives** | Two alternatives were investigated:   1. The use of synchronous CCN2 services with an additional queuing mechanism implemented at the service consumer and provider side; 2. The use of asynchronous CCN2 services using the one-way message exchange pattern. | | |
| **Decision** | The asynchronous CCN2 using the one-way message exchange pattern is selected. Each MS will need to implement a CCN2 One-way service for receiving business messages and a second for receiving from CCN2 the Confirmation of Delivery (CoD). | | |
| **Justification** | As a distributed system, and in order to ensure the maximum reliability, CCI will adopt the asynchronous services approach in order to decouple the sender from the recipient of the message. CCI process do not involve synchronous communication. | | |
| **Implications** | The following have to be delivered:   * CCI Service Specifications document; * CCI Technical Service Contract (XSDs and CCN2 WSDLs).   As CCI services are to be provided over the CCN2 Platform, National CCI Applications will have to be registered to CCN2 platform as partners in order to implement and expose the services as defined by the SSD & TSC documents. | | |
| **Derived requirements** | Inception activities for the selected architecture. | | |
| **Related Decisions** | *Architectural Decision AD-003* | | |

Table : Architectural Decision AD-004

## Architecture Overview Diagram

The architecture overview diagram as found below shows the high-level overview of the architecture from the perspective of three different ArchiMate viewpoints:

* The “business functions viewpoint” shows the key business functions which shall be performed per Business Role of the CCI System. The business processes and particularly the sequence of actions and information exchanges are defined in [];
* The “application cooperation viewpoint” depicts how the foreseen application components will support the business functions above and the interactions between different applications components. The application components under the responsibility of the Member States are clearly differentiated from the others;
* The “infrastructure usage viewpoint” illustrates how the applications will be supported by the infrastructure and technology.

The diagram illustrates that the architectural goals and decisions as defined above, are fulfilled by the proposed architecture. The major elements of the diagram are explained in the next chapter.

Figure 1: CCI Architecture Overview (Multi-layered Viewpoint)

## Key Concepts

This chapter specifies the key architectural concepts of the solution based on the major elements shown in the Architecture Overview Diagrams above.

### Business Concepts

Figure 2 below presents the CCI Business Functions Viewpoint.

Figure 2: CCI Business Functions Viewpoint



The various business actors, business roles, business functions and business objects are explained in the paragraphs below.

#### Business Actors

The Key Business Actors for CCI Systems are the following:

|  |  |
| --- | --- |
| **Actor** | **Description** |
| **Economic Operator** | Means a person who, in the course of his or her business, is involved in activities covered by the customs legislation. Art5(5) of []. |
| **Customs Authorities** | Means the customs administrations of the Member States responsible for applying the customs legislation and any other authorities empowered under national law to apply certain customs legislation Art5(1) of []. |

Table : CCI Business Actors

#### Business Roles

|  |  |  |
| --- | --- | --- |
| **Business Role** | **Description** | **Business Actor** |
| **Declarant** | Means the person lodging a customs declaration, a temporary storage declaration, an entry summary declaration, an exit summary declaration, a re- export declaration or a re-export notification in his or her own name or the person in whose name such a declaration or notification is lodged. Art5(15) of []  In the scope of CCI, the declarant is responsible to submit:   * A Customs Declaration; * An Amendment Request; * An Invalidation Request; * Additional Supporting Documents upon request. | Economic Operator |
| **Supervising Customs Office (SCO)** | The customs office indicated in the authorisation to supervise the placing of the goods under the customs procedure concerned. Art5(36) of [].  The SCO manages the communication and business continuity between Declarant and Presentation Customs Office. | Customs Authorities |
| **Presentation Customs Office (PCO)** | The customs office competent for the place where the goods are presented. Art1(2).(2) of [].  The Customs Office of Presentation receives all necessary information to perform the controls needed when the goods are presented to customs. | Customs Authorities |

Table : CCI Business Roles

#### Business Functions

##### Business Functions of Supervising Customs Office (SCO)

The following sections analytically present the business functions offered by the CCI system, classified per Business Role and Type of functionality.

###### Communication @ SCO

|  |  |
| --- | --- |
| **Communication Channel** | **Description** |
| **External Communication** | The External Communication will provide the exchange of information between the economic operator’s applications and the National Administration (NA). |
| **National Communication** | The National Communication concerns communication within National Administration and will be enabled through the “national network”. |
| **EU Level Communication** | The EU Level (Common domain) Communication will provide the exchange of information between the Supervising Customs Office and the Presentation Customs Office. |

Table : CCI Business Functions - Communication @ SCO

###### Clearance @ SCO

The following tables contain the functionality offered by CCI system at the Supervising Customs Office (SCO).

| **Business Function** | **Description** |
| --- | --- |
| **Registration and Validation of Customs Declaration** | The Customs Declaration is lodged by the Declarant either when the goods have been presented to the Presentation Customs Office or when the presentation of goods is pending. When the Customs Declaration is registered and recorded by the system, a provisional Master Reference Number (MRN) is reserved to the recorded Customs Declaration.  Note: The declarations may contain national codes. The approach for validating national codes has been defined in [] and []. |
| **Risk Analysis** | The Customs Authority of the Supervising Customs Office (SCO) places a request to the Risk Analysis System along with the necessary information for the risk analysis to be initiated. The Risk Analysis results are automatically recorded by the system and a notification for Customs Declaration validation is sent to Presentation Customs Office (PCO). |
| **Acceptance of Customs Declaration** | Upon registration of the Customs Declaration, the Customs declaration is validated at SCO when the lodgment is prior to presentation of goods. The system at SCO sends the Declaration to PCO for validation. Upon successful validation the system at SCO accepts the declaration, assigns an MRN and the acceptance of the declaration is notified to both the Declarant and PCO. |
| **Handling of Amendment Requests** | An amendment request can be lodged by the declarant after acceptance of the Customs Declaration or when an Amendment is lodged after release of the Goods, to the Supervising Customs Office (SCO). The SCO validates the amendment request and checks the state of the Customs Declaration to identify if the amendment is possible (based on the state of the Declaration). If the amendment of the Declaration is possible then it is registered by the customs officer at SCO. The amended Customs Declaration is communicated to Declarant and to PCO. |
| **Documentary Control of Goods** | The Customs Officer at the Supervising Customs Office (SCO) may deem that documentary controls on the received Customs Declaration shall be performed. In case any supporting documents are required, SCO notifies the Declarant to provide the necessary supporting information. The results of the documentary controls are sent to the Declarant. |
| **Handling of Control Decision & Results** | The results of the Risk Analysis are explored by the Customs Officer at SCO in order to register the control decision. The control decision is recorded automatically by the CCI system. The CCI system at SCO identifies one of the following:   * No control is to be performed on goods and/or documents and the decision is communicated to PCO; * Controls are to be performed on the goods and/or documents and the decision is communicated to PCO.   Upon receipt of the Controls Results (if any) from the PCO, the SCO identifies whether the goods can be released or not. |
| **Handling of Invalidation Request** | The system at SCO validates the Invalidation Request, and checks whether:  a) the goods have not been already released;  b) the goods have been released and the timer for invalidation request has been expired (90 days after acceptance of the declaration).  Upon checks performed, the system invalidates the Customs Declaration and a notification message is sent to both Declarant and to PCO. |
| **Handling of Supplementary Declaration** | In case the customs declaration lodged as a simplified declaration, the system starts a timer for lodgement of the supplementary declaration.  Upon receipt of the full declaration from the Declarant (IE415) within the pre-set time limit, the system at SCO validates the received supplementary information, and matches the accumulated data of the simplified and supplementary declaration and forwards the accumulated data to the PCO[[1]](#footnote-2). |
| **Release of Goods** | The Customs Officer at SCO registers the release decision in the system. Based on that decision the movement state changes to either ‘Under Release' or ‘Not Released'’. In both cases the system notifies both Declarant and the PCO. |

Table : Business Functions - Clearance @ SCO

###### Other Business Functions @ SCO

The following business functions serve other business functions @ SCO. They are considered not part of CCI system, however have to be implemented by National Systems.

| **Business Function** | **Description** |
| --- | --- |
| **Quota Request/Response** | The supervising Customs Office shall draw from the tariff quota, through the Commission, a quantity corresponding to its needs. |
| **Customs Duties Collection** | The system at SCO, checks the status of customs declaration:  a) If the status is Registered or Amended, then the CCI system Requests the calculation of the Duties and Taxes for CCI and records the results.  b) If the status is Under Release, then the CCI system identifies if payments have been secured, in order to proceed to the decision to release or not release the goods. |
| **Post-Clearance Audit** | Post clearance checks will be handled at National Level. The results of the audits may trigger the amendment of Customs Declaration data and hence, the recalculation of Customs Duties. |

Table : Business Functions - Other Business Functions @ SCO

##### Business Functions of Presentation Customs Office (PCO)

The following tables contain the functionality offered by CCI system at the Presentation Customs Office (PCO).

###### Communication @ PCO

|  |  |
| --- | --- |
| **Communication Channel** | **Description** |
| **National Communication** | The National Communication concerns communication within National Administration and will be enabled through the “national network”. |
| **EU Level Communication** | The EU Level (Common domain) Communication will provide the exchange of information between the Presentation Customs Office and the Supervising Customs Office. |

Table : Business Functions - Communication @ PCO

###### Clearance @ PCO

| **Business Function** | **Description** |
| --- | --- |
| **Validation of Customs Declaration @ PCO** | The system at PCO receives the Customs Declaration for validation. In order for the Customs Declaration to be registered in the system, a positive result of validation (Semantic, Syntactic, Business level of validation) at the PCO is needed.  Note: The declarations may contain national codes. The approach for validating national codes will be elaborated in subsequent phases of the project. |
| **Risk Analysis** | The system at PCO upon receipt of the notification message from SCO, places a request to the Risk Analysis System along with the necessary information for the risk analysis to be performed. The results of the Risk Analysis are automatically recorded and sent to the SCO. |
| **Control of Goods** | The system at PCO, receives the notification from SCO that controls will be performed, a positive acknowledgement is sent to SCO. The system at PCO performs risk analysis and based on the results of the risk analysis the customs officer registers the decision to control the goods, which is automatically recorded by the system. The PCO performs the controls, records the control results and sends a notification message informing of the results of the controls to SCO. |
| **Validation & Processing of Amendment Request** | Upon receipt of the validation request, the PCO validates the amendment request. The amendment of the customs declaration or the rejection of the amendment request is forwarded to the PCO by the SCO. |
| **Handling of Invalidation Request** | The system at PCO records the invalidated Customs Declaration sent from SCO. |
| **Handling of Release Information** | The decision to Release/Not Release the Goods, is sent to PCO through a notification message. |

Table : Business Functions - Clearance @ PCO

###### Other Business Functions @ PCO

The following business functions serve other business functions @ PCO. They are considered not part of CCI system, however have to be implemented by National Systems.

|  |  |
| --- | --- |
| **Business Function** | **Description** |
| **Reporting to National Statistics Authority** | Reporting of statistical data by the PCO to the national statistical authority of that Member State. |
| **VAT and Other Charges Calculation** | Calculation of VAT and Other Charges by the PCO in order to ensure VAT compliance. |
| **VAT & Other Charges Collection** | Collection of VAT & Other Charges by the PCO. |

Table : Business Functions - Other Business Functions @ PCO

#### Business Objects

The Business Objects are passive elements depicting either some key business data which are manipulated (create or update) and maintained by CCI System during the performance of a business function (**CCI Business Objects**) or business data maintained by other Customs Business Functions and processes which are used as an input or consulted in the context of a business function (**External – Read-Only Business Objects**).

##### Updatable Business Objects

|  |  |
| --- | --- |
| **Business Object** | **Description** |
| **Control Results** | Control Results are the product of controls performed by SCO and PCO. May refer to results obtained from documentary controls performed on the customs declaration and on its associated/additional documents, or to results obtained after physical controls applied to goods. The Control results are explored by SCO in order to make decision on Release/Non-Release of goods. |
| **Customs Declaration Data** | The Customs declaration data form the bulk of consolidated information referring to the placement of goods under a given customs procedure and where appropriate, of any specific arrangements to be applied. The customs declaration data can be amended or invalidated by the Declarant. |
| **Risk Analysis Results** | CCI interfaces with the risk analysis systems of the Member States and ensures that risks analysis is initiated (when required) once the received Declaration is validated and accepted by the Customs' CCI. The national risk analysis system carries out the required common risk analysis (and where appropriate national risk analysis) and send back the risk analysis results to CCI system. |
| **Supporting Documents** | Supporting Documents shall be in the declarant's possession and at the disposal of the customs authorities at the time when the customs declaration is lodged and shall be provided to the customs authorities where necessary for customs controls. |
| **Surveillance Data** | Represents collected surveillance data from CCI operations. |

Table : CCI Business Objects - Updatable Business Objects

##### External – Read-Only Business Objects

| **Business Object** | **Description** |
| --- | --- |
| **Decisions & Authorisations and Customs Documents** | Data about Traders Authorisations and Customs Decisions which are used by CCI for validation purposes.  This also concerns REX data. |
| **Economic Operators** | Data related to Economic Operators (EORI data) which will be used by CCI for validation and reference purposes. |
| **Guarantee Data** | Guarantee related data referring to the amount, period of validity, type of guarantee, etc. and are used for the assessment of the declared Guarantee. These data can be amended upon customs declaration amendment. |
| **PCA Results** | PCA Data refer to the results of the Post Clearance Audits that involve an examination of the administration, organisation, internal procedures and/or internal systems of an economic operator. |
| **Payment Data** | Data concerning payments of incurred Customs Duties and Debts for the specific customs declaration. |
| **Reference & Specimen Data** | The reference and specimen data which is used by CCI for validation and reference purposed of different codes used within customs declaration.  This includes also COL data validation. |
| **Tariff & CN Data** | TARIFF measures and non-TARIFF measures related as well as CN data used by CCI for validation and references purposes. |
| **Certificates/Licenses** | Data concerning certificates/licenses to be checked in the context of CCI operations. |

Table : External – Read-Only Business Objects

### Application Concepts

Figure 3 below presents the CCI Application Cooperation Viewpoint:



Figure 3: CCI Application Cooperation Viewpoint

The Business Actors and Business Roles that are shown in are explained in § and § respectively.

The various applications components are grouped/presented in three domains/locations namely:

* External domain;
* National domain;
* Common domain.

The aforementioned domains of responsibility of a decentralized Trans-European System (TES) are described in []. More technical information is also provided in [].

#### Economic Operators’ Interactions

**Economic Operator** (EO) with the role of **Declarant** interacts with National CCI Application at Supervising Customs Office via the External Domain.

Section 2.4.1 highlights possible interactions of **Declarant** with **National CCI Application** at Supervising Customs Office. The detailed interactions and functional specifications are defined in [].

Connection and exchange of data of EOs with National Administrations might happen either via Electronic Data Interchange (EDI) or Direct Trader Input (DTI). In case of EDI, it is considered that EO Application interacts with National Administration. The External Domain falls under the responsibility of each National Administration (taking into account the legal data requirements and the EUCDM).

Authentication and Authorisation of **Declarant** users or representatives is also under the responsibility of the Member State. The networks that can be used for this communication is also a responsibility of each Member State to define.



Figure 4: Interactions between Declarant and SCO

#### National CCI User Interactions

**Customs Officers** as **National CCI User** might have the business roleof **Supervising** or **Presentation Customs Office.**

**Customs Officers** or **National CCI User** interacts with the **National CCI Application** for the accomplishment of different business functions as specified in §2.4.1. This interaction is performed within the National Domain, which falls under the responsibility of each National Administration. Therefore, authentication and authorisation of **National CCI Users** is under the responsibility of the National Administration.

The National Administrations use their own national network for their links between their customs offices. The type of network chosen differs from one country to another. The National Administrations are responsible for the national domain network, including its security.

Access to other **Central Services/Applications** (e.g. CS/RD2) is not in the scope of this document.

#### Interactions in National Domain (Supervising/Presentation) Customs Office

National Domain is under the responsibility of each National Administration. Each National Administration is responsible to define its own architecture. presents some indicative logical applications components in National Domain at either Supervising or Presentation Customs Office. It presents the **National CCI Application** as the main application component of CCI Trans-European System. Other national logical application components (e.g. National Risk Management Application) are presented in National Domain, but they are purely indicative and depends on National architecture.

For instance, the communication with the Central Application/Services will be optimised at the National level, considering the options offered by the Commission. One option is to create a national application that will locally replicate the required information, and that will communicate with the **National CCI Application** and possibly other National applications. A second option is that the **National CCI Application** manages directly the communication with the Central applications (CRS, CS/RD2, etc.).

For representation purposes, option 1 described above has been assumed in representing a dedicated national application handling certain type information (e.g. Reference Data, EO data) and communication with Central Application/Services. Then **National CCI Application** contacts the specific national application for receiving the necessary information as per CCI business functions.

Only for specific cases, communication with specific Central Application/Services (e.g. CS/MIS) is explicitly presented with **National CCI Application** (please refer to §2.4.2.7). Those cases are for exchanging the new types of business statistics for CCI operations, and for conformance testing purposes. As stated above, it is up to National Administration to optimise and possibly assign such functions (business statistics submission) to another application component as per national architecture.

#### National CCI Application

The **National CCI Application** at either Supervising or Presentation Customs Office is the main application component which implements the **communication** and **clearance** business functions for SCO and PCO as described in §. The National CCI Application can be implemented either by extending the existing National Declaration Management Processing System and/or by a new national system that will interact with the National Declaration Management Processing System, which currently handles import declaration processing, implementing the additional necessary CCI business functions as per CCI functional [] and technical specifications. Nevertheless, the actual implementation and architecture of **National CCI Application** is purely a national decision.

In general, the **National CCI Application** is expected to interact:

* with **Economic Operators** via the External Domain as described in §;
* within National domain with several **national application components.** Further information is §2.4.2.5 and §2.4.2.6;
* with other **National CCI Application** via Common Domain as described in §2.4.2.7;
* with **Central Application/Services** via Common Domain for business statistics, and for conformance testing purposes. Further information is §2.4.2.8. Please note that CS/RD2 and CRS communication is needed and this is considered to be done via national application components.

#### Interaction with other national applications at SCO[[2]](#footnote-3)

The following table provides a brief description of interactions that are needed at Supervising Customs Office with **other** **national applications**.

**It is considered that the various logical national components are already integrated with National Customs Declaration Processing Application () and are used for current import declaration processing. Therefore, the National CCI Application utilizes them for performing the various CCI business functions.**

It is worth noting that the functional integration, the technical communication or other architectural decisions in regard to these interactions with **other national applications** is **out of scope of CCI** and it is **purely a national decision**.

| **Application Component** | **Description of Interaction** |
| --- | --- |
| **National Risk Management Application** | for risk analysis purposes of CCI declaration data at Supervising Customs Office. |
| **National TARIFF Application** | for validating and retrieving information related to TARIFF and CN data in the context of CCI declaration processing at Supervising Customs Office. |
| **National Quota Management Application** | for handling Quota requests on CCI declaration data at Supervising Customs Office. |
| **National EO Management Application****[[3]](#footnote-4)** | National Administration must receive information about EORI from CRS. Each National Administration must decide the ways to consume the interfaces exposed by the CRS. Current EOS interfaces are to be substituted by CRS interfaces. More details about interfacing with CRS can be found in the pertinent documentation of the application [].  It is worth noting that Economic Operators management might be implemented in various ways and each Member State is solely responsible to decide. However, in the context of this architecture, it is considered that **National EO Management Application** provides the relevant data management functions.  The need for this interaction is for validating and retrieving information related to Economic Operators in the context of CCI declaration processing at Supervising Customs Office. |
| **National Reference Data Application[[4]](#footnote-5)** | National Administration must send/receive reference data from/to CS/RD2. It is upon each National Application to decide the ways to use the interfaces proposed to them by CS/RD2 which are at least compatible with the existing ones. More details about interfacing with CS/RD2 can be found in the pertinent documentation of the application []. It has been assumed that the **National Reference Data Application** communicates with **CS/RD2** for Common Reference Data (please refer to §2.4.2.8).  The need for this interaction is for validating and retrieving information for reference data (both common and national reference data) in the context of CCI declaration processing at Supervising Customs Office. |
| **National Surveillance Application** | For communicating surveillance data related to CCI declaration data at Supervising Customs Office. |
| **National Decisions/Authorisation and REX System[[5]](#footnote-6)** | National Administration must receive information about AEO, Trader Authorisations and Registered Exporters from CRS. Each National Administration must decide the ways to consume the interfaces exposed by the CRS. More details about interfacing with CRS can be found in the pertinent documentation of the application [].  It is worth noting that AEO management might be implemented in various ways and each Member State is solely responsible to decide. However, in the context of this architecture, it is considered that **National Decisions/Authorisation and REX System** provides the relevant data management functions.  The need for this interaction is for validating and retrieving information related to Decisions/Authorisation and REX data in the context of CCI declaration processing at Supervising Customs Office. |
| **National Guarantee Management Application** | For validating the declared Guarantee data in the context of CCI declaration processing at Supervising Customs Office. |
| **National Control Management Application** | Concerns control management in the context of CCI declaration processing at Supervising Customs Office. |
| **National Duty & Tax calculations Application** | For calculation of duties for a specific CCI declaration at Supervising Customs Office. |
| **National Accounting/Collection Application** | Related to payment data and collected duties in the context of CCI declaration processing at Supervising Customs Office. |
| **EU Customs SW** | For the purposes of validating CERTEX certificates. |

Table : Interactions of National CCI Application at Supervising Customs Office with other national applications

#### Interactions with other national applications at PCO[[6]](#footnote-7)

The following table provides a brief description of interactions at Presentation Customs Office with **other** **national applications**.

**It is considered that the various logical national components are already integrated with National Customs Declaration Processing Application () and are used for current import declaration processing. Therefore, the National CCI Application utilizes them for performing the various CCI business functions.**

It is worth noting that the functional integration, the technical communication or other architectural decisions in regard to these interactions with **other national applications** is **out of scope of CCI** and it is **purely a national decision**.

| **Application Component** | **Description of Interaction** |
| --- | --- |
| **National Risk Management Application** | For risk analysis purposes of CCI declaration data at Presentation Customs Office. |
| **National TARIFF Application** | For validating and retrieving information related to TARIFF and CN data in the context of CCI declaration processing at Presentation Customs Office. |
| **National Licenses Management Application** | For validating and retrieving information related to national licenses/certificates in the context of CCI declaration processing at Presentation Customs Office. |
| **National EO Management Application[[7]](#footnote-8)** | National Administration must receive information about EORI from CRS. Each National Administration must decide the ways to consume the interfaces exposed by the CRS. Current EOS interfaces are to be substituted by CRS interfaces. More details about interfacing with CRS can be found in the pertinent documentation of the application [].  It is worth noting that Economic Operators management might be implemented in various ways and each Member State is solely responsible to decide. However, in the context of this architecture, it is considered that **National EO Management Application** provides the relevant data management functions.  The need for this interaction is for validating and retrieving information related to Economic Operators in the context of CCI declaration processing at Presentation Customs Office. |
| **National Reference Data Application[[8]](#footnote-9)** | National Administration must send/receive reference data from/to CS/RD2. It is upon each National Application to decide the ways to use the interfaces proposed to them by CS/RD2 which are at least compatible with the existing ones. More details about interfacing with CS/RD2 can be found in the pertinent documentation of the application []. It has been assumed that the **National Reference Data Application** communicates with **CS/RD2** for Common Reference Data (please refer to §2.4.2.8).  The need for this interaction is for validating and retrieving information for reference data (both common and national reference data) in the context of CCI declaration processing at Presentation Customs Office. |
| **National VAT Register** | For validating VAT information in the context of CCI declaration processing at Presentation Customs Office. |
| **National Decisions/Authorisation and REX System[[9]](#footnote-10)** | National Administration must receive information about AEO, Trader Authorisations and Registered Exporters from CRS. Each National Administration must decide the ways to consume the interfaces exposed by the CRS. More details about interfacing with CRS can be found in the pertinent documentation of the application [].  It is worth noting that AEO management might be implemented in various ways and each Member State is solely responsible to decide. However, in the context of this architecture, it is considered that **National Decisions/Authorisation and REX System** provides the relevant data management functions.  The need for this interaction is for validating and retrieving information related to Decisions/Authorisation and REX data in the context of CCI declaration processing at Presentation Customs Office. |
| **National VAT collection Application** | For receiving information about collected VAT charges in the context of CCI declaration processing at Presentation Customs Office. |
| **National Control Management Application** | Concerns control management in the context of CCI declaration processing at Presentation Customs Office. |
| **National Duty & Tax calculations Application** | For VAT calculation for a specific CCI declaration at Presentation Customs Office. |
| **EU Customs SW** | For the purposes of validating CERTEX certificates. |

Table : Interactions of National CCI Application at Presentation Customs Office with other national applications

#### Interactions in Common Domain between National CCI Application at PCO and National CCI Application at SCO

The **National CCI Application** at SCO shall interact with **National CCI Application** at PCO via Common Domain. The interactions will be performed in the context of ***EU Level communication*** business functions at SCO and PCO described in §2.4.1.3.1.1 and §2.4.1.3.2.1 respectively.

The *SCO to PCO information exchanges* and *PCO to* S*CO information exchanges* are shown in Figure 5 below.

The common domain information exchanges between **National CCI Applications** shall be performed in conformity to functional [] and technical specifications of CCI system.



Figure 5: Interactions between SCO and PCO

#### Interactions with Central Applications/Services

The table below describes only the interactions of **National CCI Application** with **Central Applications/Services**.

| **Application Component** | **Description of Interaction** |
| --- | --- |
| **CS/MIS** | The **National CCI Application** interacts with **CS/MIS** for submitting agreed business statistics related to CCI operations. Scope of Statistics for CCI will be similar to those provided by **CS/MIS** for TES systems (AES and NCTS). This interaction is decided to be implemented through CCN2 network. In case there is no interface provided from **CS/MIS** application to CCN2, then a similar solution for managing/monitoring statistics to the one used for ICS 2.0, will be adopted. |
| **CTA** | The **National CCI Application** interacts with **CTA** for conformance testing purposes. This interaction is decided to be implemented through CCN2 network.  The conformance of **National CCI Application** against the CCI specifications shall be verified by the new **Conformance Testing Application (CTA)**. |

Table : Interactions of National CCI Application at Supervising/Presentation Customs Office Central Applications/Services

As explained in §2.4.2.3, Figure 3 presents dedicated national application handling certain type information (e.g. Reference Data, EO data) and communication with CS/RD2 and CRS. Then **National CCI Application** contacts the specific national application for receiving the necessary information as per CCI business functions. The table below describes the interactions of **other National Applications[[10]](#footnote-11)** with **Central Applications/Services** for facilitating CCI business functions.

| **Application Component** | **Description of Interaction** |
| --- | --- |
| **CS/RD2** | The **CS/RD2 IT Application** is a DG TAXUD application (Central Application/Services) and provides a common, central reference access point for reference data (Code Lists and Authorities).  A more detailed composition into different components and their services can be found in [].  More details about interfacing with **CS/RD2 Central IT Application** can be found in the pertinent documentation of the application.  It is considered that the **National Reference Data Application[[11]](#footnote-12)** interacts with the **CS/RD2 Central IT Application**. NAs must replicate reference data via an asynchronous channel. Different mechanisms and patterns of interactions are described in detail in []. |
| **CRS** | The **CRS IT Application** is a DG TAXUD application (Central Application/Services) and provides a common, central reference access point to consolidated Economic Operator information required by the consumer IT applications, independent of where the information resides or its format. CRS will integrate information maintained (acquisition points) by EOS IT Application (EORI, AEO), Customs Decisions Management System (CDMS) IT Application (UCC Trader Authorisations) and REX IT Application (Registered Exporters).  A more detailed composition into different components and their services can be found in [].  More details about interfacing with **CRS Central IT Application** can be found in the pertinent documentation of the application [].  It is considered that **National EO Management Application[[12]](#footnote-13)** and **National Decisions/Authorisation and REX System[[13]](#footnote-14)** interacts with **CRS Central IT Application**.  The CRS IT application provides a consolidated view of Customs Customer Reference Data. It provides two interaction models:   * Online queries on Customs Customer Reference Data; * Replication of Customs Customer Reference Data.   The proposed approach is the “Replication of Customs Customer Reference Data”.  A national IT application has to be registered as a subscriber for customs customer reference information replication. In order to receive data update messages, the national IT application (e.g. National EO Management Application) has to provide an implementation of a specific service interface.  Detailed information can be found in []. |

Table : Interactions of other national applications at Supervising/Presentation Customs Office with Central Applications/Services

### Infrastructure/Technology Concepts

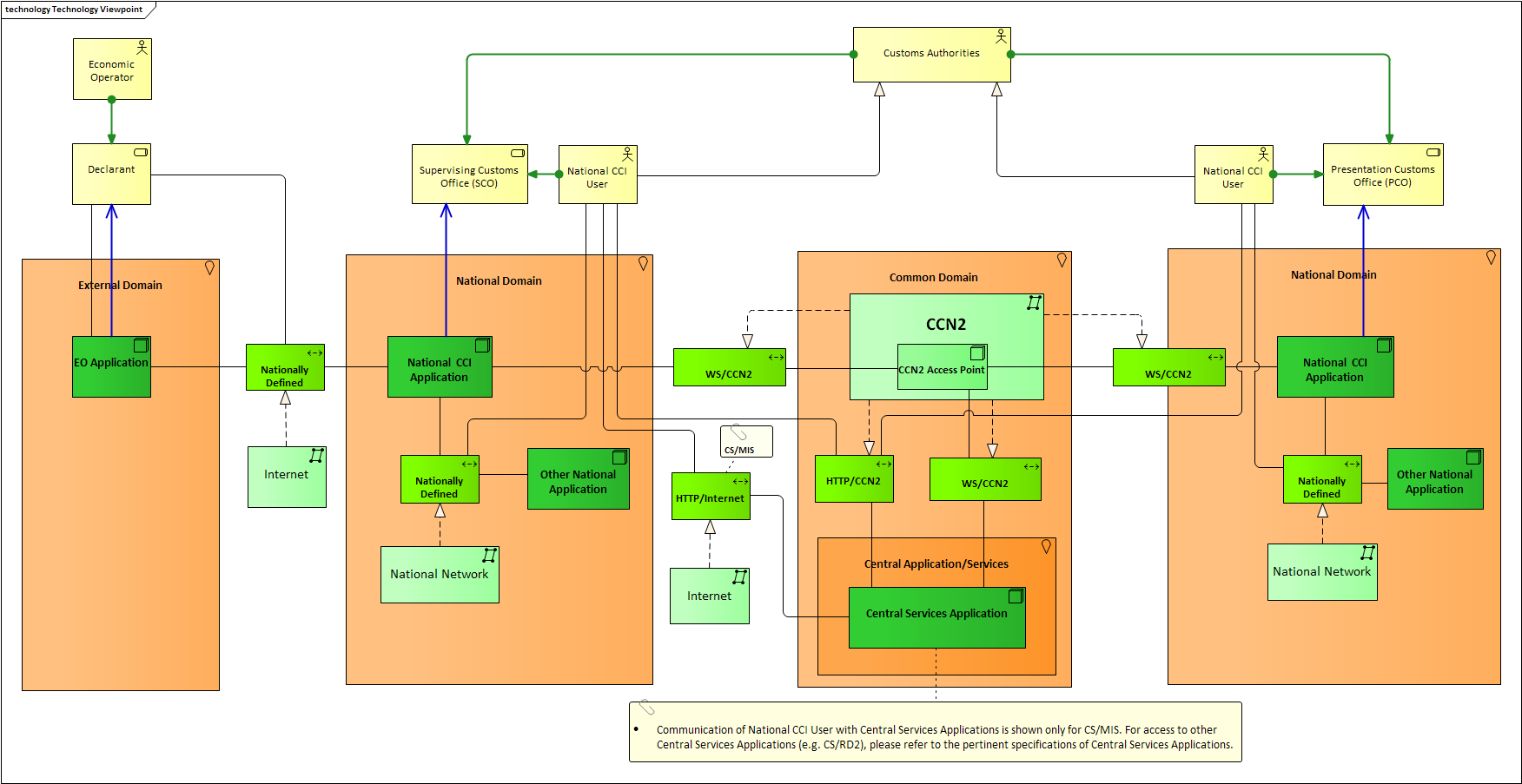
Figure 6 illustrates the technology layer for CCI system.

Figure 6: CCI Technology Viewpoint

The following paragraphs explain from technology/infrastructure point of view the various interactions defined above in business and application layer in § and § respectively.

#### Economic Operators’ Interactions

The Economic Operators’ Interactions with **National CCI Application** are described in §2.4.2.1.

From technology point of view, the network that will be used for external domain communication is a responsibility of each Member State (national decision) to define. It can be Internet, VPN or any other established National network. The same applies for the message format of the External Domain exchanges.

#### National CCI User Interactions

The business/functional needs of National CCI User Interactions are described in §2.4.2.2.

The interactions from technology/infrastructure point of view will be realised as follows per case:

* Interactions of **National CCI User** with **National CCI Application**:This interaction is performed within the National Domain, which falls under the responsibility of each National Administration. Therefore, the network and protocol are nationally defined.
* Interactions of **National CCI User** with **Central Services/Applications**: The interaction of **National CCI User** with the specific **Central Services/Applications** mentioned in § will be realised via HTTP/s over CCN2 network (with the exception of CS/MIS[[14]](#footnote-15) that is realized via HTTP/s over internet).

#### Interactions in National Domain (Supervising/Presentation) Customs Office

Various interactions in National Domain between **National CCI Application (either at SCO or PCO)** and **other national application components** are extensively discussed in §2.4.2.3, §2.4.2.5 and §2.4.2.6.

From technology point of view, the network, transport mechanisms and message formatting that will be used for realising those interactions within the national domain is a responsibility of each Member State to define (national decision).

Please refer to national domains either at SCO or PCO in Figure 6 depicting **National CCI Application** and **Other National Application** as “Nodes” of technology layer connected with a “Nationally Defined” communication path realised by the “National network”.

#### Interactions in Common Domain between National CCI Application at PCO and National CCI Application at SCO

The Interactions in Common Domain between National CCI Application at PCO and National CCI Application at SCO (hereafter Common Domain business-to-business information exchanges) are defined in §2.4.2.7.

The interactions from technology/infrastructure point of view will be realised as follows:

* As illustrated in Figure 6, all Common Domain business-to-business information exchanges between **National CCI Applications** will be performed via the CCN2 network (Common Domain);
* The **one-way web service pattern** over **CCN2** has to be used for the Common Domain business-to-business information exchanges between **National CCI Applications** (please refer to WS/CCN2 communication path in Figure 6realised by CCN2 network). For more information please refer to [];
* The message format of all Common Domain business-to-business information exchanges between **National CCI Applications** will be in **XML format**;
* The design principles, exception handling, message formatting and transport mechanisms will be elaborated in CCI technical specifications.

#### Interactions with Central Applications/Services

Interaction with **Central Applications/Services** will be over CCN or CCN2 depending on the interface provided by the **Central Applications/Services** and the already established links to these at National level.

#### Mode of Operations/Environments

Information exchanges in Common domain can be performed for operational, testing or training purposes. Therefore, every National Administration must foresee at least two environments:

* One operational environment;
* One test/training environment.

The operational and test/training environments must be logically disjoint. The test/training application and data must be separated from the operational application and data. It shall be possible to switch between the operational and the test/training environment context.

# Re-Usable Architectural Assets

The **EU CCI system** will be based on the **Distributed/Decentralised system** approach. The **National CCI Applications** is a core application component for this system. As explained in §, The National CCI Application can be implemented either by extending the existing National Declaration Management Processing System and/or by a new national system that will interact with the National Declaration Management Processing System, which currently handles import declaration processing, implementing the additional necessary CCI business functions as per CCI functional [] and technical specifications. Nevertheless, the actual implementation and architecture of National CCI Application is purely a national decision and therefore re-usability of any national architectural assets remains a national decision.

However, it is considered that **CCN2 Services** and other **Central Applications/Services** architectural components will be re-used in the context of this system as mentioned in §2.4.2.8.

# Annex A

## Diagram Notation

The ArchiMate notation used in this document to represent the various architectural viewpoints. Below, only the used ArchiMate concepts are explained and not the complete ArchiMate notation. For more information about ArchiMate specifications and notation please refer to []:

| Concept | Description | Symbol |
| --- | --- | --- |
| Business Actor | An organisational entity that is capable of performing behaviour. |  |
| Location | A conceptual point or extent in space. |  |
| Business Role | A business role is the responsibility for performing specific behaviour, to which an actor can be assigned, or the part an actor plays in a particular action or event. |  |
| Business Function | A business function is a collection of business behaviour based on a chosen set of criteria (typically required business resources and/or competencies), closely aligned to an organization, but not necessarily explicitly governed by the organization. |  |
| Business Object | A passive element that has relevance from a business perspective. |  |
| Representation | A representation represents a perceptible form of the information carried by a business object. |  |
| application component | A modular, deployable, and replaceable part of a software system that encapsulates its behaviour and data and exposes these through a set of interfaces. |  |
| Node | A node represents a computational or physical resource that hosts, manipulates, or interacts with other computational or physical resources. |  |
| Path | A path represents a link between two or more nodes, through which these nodes can exchange data or material. |  |
| Communication Network | A communication network represents a set of structures that connects computer systems or other electronic devices for transmission, routing, and reception of data or data-based communications. |  |
| “Realisation” relationship | The realisation relationship links a logical entity with a more concrete entity that realises it. |  |
| “Serving” relationship | The serving relationship models that one element provides its functionality to another element [] An example of an element is business function, business role application component, etc. |  |
| “Access” relationship | The access relationship models the access of concepts to business or data objects. |  |
| “Aggregation” relationship | The aggregation relationship indicates that an object groups a number of other objects. |  |
| “Composition” relationship | The composition relationship indicates that an object is composed of one or more other objects. |  |
| ‘Triggering” relationship | The triggering relationship describes the temporal or causal relationships between processes, functions, interactions, and events. |  |
| “Assignment” relationship | The assignment relationship links units of behaviour with active elements (e.g., roles, components) that perform them, or roles with actors that fulfil them. |  |
| “Flow” relationship | The flow relationship represents transfer from one element to another. |  |

Table : Diagram Notation

## Colouring scheme

The following colouring schemes have been adopted for the architectural elements and for their relationships.

### Architectural Elements colouring

* By default, main **business layer elements** such as business actors, business functions, business roles and representations are indicated with yellow color. Specifically, business role elements have the “Pale Goldenrod” color for purely visualization purposes;
* At business layer, **Other Business Functions at SCO** or **at PCO**, which are considered not part of CCI system, however have to be implemented by National Systems, are shown with red color;
* Exceptionally, business objects have been colored based on their type. **Updatable Business Objects** (2.4.1.4.1) are shown with “Mint cream” color while **External – Read-Only Business Objects** (2.4.1.4.2) are shown with “Serenade” color;
* Location objects are composite elements (consist of other concepts) and are colored by default with orange color. Exceptionally, the “Central Application/Services” is shown with “carrot” color for visualization purposes;
* By default, all **applications components** in application layer are color with light cyan color. Exceptionally, “National CCI Application” component is shown with “Aqua” color for visualization purposes;
* All **Nodes** in technology layer are shown with “Lime Green” color;
* All Communication Paths in technology layer are shown with “Chartreuse” color;
* All Networks in technology layer are shown with “Mint Green” color.

### Relationships colouring

* **Assignment** relationships of **business actors** to **business roles** are shown with green color;
* **Serving** relationships between high-level **business functions** are shown with orange color;
* **Serving** relationships between **applications** **components (application layer)/Nodes (technology layer)** to **business** **roles** are shown with blue color;
* **Serving** relationships between **applications** **components** are shown with black color except for:
  + **Serving** relationships of National CCI application with external domain and common domain exchanges (including CS/MIS) are shown with black bold color (2.4.2.4);
  + **Serving** relationships of National CCI application with CTA are shown with red bold color to indicate that it is used only for conformance testing (2.4.2.4);
  + **Serving** relationships of **other National Components** with **CS/RD2** and **CRS** are shown with grey color. It is used to indicate that the interactions with **CS/RD2** and **CRS** needed in the context of CCI business functions is considered to be done by **other national application components** (2.4.2.8);
  + **Serving** relationships with **EU Customs SW** are shown with green color (out of scope of National CCI – please refer to 2.4.2.5 and to 2.4.2.6);
* Realization relationships are used between **applications** **components (application layer)** and **Nodes (technology layer)** with standard black color;
* Association relationships are used between **business roles/actors (business layer)** and **communication paths (technology layer)** with standard black color to indicate which communication paths are used by business roles/actors for certain interactions (between two nodes);
* Association relationships are used between **Nodes (technology layer)** and **communication paths (technology layer)** with standard black color to show via which communication path the different interactions with other nodes can be performed;
* Realization relationships are used between **networks (technology layer)** and **communication paths (technology layer)** with standard black color to show via which network the different communication paths are offered/realized.

# Annex B

Due to the size of the diagrams, this annex contains the figures of §2.3 and §2.4 as attachments for readability purposes:

|  |  |
| --- | --- |
| Diagram | Attachment |
| Figure 1. CCI Architecture Overview | CD3-CCI-Architecture Overview-AnnexB-Figure1.png |
| Figure 2. CCI Business Functions Viewpoint | CD3-CCI-Architecture Overview-AnnexB-Figure2.png |
| Figure 3. CCI Application Cooperation Viewpoint | CD3-CCI-Architecture Overview-AnnexB-Figure3.png |
| Figure 6. CCI Technology Viewpoint | CD3-CCI-Architecture Overview-AnnexB-Figure4.png |

# Annex C

In terms of volumetric, the following should be noted. The estimation of volumetric for envisioned CCI is a challenging task. It is considered that the forms of centralised clearance that are currently in place such as national centralised clearance, SASP/CC, etc. do not give indicative volumes of transactions for the future situation. For the purposes of performance requirements and technical assessment, the volumes of ECS P2 will be considered as the anticipated volumes for CCI Phase 1 (number of movements and messages). Given that MSs will gradually join CCI operations (from Q1 2021 to Q4 2023), the full volume of transactions is estimated as soon as all MS join the operations.

Therefore, the table below, presents the CCI volumetric baseline that was produced on the basis of 2017 statistics collected from ECS P2 TES.

|  | Total number of Declarations | Total number of Messages exchanged | Message declaration average size | Messages exchanged average size |
| --- | --- | --- | --- | --- |
| ECS P2 Year 2017 Volumes | 15.1 mio | 41.8 mio | 2 kb | 1 kb |
| Estimated CCI Volumes | 15.1 mio | 41.8 mio | 10[[15]](#footnote-16) kb | 5 kb |

Table : CCI volumetric baseline

ECS P2 TES on 2017 is a quite mature system in the terms of operations and the participating MSs. From that point of view, CCI Phase 1 is expected to achieve reduced numbers in the volumes of the declarations and total exchanges than ECS P2. Hence, the above volumetric baseline must be considered for CCI Phase 1.

*\*\*\* End of document \*\*\**

1. In CCI P1, not more than one simplified declaration is matched with a supplementary one. [↑](#footnote-ref-2)
2. Other national logical application components (e.g. National Risk Management Application) are presented in National Domain, but they are purely indicative and depends on National architecture [↑](#footnote-ref-3)
3. It is up to National Administration to optimise and possibly assign such functions to another application component or to consider it as part of National CCI Application as per national architecture. [↑](#footnote-ref-4)
4. It is up to National Administration to optimise and possibly assign such functions to another application component or to consider it as part of National CCI Application as per national architecture. [↑](#footnote-ref-5)
5. It is up to National Administration to optimise and possibly assign such functions to another application component or to consider it as part of National CCI Application as per national architecture. [↑](#footnote-ref-6)
6. Other national logical application components (e.g. National Risk Management Application) are presented in National Domain, but they are purely indicative and depends on National architecture. [↑](#footnote-ref-7)
7. It is up to National Administration to optimise and possibly assign such functions to another application component or to consider it as part of National CCI Application as per national architecture. [↑](#footnote-ref-8)
8. It is up to National Administration to optimise and possibly assign such functions to another application component or to consider it as part of National CCI Application as per national architecture. [↑](#footnote-ref-9)
9. It is up to National Administration to optimise and possibly assign such functions to another application component or to consider it as part of National CCI Application as per national architecture. [↑](#footnote-ref-10)
10. It is up to National Administration to optimise and possibly assign such functions to another application component or to consider it as part of National CCI Application as per national architecture. [↑](#footnote-ref-11)
11. It is up to National Administration to optimise and possibly assign such functions to another application component or to consider it as part of National CCI Application as per national architecture. [↑](#footnote-ref-12)
12. It is up to National Administration to optimise and possibly assign such functions to another application component or to consider it as part of National CCI Application as per national architecture. [↑](#footnote-ref-13)
13. It is up to National Administration to optimise and possibly assign such functions to another application component or to consider it as part of National CCI Application as per national architecture. [↑](#footnote-ref-14)
14. The architecture decision is to use CCN2 in every communication. CCN/CSI will be used as a fall-back solution in case of problems related to readiness and maturity of CCN2. [↑](#footnote-ref-15)
15. The messages exchanged on ECS P2 TES are in EDIFACT format while the ones of CCI are will be XML formatted. Hence, the average size is adjusted with a multiplier factor of 5. [↑](#footnote-ref-16)