IMAPS v2.2.0

Interoperability Maturity Assessment of a Public Service

User guide

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Acronym	Description
ABB	Architectural Building Block
CAMSS	Common Assessment Method for Standards and Specifications
DIGIT	Directorate-General for Informatics
EC	European Commission
EIF	European Interoperability Framework
EIRA	European Interoperability Reference Architecture
EU	European Union
IMAPS	Interoperability Maturity Assessment of a Public Service
IMM	Interoperability Maturity Model
IMTs	Interoperability Maturity Tools
IQAT	Interoperability Quick Assessment Toolkit
ISA	Interoperability Services for Public Administrations
LIMAPS	Legal Interoperability Maturity Assessment of a Public Service
MS	Member State
OIMAPS	Organisational Interoperability Maturity Assessment of a Public Service
PA	Public Administration
SIMAPS	Semantic Interoperability Maturity Assessment of a Public Service
TIMAPS	Technical Interoperability Maturity Assessment of a Public Service

Glossary of terms

Term	Description
Attribute	Structural part of each IMAPS component. Each attribute includes questions (items) that assess a specific aspect of the digital public service. Each of the IMAPS survey components has questions (items) that are organised under the following attributes: the interoperability specifications of data, information and knowledge delivered by the digital public service to its end users and/or other services, the interoperability enablers and the interoperability manifestations.
Component	Fundamental structural part of the IMAPS model that reflects how the respective questions (items) in the questionnaire (survey) are organised. Each component refers to a different pillar of the digital public service lifecycle. IMAPS has three components: Service Delivery, Service Consumption and Service Management, which means that the respective questions refer to these three specific categories.
Item	Structural part of each IMAPS attribute. Items are the questions of the IMAPS questionnaire (survey)
Option	Options are the possible replies to one IMAPS item
Principles	Rules applied on digital public service to enable and ensure interoperability
(*Overall*) Weight	Weight refers to the absolute numerical factor that each component/attribute/item contributes into the structural part it belongs. Overall weight refers to the overall numerical factor that each component/attribute/item contributes to the whole IMAPS survey

EXECUTIVE SUMMARY

This document provides the guidelines and definitions for using the **Interoperability Maturity Assessment of Public Services (IMAPS)** tool in order to assess and improve the behavioural interoperability maturity of a digital public service. IMAPS survey assesses the behavioural aspects of a digital public service from the legal, organisational, semantic and technical interoperability viewpoint (L, O, S, T). IMAPS allows public service owners to evaluate the interoperability maturity level of their digital public service. It uses the Interoperability Maturity Assessment of Public Services (IMAPS) model, which provides public administrations insight into two key aspects of their interoperability performance:

- The current interoperability maturity level of a Public Service
- Improvement priorities to reach the next level of interoperability maturity

IMAPS measures how well a public administration interacts with external entities in order to organise the efficient provisioning of its public services to other public administrations, businesses and/or citizens. The IMAPS survey helps public service owners of to enhance the quality of the service delivery, reduce costs and overcome integration issues by reusing available services in an effective manner in order to maximize the service outcome and benefits for citizens and public administrations.

In the following chapters, we provide an introduction to the most important chapters in the context of IMAPS and we present its objectives, the defined maturity levels and the approach and attributes of behavioural interoperability that are the subject of observation and assessment.

In addition, we provide an explanation of the structure of the IMAPS questionnaire and the methodology used to determine the maturity levels of behavioural interoperability of a digital public service.

Finally, we conclude with the recommendations that the end-user receives for each question. After filling in the online questionnaire, the respondent receives a PDF with advice on how to improve the behavioural interoperability of his digital public service.

1 INTRODUCTION

1.1 Document Objectives

The present deliverable documents the guidelines and definitions for using the **Interoperability Maturity Assessment of Public Services (IMAPS)** tool in order to assess and improve the behavioural interoperability maturity of a digital public service. IMAPS survey assesses the behavioural aspects of a digital public service from the legal, organisational, semantic and technical interoperability viewpoints (L, O, S, T). This document is also based on the updates of IMAPS to version 2.1.0 by implementing the feedback collected during IMAPS version 2.2.0 deployment and review and IMAPS specialisations' deployment and review, as this has been recorded in the respective JIRA tickets. These updates include the description of IMAPS version 2.2.0, its purpose and scope, as well as its design and deployment on the EU Survey portal. The objectives of the present deliverable are the following:

- the description of the **key concepts** to understand the IMAPS survey;
- the presentation of the IMAPS **model objectives**;
- the description of the IMAPS **maturity levels**, as well as the **behavioural interoperability aspects** that it covers;
- the description of the IMAPS **structure** including its **attributes and components**;
- the description of how the IMAPS **questionnaire** is structured its questions and their options;
- the description of how the IMAPS **recommendations** are generated including the recommendations per question.

1.2 Document Structure

The document is organised in the following chapters:

- **Executive summary**, which provides an overview of the deliverable objectives, activities and conclusions;
- **Chapter 1:** Serves as introduction to the document;
- **Chapter 2**: Includes the description of the key concepts used in IMAPS;
- **Chapter 3**: Includes the maturity levels of IMAPS, as well as the behavioural interoperability aspects that it covers;
- **Chapter 4:** Presents IMAPS structure, in components, attributes and items, demonstrating how their design ensures alignment with EIF and EIRA;
- **Chapter 5**: Presents the IMAPS questionnaire and how it is structured;
- **Chapter 6:** Presents the IMAPS recommendations and how they are generated.

2   IMAPS KEY CONCEPTS

The following concepts are key to understand the IMAPS:

- *Public service* – services that public authorities identify as being of particular importance to citizens (A2C), businesses (A2B) and public administrations (A2A) and that would not be supplied (or would be supplied under different conditions) if there were no public intervention. Examples are transport networks, postal services and social services.
- *Digital public service* – the digital delivery of a public service via channels such as interactive digital collaborations (chat, messaging functionality), mobile application, web portal / website, email and machine-to-machine interface.
- *Interoperability* – the ability of disparate and diverse organisations to interact towards mutually beneficial and agreed common goals, involving the sharing of information and knowledge between the organisations, through the business processes they support, by means of the exchange of data between their respective IT systems.

2.1   Public Service

From a conceptual point of view, a public service starts with a trigger, goes through a number of steps and delivers an outcome towards an end user. The outcome may be, but not necessarily, a public decision (e.g. issuing of a license involves a decision, issuing of an electronic fee involves a decision, etc.). The aforementioned conceptual model of a public service is illustrated in the below figure.
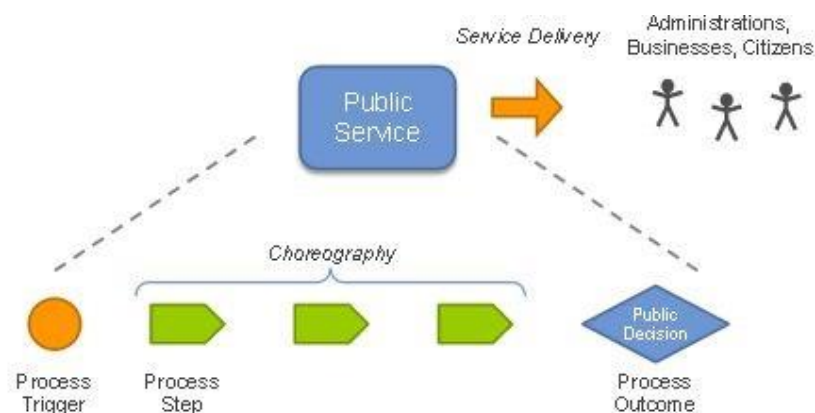
Figure 1: Conceptual model of a public service

For illustration purposes, the conceptual model is applied to the public service "Income tax declaration". In simple terms:

- The service's trigger is the new fiscal year.
- The main process steps it comprises are the following:
    - i.   Collect information;
    - ii.   Let citizen validate information;
    - iii. Check declaration
- The outcome is the public decision on the amount of income tax, which is due.

2.2 Digital public service

The Interoperability Maturity Assessment of Public Services (IMAPS) assesses the behavioural interoperability of a digital public service. The following four design rules apply when defining a digital public service:

- The digital public service has a service outcome / public decision. When multiple service outcomes are recognised, multiple digital public services will need to be defined and assessed, each through a separate IMAPS assessment (only if the answers to the questions are not identical and consequently generate different results and recommendations);
- The digital public service has a single service owner (the public administration responsible for the service). When the ownership of a service is distributed amongst multiple public administrations (e.g. multiple local administrations providing birth certificates), each service owner needs to conduct a separate assessment for his respective service (only if the answers to the questions are not identical and consequently generate different results and recommendations);
- The digital public service has a single primary end user group. The digital public service has a single primary end user group. Services can be delivered towards three types of end users (front office): citizens, business and other public administrations, or they can be consumed by another service (back-office). The IMAPS has been designed to evaluate services which are delivered and consumed by end users (i.e. front-office services), as well as by other IT systems (i.e. back-office services). In case the same digital public service is delivered to different types of end users, these services should be assessed separately from one another through the IMAPS (only if the answers to the questions are not identical and consequently generate different results and recommendations);
- The digital public service has a visual end user interface (e.g. web portal or app) or is taking form of machine-to-machine interaction.

Examples of digital public services that conform to the aforementioned design rules are the following:

- Citizens (3) are offered the service to access their Electronic Health Record (1) via the eHealth portal (4) of the Danish Sundhed portal (2);
- Citizens (3) are offered the service to issue an e-administrative fee (1) via the GSIS portal (4) provided by the Ministry of Digital Government (2);
- Administrations (3) are offered the service to obtain European vehicle information (1) via the web service (4) of the EUCARIS (2).

2.3 Interoperability and IMAPS

Interoperability in a digital public service is an attribution defined as "the extent it enables peer-to-peer collaboration with public services towards mutually beneficial goals, involving the sharing of data, information and knowledge between them regardless their legal, organisational, semantic and technical environment". Figure 2 illustrates the digital public service in the context of interoperability.

Interoperability is of multidimensional nature involving structural interoperability, behavioural interoperability and governance interoperability:

1. The **structural interoperability** is "the extent its structure has been developed reusing and/or sharing components in support of a peer-to-peer collaboration"

2. The **behavioural interoperability** is "the extent its manifested behaviour exchanges data, information or knowledge with its environment in support of a peer-to-peer collaboration"
3. The **governance interoperability** is "the extent its agreed choreography rules support a peer-to-peer collaboration"
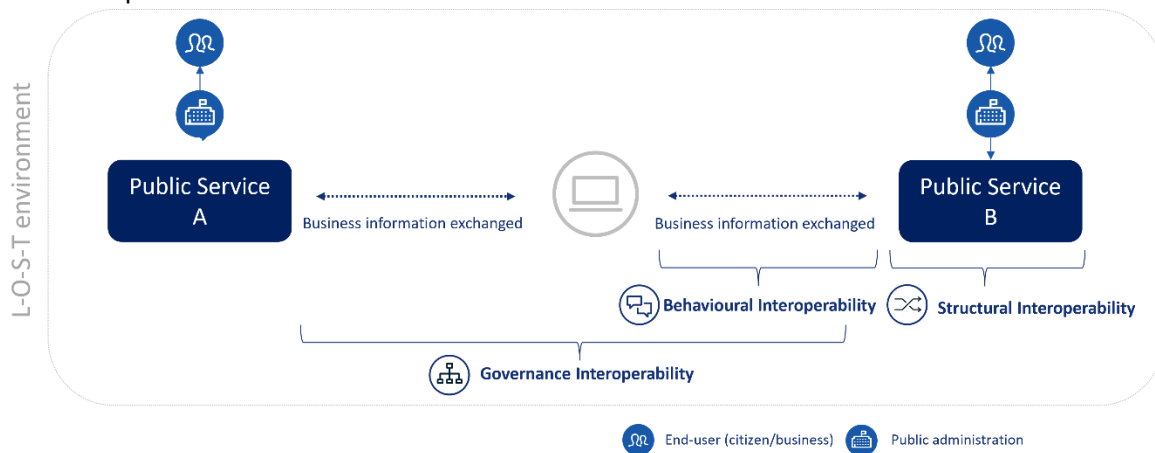

Figure 2: Interoperability dimensions

In addition, all relationships that interconnect the digital public service with the outside environment are considered relevant for assessing interoperability and thus, they are taken into account in the IMAPS. Interoperability and IMAPS are concerned with how the relationship between internal and external domains is defined and implemented.

In particular, IMAPS measures how well a public administration interacts with **external** entities to organise the efficient provisioning of its public services to other public administrations, businesses and citizens. IMAPS uses the term "behavioural" to refer to the fact that it assesses aspects that have to do with how the public services "behave" while interacting with each other or with their end users (citizens, business or other Public Administrations).

IMAPS Model Objectives

IMAPS delivers insights into two important aspects of the interoperability maturity:

- Provides insight into the **current interoperability maturity** of a digital public service based on a set of defined interoperability attributes and maturity stages;
- Provides guidelines for how the digital public service can **improve its interoperability maturity.**

Although the IMAPS is publicly available for any organisation and citizens interested, the main target audience is the public service owners of digital public services that operate in an environment where interoperability is required to deliver a public service to end users.

Improving interoperability is a continuous activity. Organisations are therefore encouraged to use the model and its improvement recommendations regularly.

2.4 IMTs User Journey

The figure below illustrates **a typical user journey** for the IAMs end user and shows how SIQAT, GIQAT and IMAPS recommendations can provide insights on how the interoperability maturity of a digital public service could be improved.
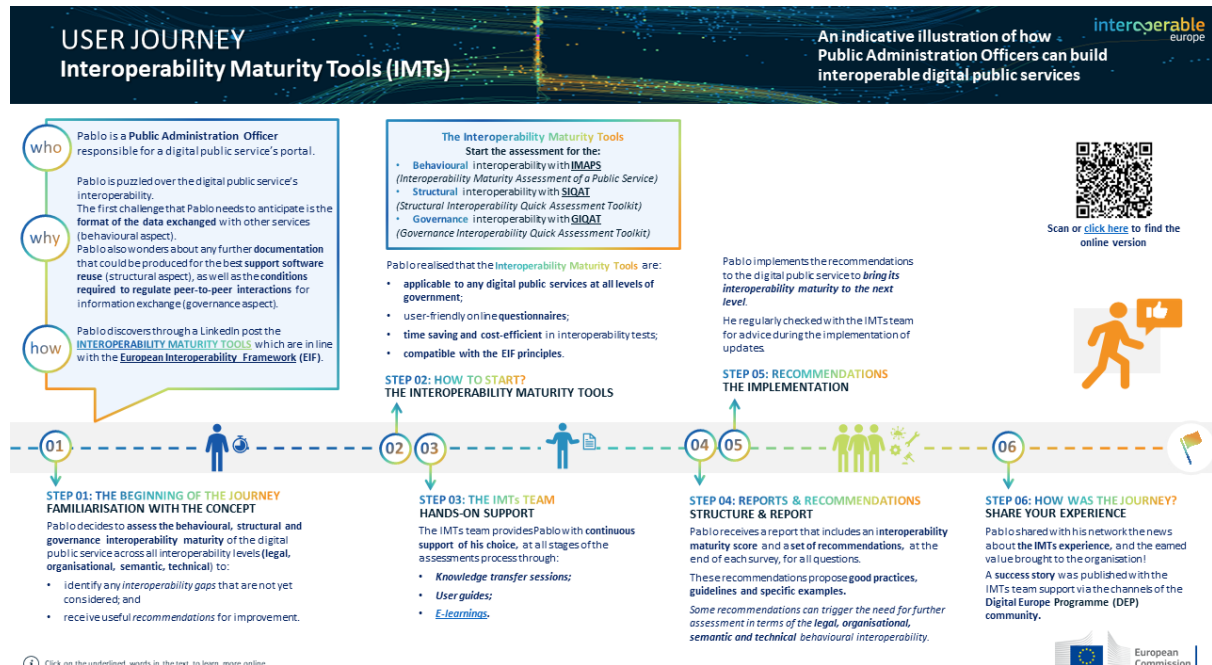
Figure 3 IMTs User Journey

It is briefly mentioned shown before the IMAPS assessment, as part of the introduction to the survey at the EU Survey portal, it describes the structure, and the logic behind the IMTs survey starting from the IMAPS questionnaire and continues with SIQAT and GIQAT.

2.5 IMAPS Target users

IMAPS can be used by the following end-users:

- Public service owners: to improve the overall behavioural interoperability and conformance of their digital public services;
- Policy-makers: to get insights on the interoperability maturity of digital public service;
- Public Procurement Officers: to identify standards and specifications for an interoperable digital public service.

3   IMAPS MATURITY LEVELS

IMAPS uses a five-stage model to indicate the interoperability maturity of the digital public service. Using maturity levels allows to:

- Measure the interoperability maturity of the digital public service as a whole as well as underlying aspects;
- Indicate which capabilities and next steps are required to reach higher levels, and thus improve interoperability maturity.

A five-stage approach is often seen in proven maturity models and is considered as best practice for assessing and improving maturity. The five maturity levels for IMAPS are summarised in the table below.

Table 1: Five maturity levels of IMAPS

LEVEL 01	AD HOC	Poor Interoperability – the digital public service cannot be considered interoperable
LEVEL 02	OPPORTUNISTIC	Fair Interoperability – the digital public service implements some elements of interoperability best practices
LEVEL 03	ESSENTIAL	Essential Interoperability – the digital public service implements the essential best practices for interoperability
LEVEL 04	SUSTAINABLE	Good Interoperability – all relevant interoperability best practices are implemented by the digital public service
LEVEL 05	SEAMLESS	Interoperability Leading Practice – the digital public service is a leading interoperability practice example for others

The desired interoperability level for a digital public service is at least level 4: "Sustainable". At this level, the digital public service is considered to have implemented all relevant best practices.

4 BEHAVIOURAL INTEROPERABILITY ASPECTS

4.1 Approach

The approach to develop IMAPS questionnaire builds upon the fact that IMAPS measures how well a public administration interacts with the **external** entities to organise the efficient provisioning of its public services to other public administrations, businesses and citizens.

IMAPS uses the term "behavioural" to refer to the fact that it assesses aspects that have to do with how the public services "behave" while interacting with each other or with their end users (citizens, business or other Public Administrations). Figure 4 below illustrates the IMAPS perspective from the **behavioural** interoperability viewpoint, which enables the business information exchange among different public services.
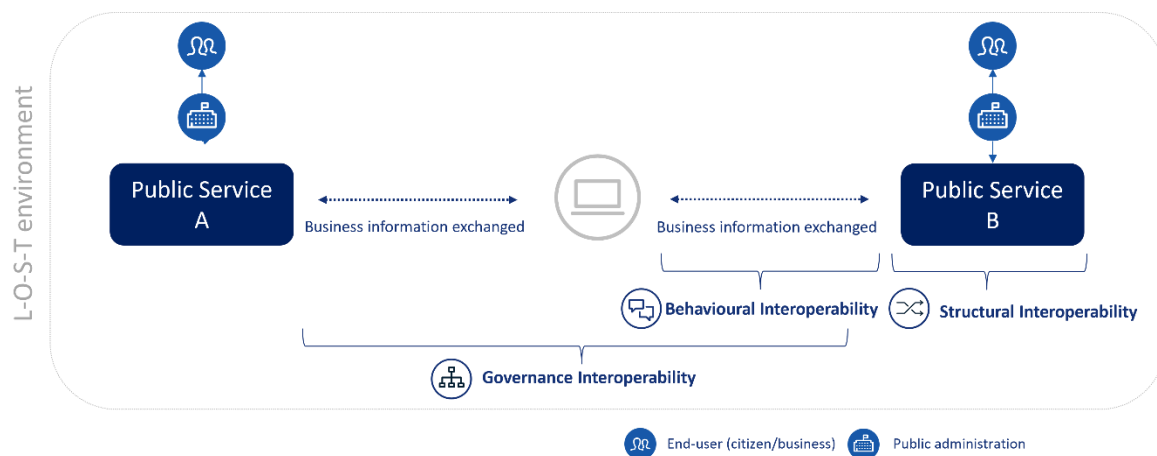
Figure 4: IMAPS perspective

The behavioural interoperability aspects are described below:

- **Service Delivery (D)** – Delivery of the digital public service to its end users;
- **Service Consumption (C)** – Consumption of reusable machine-to-machine services from other public administrations and businesses. This can include the consumption of functionalities, base registry information and security services;
- **Service Management (B)** - Controlling and monitoring the process flow related to service interactions with the external domain from trigger to outcome. This area includes Service Management aspects such as enterprise architecture, procurement, and service level management.

The figure below describes all possible instances where interoperability with the outside world may occur from the digital public service viewpoint. It distinguishes between the **internal domain** (the internal service management) and the **external domain** (the digital public service uses/consumes existing services and exposes the produced service to thirds).
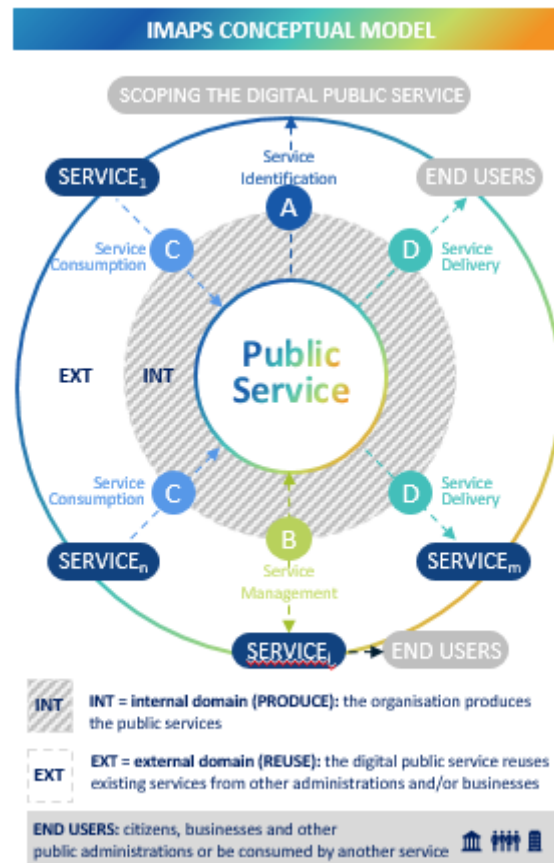
Figure 5: IMAPS behavioural interoperability viewpoint

The areas (hereafter referred to as Interoperability Areas) indicated in the figure above are the object of measurement in the IMAPS, specifying where interoperability plays a role from a service management, service delivery and service consumption viewpoint.

4.2 Service Delivery (D)

The public administration delivers the digital public service towards end users i.e. citizens, businesses or other administrations. We call this **Service Delivery**. The service that is being delivered represents the focal point of the IMAPS in terms of correctly scoping and delimiting the digital public service under evaluation. If service delivery is scoped correctly, the scoping of the other areas becomes more straightforward. The Service Delivery area focuses on the delivery of the digital public service to its end users or other services.

4.3 Service Consumption (C)

For delivering the digital public service towards the end user, the digital public service may be required to consume services of other public administrations or businesses. This area is called **Service Consumption** and it focuses on the consumption of reusable machine-to-machine (client) services from other public administrations and businesses. This can indicatively include the consumption of functionalities, base registry information and security services.

Digital public services that consume (reuse) existing services where possible are considered more interoperable than organisations that produce (develop) their own proprietary services without reusing existing functionalities.

4.4 Service Management (B)

This area focuses on important **Service Management** aspects on the area of sharing and reuse and design of the digital public service. Digital public services are considered more interoperable if documentation, source code, services and support is provided towards other administrations and business for reuse. In addition, this area covers important design aspects that ensure future-proof interoperability such as architecture, orchestration, procurement and interfaces.

4.5 Case examples

The following case examples (see Table 2) illustrate the interoperability areas of delivery, and service consumption. They are taken from real-life examples based on which the Interoperability Maturity Model has been developed. Such case examples are outlined to guide users of the model in defining and delimiting their public service's interconnections correctly.

Table 2: Examples of interoperability areas of digital public services

Digital Public Service	Service Delivery	Service Consumption
Electronic Health Record Access	Citizens are offered the service to access their Electronic Health Record via eHealth portal. Case example: *The service called "my Health summary" is available through the Danish eHealth portal 'Sundhed.dk' for citizens and allows authenticated users to obtain an overview of their own patient data.*	Payment services Identify and access management services eSignature services Personal medicine data Donor registration Living will registration Laboratory data
Online Patent Filing	Businesses are offered the service to register and pay for the filling of patents. Case example: *The EPO Online Filing client application provides applicants with a standard form for filing patent applications online with the European Patent Office. Once the request is*	Payment services Identify and access management services

	filed, the applicant receives an electronic notification of receipt. If the applicant has set up an online Mailbox, he will receive all further communication from the EPO via this Mailbox, including requests for rectifying the application and the invitation to pay claims fees.	eSignature services
Government e-invoicing	Businesses are offered the service to send online invoices to the various government administrations. Case example: *Businesses can send all their invoices in electronic format to the Dutch government. In total, more than 78 government bodies have implemented the electronic invoicing solution. The sending and receipt of e-Invoices can take place through two channels: Digipoort (direct access or via an intermediary) or the e-Invoicing portal* www.facturerenaandeoverheid.nl	Payment services Identify and access management services eSignature services

4.6   IMAPS Attributes

4.6.1   IMAPS Components' attributes

IMAPS components' attributes are presented in the table below.

Table 3: Service delivery, service consumption and service management attributes

Service Delivery	
Attribute	**Rationale**
Data, information and knowledge delivered	Assesses the **behavioural** interoperability **specifications** of data, information and knowledge delivered by the public service to its end users and/or other client services.
Service Delivery Enablers	Assesses the **behavioural** interoperability **capabilities** that enable either i) the delivery of data, information and knowledge by the digital public service to its end users **and/or other** client **services** or ii) the discoverability of the public service.
Service Delivery Manifestations	Assesses the **behavioural** interoperability **manifestations** of the public service **delivering** data, information and knowledge (manifestations can be performance, results, user experience).
Service Consumption	
Attribute	**Rationale**
Data, information and knowledge consumed	Assesses the **behavioural** interoperability **specifications** of data, information and knowledge **consumed** by the public service **from** other server services
Service Consumption Enablers	Assesses the **behavioural** interoperability **capabilities that enable the** public service **to either i) discover other server services and/or ii) consume their** data, information and knowledge
Service Consumption Manifestations	Assesses the **behavioural** interoperability **manifestations** of the public service **consuming** data, information and knowledge (manifestations can be performance, results, user experience).
Service Management	
Attribute	**Rationale**
Data, information and knowledge management	Assesses the behavioural interoperability **specifications** of data, information and knowledge **consumed** by the public service **from** other server services
Service Management Enablers	Assesses the **behavioural** interoperability **capabilities** that enable the public service to manage data, information and knowledge
Service Management Manifestations	Assesses the **behavioural** interoperability **manifestations** of the public service **managing** data, information and knowledge (manifestations can be performance, results, user experience).

4.6.2   Sources of Input

Various related programmes and initiatives inside and outside ISA have been leveraged to build the current set of IMAPS Attributes. The most important ones are:

- *European Interoperability Framework* – The European Interoperability Framework (EIF) serves as an important framework for organisations to promote and improve interoperability and therefore is considered as a paramount starting point for defining IMAPS attributes. The respective items per attribute have been specifically formed to assess the level of conformance with the elements of EIF structure (principles/layers/conceptual model)[1]. The basis to define IMAPS items have been the EIF recommendations;

- *European Interoperability Reference Architecture (EIRA)* – EIRA version 5.0.0 compliance is ensured at the level of IMAPS attributes. In this context, the respective items per attribute have been specifically formed to assess the level of conformance with the EIRA Architecture Building Blocks (ABBs). The basis to define IMAPS items has been the context of each one of the EIRA version 5.0.0 ABBs.

- *Digital Single Market* - the Digital Single Market strategy aims to open up digital opportunities for people and business and enhance Europe's position as a world leader in the digital economy. Select attributes were defined to align with this ambition; the terminology of IMAPS overall embraces the key concepts of "digitalisation" in its various aspects;

- *Interoperability Maturity Assessment of a Public Service (IMAPS)*[2] – IMAPS is an online survey that helps public service owners evaluate, consider and improve all key interoperability aspects of their digital public service (legal, semantic, organisational, or technical). Ultimately, they can view and monitor the service's compliance with the New European Interoperability Framework (EIF). Not only can IMAPS be used to assess the interoperability of any public service – from open data portals, and e-voting platforms, to public procurement services, and much more – it is applicable to services at all levels of government (international, national, regional and local).

- *Interoperability Quick Assessment Toolkit (IQAT©)* [3] – IQAT© has been developed in the context of Action 2016.36 Assessment of trans-European systems supporting EU policies of the Interoperability solutions and common frameworks for European public administrations, businesses and citizens. The objective of the IQAT© is to allows public service owners to evaluate the structural interoperability maturity level of their digital public service.

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[1] Compliance of IMAPS with EIF at the level of principles, layers and conceptual model has been also validated following the paradigm of CAMSS approach to demonstrate their scenarios' conformance with EIF.

[2] https://joinup.ec.europa.eu/collection/imaps-interoperability-maturity-assessment-public-service/about

[3] https://joinup.ec.europa.eu/solution/interoperability-quick-assessment-toolkit

5   IMAPS QUESTIONNAIRE

IMAPS uses a questionnaire structure for assessing the behavioural interoperability maturity of a digital public service. This section details the questionnaire type, question types and assessment structure in more detail.

IMAPS questionnaire is a compact and highly user-friendly tool available online. Designed as a self-assessment tool, IMAPS assessment criteria have been condensed into targeted question sets in order to evaluate key **behavioural** interoperability aspects of a digital public service. Such insight results in personalised, confidential feedback and recommendations on how a service can improve.

IMAPS Questionnaire is designed to take approximately 45 minutes to complete. Once the questionnaire is completed, a report is generated with the behavioural interoperability scores plus recommendations on how to further improve the digital public service's behavioural interoperability.

5.1   Questionnaire Structure

This section outlines the structure of the questionnaire. The four main sections of the questionnaire are in line with the earlier presented overview of behavioural interoperability aspects (section 2.4):

- **Service Identification (A):** This section assesses the scope of the digital public service (the object of measurement, i.e. the digital public service to examine), service landscaping and gathers important information for follow-up (contact details, etc.);
- **Service Delivery (D):** The section assesses how the digital public service delivers its service;
- **Service Consumption (C):** This section assesses if and how services are consumed from other administrations and businesses.
- **Service Management (B):** This section assesses how the digital public service arranges the consumption and provisioning of external services and includes Service Management aspects such as architecture, orchestration, procurement and interfaces.

The questionnaire routing is sequential at the level of the main areas (A, B, C, D). The questions within areas A, B, C and D are also defined sequentially and need to be filled in one after the other.

The following figures illustrate the sections A, B, C and D of IMAPS questionnaire as described above.

A1A. Please provide your name:

A1B. Please provide your email address:

@

A1C. Please provide your phone number:

* A1D. Please indicate the country of the organisation providing the service

A1E. Please provide your role in the organisation providing the service:

Figure 6: Section A of IMAPS questionnaire

* A2A. A digital public service is a digital service rendered in the public interest.
What is the name of the service that you provide to the end users (citizens, businesses or other public administrations)?

More Info ❓

A2B. Please provide the public service catalogue name and URI, if it is applicable for the digital public service.

* A2C. Please give a brief description of the service.

More Info ❓

A2D. Appearance: How does the service deliver the outcome towards the end user group?

More Info ❓

○ The public service delivers the outcome towards the end users **via traditional channels** e.g. phone, postal service
○ The public service delivers the outcome towards the end users **via digital channels**, e.g . through a web portal/website or an application
○ The service delivers the outcome towards **other IT systems** (machine-to-machine interface)

* A2E. Please specify the email address of the provided service:

@

Figure 7: Section A of IMAPS questionnaire

A3A. Service provider: Which tier of public administration is primarily responsible for providing the service?

More Info ❓

- ○ International Public Administration
- ○ Central Public Administration
- ○ Regional Public Administration
- ○ Local Public Administration
- ○ Other Legal Entity ↓

↑ In case of "Other Legal Entity", please indicate in the text field below.

A3B. Are the solutions provided by a Directorate-General of the European Commission?

- ○ Yes ↓
- ○ No

↑ A3C. Please indicate the Directorate-General of the European Commission (if applicable):

[▾]

Figure 8: Section A of IMAPS questionnaire

A4. Please indicate in which sector is the service provided.

- ○ Education
- ○ Public Health
- ○ Public Safety
- ○ Environmental Protection
- ○ Justice
- ○ Transportation
- ○ Infrastructure
- ○ Social Services
- ○ Economy/Financial
- ○ Other ↓

↑ In case of "Other", please indicate in the text field below

A5. What is the end user group to whom the service is delivered?

More Info ❓

- ☐ Public Administrations (A2A)
- ☐ Citizens (A2C)
- ☐ Businesses (A2B)

A6. At what administrative level is the service provided (multiple answers are possible)?

- ☐ Local (e.g. city, municipality)
- ☐ Regional
- ☐ National
- ☐ European
- ☐ International

Figure 9: Section A of IMAPS questionnaire

Service Delivery (D)
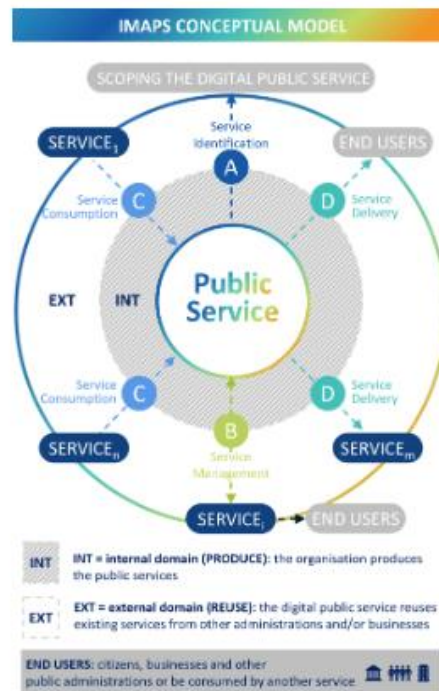
Figure 10: Section D of IMAPS questionnaire

The public administration delivers the digital public service towards end users i.e. citizens, businesses or other administrations. We call this **Service Delivery.** The service that is being delivered represents the focal point of the IMAPS in terms of correctly scoping and delimiting the digital public service under evaluation. If service delivery is scoped correctly, the scoping of the other areas becomes more straightforward.

The Service Delivery area focuses on the data, information and knowledge delivered by the digital public service, the Service Delivery Enablers and the Service Delivery Manifestations.

Please answer the following questions regarding how your digital public service is delivered to its end users and/or other public services.

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* D1. To what extent does the service publish open data?

Enabler / Manifestation   *EIF Interoperability View: L. O.* **S. T.**

More Info ❓
- ○ **Not applicable**, open data are not relevant for the solution
- ○ The service **does not publish** open data
- ○ The service **publishes** open data
- ○ **No answer**

* D2. To what extent does the service publish open data in a structured format?

Enabler / Manifestation   *EIF Interoperability View: L. O.* **S. T.**

More Info ❓
- ○ **Not applicable**, open data are not relevant for the solution
- ○ The service publishes data, information and knowledge in **non-structured** formats (e.g. pdf, jpeg)
- ○ The service publishes data, information and knowledge **structured** formats for a **limited** amount of the data, information and knowledge delivered.
- ○ The service publishes data, information and knowledge **structured** formats for **most of** the data, information and knowledge delivered.
- ○ The service publishes data, information and knowledge **structured** formats for **any** data, information and knowledge delivered.
- ○ The service publishes data, information and knowledge **as linked open data** (LOD).
- ○ **No answer**

* D3. To what extent does the service use semantic standards and specifications for the data delivered?

Enabler / Manifestation   *EIF Interoperability View: L. O.* **S. T.**

More Info ❓
- ○ **Not applicable**, there is no machine-to-machine interfacing
- ○ The service **does not use** any standards or specifications for the data, information and knowledge delivery
- ○ The service is **only using proprietary** standards and **is not leveraging** existing (open) **semantic** standards for the data, information and knowledge delivery
- ○ The service is using **a mix of** (open) semantic standards for data delivery, combined **with proprietary standards** for the data, information and knowledge delivery
- ○ The service is using **mainly** (open) semantic standards for data delivery, and **only a few proprietary standards** for the data, information and knowledge delivery
- ○ The service is using **entirely** (open) semantic standards and specifications for the data, information and knowledge delivery
- ○ **No answer**

Figure 11: Section D of IMAPS questionnaire

Service Consumption (C)

Figure 12: Section C of IMAPS questionnaire
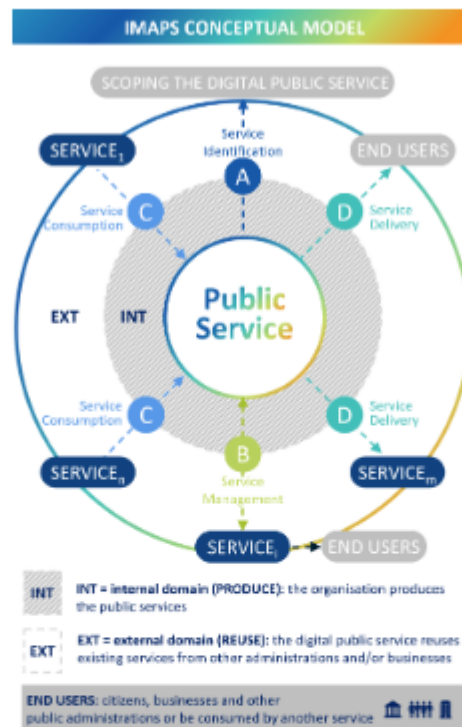
For delivering the digital public service towards the end user, the service may be required to consume services of other public administrations or businesses. This area is called **Service Consumption**.

There are various types of services that can be consumed by digital public services:

- Functional service – a common functionality (e.g. issuing a license, procurement, planning, a risk assessment module) shared across organisations;
- Security service – a specific type of functional service to share common security functions (e.g. identity management and authentication) across organisations;
- Base registry service – a specific type of functional service to share trusted, authentic and verified data (about e.g. citizens, land, vehicles) across public administrations.

Digital public services that consume (reuse) existing services where possible are considered more interoperable than organisations that produce (develop) their own proprietary services without reusing existing functionalities.

This section comprises the "Data, information and knowledge consumed", the "Service Consumption Enablers" and the "Service Consumption Manifestations".

Please answer the following questions regarding the service consumption of your service, if applicable.

↑ * C1. To what extent does the service consume data information and knowledge via digital channels?

Enabler / *Manifestation*   *EIF Interoperability View: L.* ***O.*** *S.* ***T.***

More Info ❓
- ○ **Not applicable**, the service does not consume data, information and knowledge
- ○ The service consumes data, information and knowledge **only via human interfaces**
- ○ The service consumes data, information and knowledge **mainly** via human interfaces and **some** machine to machine interfaces
- ○ The service consumes data, information and knowledge via **a mix of** human interfaces **and** machine to machine interfaces
- ○ The service consumes data, information and knowledge mainly via machine to machine interfaces and **some** human interfaces
- ○ The service consumes data, information and knowledge **fully** via machine to machine interfaces
- ○ **No answer**

↑ * C2. To what extent does the service reuse or self-produce the consumed services?

Enabler / *Manifestation*   *EIF Interoperability View: L. O. S.* ***T.***

More Info ❓
- ○ **Not applicable**, the service does not consume data, information and knowledge from other services
- ○ The service **does not reuse** any relevant services, although they are available for reuse
- ○ The service self-produces **most of** the consumed services, while relevant services are available for reuse by the service
- ○ The service reuses **a selection of** the consumed services
- ○ The service reuses **most of** the consumed services
- ○ The service reuses **all of** the consumed services
- ○ **No answer**

Figure 13: Section C of IMAPS questionnaire

Service Management (B)
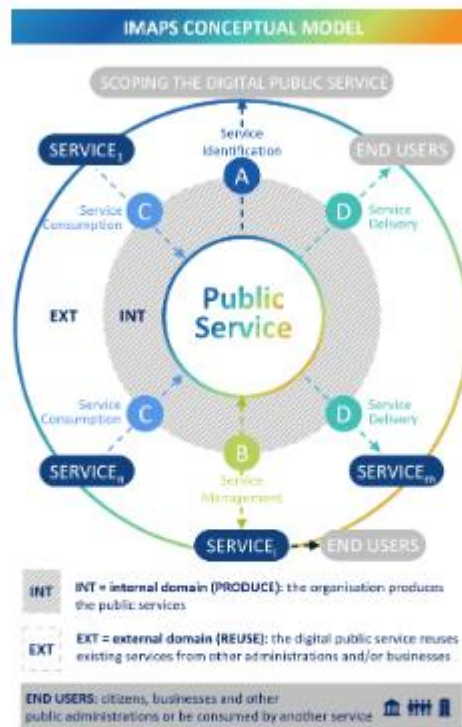
This area focuses on important **Service Management** aspects on the area of sharing and reuse and design of the service. Digital public services are considered more interoperable if documentation, source code, services and support is provided towards other administrations and business for reuse. In addition this area covers important design aspects that ensure future-proof interoperability such as architecture, processes, orchestration, procurement and service level management.

This section comprises the "Data, information and knowledge management", the "Service Management Enablers" and the "Service Management Manifestations".

Please answer the following questions regarding the service management of your service.

Figure 14: Section B of IMAPS questionnaire

* **B1. To what extent does the service apply a data and metadata management process?**

Enabler / *Manifestation*   *EIF Interoperability View: L. O.* **S**. *T.*

More Info ❓

○ The service **does not apply** any data or metadata management processes

○ The service applies **custom data or metadata management processes** that are compliant to well known data management maturity models (e.g. DCAM, CMMI Data Management Maturity Model, IBM Data Governance Council Maturity model, Stanford Data Governance Maturity Model) **without** having full level model maturity

○ The digital public service applies **custom data or metadata management processes** that are compliant to well known data management maturity models (e.g. DCAM, CMMI Data Management Maturity Model, IBM Data Governance Council Maturity model, Stanford Data Governance Maturity Model) **with** full level model maturity

○ **No answer**

Figure 15: Section B of IMAPS questionnaire

5.2   IMAPS Questionnaire

5.2.1   Service Identification (A) - Questions

A1A.	
Name	Contact details
Question type	Free text
Rationale	Gather contact information for eventual follow-up.
Question	Please provide your name.
Question logic	Next question

A1B.	
Name	Contact details
Question type	Free text
Rationale	Gather contact information for eventual follow-up.
Question	Please provide your email address.
Question logic	Next question

A1C.	
Name	Contact details
Question type	Free text - format check on phone number
Rationale	Gather contact information for eventual follow-up.
Question	Please provide your phone number.
Question logic	Next question

A1D.	
Name	Contact details
Question type	Multiple choice (1 answer possible)
Rationale	Gather contact information for eventual follow-up.
Question	Please indicate the country of the organisation providing the digital public service. Please indicate the country if not in the list above.
Question logic	Next question

A1E.

Name	Contact details
Question type	Free Text
Rationale	Gather contact information for eventual follow-up.
Question	Please provide your role in the organisation providing the service
Question logic	Next question

A2A.

Name	Digital public service description
Question type	Free Text
Rationale	Gain insight into the digital public service the administration provides.
Question	A digital public service is a digital service rendered in the public interest.
	What is the name of the service that you provide to the end users (citizens, businesses or other public administrations)?
Examples	Examples:
	• Issue of birth certificate for citizens
	• Submission of yearly income tax declaration for citizens
	• Issue of an electronic fee for citizens
	• Electronic Health Record Access
	• Government e-invoicing for businesses
	• Cross-Border Vehicle Identification Service for public administrations
Question logic	Next question

A2B.

Name	Digital public service description
Question type	Free Text
Rationale	Gain insight into the digital public service the administration provides.
Question	Please provide the public service catalogue name and URI, if it is applicable for the digital public service.

Examples	-
Question logic	Next question

A2C.

Name	Digital public service description
Question type	Free Text
Rationale	Gain insight into the digital public service the administration provides.
Question	Please give a brief description of the digital public service.
Examples	- Citizens are offered the service to access their Electronic Health Record via the eHealth portal and allows authenticated users to obtain an overview of their own patient data. - Submission of yearly income tax declaration for citizens (administration-to-citizen). - Change of residence of a citizen (administration-to-citizen). - Online information provisioning on relevant jobs to citizens (administration-to-citizen). - Posting of vacancies on a job portal for businesses via a machine-to-machine interface (administration-to-business). - Providing information on the whereabouts of specific cargo to businesses (administration-to-business). - Providing classification services towards other administrations for ensuring international standardisation of patent data via a machine-to-machine interface (administration-to-administration)
Question logic	Next question

A2D.

Name	Digital public service description
Question type	Multiple choice (1 answer possible)
Rationale	Gain insight into the digital public service the administration provides.
Question	Appearance: How does the digital public service deliver the outcome towards the end user group? The public service does not deliver the outcome directly towards a person but

	towards other IT systems (machine-to-machine interface) • The public service delivers the outcome towards the end users via traditional channels e.g. phone, postal service • The public service delivers the outcome towards the end users via digital channels, e.g . through a web portal/website or an application
Question logic	Next question

A2E.	
Name	Digital public service description
Question type	Email
Rationale	Gain insight into the digital public service the administration provides.
Question	Please specify the email address of the provided service
Question logic	Next question

A3A.	
Name	Sector of the service
Question type	Multiple choice (1 answer possible)
Rationale	This question determines the scope / boundaries of the public administration providing the digital public service.
Question	Service provider: Which tier of public administration is primarily responsible for providing the service. • International Public Administration • Central Public Administration • Regional Public Administration • Local Public Administration • Other Legal Entity
Question logic	Next question

A3B.	
Name	Sector of the service
Question type	Single Option

Rationale	This question determines the scope / boundaries of the public administration providing the digital public service.
Question	Are the solutions provided by a Directorate-General of the European Commission? • Yes • No
Question logic	Next question

A3C.	
Name	Sector of the service
Question type	Multiple choice (1 answer possible)
Rationale	This question determines the scope / boundaries of the public administration providing the digital public service.
Question	Please indicate the Directorate-General of the European Commission (If applicable) • Administration and Payment of Individual Entitlements • Agriculture and Rural Development • Budget • Climate Action • Communication • Communications Networks, Content and Technology • Competition • Consumers, Health, Agriculture and Food Executive Agency • Data Protection Officer • Defence Industry and Space • Economic and Financial Affairs • Education, Audiovisual and Culture Executive Agency • Education, Youth, Sport and Culture • Employment, Social Affairs and Inclusion • Energy • Environment • European Anti-Fraud Office • European Civil Protection and Humanitarian Aid Operations • European Climate, Infrastructure and Environment Executive Agency • European Neighbourhood and Enlargement Negotiations • European Personnel Selection Office • European Research Council Executive Agency

- European School of Administration
- Eurostat - European statistics
- Executive Agency for Small and Medium-sized Enterprises
- Financial Stability, Financial Services and Capital Markets Union
- Foreign Policy Instruments
- Health and Food Safety
- Historical Archives Service
- Human Resources and Security
- Informatics
- Infrastructure and Logistics in Brussels
- Infrastructure and Logistics in Luxembourg
- Inspire, Debate, Engage and Accelerate Action
- Internal Audit Service
- Internal Market, Industry, Entrepreneurship and SMEs
- International Partnerships
- Interpretation
- Joint Research Centre
- Justice and Consumers
- Legal Service
- Library and e-Resources Centre
- Maritime Affairs and Fisheries
- Migration and Home Affairs
- Mobility and Transport
- Publications Office
- Regional and Urban Policy
- Research Executive Agency
- Research and Innovation
- Secretariat-General
- Structural Reform Support
- Task Force for Relations with the United Kingdom
- Taxation and Customs Union
- Trade
- Translation

Question logic	Next question

A4.	
Name	Sector of the service
Question type	Multiple choice (1 answer possible)
Rationale	This question determines the scope / boundaries of the public administration providing the digital public service.

Question	Please indicate in which sector is the digital public service provided. • Education • Public Health • Public Safety • Environmental Protection • Justice • Transportation • Infrastructure • Social Services • Economy/Financial • Other
Question logic	Next question

A5.

Name	End user group(s) to which the service is delivered
Question type	Multiple choice (>1 possible answer)
Rationale	Determine the end user group(s) to which the digital public service is delivered.
Question	What is the end user group to whom the digital public service is delivered? • Public Administrations (A2A) • Citizens (A2C) • Businesses (A2B)
Examples	A specific group of businesses; A specific group of citizens; A specific group of public administrations.
Question logic	Next question

A6.

Name	Administrative level
Question type	Multiple choice (>1 possible answer)
Rationale	Gain insight into the government providing the digital public service.
Question	At what administrative level is the digital public service provided (multiple answers are possible)? • Local (e.g. city, municipality) • Regional • National • European • International

| *Question logic* | Next question |

Maturity scoring: This section is not scored.

5.2.2 Service Delivery (D) - Questions

D1.	
Name	Open data publication
Category	Enabler
EIF-layer	Legal, Technical
Weight	N/A
Question type	Multiple choice (1 answer possible)
Rationale	Open data refers to the idea that all public data should be freely available for use and reuse by others, unless restrictions apply e.g. for protection of personal data, confidentiality, or intellectual property rights. To ensure a level playing field, the opening and reuse of data must be non-discriminatory, meaning that data must be interoperable so that can be found, discovered and processed.
Question	To what extent does the digital public service publish open data? • Not applicable, open data are not relevant for the solution • The digital public service does not publish open data • The digital public service publishes open data • No answer
Examples	-
Question logic	Next question

D2.	
Name	Structure of open data
Category	Enabler
EIF-layer	Semantic
Weight	70%
Question type	Multiple choice (1 answer possible)
Rationale	Open data refers to the idea that all public data should be freely available for use and reuse by others, unless restrictions apply e.g. for protection of personal data, confidentiality, or intellectual property rights. To ensure a level playing field, the opening and reuse of data must be non-discriminatory, meaning that data must be interoperable so that can be found, discovered and processed.
Question	To what extent does the digital public service publish open data in a structured format? • Not applicable, open data are not relevant for the solution • The digital public service publishes data, information and knowledge in non-structured formats (e.g. pdf, jpeg) • The digital public service publishes data, information and knowledge structured formats for a limited amount of the data, information and knowledge delivered.

- The digital public service publishes data, information and knowledge structured formats for most of the data, information and knowledge delivered.
- The digital public service publishes data, information and knowledge structured formats for any data, information and knowledge delivered.
- The digital public service publishes data, information and knowledge as linked open data (LOD).
- No answer

Examples	- opendata.paris.fr: Open Data of the city of Paris, where you can find all the published data from the services of the city and their partners under license ODbL. - The European Data Portal: a pan-European repository of public sector information open for reuse in the EU presenting metadata references in a common format (Data Catalog Vocabulary application profile for data portals in Europe), using Resource Description Framework (RDF) technology
Question logic	Next question

D3.	
Name	Semantic standards and specifications for the data delivered
Category	Enabler
EIF-layer	Semantic
Weight	30%
Question type	Multiple choice (1 answer possible)
Rationale	Use of existing semantic standards and specifications (e.g. data models standards, standardised XML schemata, metadata standards) ensures interoperability in the data exchange between the public service and the receiving IT systems (only applicable for machine-to-machine interfacing).
Question	To what extent does the digital public service use semantic standards and specifications for the data delivered? - Not applicable, there is no machine-to-machine interfacing - The digital public service does not use any standards or specifications for the data, information and knowledge delivery - The digital public service is only using proprietary standards and is not leveraging existing (open) semantic standards for the data, information and knowledge delivery - The digital public service is using some (open) semantic standards for data delivery, combined with proprietary standards for the data, information and knowledge delivery - The digital public service is using entirely (open) semantic standards and specifications for the data, information and knowledge delivery - No answer

Examples	• A unique data model is developed specifically for data exchange. • The public service uses open semantic standards for definitions and specification of the data exchange to the fullest extent available.
Question logic	Next question

D4.	
Name	Data privacy
Category	Enabler
EIF-layer	Legal
Weight	25%
Question type	Multiple choice (1 answer possible)
Rationale	Transparency as regards how personal data is managed is essential in fostering users' trust in the digital public service. It is related to securing the right to the protection of personal data, by respecting the applicable legal framework for the large volumes of personal data of citizens, held and managed by Public administrations.
Question	To what extent does the service provide transparently the data privacy considerations to the user (such as scope of data stored, purpose of usage of data, scope of data shared with third parties, rights to request changes or log complaints, right to request data shared with third parties, applicable data privacy regulation, preservation policy)? • Not applicable, the service does not require personal data (e.g. only information provisioning, search functionality) • The service provides no information on data privacy considerations • The service provides ad-hoc information on data privacy considerations (e.g. on demand), including usage of data from third parties • The service provides limited information on data privacy considerations • The service provides full information on data privacy considerations • The service provides fully & adaptable information on data privacy, in the sense that the user can manage (some of his) data privacy settings online, and/or may request the data generated from the DPS and shared with third parties • No answer
Examples	• The citizen is redirected to a secure site where he/she can manage her privacy settings. • The business owner is informed about what business data will be shared with other administrations.
Question logic	Next question

D5.	
Name	Multilingualism
Category	Manifestation
EIF-layer	Semantic, Technical
Weight	25%
Question type	Multiple choice (1 answer possible)
Rationale	Multilingualism in the context of computing indicates that a digital public service supports two or more languages.
Question	To what extent does the digital public service support multilingualism? • Not applicable, the digital public service does not provide any documentation • The service provides documentation in only one language • The service provides documentation in some of the officially recognised languages by the public administration delivering the digital public service, for a certain volume of data • The service provides documentation in all officially recognised languages by the public administration delivering the digital public service, for a certain volume of data • The service provides documentation in all officially recognised national languages, as well as in English, French and German, while covering the full data volume • The digital public service provides documentation in all EU officially recognised languages, while covering the full data volume • No answer
Examples	• There is information on the criminal records service available in a non-official language of country A but the service to request such a record is only available in the country's official language. • The electronic procurement platform of Belgium delivers its data in all national languages i.e. Flemish, French and German
Question logic	Next question

D6.	
Name	Service Catalogue
Category	Enabler
EIF-layer	Organisational, Technical
Weight	25%
Question type	Multiple choice (1 answer possible)
Rationale	Providing detailed information on the availability & features of the public service is an enabler for the usage by citizens, business and administrations. Note that what is meant here by service catalogue is a catalogue overarching various organisations (e.g.

across several administrations or a national catalogue of public services). Digital public services that provide information to discover their offered services are considered highly mature.

Question	To what extent is the digital public service included in a service catalogue? • Not applicable or not necessary (according to the scope of the service) • The digital public service is not registered in a Service Catalogue • The digital public service is part of a catalogue available to a restricted user group (e.g. partners) • The digital public service is part of a publicly available catalogue • The digital public service is part of a publicly and online discoverable catalogue and includes a public service description (including information such as contact details, provider, preconditions and required input) • The digital public service is part of a publicly and online discoverable catalogue and includes a public service description based on standards such as CPSV-AP • No answer
Examples	• The digital public service is displayed on a government portal that holds a full repository of all public services offered to citizens, to increase the awareness and usage of the public service • Various types of catalogues exist, e.g. directories of services, open data portals, registries of base registries, metadata catalogues, catalogues of standards, specifications and guidelines
Question logic	Next question

D7.	
Name	Authentication mechanisms
Category	Enabler
EIF-layer	Legal, Technical
Weight	15%
Question type	Multiple choice (1 answer possible)
Rationale	Appropriate mechanisms should allow secure exchange of electronically verified messages, records, forms and other kinds of information between the different systems. They should handle specific security requirements and electronic identification. This item aims to assess how the public service manifests its behavioural interoperability performance towards its end users, by assessing if the public service provides authentication mechanisms for its end users or if there are any such mechanisms based on already existing IT solutions and services.
Question	To what extent does the digital public service provide authentication mechanisms for people identification? • Not applicable, authentication is not required for users to access the digital public service

- The digital public service does not provide any authentication mechanisms although it is applicable for the specific digital public service
- The digital public service provides login authentication mechanisms (username, password) for people identification
- The digital public service provides formalised authentication mechanisms e.g. EU Login based on Single sign-on principle for people identification
- The digital public service provides formalised authentication mechanisms with two-factor authentication (e.g. both password and sms token)
- The digital public service provides formalised, multi factor authentication mechanisms, including also biometric data
- No answer

Examples	• EU Login based on Single sign-on principle
Question logic	Next question

D8.	
Name	Certification
Category	Enabler
EIF-layer	Legal, Technical
Weight	10%
Question type	Multiple choice (1 answer possible)
Rationale	Certification is a success factor for ensuring working interconnections. A digital public service that requires formal certification is considered more interoperable. Certification is a formal procedure to verify if a constituency meets the prerequisites to connect to a service. Certification may examine areas like: security, governance, technological and semantic interoperability and availability.
Question	Is there a certification procedure defined for the end users to access the digital public service? • Not applicable, certification is not required for users to access the digital public service • No, there is no certification procedure available for the end users • Yes, there is a certification procedure available for the end users • No answer
Examples	• Although there is a separate test environment made available to test the interconnection with other systems, there is no certification process to ensure proper interconnection and interoperability.
Question logic	Next question

D9.	
Name	Delivery channels
Category	Manifestation
EIF-layer	Technical, Organisational
Weight	22%
Question type	Multiple choice (1 answer possible)
Rationale	Assesses through which channels the digital public service is delivered towards the user(s). This question captures both traditional (non-digital) and digital channels. Digital channels are: interactive digital collaboration (chat, cognitive agent), mobile app, web portal / website, e-mail and a machine-to-machine interface. Traditional channels are: physical counter, postal and telephone.
Question	To what extent does the digital public service deliver data, information and knowledge via multiple digital interfaces? • The digital public service delivers data, information and knowledge only via human interfaces • The digital public service delivers data, information and knowledge mainly via human interfaces and some machine to machine interfaces • The digital public service delivers data, information and knowledge via a mix of human interfaces and machine to machine interfaces • The digital public service delivers data, information and knowledge mainly via machine to machine interfaces and some human interfaces • The digital public service delivers data, information and knowledge fully via machine to machine interfaces • No answer
Examples	• The digital public service is made available via a portal that provides access to a set of public services (http://www.mijnrijksoverheid.nl/). • The service is made available via a dedicated website, telephone and physical counter.
Question logic	Next question

D10.	
Name	Pre-filling
Category	Manifestation
EIF-layer	Organisational, Technical
Weight	25%
Question type	Multiple choice (1 answer possible)
Rationale	Re-use of existing trustworthy data sources to pre-fill data fields should be stimulated as it minimizes user effort and reduces the risk for erroneous data entries.

Question	To what extent does the digital public service use pre-filling for the data and information requested?
	• Not applicable, the digital public service does not require data entries
	• The digital public service does not use pre-filling is used for the data and information requested. It could be applicable but there are no provisions in place yet
	• The digital public service uses pre-filling for the data and information requested only in an ad-hoc manner (e.g. on demand)
	• The digital public service uses pre-filling for some of the data and information that are digitally available
	• The digital public service uses pre-filling for most of the data and information that are digitally available
	• Fully, the digital public service uses pre-filling for all data fields that are digitally available
	• No answer
Examples	• Name and address data are prefilled from existing internal or external base registries (or other data sources). Note that pre-filling also includes the automated filling of drop-down boxes and/or automatic completion of key words
	• Users are able to request direct exchange of data between authorities where one public administration already holds the necessary information for a range of cross-border procedures.
Question logic	Next question

D11.	
Name	Procedural transparency
Category	Manifestation
EIF-layer	Organisational, Legal
Weight	20%
Question type	Multiple choice (1 answer possible)
Rationale	Users should have maximum insight into the process they are subject to.
Question	To what extent are the administrative rules and processes underlying the digital public service (such as decision mechanisms, lead times, information sources used, reporting obligations) transparent to the end user(s) and explained in a simple and clear way?
	• Not applicable, the digital public service does not need to provide insight into administrative rules and processes (e.g. only information provisioning, search functionality)
	• There is no or limited information on rules and processes available before, during and / or after usage of the digital public service. This information resides somewhere else (i.e. is not imminently discoverable)
	• Fully, there is detailed information on rules & processes available before, during and/or after usage of the digital public service

	• No answer
Examples	• The citizen is made aware of how long the decision-making process of the public administration will take as regards his entitlement to family benefits. • The business owner is informed about what exactly he needs to report on and for what purpose when registering his business
Question logic	Next question

D12.	
Name	User feedback and complaints
Category	Manifestation
EIF-layer	Organisational
Weight	10%
Question type	Multiple choice (1 answer possible)
Rationale	Being able to provide feedback is essential to empower users in their relation with public administrations and improve digital public services' quality.
Question	To what extent does the digital public service provide to the end user the necessary means to contribute to its further development and continuous improvement? • Not applicable or not necessary (according to the scope of the service) • The digital public service does not provide such capabilities. • The digital public service provides a single tracking and/or feedback mechanism, and feedback is considered in an ad-hoc manner • The digital public service provides multiple tracking and/or feedback mechanisms (including e.g. a rating mechanism), and feedback is considered in an ad-hoc manner • The digital public service provides multiple tracking and/or feedback mechanisms, and feedback is fully considered for the further development and continuous improvement of the digital public service • The digital public service provides multiple tracking and/or feedback mechanisms, feedback is fully considered for the further development and continuous improvement of the digital public service, and feedback is provided back to the end users • No answer
Examples	• At the end of the service delivery process, citizens can rate the pension benefit service. • Users can see how others have rated the same service
Question logic	Next question

D13.

Name	Accessibility
Category	Manifestation
EIF-layer	Technical
Weight	10%
Question type	Multiple choice (1 answer possible)
Rationale	Accessibility ensures that people with all abilities and disabilities can perceive, understand, navigate, and interact with the digital public service.
Question	To what extent is the digital public service provide accessbility features for people with disabilities (e.g. visual, auditory, physical, cognitive) at a comparable level to other users? • Not applicable, the digital public service does not utilize a graphical user interface • The service does not provide accessibility features for people with disabilities • The service provides accessibility features for people with disabilities • No answer
Examples	• The digital public service features the WAI conformance logo as proof of compliance at AA level. • The web site has been designed with accessibility criteria in mind such as text equivalents and consistent navigation. • Datasets are published in line with the web accessibility requirements Web Content Accessibility Guidelines 2.0 and 2.1, facilitating the inclusion and accessibility for all types of people including users with disabilities.
Question logic	Next question

D14

Name	Cross-border service delivery
Category	Manifestation
EIF-layer	Legal, Organisational, Semantic, Technical
Weight	10%
Question type	Multiple choice (1 answer possible)
Rationale	The Digital Single Market stipulates seamless public service delivery across all European countries.
Question	Are there any administrative level restrictions in the delivery of the digital public service (e.g. at a local, national or EU level)? • Not applicable or not necessary (according to the scope of the service) • Yes, there are restrictions. The digital public service is not fully interoperable at all applicable administrative levels (geographies)

	• No, there are no restrictions. The digital public service is already fully interoperable at all applicable administrative levels (geographies) • No answer
Examples	• An electronic ID issued by country A is required to access the cadastre service whilst foreigners who may require using the service cannot obtain such an ID. • A national of country B cannot view her pension entitlements as she has worked in multiple EU countries and her records are not reconciled across these. • The European Exchange School Alliance used in HU-ROSK-UA highlights how specialised and non-formal educational services are provided at an external EU border.
Question logic	Next question

Maturity scoring: The overall weight of this area in the total maturity score is 70%. For more information, please see

5.2.3 Service Consumption (C) - Questions

C1.	
Name	Manual or digital consumption of services
Category	Enabler
EIF-layer	Technical, Organisational
Weight	60%
Question type	Multiple choice (1 answer possible)
Rationale	Gain insight into how the digital public service is being consumed.
Question	To what extent does the digital public service consume data information and knowledge via digital channels? • Not applicable, the digital public service does not consume data, information and knowledge • The digital public service consumes data, information and knowledge only via human interfaces • The digital public service consumes data, information and knowledge mainly via human interfaces and some machine to machine interfaces • The digital public service consumes data, information and knowledge via a mix of human interfaces and machine to machine interfaces • The digital public service consumes data, information and knowledge mainly via machine to machine interfaces and some human interfaces • The digital public service consumes data, information and knowledge fully via machine to machine interfaces • No answer
Examples	• An example of digital consumption is the tax administration digitally fetching data from the Citizen Base Register.

	• An example of manual consumption is fetching data with the help of a paper form.
Question logic	Next question

C2.	
Name	Reusing or producing services
Category	Enabler
EIF-layer	Technical
Weight	40%
Question type	Multiple choice (1 answer possible)
Rationale	Specify how the digital public service is being consumed (reuse versus produce). Delivering a digital public service, while a service is available externally for use is considered less interoperable as it implies that the public service has "reinvented the wheel".
Question	To what extent does the digital public service reuse or self-produce consumed services? • Not applicable or not necessary (according to the scope of the service) • The digital public service does not reuse any relevant services, although they are available for reus • The digital pulic service self-produces most of the consumed services, while relevant services are available for reuse by the digital public service • The digital pulic service resues a selection of the consumed services • The digital pulic service resues most of the consumed services • The digital pulic service reuses all of the consumed services • No answer
Examples	• The digital public service uses Google Translate as a translation service for her web portal (Reuse). • An Identity and Access Management (IAM) service is developed and used by the administration itself while there is an institutionalized IAM-standard available in the country.
Question logic	Next question

C3.	
Name	Legal means for service consumption
Category	Enabler
EIF-layer	Legal
Weight	50%
Question type	Multiple choice (1 answer possible)

Rationale	For reuse of services or data to reach its full potential, legal interoperability and certainty is essential. For this reason, the right for anyone to reuse services should be communicated clearly throughout the Member States, and legal regimes to facilitate the reuse of data, such as licenses, should as far as possible be promoted and standardised. This item assess whether the service consumption is facilitated via any legal means that the digital public service has in place.
Question	To what extent does the digital public service apply measures to handle the legal implications related to service consumption? (e.g. tracing and logging mechanisms, legal agreements, legal rules, etc.) • There are no applicable legal implications related to service consumption for the specific digital public service • The digital public service does not apply any measures to handle the legal implications that are related to service consumption • The digital public service applies only the legally binding measures to handle the legal implications that are related to service consumption (e.g. compliance to regulations) • The digital public service applies some measures to facilitate the human interface certainty with regards to the legal implications that are related to service consumption (e.g. preservation policies) • The digital public service applies some measures to facilitate the human interface certainty and machine to machine comunication with regards to the legal implications that are related to service consumption (e.g. reusability of consumed services and data) • The digital public service applies all the applicable measures that enhnace human interface certainty and machine to machnie communication with regards to the legal implications that are related to service consumption (e.g. tracing and logging mechanisms) • No answer
Examples	• A national eGovenrment portal consumes data under legally binding requirements at a national/cross-border level. • The data exchanged between the tax registry and the ePayment service is regulated via national legal acts.
Question logic	Next question

C4.	
Name	Data consumption
Category	Enabler
EIF-layer	Semantic, Technical
Weight	50%
Question type	Multiple choice (1 answer possible)
Rationale	Interoperability depends on ensuring the availability of interfaces to these systems and the data they handle. In turn, interoperability facilitates reuse of systems and data, and enables these to be integrated into larger systems. This item assesses the

	overall importance of data within the public service, in terms of how far the public service goes with data collection, access and processing.
Question	To what extent does the digital public service handle the data that it consumes? • Not applicable, the digital public service does not collect any data • The digital public service only collects data • The digital public service accesses (and consequently collects) more than half of the total data handled • The digital public service reports (and consequently collects and accesses) more than half of the total data handled • The digital public service analyses (and consequently collects, access and reports) more than half of the total data handled • The digital public service analyses (and consequently collects, access and reports) all of the total data handled • No answer
Examples	• The digital public service consumes widely-used formats such as MS Excel (.xls/.xlsx), MS Access (.mdb/.accdb), dBase (.dbf) and OpenDocument Spreadsheet (.ods) and integrates them in its delivery.
Question logic	Next question

C5.1.	
Name	Landscaping Service Consumption
Category	Manifestation
EIF-layer	Technical
Weight	N/A
Question type	Multiple choice (>1 answer possible)
Rationale	Gain insight into the services that the digital public service is consuming.

Question	Please select the services which your digital public service has to consume in order to work:
	First, indicate for the below generic services if these are required (note that this is an indicative list)
	Second, add specific services which are specific to the digital public service and required by it in order to work
	Important note: Please list both services that are consumed from within the administration (internally) and from a third party (externally). Please list both manually and digitally consumed services.
	• Firstly, select the Generic services (indicative list – select applicable ones):
	    o Authentication Service
	    o e-Signature Creation Service
	    o e-Signature Verification and Validation Service
	    o e-Signature Preservation Service
	    o ePayment Service
	    o Messaging Service

	- Audio-visual Service - Data Transformation Service - Data Validation Service - Machine Translation Service - Data Exchange Service - Business Analytics Service - Business Reporting Service - Forms Management Service - Records Management Service - Document Management Service - Content Management Service - Access Management Service - Logging Service - Audit Service - Metadata Management - Networking Service - Hosting Service - Storage Service - Base Registry Information Source - Registration Service - Administration and Monitoring Service - Partner Management Service - eArchiving Service - Data Publication Service - e-Seal Creation Service - e-Seal Verification and Validation Service - e-Seal Preservation Service - e-Timestamp Creation Service - e-Timestamp Verification and Validation Service - Registered Electronic Delivery Service - Trust Registry Service - Service Discovery - Choreography Service - Orchestration Service - Test Service - Configuration and Cartography Service - Conformance Testing Service - No answer/not applicable
Examples	See above
Question logic	Next question

C5.2.	
Name	Landscaping Service Consumption
Category	Manifestation
EIF-layer	Technical
Weight	N/A

Question type	Open question (free text)
Rationale	Gain insight into the services that the digital public service is consuming.
Question	Please name any relevant specific services that are required by your digital public service in order to function. Again: Please include both services that are consumed from within the administration (internally) and from a third party (externally). Please include both manually and digitally consumed services.
Examples	See above
Question logic	Next question

C5.3.	
Name	Data exchange in service consumption
Category	N/A
EIF-layer	Technical, Semantic
Weight	N/A
Question type	Multiple choice (1 answer possible)
Rationale	This item clarifies if data exchange is involved in service consumption.
Question	Based on the generic and specific services above, please confirm if data exchange is also involved in service consumption. • Data exchange is involved in service consumption • No data exchange is involved in service consumption • No answer/not applicable
Examples	See above
Question logic	Next question

C6.	
Name	Cross-border service consumption
Category	Manifestation
EIF-layer	Semantic, Organisational
Weight	60%
Question type	Multiple choice (1 answer possible)
Rationale	Enabling visibility inside the administrative environment of a public administration. This is about allowing other public administrations, citizens and businesses to view and understand administrative rules, processes, data, services and decision-making. Reusing services or data from different

	administrative levels is a key success factor for ensuring organisational interoperability.
Question	To what extent does the digital public service consume services from different administrative levels (geographies or sectors)? • Not applicable or not necessary (according to the scope of the service) • The digital public service does not consume services from different administrative levels • The digital public service consumes services from different administrative levels (e.g. services from different MS, services from different organisations) • No answer
Examples	• The national electronic service of citizens' identities (eID) consumes semantically aligned data from national portals. • The national electronic public procurement platform consumes electronic notices to the TED eNotices platform of EU.
Question logic	Next question

C7.	
Name	Subscriptions to updates
Category	Enabler
EIF-layer	Technical
Weight	40%
Question type	Multiple choice (1 answer possible)
Rationale	Digital public services proactively delivering on life events are considered more interoperable than their counterparts who rely on manual intervention.
Question	To what extent does the digital public service subscribe to automatic updates of services (e.g. life events) to trigger its execution and/or update information? • Not applicable, such subscriptions are not considered relevant • No, updates require manual intervention from public service staff or end user(s) • Partly, some updates require manual intervention from public service staff or end user(s), while others are received automatically • Fully, all relevant updates are received automatically • No answer
Examples	• A digital public service in the area of social security receives automated updates of births from a base registry service and provides child allowance without the user having to request it.
Question logic	Next question

Maturity scoring: The overall weight of this area in the total maturity score is 30%. For more information, please see <u>section 7.3.</u>

5.2.4   Service Management (B) - Questions

B1.	
Name	Data and metadata management
Category	Enabler
EIF-layer	Semantic
Weight	20%
Question type	Multiple choice (1 answer possible)
Rationale	Data and metadata should be appropriately managed, shared, and preserved. Management of data, metadata, master data and reference data should be prioritised. This item goes beyond the previous question and assesses if standardised methodologies are in place in the data and metadata management governance of the digital public service
Question	To what extent does the digital public service apply data and metadata management processes? • The digital public service does not apply any data or metadata management processes • The digital public service applies custom data or metadata management processes that are compliant to well known data magagement maturity models (e.g. DCAM, CMMI Data Management Maturity Model, IBM Data Governance Council Maturity model, Stanford Data Governance Maturity Model) without having full level model maturity • The digital public service applies custom data or metadata management processes that are compliant to well known data magagement maturity models (e.g. DCAM, CMMI Data Management Maturity Model, IBM Data Governance Council Maturity model, Stanford Data Governance Maturity Model) with full level model maturity • No answerto common standards
Examples	-
Question logic	Next question

B2.	
Name	Cloud interoperability aspects for data processing
Category	Enabler
EIF-layer	Legal, Organisational, Semantic, Technical
Weight	N/A

Question type	Multiple choice (more than one answers available)
Rationale	This item identifies at which level the data processing as part of cloud interoperability has been incorporated by the DPS according to the Data Act regulation
Question	To what extent does the service address the following cloud interoperability aspects for data processing in accordance with the Data Act Regulation? • Transport interoperability, • Syntactic interoperability, • Semantic data interoperability, • Behavioural interoperability and • Policy interoperability; • Data syntactic portability, • Data semantic portability and • Data policy portability; • Application syntactic portability, • Application instruction portability, • Application metadata portability, • Application behaviour portability and • Application policy portability. • No answer/Not applicable.
Examples	-
Question logic	Next question

B3.	
Name	EIF layers
Category	Manifestation
EIF-layer	Legal, Organisational, Semantic, Technical
Weight	30%
Question type	Multiple choice (1 answer possible)
Rationale	The EIF gives guidance, through a set of recommendations, to public administrations on how to improve governance of their interoperability activities, establish cross-organisational relationships, streamline processes supporting end-to-end digital services, and ensure that existing and new legislation do not compromise interoperability efforts. Taking into account the EIF recommendations of the four interoperability layers (Legal, Technical, Organisational, and Semantic) ensures that the administration is leveraging best practices and designs a digital public service that is interoperable with other public services.
Question	To what extent does the digital public service fulfil the EIF principles that are applicable (reusability, transparency, security, etc.)? • The digital public service does not fulfil any of the applicable EIF principles • The digital public service fulfils the applicable EIF principles in an ad-hoc way • The digital public service fulfils some of the applicable EIF principles

	• The digital public service fulfils most of the applicable EIF principles
	• The digital public service fulfils all of the applicable EIF principles
	• No answer
Examples	-
Question logic	Next question

B4.	
Name	EIRA views
Category	Manifestation
EIF-layer	Legal, Organisational, Semantic, Technical
Weight	20%
Question type	Multiple choice (1 answer possible) and free text field
Rationale	The European interoperability architecture (EIRA) is important part of interoperability governance at the EU level. Compliance with the EIRA views (Legal, Technical, Organisational, and Semantic) ensures that the administration is leveraging best practices and designs a digital public service that is interoperable with other public services.
Question	To what extent is the service architecture compliant with the EIRA behavioural ABBs (Legal, Technical, Organisational, Semantic)? • The digital public service architecture is not compliant with any of the EIRA behavioural ABBs • The digital public service architecture is compliant with EIRA ABBs from only one interoperability view • The digital public service architecture is compliant with EIRA ABBs from two interoperability views • The digital public service architecture is compliant with EIRA ABBs from three interoperability views • The digital public service architecture is compliant with any of the EIRA behavioural ABBs • No answer
Examples	-
Question logic	Next question

B5.	
Name	Procedures for validation of the service
Category	Manifestation
EIF-layer	Legal, Organisational, Semantic, Technical
Weight	30%

Question type	Multiple choice (1 answer possible)
Rationale	Organisations that have in place procedures needed for functions to operate after a disastrous event and ensuring data quality and service performance contribute to interoperability.
Question	To what extent does the digital public service perform any of the following procedures to validate the consistency of the data, information and knowledge it manages? ✓ Change Management Process ✓ Conformance Testing Business ✓ Continuity Plan Disaster ✓ Recovery Plan ✓ Performance Testing ✓ Data Quality Assurance (Activities) ✓ Certification Process • None of the listed options are applicable for the specific digital public service • The digital public service does not perform any of the listed options that are applicable • The digital public service performs the listed options that are applicable in an ad hoc manner • The digital public service performs some of the listed options that are applicable • The digital public service performs most of the listed options that are applicable • The digital public service performs all of the listed options that are applicable • No answer
Examples	-
Question logic	Next question

B6.	
Name	Reuse and sharing
Category	Enabler
EIF-layer	Organisational, Semantic, Technical
Weight	40%
Question type	Multiple choice (1 answer possible) and free text field
Rationale	Organisations that make available documentation and / or (software) components for reuse contribute to interoperability. (For further information on how to foster sharing & reuse, please consult the related ISA action: https://ec.europa.eu/isa/actions/04-accompanying-measures/4-2-5action_en.htm)
Question	To what extent does the service perform any of the following options to share its release components? ✓ Sharing documentation to provide other (related) organisations valuable insights into processes, organisation, governance, technology choices, etc. ✓ Sharing source code or downloadable software to enable other organisations to effectively build their services ✓ Sharing terms of use of the service ✓ Making available open Web-API services, data structure, data formats, vocabularies, classification schemes, taxonomies and code lists to enable other organisations and individuals to (re)use functionality and/or gain access to data via web and/or mobile apps ✓ Providing support to organisations leveraging the resources provided. • None of the listed options are applicable for the specific digital public service • The digital public service does not perform any of the listed options that are applicable • The digital public service performs the listed options that are applicable in an ad hoc manner • The digital public service performs some of the listed options that are applicable • The digital public service performs most of the listed options that are applicable • The digital public service performs all of the listed options that are applicable • No answer In case option 3 has been selected, please indicate in the text field below which options are considered to share the digital public service's components and knowledge with the external environment.
Examples	• The digital public service shares best practices and documentation via its website. • The tax declaration digital public service makes available an open Web-API to calculate the income after taxes of a citizen – this web service can be reused by other public services e.g. in the area of social security.

Question logic	Next question

B7.	
Name	Data protection
Category	Enabler
EIF-layer	Legal
Weight	20%
Question type	Multiple choice (1 answer possible)
Rationale	Public administrations should ensure that they are compliant with the legal requirements and obligations regarding data protection and privacy acknowledging the risks to privacy from advanced data processing and analytics. Data protection implementation approaches ensure the secure data management and contribute to interoperability.
Question	To what extent does the service handle data in conformity with industry standard data protection policies and sensitive data pseudonymisation practices? • Data protection measures are not applicable for the specific service • The service does not handle data protection and speudonymisation, although it is applicable for the specific digital public service • The service handles data protection and speudonymisation, including protection from unathorised access, following industry standard data protection policies • No answer
Examples	• The data delivered by the national eGovernment portal is compliant with the GDPR
Question logic	Next question

B8.	
Name	Service Level Agreements (SLAs)
Category	Enabler
EIF-layer	Legal, Organisational
Weight	20%
Question type	Multiple choice (1 answer possible)
Rationale	Service Level Agreements give users of the digital public service certainty about the conditions under which they can use and request support for the service.
Question	To what extent is the digital public service mandated by a Service Level Agreement?

- Not applicable
- The digital public service is not mandated by any Service Level Agreements (SLAs)
- The digital public service is mandated by an outdated Service Level Agreement (SLA) and not all aspects are covered
- The digital public service is mandated by an up-to-date SLA but compliance is not monitored
- The digital public service is mandated by an up-to-date SLA and compliance is monitored regularly, while procedures are triggered for corrective actions when required
- The digital public service is mandated by a SLA, compliance is monitored regularly, and all the required corrective actions are immediately mitigated into effect
- No answer

Examples	- The website of the Ministry for Education clearly stipulates the service levels for applications for educational allowances. - The social security institution monitors compliance of its IT service levels for retrieval of social security data by partnering institutions.
Question logic	Next question

B9.	
Name	Terms and conditions of the service
Category	Enabler
EIF-layer	Legal, Organisational
Weight	100%
Question type	Multiple choice (1 answer possible)
Rationale	Any public service that has any form of interaction with its end users should include a terms and conditions page within it, which outlines the legal limitations of the service. This will facilitate organisational interoperability between public services and enforces user-centricity practices.
Question	To what extent does the service provide information on terms and conditions including the dataset content, use restrictions, licenses, data collection methodology? - Not applicable - The digital public service does not provide any information on terms and conditions - The digital public service provides ad-hoc information on terms and conditions (e.g. on demand). - The digital public service provides some information on terms and conditions - The digital public service provides full information on terms and conditions - The digital public service provides full information on terms and conditions and allows the involved parties to manage their consent (as applicable) - No answer

Examples	-
Question logic	Next question

B10.	
Name	Data policies
Category	Enabler
EIF-layer	Legal
Weight	N/A
Question type	Multiple choice (1 answer possible)
Rationale	Data policies are a set of broad, high level principles which form the guiding framework in which data assets can be managed. More specifically, data policies govern data management, data interoperability and standards, data quality, data protection and information security.
Question	To what extent does the digital public service provide data policies related to the data owner? • The digital public service does not provide any data policies • The digital public service provides data policies specifying the data owner of the service • No answer/not applicable
Examples	-
Question logic	Next question

Maturity scoring: The overall weight of this area in the total maturity score is 30%. For more information, please see [section 7.3.](#)

6 IMAPS RECOMMENDATIONS

The main objective of the **Interoperability Maturity Assessment of Public Services (IMAPS)** is to provide insight into how digital public services can improve their behavioural interoperability maturity. After filling in the online questionnaire, the respondent receives a PDF with advice on how to improve the behavioural interoperability of his digital public service. This report presents how these recommendations are generated.

6.1 Principles

The following five principles are applied to generate recommendations:

- **Principle 1:** Each interoperability item includes 5 options, each one of them corresponding to one of the 5 interoperability levels;
- **Principle 2:** The improvement tables provide recommendations on how to improve maturity gradually for a specific interoperability item;
- **Principle 3:** When a digital public service does not yet reach the maximum level for a specific interoperability item, a recommendation is given to make the step towards the next interoperability level;
- **Principle 4:** When a digital public service successfully attains the maximum maturity level for a interoperability item, no recommendation is given[2];
- **Principle 5**: When the maturity improvement is not based on specific interoperability characteristics per level, a sliding scale (e.g. from less to more) is used. In this scenario, a generic recommendation (not maturity level specific) is given to improve the maturity further along the sliding scale.

6.2 Recommendations overview

- For each improvement step, the recommendation tables in the following chapters show:
- The question the recommendation relates to;
- The assessed maturity level;
- The next maturity level to be reached through improvement[3];
- The recommendation as to how to reach the next maturity level.

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[2] The reason for this is that in this case- according to the model- the service is already implementing a semantic interoperability attribute in a way that it corresponds to best practice. There are no direct recommendations to improve further
[3] With the exception when this is considered a sliding scale

6.3   Recommendations

6.3.1   Service Delivery (D) – Scoring table

Table 4: Service Delivery scoring model

Item	Ad hoc (1)	Opportunistic (2)	Essential (3)	Sustainable (4)	Seamless (5)	N/A	No Answer
D1	No score						
D2	The digital public service publishes data, information and knowledge in non-structured formats (e.g. pdf, jpeg)	The digital public service publishes data, information and knowledge structured formats for a limited amount of the data, information and knowledge delivered.	The digital public service publishes data, information and knowledge structured formats for most of the data, information and knowledge delivered.	The digital public service publishes data, information and knowledge structured formats for any data, information and knowledge delivered.	The digital public service publishes data, information and knowledge as linked open data (LOD).	Not applicable, open data are not relevant for the solution	No answer
D3	The digital public service does not use any standards or specifications for the data, information and knowledge delivery	The digital public service is only using proprietary standards and is not leveraging existing (open) semantic standards for the data, information and knowledge delivery	The digital public service is using a mix of existing (open) semantic standards and specifications, combined with proprietary standards for the data, information and knowledge delivery	The digital puvlic service is using mainly existing (open) semantic standards and specifications, and only a few proprietary standards for the data, information and knowledge delivery	The digital public service is using entirely existing (open) semantic standards and specifications for the data, information and knowledge delivery	Not applicable, there is no machine-to-machine interfacing	No answer

D4	The digital public service provides no information on data privacy considerations	The digital public service provides ad-hoc information on data privacy considerations (e.g. on demand)	The digital public service provides limited information on data privacy considerations	The digital public service provides full information on data privacy considerations	The digital public service provides fully & adaptable information on data privacy, in the sense that the user can manage (some of his) data privacy settings online	Not applicable, the digital public service does not require personal data (e.g. only information provisioning, search functionality)	No answer
D5	The service provides documentation in only one language	The service provides documentation in some of the officially recognised languages by the public administration delivering the digital public service, for a certain volume of data	The service provides documentation in all officially recognised languages by the public administration delivering the digital public service, for a certain volume of data	The service provides documentation in all officially recognised national languages, as well as in English, French and German, while covering the full data volume	The digital public service provides documentation in all EU officially recognised languages, while covering the full data volume	Not applicable, the digital public service does not provide any documentation	No answer
D6	The digital public service is not registered in a Service Catalogue	The digital public service is part of a catalogue available to a restricted user group (e.g. partners)	The digital public service is part of a publicly available catalogue	The digital public service is part of a publicly and online discoverable catalogue and includes a public service	The digital public service is part of a publicly and online discoverable catalogue and includes a public service	Not applicable or not necessary (according to the scope of the service)	No answer

				description (including information such as contact details, provider, preconditions and required input)	description based on standards such as CPSV-AP		
D7	The digital public service does not provide any authentication mechanisms although it is applicable for the specific digital public service	The digital public service provides login authentication mechanisms (username, password) for people identification	The digital public service provides formalised authentication mechanisms e.g. EU Login based on Single sign-on principle for people identification	The digital public service provides formalised authentication mechanisms with two-factor authentication (e.g. both password and sms token	The digital public service provides formalised, multi factor authentication mechanisms, including also biometric data	Not applicable, authentication is not required for users to access the digital public service	No answer
D8	No, there is no certification procedure available for the end users				Yes, there is a certification procedure available for the end users	Not applicable, certification is not required for users to access the digital public service	No answer
D9	The digital public service delivers data, information and	The digital public service delivers data, information and	The digital public service delivers data, information and	The digital public service delivers data, information and	The digital public service delivers data, information and		No answer

	knowledge only via human interfaces	knowledge mainly via human interfaces and some machine to machine interfaces	knowledge via a mix of human interfaces and machine to machine interfaces	knowledge mainly via machine to machine interfaces and some human interfaces	knowledge fully via machine to machine interfaces		
D10	The digital public service does not use pre-filling is used for the data and information requested. It could be applicable but there are no provisions in place yet	The digital public service uses pre-filling for the data and information requested only in an ad-hoc manner (e.g. on demand)	The digital public service uses pre-filling for some of the data and information that are digitally available	The digital public service uses pre-filling for most of the data and information that are digitally available	Fully, the digital public service uses pre-filling for all data fields that are digitally available	Not applicable, the digital public service does not require data entries	No answer
D11	There is no or limited information on rules and processes available before, during and / or after usage of the digital public service. This information resides somewhere else (i.e. is not imminently				Fully, there is detailed information on rules & processes available before, during and/or after usage of the digital public service	Not applicable, the digital public service does not need to provide insight into administrative rules and processes (e.g. only information provisioning, search functionality)	No answer

	discoverable)					
D12	The digital public service does not provide such capabilities.	The digital public service provides a single tracking and/or feedback mechanism, and feedback is considered in an ad-hoc manner	The digital public service provides multiple tracking and/or feedback mechanisms (including e.g. a rating mechanism), and feedback is considered in an ad-hoc manner	The digital public service provides multiple tracking and/or feedback mechanisms, and feedback is fully considered for the further development and continuous improvement of the digital public service	The digital public service provides multiple tracking and/or feedback mechanisms, feedback is fully considered for the further development and continuous improvement of the digital public service, and feedback is provided back to the end users	Not applicable or not necessary (according to the scope of the service)	No answer
D13	The service does not provide accessibility features for people with disabilities			The service provides accessibility features for people with disabilities	Not applicable, the digital public service does not utilize a graphical user interface	No answer
D14	Yes, there are restrictions. The digital public service is not fully interoperable at all applicable administrat			No, there are no restrictions. The digital public service is already fully interoperable at all applicable	Not applicable or not necessary (according to the scope of the service)	No answer

					administrat ive levels (geographi es)		
ive levels (geographi es)							

6.3.2 Service Delivery (D) – Recommendations

The table below presents the respective recommendation to each option in IMAPS questionnaire. As mentioned above, the purpose of the recommendations is to propose the needed actions to be taken by the digital public service owners in order to **achieve a higher level of behavioural interoperability maturity**.

In case the selected option is associated to "Seamless level (5)", then no action is required from the public service owners and the recommendation is by default "Congratulations, you are at the Seamless level".

Table 5: Service Delivery Recommendations

Question	Addressed Level	Next Level	Recommendation
D1.	No scoring		
D2.	Ad hoc (1)	Opportunistic (2)	Currently, your digital public service **publishes non-structured data**. Consider gradually publishing open data using structured formats (e.g. pdf, jpeg) to improve the semantic behavioural interoperability of your digital public service. You can investigate further these formats using the Semantic Interoperability Maturity Assessment of a Public Service (SIMAPS).
	Opportunistic (2)	Essential (3)	Currently, your digital public service publishes **a limited amount of data**.using structured formats e.g. spreadhseets. Consider refining the number of data in structured formats. To improve the semantic behavioural interoperability of your public service. You can investigate further these formats using the Semantic Interoperability Maturity Assessment of a Public Service (SIMAPS).
	Essential (3)	Sustainable (4)	Currently, your digital public service publishes **some data**.using structured formats e.g. spreadhseets. Consider refining the number of data in structured formats. To improve the semantic behavioural interoperability of your public

			service. You can investigate further these formats using the Semantic Interoperability Maturity Assessment of a Public Service ([SIMAPS](#)).
	Sustainable (4)	Seamless (5)	Currently, your digital public service publishes **most of its data** in structured formats such as Excel. Consider publishing your data in non-proprietary formats with semantic metadata / ontologies (e.g. rdf, linked open data) to achieve a higher level of semantic behavioural interoperability. You can investigate further these formats using the Semantic Interoperability Maturity Assessment of a Public Service ([SIMAPS](#)).
D3.	Ad hoc (1)	Opportunistic (2)	Currently, the digital public service does not use any standards or specification for data, information and knowledge delivery. Consider applying some (open or proprietary) standards to facilitate this process. You can investigate further these standards via the Semantic Interoperability Maturity Assessment of a Public Service ([SIMAPS](#)).
	Opportunistic (2)	Essential (3)	Currently, the digital public service is only using proprietary standards and is not leveraging existing (open) semantic standards for data exchange. Consider using partly some semantic standards for data exchange, combined with proprietary standards. You can investigate further these standards via the Semantic Interoperability Maturity Assessment of a Public Service ([SIMAPS](#)) and the Technical Interoperability Maturity Assessment of a Public Service ([TIMAPS](#)).
	Essential (3)	Sustainable (4)	Currently, the digital public service is a mix of existing (open) semantic standards and specifications, combined with proprietary standards for the data, information and knowledge delivery. Investigate if it will be possible for the service to move towards a situation where the data exchange is mostly based on existing (open) semantic standards and specifications. You can

			investigate further these standards via the Semantic Interoperability Maturity Assessment of a Public Service (SIMAPS).
	Sustainable (4)	Seamless (5)	Currently, the digital public service is using some (open) semantic standards are used for data exchange, combined with proprietary standards. Investigate if it will be possible for your service to move towards a situation where the data exchange is entirely based on existing (open) semantic standards and specifications. You can investigate further these standards via the Semantic Interoperability Maturity Assessment of a Public Service (SIMAPS) and the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS).
D4.	Ad hoc (1)	Opportunistic (2)	Currently, end users are not provided with any information on data privacy. This is however essential in fostering users' trust in the digital public service. Map all information that would be beneficial to end users and communicate these via the available channels. Consider investigating further the maturity of the legal requirements of your public service via Legal Interoperability Maturity Assessment of a Public Service (LIMAPS).
	Opportunistic (2)	Essential (3)	Currently, end users are only provided with information on their data privacy in an ad-hoc means, e.g. on demand. Consider providing at least a subset of information regarding their data privacy.Consider investigating further the maturity of the legal requirements of the digital public service via Legal Interoperability Maturity Assessment of a Public Service (LIMAPS) and the Organisational Interoperability Maturity Assessment of a Public Service (OIMAPS).

	Essential (3)	Sustainable (4)	Currently, end users are only provided with a subset of information on their data privacy. Map all information that would be beneficial to end users and focus on closing the gaps to ensure full transparency. Consider investigating further the maturity of the legal requirements of your public service via Legal Interoperability Maturity Assessment of a Public Service (LIMAPS).
	Sustainable (4)	Seamless (5)	Your digital public service provides detailed information on data privacy to users. However it is currently not possible for the user to manage (some of this) data privacy information online. This is though considered a desirable end state. As a first step, analyse which fields are important for the end user to manage and assess further the maturity of the legal requirements of your public service via Legal Interoperability Maturity Assessment of a Public Service (LIMAPS).
D5.	Ad hoc (1)	Opportunistic (2)	Your digital public service is not multilingual. Consider at a minimum offering a multi-lingual interface. Offer it in one or several languages which best reflect the composition of your user community. You can further investigate the extent of multilingualism using the Semantic Interoperability Maturity Assessment of a Public Service (SIMAPS) and the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS).
	Opportunistic (2)	Essential (3)	The digital public service is available in some of the officially recognised languages by the public administration delivering the digital public service, for a certain volume of data. Consider all officially recognised languages by the public administration delivering the digital public service. You can further investigate the extent of multilingualism using the Semantic Interoperability Maturity Assessment of a Public Service (SIMAPS)

			and the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS).
	Essential (3)	Sustainable (4)	Currently, multilingualism is considered partially and only at a technical level. Whilst this is a good starting point, you may consider providing multilingualism at a semantic level as well. You can further investigate the extent of multilingualism using the Semantic Interoperability Maturity Assessment of a Public Service (SIMAPS) and the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS).
	Sustainable (4)	Seamless (5)	Currently, multilingualism is considered adequately at a technical level and/or partially at a semantic level You can further investigate the extent of multilingualism using the Semantic Interoperability Maturity Assessment of a Public Service (SIMAPS) and the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS).
D6.	Ad hoc (1)	Opportunistic (2)	Currently, your digital public service is not registered in a Service Catalogue. Registering your public service within a catalogue is recommended to promote and increase the usage of the service. Consider investigating further the discoverability of the public service (inclusion in a catalogue) from all Interoperability views (L, O, S, T) using the IMAPS specialisations (LIMAPS, OIMAPS, SIMAPS, TIMAPS).
	Opportunistic (2)	Essential (3)	Your digital public service is registered in a catalogue only accessible to a restricted user group. Consider leveraging a publicly available catalogue to reach a larger target audience. Consider investigating further the discoverability of the public service (inclusion in a catalogue) from all Interoperability views (L, O, S, T) using the IMAPS specialisations (LIMAPS, OIMAPS, SIMAPS, TIMAPS).

	Essential (3)	Sustainable (4)	Your digital public service is registered in a publicly available catalogue but is not discoverable online. Ensuring online discoverability is important to promote the machine-to-machine consumption of the digital public service. Consider investigating further the discoverability of the public service (inclusion in a catalogue) from all Interoperability views (L, O, S, T) using the IMAPS specialisations (LIMAPS, OIMAPS, SIMAPS, TIMAPS).
	Sustainable (4)	Seamless (5)	Your digital public service is registered in a publicly and online discoverable catalogue and includes a public service description. However, at this moment you are not (fully) leveraging standards such as CPSV-AP. Adopting these standards will help in the delivery of interoperable public service descriptions and group services according to life or business events. Consider investigating further the discoverability of the public service (inclusion in a catalogue) from all Interoperability views (L, O, S, T) using the IMAPS specialisations (LIMAPS, OIMAPS, SIMAPS, TIMAPS).
D7.	Ad hoc (1)	Opportunistic (2)	Currently, the digital public service does not use any authentication mechansims, although it could be applicable. Consider using simple login authentication mechanisms such as provision of username and password to authenticate the end-users. You can further investigate the authentication mechanisms and the technical means in place for people identification using the Technical Interoperability Maturity of a Public Service (TIMAPS).
	Opportunistic (2)	Essential (3)	Currently, the digital public service is using a login mechanism for users' authentication. Consider using formalised authantication mechanisms such as EU Login to achieve a better interoperability of your service. You can further investigate the authentication

			mechanisms and the technical means in place for people identification using the Technical Interoperability Maturity of a Public Service (TIMAPS).
	Essential (3)	Sustainable (4)	Currently, the digital public service provides formalised authentication mechanisms e.g. EU Login based on Single sign-on principle for people identification Consider applying more advanced measures like e.g. two-factor authentication. You can further investigate the authentication mechanisms and the technical means in place for people identification using the Technical Interoperability Maturity of a Public Service (TIMAPS).
	Sustainable (4)	Seamless (5)	Currently, the digital public service provides formalised authentication mechanisms with two-factor authentication (e.g. both password and sms token). Consider applying more advanced measures like e.g. biometric data, if applicable. You can further investigate the authentication mechanisms and the technical means in place for people identification using the Technical Interoperability Maturity of a Public Service (TIMAPS).
D8.	Ad hoc (1)	Seamless (5)	You are providing your digital public service towards the end users without a certification procedure. As a result, you create the risk of interconnections not working properly e.g. in terms of security, governance, technological and semantic interoperability and availability. Consider developing a formalised certification procedure in order to ensure your service can be delivered in a stable and safe

			manner to end users by investigating further the certification procedures via Organisational Interoperability Maturity Assessment of Public Service ([OIMAPS)](#).
D9.	Ad hoc (1)	Opportunistic (2)	The digital public service delivers data, information and knowledge only via human interfaces. Consider adding also machine-to-machine interfaces. Consider investigating further the digital channels you can use (e.g. web portals) via the Technical Interoperability Maturity Assessment of a Public Service ([TIMAPS](#)).
	Opportunistic (2)	Essential (3)	The digital public service delivers data, information and knowledge mainly via human interfaces and some machine to machine interfaces. Consider adding more machine-to-machine interfaces as applicable to raise efficiency and reusability. Consider investigating further the digital channels you can use (e.g. web portals) via the Technical Interoperability Maturity Assessment of a Public Service ([TIMAPS](#)).
	Essential (3)	Sustainable (4)	The digital public service delivers data, information and knowledge via a mix of human interfaces and machine to machine interfaces. Consider adding more machine-to-machine interfaces as applicable to raise efficiency and reusability. Consider investigating further the digital channels you can use (e.g. web portals) via the Technical Interoperability Maturity Assessment of a Public Service ([TIMAPS](#)).
	Sustainable (4)	Seamless (5)	The digital public service delivers data, information and knowledge mainly via machine to machine interfaces and some human interfaces. Consider investigating further the multiple digital channels, including interactive digital collaboration M2M via the Technical Interoperability

			Maturity Assessment of a Public Service (TIMAPS).
D10.	Ad hoc (1)	Opportunistic (2)	Currently, your service does not require pre-filling or does not make use of pre-filling. If the former is the case, periodically evaluate whether pre-filling is not becoming relevant as your service evolves. For both cases, consult peer practices in order to make sure that you do not miss out on opportunities to pre-fill. Evaluate and map the different sources that you could use for pre- filling.
	Opportunistic (2)	Essential (3)	The digital public service uses pre-filling for the data and information requested only in an ad-hoc manner (e.g. on demand). Consult peer practices in order to make sure that you do not miss out on opportunities to pre-fill. Evaluate and map the different sources that you could use for pre- filling. Evaluate and map the different sources that you could use for pre- filling using the Organisational Interoperability Maturity Assessment of a Public Service (OIMAPS).
	Essential (3)	Sustainable (4)	The digital public service uses pre-filling for some of the data and information that are digitally available. Consult peer practices in order to make sure that you do not miss out on opportunities to pre-fill. Evaluate and map the different sources that you could use for pre- filling. Evaluate and map the different sources that you could use for pre- filling using the Organisational Interoperability Maturity Assessment of a Public Service (OIMAPS).
	Sustainable (4)	Seamless (5)	The digital public service uses pre-filling for most of the data and information that are digitally available. Consult peer practices in order to make sure that you do not miss out on

			opportunities to pre-fill. Evaluate and map the different sources that you could use for pre- filling. Evaluate and map the different sources that you could use for pre- filling using the Organisational Interoperability Maturity Assessment of a Public Service (OIMAPS).
D11.	Ad hoc (1)	Seamless (5)	Currently, your public service does not provide information on rules & processes to its end users. This may negatively impact the perception of your service and might lead to wrong assumptions and/or expectations of end users. Map all information that would be beneficial to end users (such as decision mechanisms, lead times, and reporting obligations) and communicate these via the available channels. Consider using the Organisational Interoperability Maturity Assessment of a Public Service (OIMAPS) and the Technical Maturity Assessment of a Public Service (TIMAPS) to further investigate the mechanisms of the underlying processes.
D12.	Ad hoc (1)	Opportunistic (2)	At this moment your digital public service does not provide the possibility to give feedback. This is though beneficial to capture information on areas for improvement and/or insight into the particular strengths of the digital public service. Ensure you have digital channels available to capture this information and/or address complaints. Consider using the Organisational Interoperability Maturity Assessment of a Public Service (OIMAPS) to further examine other similar aspects of service performance and user experience.
	Opportunistic (2)	Essential (3)	Your digital public service has tracking and/or feedback mechanisms. Currently, your digital public service offers the possibility for feedback. It would be beneficial to provide additional insights into the (anonymised)

			feedback from other end users. This way, end users will have a clear view of the quality of the functionalities offered, their limitations and are able to learn from each other's user experiences. Consider using the Organisational Interoperability Maturity Assessment of a Public Service (OIMAPS) to further examine other similar aspects of service performance and user experience.
	Essential (3)	Sustainable (4)	Your digital public service has tracking and/or feedback mechanisms. Currently, your digital public service offers the possibility for feedback and insights into the end users' reviews. Consider the implementation of the feedback received as a means of continuous development of the service. Consider using the Organisational Interoperability Maturity Assessment of a Public Service (OIMAPS) to further examine other similar aspects of service performance and user experience.
	Sustainable (4)	Seamless (5)	Your digital public service has tracking and/or feedback mechanisms. Currently, your digital public service offers the possibility for feedback, review and end users' insights. Consider implementing the suggested feedback and communicate it back to the end users. Consider using the Organisational Interoperability Maturity Assessment of a Public Service (OIMAPS) to further examine other similar aspects of service performance and user experience.
D13.	Ad hoc (1)	Seamless (5)	Currently, your digital public service is not equally accessible to all end users. Implement accessibility features to make navigation, information and interaction with the digital public service convenient for people with disabilities. Consider an accessibility standard such as Web Content Accessibility (WAI) Guidelines 2.0, level AA for this purpose. You can use the

			Semantic Interoperability Maturity Assessment of a Public Service (SIMAPS) and the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS) to investigate the extent of accessibility features provided by the digital public service to its end users.
D14.	Ad hoc (1)	Seamless (5)	At this moment there are restriction for non- residents or foreigners using the digital public service. Determine how many users are potentially impacted by this and draft a plan to ensure cross border service delivery by opening up the digital public service to foreign users (requiring e.g. alternative authentication mechanisms). Consider using the Organisational Interoperability Maturity Assessment of a Public Service (OIMAPS) and the Semantic Interoperability Maturity Assessment of a Public Service (SIMAPS) to further examine the level of administrative interaction of the service with other services, businesses, end users, etc.

6.3.3   Service Consumption (C) – Scoring table

Table 6: Service Consumption scoring model

10	Ad hoc (1)	Opportunistic (2)	Essential (3)	Sustainable (4)	Seamless (5)	N/A	No Answer
C1	The digital public service consumes data, information and knowledge only via human interfaces	The digital public service consumes data, information and knowledge mainly via human interfaces and some machine to machine interfaces	The digital public service consumes data, information and knowledge via a mix of human interfaces and machine to machine interfaces	The digital public service consumes data, information and knowledge mainly via machine to machine interfaces and some human interfaces	The digital public service consumes data, information and knowledge fully via machine to machine interfaces	Not applicable, the digital public service does not consume data, information and knowledge	No answer

C2	Most consumed services are self-produced, while relevant services are available for reuse	The digital public service does not reuse any relevant services, although they are available for reuse	The digital public service reuses a selection of the consumed services	The digital public service reuses most of the consumed services	The digital public service reuses all of the consumed services	Not applicable or not necessary (according to the scope of the service)	No answer
C3	The digital public service does not apply any measures to handle the legal implications that are related to service consumption	The digital public service applies only the legally binding measures to handle the legal implications that are related to service consumption (e.g. compliance to regulations)	The digital public service applies some measures to facilitate the human interface certainty with regards to the legal implications that are related to service consumption (e.g. preservation policies)	The digital public service applies some measures to facilitate the human interface certainty and machine to machine comunication with regards to the legal implications that are related to service consumption (e.g. reusability of consumed services and data)	The digital public service applies all the applicable measures that enhnace human interface certainty and machine to machnie communication with regards to the legal implications that are related to service consumption (e.g. tracing and logging mechanisms)	There are no applicable legal implications related to service consumption for the specific digital public service	No answer
C4	Not applicable, the digital public service does	The digital public service only collects data	The digital public service accesses (and consequently	The digital public service reports (and consequently collects and accesses) more than	The digital public service analyses (and consequently	The digital public service analyses (and consequently collects,	No answer

	not collect any data		collects) more than half of the total data handled	half of the total data handled	collects, access and reports) more than half of the total data handled	access and reports) all of the total data handled	
C5.1	No scoring						
C5.2	No scoring						
C5.3	No scoring						
C6	The digital public service does not consume services from different administrative levels				The digital public service consumes services from different administrative levels (e.g. services from different MS, services from different organisations)	Not applicable or not necessary (according to the scope of the service)	No answer
C7	The digital public service does not subscribe to any automatic updates as they require manual intervention from public service staff or end user(s)	The digital public service receives relevant updates mainly via manual intervention (from public service staff or end user(s)) and some automatically	The digital public service receives relevant updates via a mix of human intervention (from public service staff or end user(s)) and machine to machine interfaces	The digital public service receives relevant updates mainly automatically and some require manual intervention from public service staff or end user(s)	The digital public service receives automatically all relevant updates	Not applicable, such subscriptions are not considered relevant	No answer

6.3.4 Service Consumption (C) – Recommendations

Table 7: Service Consumption Recommendations

Question	Addressed Level	Next Level	Recommendation
C1.	Ad hoc (1)	Opportunistic (2)	You are currently consuming all the services manually. You could enhance your interoperability by 'digitalizing' the consumption further. This will create benefits in the areas of data quality, throughput time, costs and interoperability. Try to find ways to interact more digitally with related organisations.
	Opportunistic (2)	Essential (3)	You are currently consuming most of the services manually. You could enhance your interoperability by 'digitalizing' the consumption further. This will create benefits in the areas of data quality, throughput time, costs and interoperability. Fully digital consumption of services also enables straight through processing and/or real-time processing. Try to find ways to interact more digitally with related organisations using the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS) and the Organizational Interoperability Maturity Assessment of a Public Service (OIMAPS).
	Essential (3)	Sustainable (4)	ou are currently consuming some of the services manually. You could enhance your interoperability by 'digitalizing' the consumption further. This will create benefits in the areas of data quality, throughput time, costs and interoperability. Fully digital consumption of services also enables straight through processing and/or real-time processing. Try to find ways to interact more digitally with related organisations using the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS) and the Organizational Interoperability

			Maturity Assessment of a Public Service (OIMAPS).
	Sustainable (4)	Seamless (5)	You are currently consuming most of the services digitally. You could enhance your interoperability by 'digitalizing' the consumption further. This will create benefits in the areas of data quality, throughput time, costs and interoperability. Fully digital consumption of services also enables straight through processing and/or real-time processing. Try to find ways to interact more digitally with related organisations using the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS) and the Organizational Interoperability Maturity Assessment of a Public Service (OIMAPS).
C2.	Ad hoc (1)	Opportunistic (2)	**Your service does not consume any services from other public administrations whilst they are available for reuse**. This shows that you are not making use of existing services to increase the effectiveness and efficiency of your own digital public service. Elaborate why this is the case. Before producing your own services, always take the time to map existing ones to possibly adapt them for your own purposes. Understand how you can improve your view on which services are being provided by other organisations using the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS).
	Opportunistic (2)	Essential (3)	**Your service does not consuming all relevant services from other public administrations whilst they are available for reuse**. This shows that you are not making use of existing services to increase the effectiveness and efficiency of your own digital public service. Elaborate why this is the case. Before producing your own services, always take the time to map existing ones to possibly adapt them for your own purposes. Understand how you

			can improve your view on which services are being provided by other organisations using the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS).
	Essential (3)	Sustainable (4)	**Currently, your digital public service reuses a selection of consumed services**. This shows that you are not making use of existing services to increase the effectiveness and efficiency of your own digital public service. Before producing your own services, always take the time to map existing ones to possibly adapt them for your own purposes. Understand how you can improve your view on which services are being provided by other organisations using the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS).
	Sustainable (4)	Seamless (5)	**Currently, your digital public service most of consumed services**. This shows that you are not making use of existing services to increase the effectiveness and efficiency of your own digital public service. Before producing your own services, always take the time to map existing ones to possibly adapt them for your own purposes. Understand how you can improve your view on which services are being provided by other organisations using the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS).
C3.	Ad hoc (1)	Opportunistic (2)	Currently, your digital public service does not have in place legal means to handle the service consumption. Legal requirements or any other legal mechanisms ensure a secure consumption of data and services from other public services and enable a smoother service consumption. Consider putting in place legal means e.g. regulated rules to facilitate the service consumption. You can further investigate the legal means to handle the service consumption using the

			Legal Interoperability Maturity Assessment of a Public Service (LIMAPS).
	Opportunistic (2)	Essential (3)	Currently, your digital public service has in place some of the applicable legal means and rules to handle the service consumption. You can further investigate the legal means to handle the service consumption using the Legal Interoperability Maturity Assessment of a Public Service (LIMAPS).
	Essential (3)	Sustainable (4)	Currently, your digital public service has in place some of the applicable legal means and rules to handle the service consumption. Consider providing means to enable end user certainty and understanding of the relevant legal implications. You can further investigate the legal means to handle the service consumption using the Legal Interoperability Maturity Assessment of a Public Service (LIMAPS).
	Sustainable (4)	Seamless (5)	Currently, your digital public service has in place some of the applicable legal means and rules to handle the service consumption. Consider providing means to enable end user certainty and understanding of the relevant legal implications, as well as machine to machine communication, for more efficient consumption of data, information and knowledge. You can further investigate the legal means to handle the service consumption using the Legal Interoperability Maturity Assessment of a Public Service (LIMAPS).
C4.	Ad hoc (1)	Opportunistic (2)	Currently, your public service only collects the data that are consumed, without handle them further. Consider accessing and reusing further the data collected from other public services. The more the integration of public data to the public service, the better for establishing smooth interoperation among them.

	Opportunistic (2)	Essential (3)	Currently, more than half of the total data handled is accessed. Consider reusing further the data collected from other public services. The more the integration of public data to the public service, the better for establishing smooth interoperation among them. Consider using the Semantic Interoperability Maturity Assessment of a Public Service (SIMAPS) and the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS) to further investigate how your digital public service can handle the data collected and consumed from other services.
	Essential (3)	Sustainable (4)	Currently, more than half of the total data handled is reported. Consider analysing and reusing further the data collected from other public services. The more the integration of public data to the public service, the better for establishing smooth interoperation among them. Consider using the Semantic Interoperability Maturity Assessment of a Public Service (SIMAPS) and the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS) to further investigate how your digital public service can handle the data collected and consumed from other services.
	Sustainable (4)	Seamless (5)	Currently, more than half of the total data handled is analysed. Consider analysing and reusing all the data collected from other public services. The more the integration of public data to the public service, the better for establishing smooth interoperation among them. Consider using the Semantic Interoperability Maturity Assessment of a Public Service (SIMAPS) and the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS) to further investigate how your digital public service can handle the data collected and consumed from other services.

C6.	Ad hoc (1)	Seamless (5)	Currently, the digital public service does not consume services from other administrative levels. Expanding the boundaries of the organisational relationships between the public service and the consuming services is very important for the organisational interoperability of a public service. Consider consuming gradually services from different organisations or from different MS. The more the different public administrations that can use the data, information, knowledge delivered, the greater becomes the ability of interoperability and interconnection of the public service with its end users. Consider investigating further the organisational and semantic aspects of the consumed services via the Organisational Interoperability Maturity Assessment of a Public Service ([OIMAPS](#)) and the Semantic Interoperability Maturity Assessment of a Public Service ([SIMAPS](#))
C7.	Ad hoc (1)	Opportunistic (2)	Currently, all updates require manual intervention. This means manual effort and potentially quality issues. Determine the business case for improving the automatic processing of updates in terms of efficiency, quality, responsiveness and security. Start with (life) events that have the highest impact on the functioning of the digital public service. Consider investigating further the automatic updates of the consumed services. Consider investigating further the automatic updates of the consumed services via the Technical Interoperability Maturity Assessment of a Public Service ([TIMAPS](#)).

	Opportunistic (2)	Essential (3)	Currently, your digital public service relies heavily on manual intervention when it receives updates. This means manual effort and potentially quality issues. Determine the business case for improving the automatic processing of updates in term of efficiency, quality, responsiveness and security. Proceed with (life) events that have the highest impact on the functioning of the digital public service. Consider investigating further the automatic updates of the consumed services via the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS).
	Essential (3)	Sustainable (4)	Currently, your digital public service relies on some manual intervention when it receives updates. This means manual effort and potentially quality issues. Determine the business case for improving the automatic processing of updates in term of efficiency, quality, responsiveness and security. Proceed with (life) events that have the highest impact on the functioning of the digital public service. Consider investigating further the automatic updates of the consumed services via the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS).
	Sustainable (4)	Seamless (5)	Currently, your digital public service still relies on some manual intervention when it receives updates. This means manual effort and potentially quality issues. Determine the business case for improving the automatic processing of updates in term of efficiency, quality, responsiveness and security. Proceed with (life) events that have the highest impact on the functioning of the digital public service. Consider investigating further the automatic updates of the consumed services via the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS).

6.3.5 Service Management (B) – Scoring table

Table 8: Service Management scoring model

Item	Ad hoc (1)	Opportunistic (2)	Essential (3)	Sustainable (4)	Seamless (5)	N/A	No Answer
B1	No processes are applied for data management nor metadata management		A custom process is applied for data and metadata management, but it is not compliant to a common standard	A common process is applied for data and metadata management and is compliant to a common standard	A common process is applied for data and metadata management and at least one of them is compliant to common standards	Not applicable, the digital public service does not consume data, information and knowledge	No answer
B2	No scoring						
B3	The digital public service does not fulfil any of the applicable EIF principles	The digital public service fulfils the applicable EIF principles in an ad-hoc way	The digital public service fulfils some of the applicable EIF principles	The digital public service fulfils most of the applicable EIF principles	The digital public service fulfils all of the applicable EIF principles		No answer
B4	The digital public service architecture is not compliant with any of the EIRA behavioural ABBs	The digital public service architecture is compliant with EIRA ABBs from only one interoperability view	The digital public service architecture is compliant with EIRA ABBs from two interoperability views	The digital public service architecture is compliant with EIRA ABBs from three interoperability views	The digital public service architecture is compliant with any of the EIRA behavioural ABBs		No answer
B5	The digital public service does not perform any of the	The digital public service performs the listed options that	The digital public service performs some of the listed	The digital public service performs most of the listed options	The digital public service performs all of the listed	None of the listed options are applicable for the	No answer

	listed options that are applicable	are applicable in an ad hoc manner	options that are applicable	that are applicable	options that are applicable	specific digital public service	
B6	The digital public service does not perform any of the listed options that are applicable	The digital public service performs the listed options that are applicable in an ad hoc manner	The digital public service performs some of the listed options that are applicable	The digital public service performs most of the listed options that are applicable	The digital public service performs all of the listed options that are applicable	None of the listed options are applicable for the specific digital public service	No answer
B7	The digital public service does not handle data protection, although it is applicable for the specific digital public service				The digital public service handles data protection, following industry standard data protection policies	Data protection measures are not applicable for the specific digital public service	No answer

B8	The digital public service is not mandated by any Service Level Agreements (SLAs)	The digital public service is mandated by an outdated Service Level Agreement (SLA) and not all aspects are covered	The digital public service is mandated by an up-to-date SLA but compliance is not monitored	The digital public service is mandated by an up-to-date SLA and compliance is monitored regularly, while procedures are triggered for corrective actions when required	The digital public service is mandated by a SLA, compliance is monitored regularly, and all the required corrective actions are immediately mitigated into effect	Not applicable	No answer
B9	The digital public service does not provide any information on terms and conditions	The digital public service provides ad-hoc information on terms and conditions (e.g. on demand).	The digital public service provides some information on terms and conditions	The digital public service provides full information on terms and conditions	The digital public service provides full information on terms and conditions and allows the involved parties to manage their consent (as applicable)	Not applicable	No answer
B10	No scoring						

6.3.6   Service Management (B) – Recommendations

Table 9: Service Management Recommendations

Question	Addressed Level	Next Level	Recommendation
B1.	Ad hoc (1)	Essential (3)	Currently, your digital public service does not use methodologies for implementing data management nor metadata management. Having in place such methodologies would enable better readiness of the public service data to be aligned with other implementations of data. Consider gradually using a methodology for implementing data management or metadata management. Consider using the Semantic Interoperability Maturity Assessment of a Public Service (SIMAPS) to further investigate the methodologies available for data and metadata management.
	Essential (3)	Sustainable (4)	Your digital public service is adequately mature to follow a certain methodology to perform data management. However, considering a commonly standardised methodology, would enable better readiness of the public service data to be aligned with other implementations of data. Consider using the Semantic Interoperability Maturity Assessment of a Public Service (SIMAPS) to further investigate the methodologies available for data and metadata management.
	Sustainable (4)	Seamless (5)	Your digital public service is adequately mature to follow a certain methodology to perform data management. However, considering a commonly standardised methodology, would enable better readiness of the public service data to be aligned with other implementations of data. Consider using the Semantic Interoperability Maturity Assessment of a Public Service (SIMAPS) to further investigate the methodologies available for data and metadata management.
B2.	No recommendations applicable.		

B3.	Ad hoc (1)	Opportunistic (2)	Currently, your digital public service does not take into consideration none of the recommendations of EIF. Consider gradually taking into consideration some of the EIF recommendations e.g. of Semantic Interoperability to improve the interoperability of your public service. You can further investigate the EIF layers (L, O, S, T) in the IMAPS specialisations.
	Opportunistic (2)	Essential (3)	Currently, the digital public service takes into consideration partially the recommendations of EIF. Consider gradually taking into consideration the EIF recommendations of all layers to improve the interoperability of the digital public service. You can further investigate the EIF layers (L, O, S, T) in the IMAPS specialisations.
	Essential (3)	Sustainable (4)	Currently, the digital public service takes into consideration partially the recommendations of EIF. Consider gradually taking into consideration the EIF recommendations of all layers to improve the interoperability of the digital public service. You can further investigate the EIF layers (L, O, S, T) in the IMAPS specialisations.
	Sustainable (4)	Seamless (5)	Currently, your digital public service takes into consideration partially the recommendations of EIF. Consider gradually taking into consideration the EIF recommendations of all layers to improve the interoperability of your public service. You can further investigate the EIF layers (L, O, S, T) in the IMAPS specialisations.
B4.	Ad hoc (1)	Opportunistic (2)	Your digital public service does not take into consideration none of the EIRA views. This means that there is no part of your public service that is compliant to EIRA ABBs. Consider applying the EIRA views at least at some parts of your service to make it more interoperable. You can get further inspiration for the EIRA views (L, O, S, T) using the IMAPS specialisations (LIMAPS, OIMAPS, SIMAPS, TIMAPS).

	Opportunistic (2)	Essential (3)	Currently, your digital public service takes into consideration partially the EIRA views. This means that some parts of your public service are compliant to some EIRA ABBs. Consider applying the EIRA views to all parts of your service to make it more interoperable. You can get further inspiration for the EIRA views (L, O, S, T) using the IMAPS specialisations (LIMAPS, OIMAPS, SIMAPS, TIMAPS).
	Essential (3)	Sustainable (4)	Currently, your digital public service takes into consideration partially the EIRA views. This means that some parts of your public service are compliant to some EIRA ABBs. Consider applying the EIRA views to all parts of your service to make it more interoperable. You can get further inspiration for the EIRA views (L, O, S, T) using the IMAPS specialisations (LIMAPS, OIMAPS, SIMAPS, TIMAPS).
	Sustainable (4)	Seamless (5)	Currently, your digital public service takes into consideration partially the EIRA views. This means that some parts of your public service are compliant to some EIRA ABBs. Consider applying the EIRA views to all parts of your service to make it more interoperable. You can get further inspiration for the EIRA views (L, O, S, T) using the IMAPS specialisations (LIMAPS, OIMAPS, SIMAPS, TIMAPS).
B5.	Ad hoc (1)	Opportunistic (2)	Currently, your digital public service does not provide any of the proposed procedures to validate the consistency of the data, information and knowledge managed which is not adequate. Consider putting in place at least two of the proposed processes to monitor the performance and the data quality of your service. You can take further inspiration for these processes via the IMAPS specialisations (LIMAPS, OIMAPS, SIMAPS, TIMAPS).
	Opportunistic (2)	Essential (3)	Currently, your digital public service provides only ad hoc the proposed processes to validate the consistency the data, information and knowledge managed. Consider putting in

			place at least half of the proposed processes to achieve a higher level of behavioural interoperability and more efficient management of your service. You can take further inspiration for these processes via the IMAPS specialisations (LIMAPS, OIMAPS, SIMAPS, TIMAPS).
	Essential (3)	Sustainable (4)	Currently, your digital public service provides some of the proposed processes to validate the consistency the data, information and knowledge managed. Consider putting in place at least half of the proposed processes to achieve a higher level of behavioural interoperability and more efficient management of your service. You can take further inspiration for these processes via the IMAPS specialisations (LIMAPS, OIMAPS, SIMAPS, TIMAPS).
	Sustainable (4)	Seamless (5)	Currently, your digital public service provides most of the proposed processes to validate the consistency the data, information and knowledge managed. Consider putting in place all applicable processes to achieve a higher level of behavioural interoperability and more efficient management of your service. You can take further inspiration for these processes via the IMAPS specialisations (LIMAPS, OIMAPS, SIMAPS, TIMAPS).
B6.	Ad hoc (1)	Opportunistic (2)	Currently, your digital public service does not share components and knowledge with the external environment. Work towards reuse and sharing on four areas: - Provisioning of open Web-API services - Sharing source code and/or downloadable software components (including required licensing) - Sharing documentation - Provisioning of knowledge (direct Q&A support). You can get further inspiration using the technical (TIMAPS), organisational (OIMAPS)

			and legal (LIMAPS) specialised versions of IMAPS.
	Opportunistic (2)	Essential (3)	Currently, your digital public service shares components and knowledge with the external environment only in ad-hoc manner. Work towards reuse and sharing on four areas: - Provisioning of open Web-API services - Sharing source code and/or downloadable software components (including required licensing) - Sharing documentation - Provisioning of knowledge (direct Q&A support). You can get further inspiration using the technical (TIMAPS), organisational (OIMAPS) and legal (LIMAPS) specialised versions of IMAPS.
	Essential (3)	Sustainable (4)	Currently, your digital public service shares limited components and knowledge with the external environment. Work towards reuse and sharing on four areas: - Provisioning of open Web-API services - Sharing source code and/or downloadable software components (including required licensing) - Sharing documentation - Provisioning of knowledge (direct Q&A support). You can get further inspiration using the technical (TIMAPS), organisational (OIMAPS)

			and legal ([LIMAPS](#)) specialised versions of IMAPS.
	Sustainable (4)	Seamless (5)	Currently, your digital public service shares some components and knowledge with the external environment. Work towards reuse and sharing on four areas: - Provisioning of open Web-API services - Sharing source code and/or downloadable software components (including required licensing) - Sharing documentation - Provisioning of knowledge (direct Q&A support). You can get further inspiration using the technical ([TIMAPS](#)), organisational ([OIMAPS](#)) and legal ([LIMAPS](#)) specialised versions of IMAPS.
B7.	Ad hoc (1)	Sustainable (4)	Currently, your digital public service does not have any measures in place for data protection. Data protection ensures transparency and integrity of the data processed and collected, therefore it is necessary to have policies in place to handle them. Consider using custom data policies and regulations to handle data protection. You can further investigate the measures to handle data protection via the Legal Interoperability Maturity Assessment of a Public Service ([LIMAPS](#)).
	Sustainable (4)	Seamless (5)	Currently, your digital public service handles data protection with custom policies and regulations. Consider using formalised regulations e.g. GDPR to handle the data protection within your service, as it provides a set of rules and regulations that governs the use of personal data. You can further investigate the measures to handle data

			protection via the Legal Interoperability Maturity Assessment of a Public Service (LIMAPS).
B8.	Ad hoc (1)	Opportunistic (2)	Currently, your digital public service is not using Service Level Agreements (SLAs) to make the expected service performance transparent and predictable for users. Ensuring SLAs and institutionalizing a Service Level Management process is considered a good practice and helps the organisation to steer on service stability and outcome. Consider using the Legal Interoperability Maturity Assessment of a Public Service (LIMAPS) and the Organisational Maturity Assessment of a Public Service (OIMAPS) to further investigate the legal and organisational requirements of the public service.
	Opportunistic (2)	Essential (3)	Currently, your digital public service is using an obsolete Service Level Agreements (SLAs) that does not cover all aspects. Ensuring SLAs to make the expected service performance transparent and predictable for users. and institutionalizing a Service Level Management process is considered a good practice and helps the organisation to steer on service stability and outcome. Consider using the Legal Interoperability Maturity Assessment of a Public Service (LIMAPS) and the Organisational Maturity Assessment of a Public Service (OIMAPS) to further investigate the legal and organisational requirements of the public service.
	Essential (3)	Sustainable (4)	As part of the Service Level Management process, good practice organisations monitor the compliance monthly and provide reports to their users to indicate compliance or provide an overview of the corrective actions that were taken to restore the service.

			Consider using the Legal Interoperability Maturity Assessment of a Public Service (LIMAPS) and the Organisational Maturity Assessment of a Public Service (OIMAPS) to further investigate the legal and organisational requirements of the public service.
	Sustainable (4)	Seamless (5)	As part of the Service Level Management process, good practice organisations monitor the compliance monthly and provide reports to their users to indicate compliance or provide an overview of the corrective actions that were taken to restore the service. Consider using the Legal Interoperability Maturity Assessment of a Public Service (LIMAPS) and the Organisational Maturity Assessment of a Public Service (OIMAPS) to further investigate the legal and organisational requirements of the public service.
B9.	Ad hoc (1)	Opportunistic (2)	Currently, the digital public service does not provide any information on terms and conditions of the digital public service operation. Consider partially defining the legal terms and conditions of your public service using a public service description or a license. You can use the Legal Interoperability Maturity Assessment of a Public Service (LIMAPS) and the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS) to further investigate how to make clear the terms and conditions of the public service to the end users.
	Opportunistic (2)	Essential (3)	Currently, the digital public service provides ad-hoc information on terms and conditions. Consider partially defining the legal terms and conditions of your public service using a public service description or a license. You can use the Legal Interoperability Maturity Assessment of a Public Service

			(LIMAPS) and the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS) to further investigate how to make clear the terms and conditions of the public service to the end users.
	Essential (3)	Sustainable (4)	Currently, the digital public service provides some information on terms and conditions.. Consider partially defining the legal terms and conditions of your public service using a public service description or a license. You can use the Legal Interoperability Maturity Assessment of a Public Service (LIMAPS) and the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS) to further investigate how to make clear the terms and conditions of the public service to the end users.
	Sustainable (4)	Seamless (5)	Currently, the digital public service provides adequate information on terms and conditions. Consider fully defining the legal terms and conditions of your public service using a public service description or a license and offering to the end users the option to manage their consent (as applicable, e.g. end-user consent). You can use the Legal Interoperability Maturity Assessment of a Public Service (LIMAPS) and the Technical Interoperability Maturity Assessment of a Public Service (TIMAPS) to further investigate how to make clear the terms and conditions of the public service to the end users.
B10.	No recommendations applicable.		