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# Use cases and benefits of ISA<sup>2</sup> specifications

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This publication has been drafted under the 2016.07 *SEMIC: Promoting semantic interoperability amongst the EU Member States*. ISA<sup>2</sup> is a EUR 131 million programme of the European Commission, supporting the modernisation of public administrations in Europe through the development of interoperability solutions. More than 20 solutions are already available, with more to come soon. All solutions are open source and available free of charge to any interested public administration in Europe.

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## 1. INTRODUCTION

*This section introduces the purpose and scope of this short study on the use cases and benefits of ISA<sup>2</sup> specifications, explains the approach and methodology to the study and presents the structure of the document.*

### 1.1. Purpose of the study

The ISA<sup>2</sup> programme supports, during the 2016–2020 period, the development of digital solutions that enable public administrations, businesses and citizens in Europe to benefit from interoperable cross-border and cross-sector public services. Several actions, funded through the ISA<sup>2</sup> programme, contribute to this objective through the development of tools, services and frameworks in the area of interoperability.

This study is developed in the context of ISA<sup>2</sup> Action 2016.07 *SEMIC: Promoting semantic interoperability amongst the EU Member States*. The SEMIC action seeks to promote the use of semantic tools and solutions to overcome interoperability challenges between Member States public administrations when maintaining and exchanging data for the execution of European Public Services. To support this objective, it has produced semantic specifications and solutions, which are available to public administrations in Europe free of charge.

This study aims to elaborate on the value proposition of ISA<sup>2</sup> specifications, including Core Vocabularies and DCAT-AP, to enable a technical audience to promote ISA<sup>2</sup>'s specifications in their organisations.

### 1.2. Scope and approach to the study

For the purpose of the study, the focus will be on Core Vocabularies and DCAT-AP specifications. The study will assess their potential benefits based on identified use cases, illustrated by practical examples.

The study will use as a starting point the expected use cases of ISA semantic specifications. For Core Vocabularies, the following use cases will be considered:

- Open data publishing (foundation of a common export format for data in base registries like cadastres, business registers and service portals);
- Data integration (integration of data coming from different sources);
- Publication of Linked Data (publication of structured data to allow interlinking of data and facilitate semantic queries from multiple sources);
- Information exchange between systems (context-specific data model used to exchange data among existing information systems);
- Development of new systems (conceptual and logical data models in newly developed information systems).

For DCAT-AP for data portals, the main use case considered will be the provision of common specification for describing public sector datasets in Europe to enable the exchange of descriptions of datasets among data portals. In particular, the following specific uses are covered: the use of standardized description while maintaining an organisation's own system for documenting and storing dataset collection; the aggregation of such descriptions into a single point of access (content aggregator such as pan-European data portal); facilitation of access of data consumers from a single point of access. Traditional eGovernment Open Data Portals, both at national and at local levels, or new domains will be considered.

Several sources were consulted through a review of existing literature for this purpose (Annex I).

### 1.3. Structure of the study report

The study report is structured as follows:

- **Section 1** introduces the study, highlighting the purpose, scope and approach of the study;
- **Section 2** summarizes the policy context of the ISA<sup>2</sup> programme SEMIC action and proposes a collection of factsheets of ISA specifications within the scope of this study;
- **Section 3** presents, on this basis, expected benefits of ISA specifications, in particular Core Vocabularies and DCAT-AP. The section also seeks to assess the potential benefits to users, primarily in the form of expected benefits;
- **Section 4** provides some conclusions and recommendations for further action.

## 2. ISA<sup>2</sup> SPECIFICATIONS: AN OVERVIEW

*The ISA<sup>2</sup> programme supports the development of digital solutions that enable public administrations, businesses and citizens in Europe to benefit from interoperable cross-border and cross-sector public services.*

### 2.1. Policy background and context

The ISA<sup>2</sup> Programme (Interoperability Solutions for European Public Administrations, Businesses and Citizens) is an EU funding programme established on 1 January 2016 for a duration of five years until 31 December 2020 by decision of the European Parliament and Council.<sup>1</sup> It follows up on its predecessor, the ISA programme, which ran from 2010-2015<sup>2</sup>. Through the ISA<sup>2</sup> programme, EU institutions demonstrate their continued commitment to promoting interoperability between European public services and stimulate the digitalisation of European public administrations through the development of digital solutions.

Promoting such interoperability, digital public services and seamless data flows between European public administrations requires to address different layers of interoperability. The ISA<sup>2</sup> Programme has a total budget of EUR 131 million for this purpose, organised around 53 distinct actions focusing on the development of reusable generic tools, common services and common frameworks in the area of eGovernment. These tools and solutions are available for re-use free of charge to European public administrations.

On the semantic level, it is important to ensure that individual data elements exchanged between public administrations are automatically recognised thanks to unambiguous, shared meaning. As such, semantic interoperability guarantees that the precise format and meaning of exchanged data is maintained and understood throughout its flow between parties<sup>3</sup>. Several ISA<sup>2</sup> actions seek to contribute to these objectives. The SEMIC action, in particular, contributes to the promotion of semantic interoperability amongst the EU Member States and provides semantic interoperability solutions.

### 2.2. Core Vocabularies: Fact Sheets

Semantic vocabularies can be highly complex, describing several thousands of terms or somewhat simple, describing no more than one or two concepts. ISA<sup>2</sup> Core Vocabularies aim to promote and enable semantic interoperability across the EU. These Core Vocabularies are “simplified, reusable and extensible data models that capture the fundamental characteristics of a data entity in a context-neutral and syntax-neutral fashion”<sup>4</sup>. As Semantic Vocabularies, they “define concepts, classify terms and define relationships between data elements used to describe a chosen area of application”<sup>5</sup>. Core Vocabularies tend to be more simple vocabularies, focusing on defining most relevant characteristics of a concept, which can then be extended into context-specific data models depending on public administrations’ needs (for example a national context

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<sup>1</sup> Decision (EU) 2015/2240 of the European Parliament and of the Council of 25 November 2015 establishing a programme on interoperability solutions and common frameworks for European public administrations, businesses and citizens (ISA<sup>2</sup> programme) as a means for modernising the public sector.

<sup>2</sup> Decision No 922/2009/EC of the European Parliament and of the Council of 16 September 2009 on interoperability solutions for European public administrations.

<sup>3</sup> Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions COM (2017) 134 final, ‘European Interoperability Framework -Implementation Strategy’.

<sup>4</sup> European Commission, e-Government Core Vocabularies handbook: Using horizontal data standards for promoting interoperability, 2015.

<sup>5</sup> The World Wide Web Consortium (W3C): <https://www.w3.org/standards/semanticweb/ontology>

in a specific Member States). Public administrations can use and extend the Core Vocabularies in the following contexts:

- Open data publishing,
- Data integration,
- Publication of Linked Data,
- Information exchange between systems,
- Development of new systems.

Each of these theoretical use cases is further described below:

- **Open data publishing:** Open data refers to data that is freely available to all users and that can be accessed, used and (re-)published without restrictions from copyright, patents or other control. The public sector and open government data is one of the most significant open data readily and widely accessible and publishable freely. In the EU, Member States' public administrations produce a wealth of data, for example, digital maps, statistics and legal information<sup>6</sup>. Such data is recognised as a valuable resource for the digital economy and the completion of the Digital Single Market<sup>7</sup>. While this data was difficult to access in paper-formats, the increasing digitalisation of the European public sector allows more and more to take advantage of the potential of public sector data and enable access and re-use of data. Open data portals, used by public administrations at EU, national and local levels, are important channels to facilitate access to and re-use of public sector data.
- **Data integration:** Data integration is the combination of heterogeneous data from disparate sources and providing data users with a unified view of integrated data through technical and business processes. The Core Vocabularies provide semantic alignment between data sources and can be used to integrate data that comes from disparate data sources, creating a data mash-up.
- **Publication of Linked Data:** Linked Data provides a simple method for combining and publishing structured data from multiple sources and creating a collection of interrelated datasets<sup>8</sup>. As such, Linked Data provides a standard way to represent data regarding a number of topics. Publishing linked data facilitates the linking of information from different sources and searching for information through semantic queries. These distinct sources can be, for example, different systems within a public administration or databases of two or more different public administrations, between regions within a single Member State or between two or more Member States. The Core Vocabularies allow for the publication of structured data through interlinking of data from multiple sources.
- **Information exchange between systems:** Data exchange is the process of sharing data between two or more systems, a source system and target system(s), in a way that the target data is an accurate representation of the source data. In other words, information must be exchanged based on a specific format and meaning of data exchanged between two or more parties to allow preservation of data and common understanding<sup>9</sup>. The Core Vocabularies can become the basis of a context-specific data model used to exchange data among existing information systems.

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<sup>6</sup> European Commission, Proposal for a Directive of the European Parliament and of the Council on the re-use of public sector information (recast) COM/2018/234 final - 2018/0111 (COD)

<sup>7</sup> European Commission, Study to support the review of Directive 2003/98/EC on the re-use of public sector information, 2018.

<sup>8</sup> W3C Working Group Note, Best Practices for Publishing Linked Data: <https://www.w3.org/TR/ld-bp/>

<sup>9</sup> European Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions COM (2017) 134 final, 'European Interoperability Framework -Implementation Strategy'.

- **Development of new systems:** The Core Vocabularies can be used as a default starting point or a “common building block”<sup>10</sup> for developing and designing the conceptual and logical data models in newly developed information systems, by extending the vocabularies and adding semantic definitions relevant to a specific context. Electronic data used by public administrations of Member States at different levels of government are often context-specific, including legal contexts.

The ISA<sup>2</sup> programme has developed the Core Vocabularies for public administrations in an open process with the active involvement of specific working groups, composed of various stakeholders including the European Commission, representatives of Member States public administrations, standardisation organisations and the global community<sup>11</sup>.

The Core Vocabularies developed are the following:

- Core Business
- Core Criterion and Core Evidence
- Core Location
- Core Person
- Core Public Organisation
- Core Public Service

Each of the above-mentioned possible use cases is considered for the Core Vocabularies. Concrete examples, drawn from users of the different Core Vocabularies, will serve to illustrate their potential benefits of the vocabularies and their use cases.

Table 1 – Reported use cases for each Core Vocabulary

	Open data publication	Data integration	Publication of Linked Data	Information exchanges between systems	Development of new systems
Core Business	X	X	X	X	X
Core Criterion and Core Evidence		X		X	X
Core Location	X	X		X	
Core Person		X		X	
Core Public Organisation				X	
Core Public Service	X	X	X	X	

<sup>10</sup> European Commission, e-Government Core Vocabularies handbook: Using horizontal data standards for promoting interoperability, 2015.

<sup>11</sup> DIGIT, ISA Process and methodologies for Core Vocabularies, 2011.



The factsheets provide an overview of the main descriptive elements of the specifications and illustrate their possible use cases with practical examples.

### 2.2.1. Core Business vocabulary

The factsheet below provides an overview of the Core Business vocabulary, and its use.

Table 2 – Factsheet: Core Business vocabulary

Core Business vocabulary <sup>12</sup>	
Definition	<p>The Core Business vocabulary encompasses the fundamental characteristics of a legal entity (including for example its legal name, identifier or activities) which is created through a formal registration process. It is thus applicable to organisations having obtained legal entity status through a formal registration process, and thus excludes natural persons, virtual organisations and other types of legal entity or 'agent' that are able to act.</p> <p>The Core Business vocabulary supports public administrations in their efforts towards developing interoperable eGovernment systems.</p>
Data elements	<p>The Core Business vocabulary defines, among others, the following data elements:</p> <ul style="list-style-type: none"> <li>• Formal organisation</li> <li>• Registered organisation</li> <li>• Organisation type</li> <li>• Organisation status</li> <li>• Organisation activity</li> </ul>
Development process	<p>The Core Business vocabulary was initially developed and published by the European Commission ISA Programme with support from DG MARKT. An RDF syntax of the Core Business vocabulary has been published on the W3C standards and been further developed, reviewed and revised through the Government Linked Data Working Group (GLD WG).</p>
Publication date	1 August 2013
Main benefits	<p>The Core Business vocabulary includes a minimal set of classes and properties designed to cover data elements recorded by business registers and thereby facilitate information exchange between them.</p>
Examples of uses and benefits	<p><u>Electronic platforms to integrate data related to businesses from different sources and allowing information exchanges between different systems:</u></p>

<sup>12</sup> Core Business vocabulary: <https://joinup.ec.europa.eu/solution/registered-organization-vocabulary/about> and Registered Organisation Vocabulary: <https://www.w3.org/TR/vocab-regorg/>

	<ul style="list-style-type: none"> <li>• The EU Business Registers Interconnection System (BRIS), which has been developed using the Core Business Vocabulary, is an example of the platform developed at EU level to facilitate the interoperable cross-border exchange of data between Member States.<sup>13</sup> The BRIS is a platform providing access to company data and ensuring thereby interoperable communication of company data between interconnected registers<sup>14</sup>. The BRIS allows different national systems and national business registers to communicate to each other electronically safely and securely and enables access to information on European companies. The BRIS connects 350 European Business Registers from 31 Countries (EU Member States and EEA) and sees over 100 000 BRIS messages exchanged on a daily basis.<sup>15</sup></li> <li>• The OpenCorporates portal is one of the largest open databases of companies and company data in the world, with over 100 million companies spread across a large number of jurisdictions.<sup>16</sup> It was one of the first known applications of the Core Business.<sup>17</sup></li> </ul>
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### 2.2.2. Core Criterion and Core Evidence vocabulary

The factsheet below provides an overview of the Core Criterion and Core Evidence vocabulary and its use.

Table 3 – Factsheet: Core Criterion and Core Evidence vocabulary

Core Criterion and Core Evidence vocabulary	
Definition	Core Criterion and Core Evidence Vocabulary (CCCEV) describe the principles and the means that a private entity must fulfil to become eligible or qualified to perform public services. A Criterion is a rule or a principle that is used to judge, evaluate or test something. An Evidence is a means to prove that a Criterion is fulfilled <sup>18</sup> .
Data elements	<p>The Core Criterion and Core Evidence vocabulary define, among others, the following data elements:</p> <ul style="list-style-type: none"> <li>• Identifier</li> <li>• Criterion type</li> <li>• Name</li> <li>• Description</li> <li>• Fulfilled indicator</li> <li>• Weight</li> </ul>

<sup>13</sup> Directive 2012/17/EU of the European Parliament and of the Council of 13 June 2012 amending Council Directive 89/666/EEC and Directives 2005/56/EC and 2009/101/EC of the European Parliament and of the Council as regards the interconnection of central, commercial and companies registers.

<sup>14</sup> European Commission BRIS: <https://ec.europa.eu/cefdigital/wiki/pages/viewpage.action?pagelId=46992657>

<sup>15</sup> European Commission, Business Register Interconnection System (BRIS): a journey to using Core Vocabularies, presentation delivered during SEMIC 2018 conference in June 2018.

<sup>16</sup> CoreCorporates: <https://opencorporates.com/info/about>

<sup>17</sup> OpenCorporates: <https://joinup.ec.europa.eu/news/over-43-million-companies-des>

<sup>18</sup> Core Criterion and Core Evidence vocabulary : <https://joinup.ec.europa.eu/solution/core-criterion-and-core-evidence-vocabulary/about>

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	<ul style="list-style-type: none"> <li>• Defined in Formal Framework</li> <li>• Fulfilled by Requirement Group.</li> </ul>
Development process	The Core Criterion and Core Evidence vocabulary have been reviewed according the process and methodology for developing ISA Core Vocabularies, with the involvement of relevant stakeholders and a public review process.
Publication date	15 December 2016 (Version 1.00)
Main benefits	<p>The Core Criterion and Core Evidence Vocabulary enable the exchange of information between organisations defining criteria and organisations responding to these criteria using evidence.</p> <p>By using the CCCEV, public organisations have the potential to implement new capabilities in their information systems to:</p> <ul style="list-style-type: none"> <li>• Allow users picking up criteria from common repositories, standardising the criteria used in different sectors and domains.</li> <li>• Enable the automatic response to criteria, lowering the language barrier for cross-border processes and exchanges.</li> <li>• Automatic assessment through the analysis of criteria and provided evidence.</li> <li>• Promote the standardisation of criteria and evidence among attestation and certificate providers, and even across the different Member States.</li> <li>• Increase the transparency of the assessment and therefore the selection processes, reducing complains and a subjective assessment.</li> </ul>
Examples of uses and benefits	<p>The European Single Procurement Document (ESPD) used as a starting point the CCCEV, although there are now variations between the CCCEV and ESPD data models as a result of adjustments through work in expert groups in which additional buyer requirements were defined. ESPD extended the cross-domain, business agnostic version of CCCEV to take into account the specificities of procurement processes.</p> <p>ESPD is a self-declaration form, initially paper-based now exclusively electronic forms, used in public procurement procedures by public buyers and businesses across the EU to provide evidence of fulfilment of conditions required in cross-border public procurement procedures. The ESPD significantly simplifies access to cross-border tendering opportunities and reduces administrative burden for participating entities through the use of a unique harmonised and multilingual form rather than the diverse documents previously required to fulfil the exclusion and selection criteria of a tender<sup>19</sup>. ESPD allows to export, store, submit and re-use data and enables the integration of ESPD in national e-Procurement portals. The ESPD is integrated with e-Certis, an information system that allows users (business or contracting authorities/buyers) search in multiple EU languages, consult and export</p>

<sup>19</sup> European Commission, European Single Procurement Document and eCertis: <http://ec.europa.eu/growth/single-market/public-procurement/e-procurement/espdl/>

information related to different certificates requested in procurement procedures across the EU.

### 2.2.3. Core Location vocabulary

The factsheet below provides an overview of the Core Location vocabulary and its use.

Table 4 - Factsheet: Core Location vocabulary

Core Location vocabulary <sup>20</sup>	
Definition	The Core Location Vocabulary covers the fundamental characteristics of a location, represented as an address, a geographic name or geometry.
Data elements	<p>The Core Location vocabulary defines the following data elements:</p> <ul style="list-style-type: none"> <li>• location</li> <li>• geographic name</li> <li>• geographic identifier</li> <li>• geometry</li> <li>• address</li> <li>• full address</li> <li>• PO box</li> <li>• thoroughfare</li> <li>• locator designator</li> <li>• locator name</li> <li>• address area</li> <li>• post name</li> <li>• admin unit level 2</li> <li>• admin unit level 1</li> <li>• post code</li> <li>• address ID</li> </ul>
Development process	The Core Location vocabulary was produced by the Core Vocabularies Working Group (Location Task Force). It has been reviewed by representatives of the Member States of the European Union, PSI publishers, and by other interested parties.
Publication date	07 May 2012 (Version 1.00)
Main benefits	The Location Core Vocabulary provides a minimum set of classes and properties used to describe a location represented as an address, a geographic name, or a geometry. This specification enables interoperability among land registers and any other ICT based solutions exchanging and processing location information.

<sup>20</sup> Core Location Vocabulary: <https://joinup.ec.europa.eu/solution/core-location-vocabulary/about>

<p>Examples of uses and benefits</p>	<p><u>Electronic exchange of data related to location by interlinking systems of different public administrations:</u></p> <ul style="list-style-type: none"> <li>• Belgian authorities have used the Core Location vocabulary to interconnect national and regional public administrations base registers with address data.<sup>21</sup> The pilot has demonstrated that, with the Core Location vocabulary, it was technically feasible to integrate and homogenise address data from different systems/organisations. Potential qualitative benefits include:             <ul style="list-style-type: none"> <li>○ Fragmented and heterogeneous address data is interoperable and linkable with the use of the Core Location vocabulary;</li> <li>○ Simplification of use of location data due to use of standard web interfaces and search tools;</li> <li>○ Enhanced quality of address data through increased use of address and location data;</li> <li>○ Development of new data-driven services and applications;</li> <li>○ Publication of linked core location data for more efficient cross-border public service delivery.</li> </ul> <p>The Belgian pilot did however not allow to provide quantitative measurements of these potential benefits.</p> </li> <li>• The Greek Tax Authorities have also relied on the Core Location vocabulary to describe several thousands of companies registered in the Greek Tax Authorities business registry, published as linked open data using the core business and core location vocabularies.<sup>22</sup></li> </ul>
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#### 2.2.4. Core Person vocabulary

The factsheet below provides an overview of the Core Person vocabulary and its use.

Table 5 – Factsheet: Core Person vocabulary

Core Person vocabulary <sup>23</sup>	
Definition	The Core Person vocabulary encompasses the fundamental characteristics of a person, e.g. name, gender, date of birth, location.
Data elements	<p>The Core Person vocabulary defines the following data elements:</p> <ul style="list-style-type: none"> <li>• Patronymic name</li> <li>• Birth name</li> <li>• Place of birth</li> </ul>

<sup>21</sup> Core Location Pilot 'Interconnecting Belgian National and Regional Address Data' <https://joinup.ec.europa.eu/document/core-location-pilot-interconnecting-belgian-address-data>

<sup>22</sup> Core business and core location vocabularies piloted in Greece: <https://joinup.ec.europa.eu/news/core-business-and-core-locati>

<sup>23</sup> Core Person Vocabulary : <https://joinup.ec.europa.eu/solution/core-person-vocabulary/about>

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	<ul style="list-style-type: none"> <li>• Place of death</li> <li>• Country of birth</li> <li>• Country of death</li> <li>• Citizenship</li> <li>• Residency</li> </ul>
Development process	The development of the Core Person Vocabulary was chaired by Eurojust, which promotes interoperability in the judicial domain via the EPOC IV project. It has been reviewed according the process and methodology for developing ISA Core Vocabularies.
Publication data	07 May 2012 (Version 1.00)
Main benefits	Core Person provides a solution for interoperability among registers(such as criminal case registers) or other ICT based solutions for the exchange and processing of information about people.
Examples of uses and benefits	<p><u>Electronic exchange of data related to persons between public administrations:</u></p> <ul style="list-style-type: none"> <li>• The e-CODEX project<sup>24</sup> enables cross-border judicial cooperation by facilitating the digital exchange of case-related data, including on persons. It allows to interlink national and European IT systems in the e-Justice domain. Although e-CODEX allows the exchanges of data relating to different concepts, e-CODEX built on the Core Person Vocabulary for the exchange of persons' data. Users include Eurojust, European Judicial Network and European Public Prosecutor's Office.</li> <li>• The Region of Flanders relied on the Core Person vocabulary to expand and develop its local extensions through the Open Standards for Linked Administrations in Flanders (OSLO) project to enable the aggregation of information from different administrations at local, regional and national levels as well as the electronic exchange of contact information between local administrations by ensuring structured and machine-readable data can be exchanged and re-used. The OSLO vocabulary is aligned with the several Core Vocabularies, including Core Person (but also Business, Location, and Public Service vocabularies).</li> </ul>

<sup>24</sup> E-CODEX <https://www.e-codex.eu/>

### 2.2.5. Core Public Organisation vocabulary

The factsheet below provides an overview of the Core Public Organisation vocabulary and its use.

Table 6 – Factsheet: Core Public Organisation vocabulary

Core Public Organisation vocabulary <sup>25</sup>	
Definition	The Core Public Organisation vocabulary (CPOV) aspires to become a common data model for describing public organisations in the European Union.
Data elements	<p>The Core Public Organisation vocabulary includes, among others, the following data elements:</p> <ul style="list-style-type: none"> <li>• Identifier</li> <li>• Preferred Label</li> <li>• Alternative Label</li> <li>• Description</li> <li>• Spatial</li> <li>• Purpose</li> <li>• Classification</li> <li>• Homepage</li> <li>• Logo</li> <li>• SubOrganisation</li> <li>• SubOrganisationOf</li> </ul>
Development process	The Core Public Organisation vocabulary has been developed and reviewed according to the process and methodology for developing ISA Core Vocabularies, with the involvement of relevant stakeholders and a public review process.
Publication date	19 December 2016
Main benefits	The Core Public Organisation Vocabulary seeks to respond to several identified needs of businesses, public administrations and citizens across the European Union regarding information sharing between government entities, between government and business or between government and citizens. The use of CPOV would allow to develop common information systems or cross-border repositories of public services and organisations. Overall, the CPOV enables the publishing of data about public organisations.
Examples of uses and benefits	<p><u>Publication of data on public information portals by European public administrations:</u></p> <p>The Region of Flanders has relied on ISA<sup>2</sup> Core Vocabularies, such as Core Person as previously mentioned, but also CPOV for its e-government portal 'Informatie Vlaanderen'. The vocabularies provided starting points for extending these vocabularies to specific needs, while allowing to describe several key concepts for the information portal.</p>

<sup>25</sup> Core Public Organisation vocabulary: <https://joinup.ec.europa.eu/solution/core-public-organisation-vocabulary/about>

### 2.2.6. Core Public Service vocabulary (CPSV) and Core Public Service vocabulary Application Profile (CPSV-AP)

The factsheet below provides an overview of the Core Public Service vocabulary and its application profile.

Table 7 – Factsheet: Core Public Service vocabulary

Core Public Service vocabulary <sup>26</sup> (CPSV) and Core Public Service vocabulary Application Profile (CPSV-AP) <sup>27</sup>	
Definition	The Core Public Service vocabulary encompasses the fundamental characteristics of a service offered by a public administration.
Data elements	<p>The Core Public Service vocabulary defines the following data elements:</p> <ul style="list-style-type: none"> <li>• Identifier</li> <li>• Name</li> <li>• Description</li> <li>• Keyword</li> <li>• Sector</li> <li>• Type</li> <li>• Language</li> <li>• Status</li> <li>• Has Contact Point</li> </ul> <p>The CPSV-AP, created by the "Catalogue of services" ISA action<sup>28</sup>, defines additional attributes to provide a detailed service description. In practice, the CPSV-AP is the specification implemented by most of the known users.</p>
Development process	The CPSV-AP version 1.00 was developed through a working group composed of representatives of public authorities and the Points of Single Contact which each Member State had to implement in the context of the Services Directive (2006/123/EC).
Publication date	25 March 2013
Main benefits	<p>The main benefits of the Core Public Service vocabulary and its application profile include:</p> <ul style="list-style-type: none"> <li>• Easing access to information about public services thanks to common descriptions and logical groupings of public services, via a common data model.</li> <li>• Building user-centric catalogues of public services at all levels of administration (European, national, regional) and facilitating the exchange and integration of public service descriptions between administrations' one-stop-shops at the different levels of government.</li> </ul>

<sup>26</sup> Core Public Service vocabulary: <https://joinup.ec.europa.eu/solution/core-public-service-vocabulary/about>

<sup>27</sup> Core Public Service vocabulary application profile: <https://joinup.ec.europa.eu/solution/core-public-service-vocabulary-application-profile/about>

<sup>28</sup> [https://ec.europa.eu/isa2/actions/CoS\\_en](https://ec.europa.eu/isa2/actions/CoS_en)



	<ul style="list-style-type: none"> <li>• Manage portfolios of public services through standardised ways of documenting public services.</li> <li>• Publication of descriptions of business events and related public services at the point of single access.</li> </ul> <p>A distinction can be made between benefits experienced by public administrations and by citizens using these public services:</p> <ul style="list-style-type: none"> <li>• For public administrations, the highlighted benefits include lower administrative burden, including due to the need to describe public services only once, improved management of public service information as well as more efficient communication with citizens;</li> <li>• For citizens, the most noticeable benefits include improved access to information related to public services, improved efficiency of services and thereby improved perception of services provided by public administrations.</li> </ul>
<p>Examples of uses and benefits</p>	<p>There are several known use cases of the Core Public Service vocabulary among Member States' public administrations, at national and regional levels. These include<sup>29</sup>:</p> <p>At <u>national level</u>:</p> <ul style="list-style-type: none"> <li>• In Belgium, the use of CPSV-AP<sup>30</sup> as a common vocabulary in the context of a pilot to harmonise public services data from different regional sources and centralise them into a common system that can be visualised on a user-centric portal.</li> <li>• In Estonia, the Ministry of Economic Affairs extended the CPSV to align with local needs; new classes and properties cover information related to security, evaluation and the underlying Web Service(s) supporting the delivery of public service through catalogues of public services<sup>31</sup>.</li> <li>• Finland, Ireland and Portugal used the CPSV-AP as inspiration to create a national data model, taking into account national specificities and characteristics, which can be used to develop national catalogues of public services.</li> <li>• In Italy, the Agency of Digitisation developed a national data model that extends to CPSV-AP to include country-specific characteristics, which is implemented through a catalogue of public services based on public service descriptions collected from administrations across the country automatically validated through the CPSV-AP Validator.</li> <li>• Slovakia developed a national data model based on the CPSV-AP as base model (the CPSV-AP_SK) to support the mapping of the Slovakian central meta-information system of public administration (MetaIS Open Data</li> </ul>

<sup>29</sup> Examples of uses and pilots of CPSV-AP at different levels of public administration are drawn from DIGIT, Analysis of expected and actual benefits of using the solutions implemented in the CoS action, 2018.

<sup>30</sup> CPSV-AP is the Application Profile of the Core Public Service Vocabulary; it consists of a set of metadata elements and their application to facilitate broader use of the CPSV. The CPSV-AP is a step towards creating a model for describing public services, currently related to business and life events, and contributing to the establishment of public administration catalogues of services targeted to businesses and citizens.

<sup>31</sup> Estonian public service catalogue: <https://www.mkm.ee/en/service-search>

Portal) to the CPSV-AP in order to tailor and align public service descriptions available on the portal and transform them into Linked Data.

- The Netherlands ran a pilot to develop a simple way of creating public service descriptions for the Dutch national data model, i.e. Samenwerkende Catalogi, aligned to the CPSV-AP. Through the pilot, public service descriptions were adapted to allow for the creation of standardised public services descriptions by Public Administrations and allow for their dissemination and reuse at national and European level.

At regional level:

- The region of Flanders used a translated and updated version of the CPSV-AP as their regional model for describing public services. A catalogue of public services has been developed based on this model.
- The Region of Epirus in Greece used the CPSV-AP to model a subset of their public services catalogue<sup>32</sup>.

At cross-border level:

- Estonia and Finland implemented a cross-border pilot to create a cross-border catalogue of public services<sup>33</sup> as well as a user-centric website to visualise the data. The common vocabulary used to describe public services is in a machine-readable format.
- Portugal and Spain are collaborating on a pilot using the CPSV-AP and tools to create a cross-border catalogue of public services as well as a user-centric website to visualise the data.

At EU level:

- The CPSV-AP could be used for the technical realization of the Single Digital Gateway (SDG)<sup>34</sup>. The tools accompanying the CPSV-AP could be valuable in the context of the SDG search facility and the common assistance finder<sup>35</sup>.

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<sup>32</sup> Open data portal of the Epirus region: <http://www.opendataepirus.gr/en/>

<sup>33</sup> Cross-border catalogue of public services for Estonia and Finland: [http://cpsv-ap.semic.eu/cpsv-ap\\_harvester\\_xBorder\\_pilot/index.html](http://cpsv-ap.semic.eu/cpsv-ap_harvester_xBorder_pilot/index.html)

<sup>34</sup> European Commission, Commission Staff Working Document Implementation plan Accompanying the document Proposal for a regulation of the European Parliament and of the Council on establishing a single digital gateway to provide information, procedures, assistance and problem solving services and amending Regulation (EU) No 1024/2012 SWD/2017/0211 final - 2017/086 (COD)

<sup>35</sup> DIGIT, Analysis of the possibility to use the CPSV-AP for the SDG search facility and in particular for the common assistance finder 4, 2018.

### 2.3. DCAT-AP: Fact sheet

The factsheet below provides an overview of the DCAT Application Profile for data portals in Europe (DCAT-AP) and its use.

Table 8 – Factsheet: DCAT Application Profile for data (DCAT-AP)

DCAT Application Profile for data portals in Europe (DCAT-AP) <sup>36</sup>	
Definition	<p>The DCAT Application Profile for data portals in Europe (DCAT-AP) is a specification based on the Data Catalogue Vocabulary (DCAT) for describing public sector data sets in Europe. It is used to facilitate the cross-data portal search for data sets and ease the search for public sector data in cross-border and cross-sector situations through the exchange of descriptions of data sets among data portals.</p> <p>Two extensions to DCAT-AP have been developed: GeoDCAT-AP for describing geospatial datasets and StatDCAT-AP for describing statistical data sets.</p>
Data elements	<p>DCAT vocabulary includes descriptions of the following data:</p> <ul style="list-style-type: none"> <li>• catalogue record</li> <li>• dataset</li> <li>• description</li> <li>• homepage</li> <li>• language</li> <li>• license</li> <li>• publisher</li> <li>• release date</li> <li>• rights</li> <li>• spatial</li> <li>• themes</li> <li>• title</li> <li>• update date.</li> </ul>
Development process	<p>DCAT-AP and its extensions were developed and maintained through dedicated Working Groups and public reviews. Between April and May 2013, the DCAT-AP specification was developed by a Working Group composed of participants from 16 Member States, EU institutions and the US.</p>
Publication	8 May 2013
Main benefits	<p>The DCAT-AP allows to describe collections of datasets using standardised descriptions, while maintaining an individual documenting and storing system. It also enables single points of access, facilitating identification of data sets for data consumers.</p>
Examples of uses and benefits	<p>There are many known users of DCAT-AP to aggregate content and descriptions into a single point of access.</p>

<sup>36</sup> DCAT-AP <https://joinup.ec.europa.eu/solution/dcat-application-profile-data-portals-europe>

At European level:

- The European Union Open Data Portal is one of the most well-known use cases, in which DCAT-AP is used for metadata publishing and to ensure interoperability of data portals and data coming from different sources at national level. The European Data Portal allows for data integration by acting as a content aggregator, bringing together descriptions of public sector datasets into a single point of access and their exchange between portals.
- The Joint Research Center's Data Catalogue also uses DCAT-AP to provide a single point of access for data produced by the JRC.

At national level, there are many Member States and EEA countries using DCAT-AP for the publication of Linked Data on national open data portals, including Belgium, Ireland, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland.

At local level, some cities develop their own open data portals, such as the city of Ghent in Belgium.

### 3. EXPECTED BENEFITS OF ISA<sup>2</sup> SPECIFICATIONS

*The use of Core Vocabularies, based on known practical examples, allows European public administrations to implement all of the expected use cases identified in section 1.2 and, more generally, contribute to the seamless exchange of data between public administrations, within a single Member State, between national and/or regional authorities, but also between Member States and at EU level.*

#### 3.1. Reuse of solutions

The reuse of semantic specifications and Core Vocabularies developed through the ISA<sup>2</sup> programme is beneficial in many ways, including by reducing investment costs, operational costs but also resources regarding time for end-users and implementers who would have to otherwise develop semantic specifications. As demonstrated by the numerous examples of reuse of Core Vocabularies and DCAT-AP, public administrations, at different levels of governance, have been able to take advantage of the specifications developed through the ISA<sup>2</sup> Programme.

In addition, as these Core vocabularies are expandable data models, they allow for developments to take into account and complement existing vocabularies with domain-specific characteristics and tailor the solutions to specific, regional or national contexts, as attested by the variety of expansions carried out by public administrations, with Estonia, Finland, Ireland and Portugal for example expanding the Core Public Service vocabulary to reflect national characteristics.

Furthermore, ISA<sup>2</sup> specifications are accessible and free to use by all European public administrations and thus, in principle, decrease costs associated with the development of new systems or standards. On the other hand, solutions developed by other providers, in particular commercial providers, tend to result in vendor-lock in. Open specifications indeed contribute to ensuring that costs related to the switch of the solution when changing vendor or provider are avoided<sup>37</sup>. Overall, development costs of Member States' e-Government plans are reduced by preventing recurring and lengthy development cycles and also by potentially removing the cost resulting from changing vendor or provider of data portal services. The government of Spain, involved in pilots using CPSV-AP as a common data model between different organisational entities, reports that adopting a common data model is "cheaper and easier to operate, as it enables parties to speak the same language, thereby improving interoperability"<sup>38</sup>. Italy too reports similar benefits of using CPSV-AP as a strong basis to create catalogues of public service catalogues, rather than starting such developments without a basis or source of inspiration. Such simplification is particularly important in Member States with complex administrative structures. Cross-border contexts also call for solutions facilitating cross-border data exchanges, including through interlinked databases or portals, across various sectors.

A study carried out in 2017<sup>39</sup> already highlighted these benefits which users confirmed through interviews.

#### 3.2. Quality of public services

The overall quality of public services provided by Member States and the EU is improved, resulting in higher user satisfaction due to more user-centric approaches, the existence of one-stop-shops, improved data availability and findability. Data can thus be more complete, accurate and reliable with the use of

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<sup>37</sup> ISA<sup>2</sup> Programme of the EU, *Identification of IoP benefits (direct and indirect)*, European Commission, 2015.

<sup>38</sup> DIGIT, *Analysis of expected and actual benefits of using the solutions implemented in the CoS action*, 2018.

<sup>39</sup> DIGIT, *Outcomes and benefits of ISA<sup>2</sup> Action SEMIC*, 2017.

interoperable systems compared with a non-interoperable alternative due to the minimized risk of errors and missing entries, reconciliation of identified conflicts, and automatic update of information. These benefits, for all different types of users including public administrations, businesses and citizens, are multiple. For administrations, specific benefits include lower administrative burden, improved management of public service information and more efficient communication with target audiences, resulting in overall better perceptions of the quality of services delivered. For citizens and businesses in particular, these benefits include improved access to information, in a more efficient manner, and reduced administrative burden, which enhance the perception of citizens of services provided by public administrations and their quality.

Additionally, the use of ISA<sup>2</sup> specifications contributed to improving compliance by end-users and implementers, whether it be compliance with specific standards, specifications or policy and legislative requirements. Such optimisation also contributed to policy and/or organisational objectives. Systems at European level, for example, e-CODEX or the BRIS, correspond to specific policy objectives and allow to reach these objectives more efficiently through a harmonized approach. The e-CODEX project, for example, contributes to the strategic objectives of cross-border judicial cooperation and ensures fast and secure communication between Member States' authorities. The BRIS allows to address in a harmonised matter obligations imposed upon Member States by an Implementing Regulation of the European Commission<sup>40</sup>. BRIS was indeed set up in a context of businesses increasingly expanding beyond national borders and the increased need for cooperation between Member States and their national business registers. The BRIS was thus established to ensure the interconnection of business registers without establishing a centralised register and allowing Member States to keep their national registers and systems autonomous.

In addition to complying with legal obligations, such systems greatly improve data availability and access to data by users and other public administrations. Enhanced data availability inevitably results in improved, more efficient delivery of public services by administrations.

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<sup>40</sup> Directive 2012/17/EU of the European Parliament and of the Council of 13 June 2012 amending Council Directive 89/666/EEC and Directives 2005/56/EC and 2009/101/EC of the European Parliament and of the Council as regards the interconnection of central, commercial and companies registers and Commission Implementing Regulation (EU) 2015/884 of 8 June 2015 establishing technical specifications and procedures required for the system of interconnection of registers established by Directive 2009/101/EC of the European Parliament and of the Council.

## 4. CONCLUSIONS AND RECOMMENDATIONS

*This section summarises the main findings and presents some recommendations emerging from the previous analysis for consideration.*

### 4.1. Conclusions

ISA<sup>2</sup> specifications aim to promote and enable semantic interoperability across the EU. Practically, there are several use cases and expected benefits for each of these use cases.

For Core Vocabularies, the main use cases are identified: open data publishing, data integration, information exchanges between systems through the use of context-specific data models as well as providing a basis for the data model in the development of new systems.

For DCAT-AP for data portals, the main use case is the provision of the common specification for describing public sector datasets in Europe to enable the exchange of descriptions of datasets among data portals and the search across data portals.

Numerous examples exist of the use of the specifications by public administrations at European, national, regional and local levels. However, the benefits of such uses are not systematically monitored nor quantified.

Previous studies have investigated the outcomes and benefits of SEMIC specifications, but remained theoretical as to the description of these expected benefits. Similarly, the present study synthesizes previous reports of these benefits.

### 4.2. Recommendations

ISA<sup>2</sup> specifications have been successfully implemented by several users at different levels, yet the benefits of such adoption and implementation are challenging to assess and quantify. To illustrate more accurately the actual benefits perceived and experienced by the many users of the ISA<sup>2</sup> specifications, in particular, the Core Vocabularies and DCAT-AP, it is advisable to continue to actively engage with stakeholders. Complementing the present study with input from, for example, the proposed online questionnaire would allow to confirm the experience of users with regards the identified benefits and allow to detail these based on concrete illustrations, both in quantitative (time-savings, cost-savings, user satisfaction) and qualitative terms for less tangible benefits related to for example data availability and quality of services.

## Annex I. DATA SOURCES

- Core Business vocabulary: <https://joinup.ec.europa.eu/solution/registered-organization-vocabulary/about> and Registered Organisation Vocabulary: <https://www.w3.org/TR/vocab-regorg/>
- Core Business and core Location vocabularies piloted in Greece: <https://joinup.ec.europa.eu/news/core-business-and-core-locati>
- Core Criterion and Core Evidence vocabulary: <https://joinup.ec.europa.eu/solution/core-criterion-and-core-evidence-vocabulary/about>
- Core Location Vocabulary: <https://joinup.ec.europa.eu/solution/core-location-vocabulary/about>
- Core Location Pilot 'Interconnecting Belgian National and Regional Address Data' <https://joinup.ec.europa.eu/document/core-location-pilot-interconnecting-belgian-address-data>
- Core Person Vocabulary: <https://joinup.ec.europa.eu/solution/core-person-vocabulary/about>
- Core Public Organisation vocabulary: <https://joinup.ec.europa.eu/solution/core-public-organisation-vocabulary/about>
- Core Public Service vocabulary: <https://joinup.ec.europa.eu/solution/core-public-service-vocabulary/about>
- Core Public Service vocabulary application profile: <https://joinup.ec.europa.eu/solution/core-public-service-vocabulary-application-profile/about>
- DCAT-AP <https://joinup.ec.europa.eu/solution/dcat-application-profile-data-portals-europe>
- Decision (EU) 2015/2240 of the European Parliament and of the Council of 25 November 2015 establishing a programme on interoperability solutions and common frameworks for European public administrations, businesses and citizens (ISA<sup>2</sup> programme) as a means for modernising the public sector.
- Decision No 922/2009/EC of the European Parliament and of the Council of 16 September 2009 on interoperability solutions for European public administrations.
- Directive 2012/17/EU of the European Parliament and of the Council of 13 June 2012 amending Council Directive 89/666/EEC and Directives 2005/56/EC and 2009/101/EC of the European Parliament and of the Council as regards the interconnection of central, commercial and companies registers.
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- European Commission, e-Government Core Vocabularies handbook: Using horizontal data standards for promoting interoperability, 2015.
- European Commission, ISA<sup>2</sup> Programme of the EU, Identification of IoP benefits (direct and indirect), 2015.
- European Commission, Proposal for a Directive of the European Parliament and of the Council on the re-use of public sector information (recast) COM/2018/234 final - 2018/0111 (COD).
- European Commission, Study to support the review of Directive 2003/98/EC on the re-use of public sector information, 2018.
- European Commission, Business Register Interconnection System (BRIS): a journey to using Core Vocabularies, presentation delivered during SEMIC 2018 conference in June 2018.

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ISA<sup>2</sup> is a EUR 131 million programme of the European Commission which develops digital solutions that enable interoperable cross-border and cross-sector public services, for the benefit of public administrations, businesses and citizens across the EU. ISA<sup>2</sup> supports a wide range of activities and solutions, among which is the Semantic Interoperability Community (SEMIC) action.

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