

WP3 INTERLINK TECHNOLOGICAL ENABLERS

D3.2- INITIAL REPOSITORY OF INTERLINKERS AND PARTNERSHIP TOOLS



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Glossary

ENTRY	DEFINITION
INTERLINKERS	Common building blocks, provided as software tools or in the form of knowledge offered digitally, that represent interoperable, re-usable, EU-compliant, standardised functionality for the co-production of public services

ACRONYMS

ABBREVIATED	EXTENDED
AAC	Authentication and Authorization Controller
AGID	the Italian Agency for Digitalization
C2G	Citizen to Government
C+G	Citizens and Government
CEF	Connecting Europe Facility
CPSV-AP	Core Public Service Vocabulary Application Profile
EDPB	European Data Protection Board
eID	electronic IDentification
eIDAS	electronic IDentification, Authentication and trust Services
G2C	Government to Citizen
ISA2	Interoperability solutions for public administrations, businesses and citizens https://ec.europa.eu/isa2/
PA	Public Administration
RDF	Resource Description Framework
SAML	Security Assertion Markup Language
SME	Small and Medium-sized Enterprises
SOC	Service Offering Canvas
WCAG	Web Content Accessibility Guidelines



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Executive summary

Deliverable D3.2 is a deliverable of type OTHER and is constituted by the collection of knowledge and software resources that implement the INTERLINKERs made available in the first version of the INTERLINK platform released at M16.

This report is a companion document for D3.2 aimed at briefly illustrating how the INTERLINKERs have been formally described and uploaded in the platform and which enablers are actually listed in the initial repository available online at <https://demo.interlink-project.eu/catal>. Appendix A and Appendix B additionally report the JSON schemas used to encode the metadata of INTERLINKERs.

An updated version of this deliverable will be provided by D3.3 which will be released at M28 after (i) the revision of INTERLINKERs according to the evaluation findings emerged during the first use case pilot round, and (ii) the creation of new knowledge and software resources required to prepare the INTERLINK platform for the second round of evaluation.

1 Introduction

INTERLINKERs are common building blocks, provided as software tools or in the form of knowledge offered digitally, that offer interoperable, re-usable, EU-compliant, standardised functionality **for public service co-production management**. These building blocks are designed to support the co-production of effective, participatory, and sustainable public services (see Deliverable D3.1 for a formal specification of INTERLINKERs). They can be used for the following purposes:

- **To guide co-production:** These are co-production enablers that guide and support teams in the collaborative execution of the co-production initiatives.
- **To build capacity:** These are partnership tools and knowledge resources, which tackle the legal, social, and business aspects to make co-delivered public services viable and feasible in time.
- **To aid service development:** These are technical enablers for co-delivered services, aligned with other existing EU-wide initiatives to foster interoperable and sustainable public services.

The INTERLINKERs catalogue is intended to provide a one-stop-shop for know-how and tools enabling co-production. Indeed, it is possible to access different guides and templates, explore the information about how to access and activate the tools, install and integrate Open Source software, etc. The first version of the catalogue released at M16 has been populated with knowledge and software INTERLINKERs leveraging, whenever possible, open source tools or resources generated in previous EU projects, social innovation initiatives, and service design best practices like: WeLive¹,

¹<https://cordis.europa.eu/project/id/645845>.



Silearning.eu², servicedesigntools.org³, DesignersItalia⁴, IDEO⁵ or Engage2020⁶. Some existing resources have required an adaptation to the specific needs of co-production. Other INTERLINKERS have been created from scratch based on the requirements and specifications emerged from tasks T4.1, T3.1, T5.1.

Figure 1 shows the graphical interface of the INTERLINKERS catalogue, as has been implemented in the first prototype of the INTERLINK Collaborative Environment (T4.4), where items can be filtered according to strings associated to their metadata, to their nature (software or knowledge), who created them and their ranking.

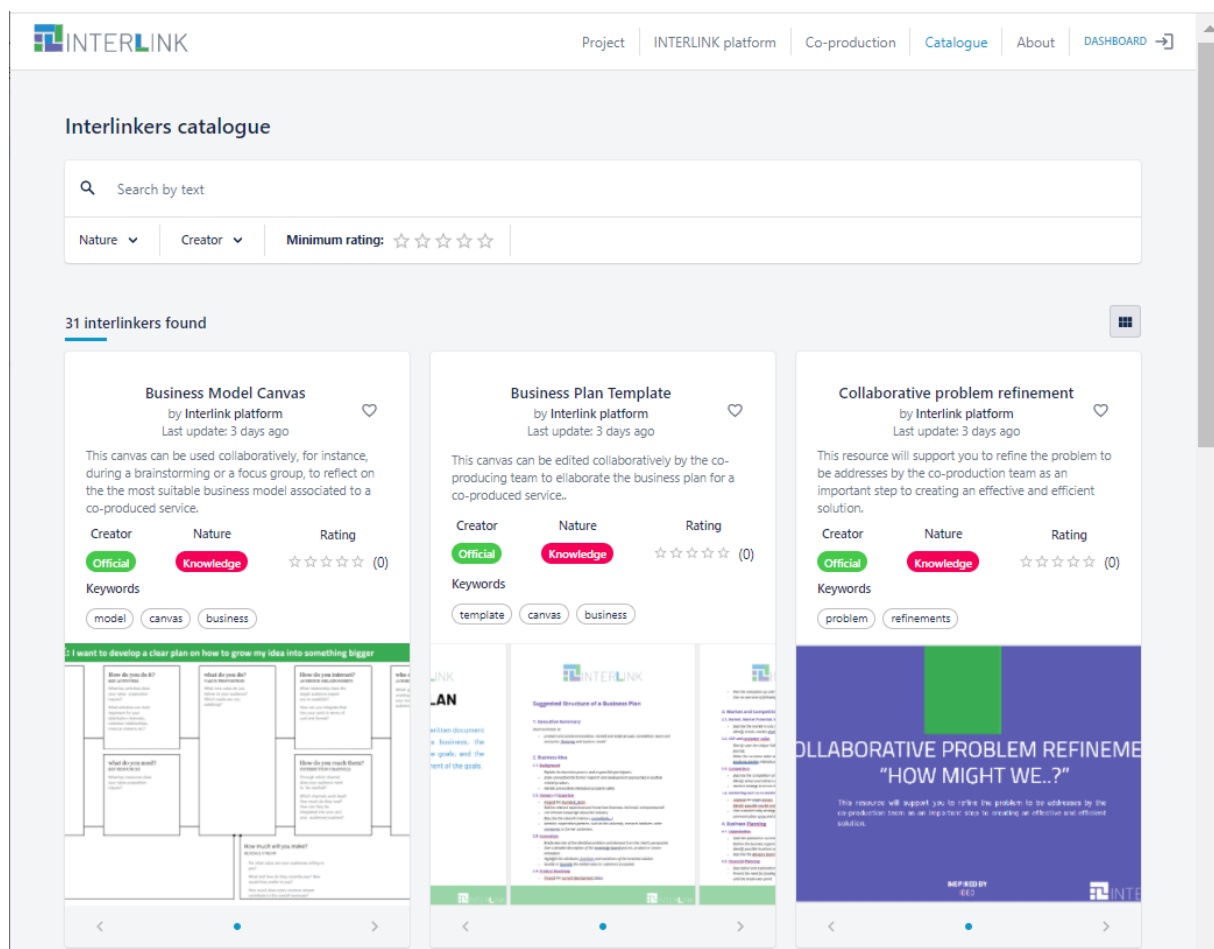


Figure 1. Snapshot of the INTERLINKERS catalogue as implemented in the first prototype of the INTERLINK Collaborative Environment at M16

² <https://www.silearning.eu/>.

³ <https://servicedesigntools.org/resources>.

⁴ <https://designers.italia.it/>.

⁵ <https://www.ideo.com/eu>.

⁶ <http://www.engage2020.eu/>.



2 Schema for INTERLINKER metadata

This section describes the properties that have been defined for collecting information and metadata about each INTERLINKER. **The data collected by using this specification was used to (i) populate the database of the INTERLINKER Catalogue, (ii) provide contents to be shown in the INTERLINK portal interface at each node of the co-production tree, (iii) provide the information on which search filters and recommendation algorithms will operate.** It is based on the Template for INTERLINKER specification described in Deliverable D3.1. Some additional fields have been added (e.g. "Difficulty", "Overview") to improve the kind of information that is shown to the user in the portal interface. Other fields collect technical information, as for example the actual url addresses of the files implementing the knowledge resources or the link to the software services.

Property	Description
NAME⁷	A name for the INTERLINKER. Translations in different languages may be provided. This input will be: <ul style="list-style-type: none"> • Shown on the platform interface in the page showing the details of the INTERLINKER • Used for searching/browsing the catalogue of INTERLINKERs by name VALUE = <short text>, possibly in different languages
DESCRIPTION⁸	Textual description of the INTERLINKER, its functionality, usage, etc. Translations in different languages may be provided. This input will be: <ul style="list-style-type: none"> • Shown on the platform interface in the page showing the details of the INTERLINKER VALUE = <text>, possibly in different languages. <p>It is important to note that the description may be potentially provided in a rich text format. While currently only HTML format is supported, in the future it would be possible to provide descriptions in other formats, including e.g. markdown.</p>
LANGUAGES	List of languages supported by the INTERLINKER. VALUE= <list of options>, with options being ISO 639-1 two-letter language codes
TAGS	Tags that can be used to semantically annotate the INTERLINKER. (In the first implementation of the INTERLINKER catalogue tags are free text strings.) Translations in different languages may be provided. VALUE = <list of tags>, possibly in different languages
DIFFICULTY	Expected level of difficulty in using the tool. The value of this field will be:

⁷ In the JSON schema for metadata description reported in Appendix A and B, this field is named as "name_translations", capturing the naming of the INTERLINKER in different languages. The translations are provided in the key-value form, with key being ISO 639-1 two-letter language code, and value representing the translated name.

⁸ In the JSON schema for metadata description reported in Appendix A and B, this field is named as "description_translations" capturing the description of the INTERLINKER in different languages. The translations are provided in the key-value form, with key being ISO 639-1 two-letter language code, and value representing the translated name.



	<ul style="list-style-type: none"> • Shown on the platform interface in the page showing the details of the INTERLINKER • Used by the internal algorithms for intelligent filtering and recommendation <p>Possible values:</p> <ol style="list-style-type: none"> 1 very easy to use 2 easy to use, few energies required 3 Medium difficulty, some energies required 4 Difficult, expert facilitation may be useful 5 Very difficult, expert facilitation suggested <p>VALUE = <value></p>
<p>TARGET (Stakeholders)</p>	<p>List of stakeholders, if applicable, that will be engaged in using this INTERLINKER. (The usefulness of this field will be evaluated in the second pilot). Multiple values are possible:</p> <ul style="list-style-type: none"> <input type="checkbox"/> All <input type="checkbox"/> PAs <ul style="list-style-type: none"> <input type="checkbox"/> Public servants <input type="checkbox"/> Politicians <input type="checkbox"/> Businesses <ul style="list-style-type: none"> <input type="checkbox"/> SMEs <input type="checkbox"/> Freelancers <input type="checkbox"/> Large companies <input type="checkbox"/> Private non-profit <input type="checkbox"/> Citizens <ul style="list-style-type: none"> <input type="checkbox"/> Potential end-users <input type="checkbox"/> Expert citizens <input type="checkbox"/> Research organisations <ul style="list-style-type: none"> <input type="checkbox"/> Universities <input type="checkbox"/> Other research entities <p>VALUE = <list of keywords></p>
<p>LICENCE</p>	<p>Type of licences under which the INTERLINKER is usable. The user should be provided with information that explains the meaning of the different licences, both for software and knowledge. Possible values:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Public Domain <input type="checkbox"/> Permissive licence <input type="checkbox"/> Copyleft <input type="checkbox"/> Non -commercial licence <input type="checkbox"/> Proprietary licence <p>(To be evaluated in the second pilots whether more specific values for licences should be used in this field.) VALUE = <keyword></p>
<p>LIST OF PROBLEM PROFILES</p>	<p>List of names of Problem Profiles associated to the INTERLINKER This input will be:</p> <ul style="list-style-type: none"> • Used by the internal algorithms for mapping the INTERLINKER to the corresponding nodes of the co-production tree <p>VALUE = <list of names of problem profiles></p>



TYPE OF INTERLINKER	<p>Either Enabling or Enhancing Service with the corresponding sub-classification. This input will be:</p> <ul style="list-style-type: none"> Used internally by the INTERLINK platform to describe how the INTERLINKER relates to the standard classifications introduced by the CEF Service Offering Canvas (SOC)⁹ <p>Possible values:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Enabling Services <ul style="list-style-type: none"> <input type="checkbox"/> Implementing Software and Artifacts <input type="checkbox"/> Operation services <input type="checkbox"/> Enhancing Services <ul style="list-style-type: none"> <input type="checkbox"/> Onboarding services <input type="checkbox"/> Follow-up services <input type="checkbox"/> External experts <p>VALUE = <list of keywords></p>
NATURE OF INTERLINKER	<p>Either Software, Knowledge INTERLINKER. This input will be:</p> <ul style="list-style-type: none"> Used by the internal algorithms for intelligent filtering and recommendation <p>Possible values:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Software INTERLINKER <input type="checkbox"/> Knowledge INTERLINKER <p>VALUE = <keyword></p> <p>(Currently this property value is not explicit in the JSON metadata schema as reported in the Appendix, but is implicit in which directory is used to upload the INTERLINKER resources in github)</p>
RELATED INTERLINKERS	<p>List of related INTERLINKERS and dependency INTERLINKERS. This input will be:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Shown on the platform interface in the page showing the details of the INTERLINKER <input type="checkbox"/> Used by the internal algorithms for intelligent filtering and recommendation <p>VALUE = <list of names of INTERLINKERS></p>
ADMINISTRATIVE SCOPE	<p>This field describes the administrative context for which this INTERLINKER is particularly suitable. The value of this field will be:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Used by the internal algorithms for intelligent filtering and recommendation (To be decided) Shown on the platform interface in the page showing the details of the INTERLINKER <p>Multiple values are possible:</p> <ul style="list-style-type: none"> <input type="checkbox"/> EU level <input type="checkbox"/> National level <input type="checkbox"/> Local level <p>VALUE = <list of keywords></p>
DOMAIN	<p>This field describes the Public Service application domain for which this INTERLINKER is particularly suitable. Possible values should be taken from standard classifications of public services. (For example, the Core Public Service Vocabulary Application Profile (CPSV-AP) developed within the ISA2 European initiative¹⁰). For the first version of the INTERLINKERS catalogue, the value of this field will be a free string.</p>

⁹ <https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Service+Offering+Canvas+Playbook>

¹⁰ https://ec.europa.eu/isa2/solutions/core-public-service-vocabulary-application-profile-cpsv-ap_en



	<p>VALUE = <string> (<list of keywords> for second prototype)</p>
PROCESS	<p>This field describes the governance model for which the INTERLINKER is particularly suitable.</p> <p>Multiple values are possible:</p> <ul style="list-style-type: none"> <input type="checkbox"/> G2C <input type="checkbox"/> G+C <input type="checkbox"/> C2G <p>For the first version of the INTERLINKERscatalogue, the value of this field will be a free string.</p> <p>VALUE = <string> (<list of keywords> for second prototype)</p>
CONSTRAINTS AND LIMITATIONS	<p>Specific requirements and properties constraining the usage and exploitation of the INTERLINKER.</p> <p>Translations in different languages may be provided.</p> <p>This input will be:</p> <ul style="list-style-type: none"> • Shown to technical users of the platform to explain how the INTERLINKER can be used as a Building Block for Public Services • (To be decided) Shown on the platform interface in the page showing the details of the INTERLINKER <p>VALUE = <text>, possibly in different languages</p>
REGULATIONS AND STANDARDS	<p>Legal and technical context where the INTERLINKER operates, as a set of relevant, normative acts, policies, standards, and specification the INTERLINKER adheres to.</p> <p>Translations in different languages may be provided.</p> <p>This input will be:</p> <ul style="list-style-type: none"> • Shown to technical users of the platform to explain how the INTERLINKER adheres to national and EU standards • (To be decided) Shown on the platform interface in the page showing the details of the INTERLINKER <p>Possible values:</p> <p>In the initial specification of INTERLINKERs this field will be defined as textual, to allow for more freedom in the description. To be further evaluated which types of standard classifications will be used as reference for a more constrained filling of this field.</p> <p>VALUE = <text>, possibly in different languages</p>
OVERVIEW TEXT	<p>Explanation of what is made available for user interaction. This represents additional information that explains how the INTERLINKER looks like/works, for the user to decide whether to open/download/use the INTERLINKER.</p> <p>Translations in different languages may be provided.</p> <p>This input will be:</p> <ul style="list-style-type: none"> • Shown on the platform interface in the page showing the details of the INTERLINKER <p>VALUE = <text>, possibly in different languages</p>
SNAPSHOTS	<p>One or more images that provide a preview of the knowledge / service that will be made available to users.</p> <p>VALUE = <a list of urls to images></p> <p>(This property is currently not explicitly included in the JSON metadata schema as reported in the Appendix, but snapshots are uploaded in an appropriate subfolder in github.)</p>



SPECIFIC PROPERTIES FOR SOFTWARE INTERLINKERS	
SUPPORTERS	<p>Further classification of the software INTERLINKERs, according to different technical dimensions. This input will be:</p> <ul style="list-style-type: none"> • Shown to technical users of the platform to explain what is required to run the service provided by the INTERLINKER <p>Possible values:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Software-As-A-Service <input type="checkbox"/> On-premise software <input type="checkbox"/> Installed app <p>VALUE = <list of options></p>
DEPLOYMENT MANUAL	<p>Url for the deployment manual of the software INTERLINKER This input will be:</p> <ul style="list-style-type: none"> • Shown to technical users of the platform to describe APIs and other technical details for using the INTERLINKER or integrating it as a building block in a Public Service <p>VALUE = <url></p>
USER MANUAL	<p>Url for the user manual of the software INTERLINKER This input will be:</p> <ul style="list-style-type: none"> • Shown on the platform interface in the page showing the details of the INTERLINKER <p>VALUE = <url></p>
DEVELOPER MANUAL	<p>Url for the developer manual of the software INTERLINKER This input will be:</p> <ul style="list-style-type: none"> • Shown to technical users of the platform <p>VALUE = <url></p>
SUPPORTS INTERNATIONALISATION	<p>Boolean field expressing whether the INTERLINKER supports internationalisation. VALUE = <boolean ></p>
IS RESPONSIVE	<p>Boolean field expressing whether the INTERLINKER is responsive VALUE = <boolean ></p>
SPECIFIC PROPERTIES FOR PLATFORM INTEGRATION	
AUTHENTICATION METHOD	<ul style="list-style-type: none"> <input type="checkbox"/> Header <input type="checkbox"/> Cookie <p>VALUE = <option></p>
CAPABILITIES	<p>This property aggregates a list of boolean fields expressing certain abilities of the INTERLINKER with respect to the management of INTERLINKER-specific entities, or assets (e.g., documents, discussions, surveys, etc) and with respect to the ways the UI of the INTERLINKER is integrated in the collaboration environment:</p> <ul style="list-style-type: none"> - INSTANTIATE: Boolean field expressing whether assets can be instantiated. - VIEW: Boolean field expressing whether assets are viewable. - CLONE: Boolean field expressing whether assets are cloneable. - EDIT: Boolean field expressing whether assets are editable.



	<ul style="list-style-type: none"> - DELETE: Boolean field expressing whether assets are deletable. - PREVIEW: Boolean field expressing whether assets can be opened in a preview. - OPEN IN MODAL: Boolean field expressing whether the INTERLINKER can be open in a modal window
PATH	String field used together with IS_SUBDOMAIN and DOMAIN to calculate the complete URL of the service. VALUE = <string>
IS SUBDOMAIN	Boolean field expressing whether the INTERLINKER runs as a subdomain VALUE = <boolean >
LOGOTYPE	Url for an image which represents the logo of the software INTERLINKER. VALUE = <url>
SPECIFIC PROPERTIES FOR KNOWLEDGE INTERLINKERS	
FORM OF KNOWLEDGE	<p>Type of knowledge INTERLINKER: e.g., visual template, document template, canvas, best practices, guidelines, checklist, survey template, legal agreement template</p> <p>This input will be:</p> <ul style="list-style-type: none"> • Shown on the platform interface in the page showing the details of the INTERLINKER <p>Possible values are:</p> <ul style="list-style-type: none"> <input type="checkbox"/> visual template, <input type="checkbox"/> document template, <input type="checkbox"/> canvas, <input type="checkbox"/> best practices, <input type="checkbox"/> guidelines, <input type="checkbox"/> checklist, <input type="checkbox"/> survey template, <input type="checkbox"/> legal agreement template <input type="checkbox"/> other <p>VALUE = <option></p>
FORMAT	<p>Type of the format used to encode the knowledge of the INTERLINKER</p> <p>This input will be:</p> <ul style="list-style-type: none"> • Shown on the platform interface in the page showing the details of the INTERLINKER <p>Possible values are:</p> <ul style="list-style-type: none"> <input type="checkbox"/> PDF, <input type="checkbox"/> Editable source documents (word, excel,) <input type="checkbox"/> open documents, <input type="checkbox"/> structured formats (e.g., JSON, XML, RDF, CSV) <p>VALUE = <option></p>
RESOURCE LINK	File path for the actual Knowledge INTERLINKER VALUE = <path>



INSTRUCTIONS	Text or file path for a text document containing instructions on how to use the INTERLINKER. Translations in different languages may be provided. This input will be: <ul style="list-style-type: none"> • Shown on the platform interface in the page showing the details of the INTERLINKER VALUE = <path> or <text>, possibly in different languages
SOFTWARE INTERLINKER	Reference to the software component that can be used, within the Collaborative Environment, to open the Knowledge Interlinker. Possible values are: <ul style="list-style-type: none"> <input type="checkbox"/> Google Drive, <input type="checkbox"/> CEditor <input type="checkbox"/> Survey <input type="checkbox"/> External Resource Manager VALUE = <option>

2.1. Integration of INTERLINKERs with the Collaborative Environment

Following a design pattern similar to the one defined in Research Object Crates (RO-CRATE)¹¹, INTERLINK has defined an extensible declarative model, based on JSON Schemas formally describing the properties listed above, to guide the uniform preparation of the metadata for the Software and Knowledge INTERLINKERs to be uploaded in the Catalogue. Appendix A and Appendix B report the intermediate JSON schemas used in the first version of the platform prototype released at M16. In this v1 implementation release, JSON schemas and metadata for the content of the Catalogue of INTERLINKERs are saved as persistified data in the GitHub repository. For the v2 implementation, the Catalogue data will be managed with an additional (back-office) web editor tool with the possibility to persistify data as entries in a database, e.g. MongoDB.

The current way to add implementation of a new INTERLINKER is to create a new directory per INTERLINKER in the project GitHub repository that contains:

- A "metadata.json" file in the root of the directory;
- Optionally, a "snapshots" directory to store the images corresponding to the INTERLINKER.

Knowledge INTERLINKERs usually contain several representations of the resource, e.g. document (docx), spreadsheet (xlsx), presentation (pptx) and so on, from which it will be instantiated so that users may view what capability they offer before instantiating them. Besides, they often include an *instructions.md* file which explains its usage (see the example in Figure 2 of what is uploaded in github for the "Stakeholders Mapping Canvas" knowledge INTERLINKER).

¹¹ «Research Object Crate (RO-Crate)», Research Object Crate (RO-Crate). <https://www.researchobject.org/ro-crate/>. Accessed 4 April 2022.

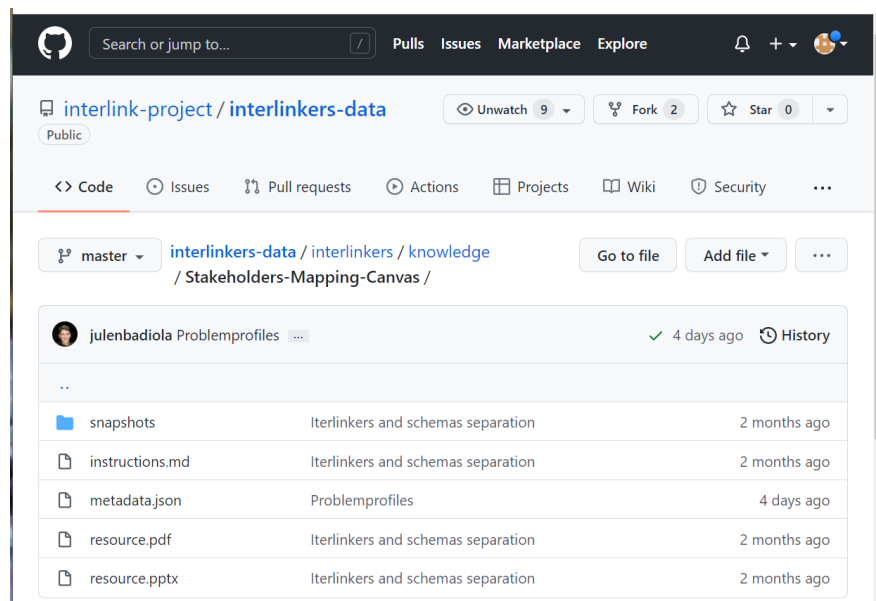


Figure 2. Metadata, instructions, snapshots and resource files uploaded in github for the "Stakeholders Mapping Canvas" knowledge INTERLINKER

Software INTERLINKERs usually contain a *logo.png* file to be able to depict them in the Collaborative Environment (see the example in Figure 3 of what is uploaded in github for the "CEditor" software INTERLINKER).

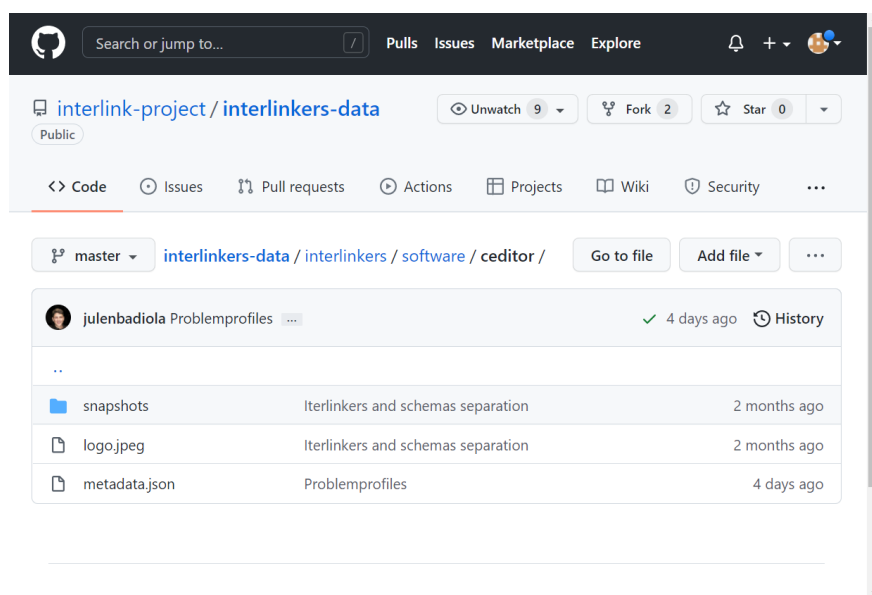


Figure 3. Metadata, logo, and snapshots uploaded in github for the "Collaborative Editor" software INTERLINKER

Besides and very importantly, apart from common metadata to all enablers (e.g. problem profiles targeted, difficulty, licence, name, description, etc.) software INTERLINKERs also include aspects to enable its integration into the collaborative environment, whenever they are of co-production platform-type. First, the integration defines how the UI of the INTERLINKER software instance is integrated with the collaboration environment and how the INTERLINKER can be reached (e.g., where it is deployed). Second, the INTERLINKER is described with respect to the management of



INTERLINKER-specific entities, called **assets**, that are operated during the co-production process. These entities include, for example, the shared documents, the discussion threads, the surveys created, etc. The specification of the INTERLINKER therefore includes the “capabilities” dictionary with elements like “instantiate”, “clone”, “view”, “edit”, “delete”, “download” or “open_in_modal” Boolean fields among others. Table 1 illustrates the corresponding API methods for the asset management to be provided by every platform-type software INTERLINKER to be neatly integrated into the collaborative environment web portal.

URI	METHOD	DESCRIPTION
/	GET	redirects to swagger / redoc DOCS
/assets	POST	[OPTIONAL] Posts data for asset creation and return JSON of asset
/assets/instantiate	GET	GUI for asset creation
/assets/{ASSET_ID}	GET	JSON data of asset
/assets/{ASSET_ID}	DELETE	Deletes asset and returns No content
/assets/{ASSET_ID}/download	GET	Download a representation of asset
/assets/{ASSET_ID}/view	GET	GUI for the interaction with the asset
/assets/{ASSET_ID}/clone	POST	[OPTIONAL] Clones the asset and returns JSON data

Apart from methods required to integrate a co-production INTERLINKER into the collaborative environment, as seen in Table 1, custom endpoints may be defined by each INTERLINKER, e.g. for GoogleDrive the endpoint shown in Figure 2 as `/api/v1/assets/empty`.

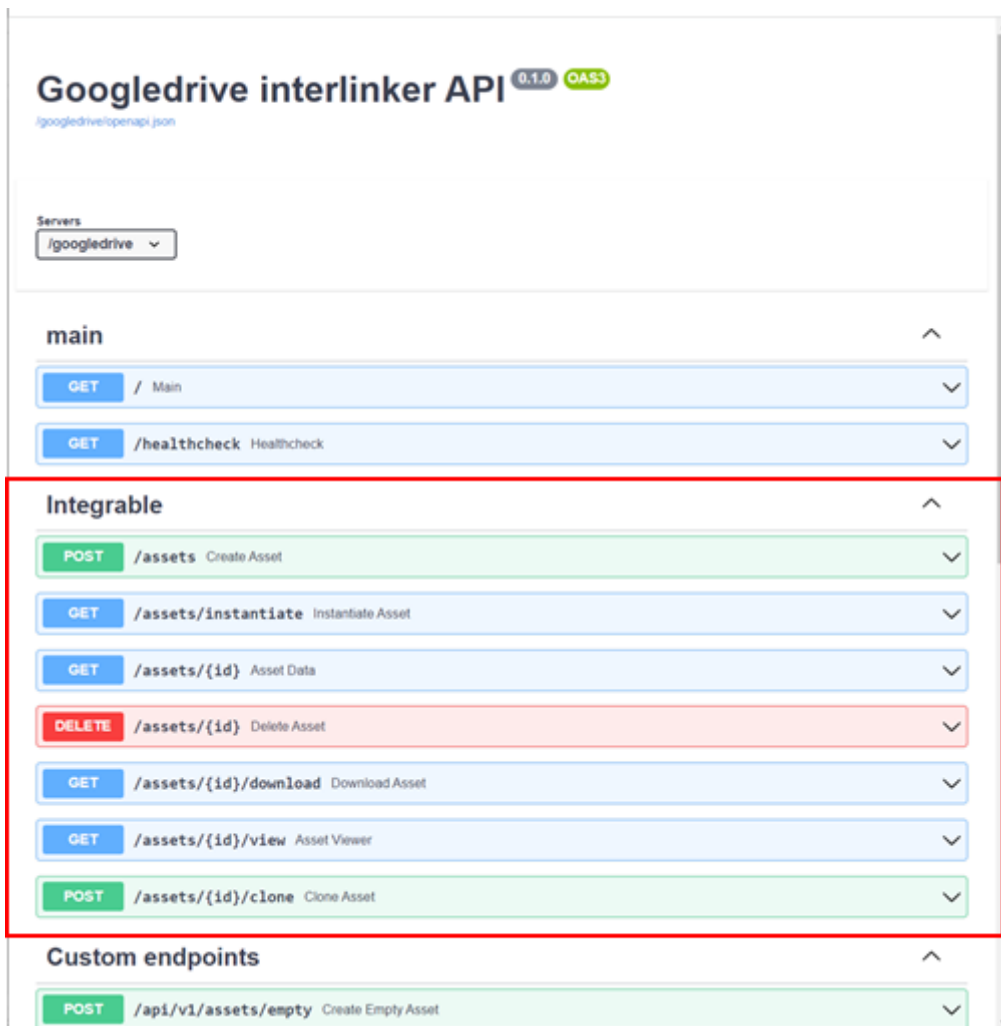


Figure 4. Sample API exposed by the GoogleDrive software INTERLINKER to be integratable in the Collaborative Environment.

3 Software INTERLINKERs

The following subsections present the list of the software INTERLINKERs that have been developed within task T3.2 to populate the INTERLINK platform in preparation for the first pilot tests. For each INTERLINKER a brief description is provided as well as the link to the directory in the GitHub repository created for the project in which the complete resource and its metadata are available for consultation.

Each software INTERLINKER is also available for inspection within the INTERLINKER catalogue in the demo environment¹².

INTERLINKERs have been divided here into (i) software enablers that are particularly useful to support co-production (although, in some cases, they can be considered also

¹² <https://demo.interlink-project.eu/catal>.



building blocks for Public Services) and (ii) software enablers that can be used to assemble Public Services.

3.1 IT enablers for Co-production

This subsection collects the software INTERLINKERS that may be helpful during the co-production process and have been made available in the first version of the Collaborative Environment released at M16 for testing during the first pilot season.

Newly developed software:

- Servicepedia
- Survey Editor

Tightly integrated third party software:

- Google Drive Manager
- Loomio
- Collaborative Editor (Etherpad)

Pointers to selected useful third party software:

- W3C accessibility Tools
- W3C Markup Validation Service
- Trello
- Google Chart
- Grafana
- Mailchimp
- Doodle

Name	Servicepedia (also called Augmenter)
Description	<p>Servicepedia is a Web-based, Open Source application that offers the possibility of creating and improving Public Service descriptions. In the workspace users can share opinions, questions and feedback. An assigned moderator will decide to approve or not a suggestion. With Augmenter it is possible to:</p> <ul style="list-style-type: none"> • create and improve public service descriptions, organise discussions and keep record of participation and involvement; • manage moderator decisions over the improvements; • generate a final improvement report. <p>The Servicepedia can run as a standalone application but It has also been integrated internally to the INTERLINK platform.</p>
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/software/augmenter

Name	Survey editor
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Description	<p>Uses SurveyJS javascript library to allow the creation of custom surveys.</p> <p>This software component is tightly integrated in the Collaborative Environment.</p>
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/software/survey-editor

Name	Google Drive Manager
Description	<p>Google Drive is a file storage and synchronisation service developed by Google. It allows users to store files in the cloud, synchronise files across devices, and share files. Google Drive encompasses Google Docs, Google Sheets, and Google Slides, which are a part of the Google Docs Editors office suite that permits collaborative editing of documents, spreadsheets, presentations, drawings, forms, and more. Files created and edited through the Google Docs suite are saved in Google Drive.</p> <p>This software INTERLINKER allows users of the collaborative environment to create new documents, spreadsheets and presentations which can be co-edited and shared by co-production team participants.</p> <p>Google Drive has been tightly integrated inside the Collaborative Environment.</p>
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/software/google-drive

Name	Loomio
Description	<p>Loomio (https://www.loomio.com/) is an Open Source solution developed by a third party that offers a workspace for conversation, sharing information and opinions, making proposals, deciding actions and achieving outcomes. With Loomio it is possible to:</p> <ul style="list-style-type: none"> ● start and organise discussions and keep record of participation and involvement; ● manage collaborative decisions through different forms of polls, surveys, etc; ● enable collaborating voting around ideas and proposals under discussion. <p>Loomio has been partly integrated inside the Collaborative Environment. A dedicated instance of Loomio has been created for the INTERLINK platform: users can launch new discussion threads from inside the Collaborative Environment and work on it from a separate browser tab. Loomio can also be accessed independently, to facilitate the participation of large numbers of participants also who are not registered to the INTERLINK platform. This is to facilitate citizen engagement.</p>
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/software/loomio

Name	Collaborative editor
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Description	Alternative for Google Drive. Uses Etherpad to allow collaboration on text documents. This software component is tightly integrated in the Collaborative Environment.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/software/ceditor

Name	W3C accessibility tools
Description	Web accessibility evaluation tools are software programs or online services that help you determine if web content meets accessibility guidelines. This page provides a list of evaluation tools that you can filter to find ones that match your particular needs. This INTERLINKER is a pointer to an external recommended resource.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/w3c-accessibility-tools

Name	W3C Markup Validation Service
Description	This validator checks the markup validity of Web documents in HTML, XHTML, SMIL, MathML, etc.. This INTERLINKER is a pointer to an external recommended resource.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/w3c-markup-language-validator

Name	Trello
Description	Trello (https://trello.com/) is a commercial collaboration tool that organises projects into boards. In one glance, Trello tells the team components what's being worked on, who's working on what, and where something is in a process. Through the Dashboard Trello maps an activity as a task card. The activity card has a start/end dates, can be assigned to any of the team members, support the files upload. To manage and monitor the status, the activity supports a checklist which can optionally be used. The Dashboard support different activity card views among which timeline and table.



	This INTERLINKER is a pointer to an external recommended resource.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/trello

Name	Google Chart
Description	<p>Google Charts is a JavaScript library providing a way to visualise data on your website (from simple line charts to complex hierarchical tree maps).</p> <p>This INTERLINKER is a pointer to an external recommended resource.</p>
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/google-chart

Name	Grafana
Description	<p>Grafana (www.grafana.com) is a multi-platform open-source analytics and interactive visualisation web application. It provides charts, graphs, and alerts for the web when connected to supported data sources.</p> <p>With Grafana it is possible to query, visualise, alert on, and understand metrics no matter where they are stored. It's also possible to create, explore, and share dashboards with team members and foster a data driven culture.</p> <p>This INTERLINKER is a pointer to an external recommended resource.</p>
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/grafana

Name	Mailchimp
Description	<p>Mailchimp (www.mailchimp.com) is a freemium marketing automation platform and email marketing service for managing mailing lists and creating email marketing campaigns to send to customers.</p> <p>With Mailchimp it is possible to organise the project contact list and manage the communication and the involvement of the project community. It supports the creation of newsletters as well as surveys, postcards, social posts and so on.</p> <p>This INTERLINKER is a pointer to an external recommended resource.</p>
Link	https://github.com/interlink-project/interlinkers-



	data/tree/master/interlinkers/externalsoftware/mailchimp
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Name	Doodle
Description	<p>Doodle (www.doodle.com) is an online calendar tool for time management and coordinating meetings. Anytime more than two people are trying to arrange a meeting, Doodle is very useful.</p> <p>Doodle can be used to plan meetings with team members, project collaborators, and external suppliers. In short words doodle gives the possibility to create a matrix with a set of time slots and a list of persons. Each person ticks the time slots where he/she is available. When everybody completes the votes doodle returns the timeslots where all the persons are available for a meeting.</p> <p>This INTERLINKER is a pointer to an external recommended resource.</p>
Link	https://github.com/interlink-project/interlinkers-externalsoftware/doodle

3.2 IT enablers for building Public Services

This subsection collects additional software INTERLINKERS that may be helpful during the building of Public Services and have been made available in the first version of the Collaborative Environment released at M16 for testing during the first pilot season.

Newly developed software:

- Event Co-designer (ECO)
- Event Organiser (EVO)

Tightly integrated software:

- AAC - Authentication and Authorization Controller

Pointers to selected useful third party software:

- KeyCloak
- WSO2 API Manager

Name	ECO - Event co-designer
Description	<p>Event Co-designer (ECO) is an open source plugin for the popular WordPress (WP) content management system which allows co-designing and organising new public events. It is especially designed from the needs of the ZGZ use case and can be integrated directly to the existing Etopia WP website. ECO provides an easy-to-use and feature-rich calendar view to schedule new events and make</p>



	requests for resources, facilities and services needed to organise the event. In addition, ECO includes collaborative tools for documenting, discussing and co-evaluating the event proposal.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/event-codesigner

Name	EVO - Event Organiser
Description	Event Organiser (EVO) is a stand-alone web application to evaluate co-designed event proposals made with the ECO WordPress plugin and organise the events in practice. EVO complements the ZGZ use case by giving administrative tools to foster co-designing of events and implementing the best proposals. EVO comprises features to manage available resources and services and allocate them to requests made in event proposals. In addition, EVO can be used to organise co-evaluation polls to analyse different aspects of the proposal in order to find out which of the proposals are ready for implementation.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/event-organizer

Name	AAC - Authentication and Authorization Controller
Description	<p>AAC is an Open Source platform for identity management, authentication, and authorization. Based on standard security protocols, such as OAuth2.0, OpenID Connect, SAML, SCIM, the tool allows for protecting the APIs and applications, manage users, authenticate using external Identity Providers performing also Single Sign-On and Single Logout functionality. The tool is compatible with the eID providers and allows for integration of nation-level or cross-country authentication solutions.</p> <p>More specifically, the tool allows for, but not limited to</p> <ul style="list-style-type: none"> • Multi-tenant management of users, applications, and personal data management in an extensible manner with the custom user attributes (claims) and attribute extraction; • User management with email/password based user registration or even passwordless authentication (based on WebAuthn standard) • Authentication federation with external providers, and in particular, with eIDAS-compliant solutions, using SAML, OpenID Connect, and OAuth2.0 protocols; • Perform OAuth2.0-based authorization and access control with customizable and extensible model of scopes, services, and applications;



	<ul style="list-style-type: none"> Perform role-based and attribute-based access control policy implementation for end-users and applications accessing protected APIs. <p>Besides being proposed as a standalone INTERLINKER, the tool is used for user management and authentication within the collaboration environment; its pilot-specific installation may be also engaged by the public services in the SaaS mode.</p>
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/aac

Name	Keycloak
Description	<p>Keycloak (www.keycloak.org) is an open-source solution providing user federation, strong authentication, user management, fine-grained authorization. Keycloak can authenticate users with existing OpenID Connect or SAML 2.0 Identity Providers. Keycloak has built-in support to connect to existing LDAP or Active Directory servers. Through the admin console administrators can centrally manage all aspects of the Keycloak server. They can enable and disable various features. They can configure identity brokering and user federation. They can create and manage applications and services, and define fine-grained authorization policies. They can also manage users, including permissions and sessions. Through the account management console users can manage their own accounts. They can update the profile, change passwords, and setup two-factor authentication. Users can also manage sessions as well as view history for the account.</p> <p>This INTERLINKER is a pointer to an external recommended resource.</p>
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/keycloak

Name	WSO2 API Manager
Description	<p>WSO2 API Manager is an open-source complete platform for building, integrating, and exposing your digital services as managed APIs in the cloud, on-premise, and hybrid architectures to drive your digital transformation strategy. It allows API developers to design, publish, and manage the lifecycle of APIs and API product managers to create API products from one or more APIs. WSO2 API Manager is one of the interlink software building block. With WSO2 API Manager it is possible to:</p> <ul style="list-style-type: none"> - Publish an API - Control and monitor the access to the published API - Document the published API <p>This INTERLINKER is a pointer to an external recommended resource.</p>
Link	https://github.com/interlink-project/interlinkers-



	data/tree/master/interlinkers/externalsoftware/wso2-api-Manager
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4 Knowledge INTERLINKERs and partnership enablers

Knowledge INTERLINKERs take the form of knowledge offered digitally, that provide interoperable, re-usable, EU-compliant, standardised information and guidance for the public service co-production management.

Knowledge INTERLINKERs include **learning material on and templates for co-production** governance models, co-business models, and methods for actually performing the various steps of a co-production process, like for example: problem framing and analysis, service exploration via personas, scenarios and user journeys, service design, evaluation methods for the co-delivered services. Also **Partnership Enablers** pertain to this type of INTERLINKERs. They are non-technological enablers that help establish and manage a network of stakeholders involved in a co-production process. They include, for example, partnership agreements, non-disclosure agreements, legal and social frameworks, promotion material templates, best practices from grassroots' initiatives on how to set up and organise groups of heterogeneous people, guidelines for stakeholder engagement, etc.

In short, knowledge INTERLINKERs are aimed at the **creation of a community of stakeholders who possess knowledge and competence on the co-production of public services and the ability to apply them.**

The following subsections present the list of the knowledge INTERLINKERs that have been developed within task T3.2 to populate the INTERLINK platform in preparation for the first pilot tests. For each INTERLINKER a brief description is provided as well as the link to the directory in the GitHub repository created for the project in which the complete resource and its metadata are available for consultation.

Each knowledge INTERLINKER is also available for inspection within the INTERLINKER catalogue in the demo environment¹³.

4.1. INTERLINKERs for co-production process start

This category of knowledge INTERLINKERs includes:

- Project description template
- Project description example

Name	Project description template
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¹³ <https://demo.interlink-project.eu/catal>.



Description	Template for preparing a project description that synthetically summarises the goals and major aspects of a co-production initiative. This document provides a template on how to describe the main aim and expected benefit of establishing a collaborative network of stakeholders and engaging them in the co-production process.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Project-Description-Template

Name	Project description example
Description	This knowledge resource provides an example of project description that synthetically summarises the goals and major aspects of a co-production initiative.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Project-Description-Example

4.2. INTERLINKERS for stakeholders engagement

This category of knowledge INTERLINKERS includes:

- Understand the different types of stakeholders
- Stakeholders mapping canvas
- Stakeholders identification and analysis template
- Stakeholders engagement plan
- Communication for stakeholders engagement KIT
- Guidelines for Focus Group
- Template for Focus Group on co-production process
- Consent form INTERLINK
- Consent form template
- Information sheet INTERLINK
- Information sheet template

Name	Understand the different types of stakeholders
Description	Guidelines to understand which are the different types of stakeholder, their motivations, skills, expectations toward the project
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Stakeholder-Types-Guidelines



Name	Stakeholders mapping canvas
Description	This resource will support a team to identify and select the stakeholders in the co-production team. This canvas can be used collaboratively, for instance, during a brainstorming or a focus group, to reflect on the different types of stakeholders that should be involved in the co-production process in order to represent the different target groups.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Stakeholders-Mapping-Canvas

Name	Stakeholders identification and analysis template
Description	This template of an excel file can be used in conjunction with the Stakeholders Mapping Canvas to identify by name and title the people, groups, and organisations that have significant influence on project direction and its success or who are significantly impacted by the project. The template helps in planning stakeholders engagement according to different dimensions: <ol style="list-style-type: none"> 1. the desired or expected level of involvement 2. potential issues related to their engagement 3. motivations and barriers that can support you in finding the best strategy to engage them in the co-production process. 4. expectation of the different stakeholders 5. skills and potential role within the co-production process.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Stakeholders-identification-analys-template

Name	Stakeholders engagement plan template
Description	This document can be used to design a Stakeholder Engagement Plan, a document that is formulated before a project begins, and which is kept on file and updated over the course of the project as necessary. Its purpose is to identify a project's key stakeholders, and to outline a methodology and approach for how the project team will interact and communicate with those stakeholders.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Stakeholder-Engagement-Plan-Template

Name	Communication for stakeholders engagement KIT
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Description	<p>This kit contains a checklist and links to requirements to be handed out to use case managers engaged in co-production activities. It briefly explains the procedures of involving stakeholders and collects communication materials like email templates, social cards, newsletter templates.</p> <p>All the templates and social cards can be tailored according to the specific event / activity / experiment the participants will be involved in, for example, to spread the correct information about the venue, purposes, and so on.</p>
Link	A draft version of this knowledge INTERLINKER has been produced and it is currently under discussion and refinement with the use case owners.

Name	Guidelines for Focus Group
Description	This INTERLINKER provides a list of operational steps to help you set up a research investigation based on focus groups for your co-production project. It includes a template for writing down the research plan underlying a (set of) focus group(s).
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Focus-Group-Guidelines

Name	Template for Focus Group on co-production process
Description	This resource provides a skeleton to organise a focus group to investigate the co-production practices in a given organisation. It addresses a series of questions about previous or current collaboration practices, the dynamics of collaboration (timeline, people, tools, communication channels), current KPIs, critical aspects and desiderata.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Focus-Group-Template-Co-production

Name	Consent form INTERLINK
Description	Template to prepare a form to collect consent from participants engaged in INTERLINK research activities about the use of their personal data.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Consent-Form-INTERLINK

Name	Consent form template
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Description	Form to collect consent from participants engaged in research activities of a co-production project about the use of their personal data.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Consent-Form-INTERLINK

Name	Information sheet INTERLINK
Description	Information on the INTERLINK project to be distributed to participants. It provides background on research activities.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Information-Sheet-INTERLINK

Name	Information sheet template
Description	Template to guide the preparation of an information sheet to be distributed to participants to project activities. It provides background on research objectives
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Information-Sheet-Template

4.3. INTERLINKERS for service design

This category of knowledge INTERLINKERS includes:

- Guidelines for online Surveys
- Guidelines for collaborative problem refinement
- Template for Focus Group on problem refinement
- Guidelines for interviews
- Template for Surveys on Media and Technology Usage
- Template for semi-structured interviews
- Template for structured interviews
- Template for Personas (in Italian)
- Example of Use Scenario (in Italian)
- Guidelines for co-design of service (in Italian)
- Templates for User Journeys (in Italian)
- Template for Hackathons Rules
- Template for Public Service proposal



Name	Guidelines for online Surveys
Description	This resource contains instructions on how to set up a research activity based on online surveys, for a co-production project.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Guidelines-for-online-surveys

Name	Guidelines for collaborative problem refinement
Description	This resource will support you to refine the problem to be addressed by the co-production team as an important step to creating an effective and efficient solution. It contains a canvas that can be completed individually or in groups. Completing the task in groups however is preferable as the objective of the exercise is to approach the problem from different viewpoints in order to understand and define the problem better.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Collaborative-Problem-Refinement

Name	Template for Focus Group on problem refinement
Description	This resource provides a skeleton to organise a focus group to investigate the problem that needs to be solved by a digital service / functionality. It addresses a series of questions about potential users, current practices, critical aspects and desiderata.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Focus-Group-Template-problem-exploration-functionalities

Name	Guidelines for interviews
Description	Instructions on how to set up a research activity based on interviews, for a co-production project.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Guidelines-for-interviews



Name	Template for semi-structured interviews
Description	Instructions and examples on how to conduct semi-structured interviews for a co-production project.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Template-for-semi-structured-interview

Name	Template for structured interviews
Description	Instructions and examples on how to conduct structured interviews for a co-production project.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Template-for-semi-structured-interview

Name	Template for Personas (in Italian)
Description	Template that guides the definition and use of personas that represent users archetypes of the service to be designed. This knowledge enabler is a local copy of a resource created by Designers Italia for AGID (the Italian Agency for Digitalization).
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/it-agid-personas

Name	Example of Use Scenario (in Italian)
Description	Scenarios are stories that tell specific stories of the use of a digital service by a specific user, in a specific context; you can use them in different ways and with different purposes, depending on the focus of the project: This knowledge enabler is a local copy of a resource created by Designers Italia for AGID (the Italian Agency for Digitalization).
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/it-use-scenarios



Name	Guidelines for co-design of service (in Italian)
Description	This resource describes the guidelines for the designing of a service in the public administration This knowledge enabler is a local copy of a resource created by Designers Italia for AGID (the Italian Agency for Digitalization).
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/it-workshop-service-design

Name	Templates for User Journeys (in Italian)
Description	Templates to prepare and exploit user journey for the co-design of a service This knowledge enabler is a local copy of a resource created by Designers Italia for AGID (the Italian Agency for Digitalization).
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/it-user-journey

Name	Template for Hackathons Rules
Description	This is a document with a template for describing hackathons rules.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Hackathon-Rules-Template

Name	Template for Public Service proposal
Description	This is a document with a template for the co-design of Public Service Proposals to be used during hackathons.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Public-Service-Proposal-Template

4.4. INTERLINKERS for service development

This category of knowledge INTERLINKERS includes:

- W3C Web Content Accessibility Guidelines
- EDPB Data Protection Guidelines
- Open Source guides
- AGID Cloud Enablement Kit (In Italian)



- AGID Cloud computing migration strategy evaluation template
- AGID Guidelines on the acquisition and reuse of software for public administrations
- AGID Guidelines for the development of secure software
- AGID Italian PA interoperability model
- AGID Minimum Security Measures for Public Administration.
- Open API specification
- EIDAS standards

Name	W3C Web Content Accessibility Guidelines
Description	<p>Web Content Accessibility Guidelines (WCAG) provide guidelines that explain how to make the Web content more accessible to the people with disabilities.</p> <p>This INTERLINKER is a pointer to an external recommended resource.</p>
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/w3c_web_content_accessibility_guidelines

Name	EDPB Data Protection Guidelines
Description	<p>These Guidelines give general guidance on the obligation of Data Protection by Design and by Default (henceforth “DPbDD”) set forth in Article 25 in the GDPR.</p> <p>This INTERLINKER is a pointer to an external recommended resource.</p>
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/it-guidelines-data-protection

Name	Open Source guides
Description	<p>A collection of resources for individuals, communities, and companies who want to learn how to run and contribute to an open source project.</p> <p>This INTERLINKER is a pointer to an external recommended resource.</p>
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/Opensource-Guide

Name	AGID Cloud Enablement Kit (In Italian)
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Description	<p>This resource describes the Cloud Enablement strategy outlined by AGID and Team Digitale (in Italian).</p> <p>This INTERLINKER is a pointer to an external recommended resource.</p>
Link	<p>https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/it-cloud-enablement-kit</p>

Name	AGID Cloud computing migration strategy evaluation template
Description	<p>Template to support public administrations to migrate its internal services to the cloud, it must follow a well-defined strategy and process. This interlinker allows users to specify and validate the migration strategy of online services to the cloud architecture.</p> <p>This INTERLINKER is a pointer to an external recommended resource.</p>
Link	<p>https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/it-cloud-strategy-assesment</p>

Name	AGID Guidelines on the acquisition and reuse of software for public administrations
Description	<p>This interlinker specifies the guidelines to use when a public administration decides to reuse software developed by other organisations, it must set up a correct management strategy for the new product.</p> <p>This INTERLINKER is a pointer to an external recommended resource.</p>
Link	<p>https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/it-guidelines_acquiring_reuse_sw_pa</p>

Name	AGID Guidelines for the development of secure software
Description	<p>Guidelines that specify the correct security policies to minimise possible data loss.</p> <p>This INTERLINKER is a pointer to an external recommended resource.</p>
Link	<p>https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/it-pa-guidelines-for-secure-</p>



	software
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Name	AGID Italian PA interoperability model
Description	<p>It is important for a public administration to design and develop interoperable services. This interlinker describes the interoperability policies to be adopted in the Italian context.</p> <p>This INTERLINKER is a pointer to an external recommended resource.</p>
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/it-pa-interoperability-model

Name	AGID Minimum Security Measures for Public Administration.
Description	<p>For a public administration, it is important to follow correct security policies to minimise possible data loss. This interlinker specifies the minimum security measures.</p> <p>This INTERLINKER is a pointer to an external recommended resource.</p>
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/it-pa-minimum-security-measures

Name	Open API specification
Description	<p>For a public administration, it is important to develop the new services considering future integration possibilities. OpenAPI is a standard helping in doing that.</p> <p>This INTERLINKER is a pointer to an external recommended resource.</p>
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/open-API-specification

Name	EIDAS standards
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Description	<p>The eIDAS solution allows citizens from Member States to prove and verify their identification when accessing on-line services in other Member States. It allows citizens to authenticate themselves by using their eIDs and connecting with their Identity Provider (IdP) from their country.</p> <p>This INTERLINKER is a pointer to an external recommended resource.</p>
Link	<p>https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/eidas-standard</p>

4.5. INTERLINKERs for service sustainability

This category of knowledge INTERLINKERs includes:

- Outcome marketing feature set
- Business model canvas
- Business plan template

Name	Outcome marketing feature set
Description	<p>This resource suggests a model to define the features of a co-produced service. It guides the description of the problem(s) that the product will solve in the long run, the vision for the user experience as well as the user interface, the vision for how the product will generate a return of investment.</p>
Link	<p>https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/outcome-marketing-featureset</p>

Name	Business model canvas
Description	<p>This canvas can be used collaboratively, for instance, during a brainstorming or a focus group, to reflect on the the most suitable business model associated to a co-produced service</p>
Link	<p>https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Business-Model-Canvas</p>

Name	Business plan template
-------------	-------------------------------



Description	This template can be edited collaboratively by the co-producing team to elaborate the business plan for a co-produced service.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Business-Plan-Template

4.6. INTERLINKERS for evaluation (of co-production and of service)

This category includes knowledge INTERLINKERS that are useful for the evaluation of the co-production of public services and for the evaluation of the execution of public services:

- Final End-Users' Questionnaire for Quality of Service
- INTERLINK Co-Producers' Perceptions Questionnaire
- INTERLINK Users' Demographics and Activity Satisfaction Questionnaire
- Usability testing

Name	Final End-Users' Questionnaire for Quality of Service
Description	This is a model of End Users' Perceptions Questionnaire. It aims to measure end-users' perceptions on user-based quality, value-based quality, trust and acceptance. This questionnaire is thought to be answered by users of traditional e-services and also those who co-produced them through INTERLINK.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Final-End-Users-Questionnaire-QoS

Name	INTERLINK Co-Producers' Perceptions Questionnaire
Description	This is a model of a questionnaire aimed to measure co-producer's perceptions on user-based quality, value-based quality, trust and acceptance. This questionnaire is thought to be answered by those who take part in the co-production of a public service or reuse artefacts (public services & INTERLINKERS) made available through INTERLINK co-production tools (Collaborative Environment and Catalogue).
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/co-producers-perceptions-Questionnaire



Name	INTERLINK Users' Demographics and Activity Satisfaction Questionnaire
Description	This is a model of a questionnaire aimed to collect demographics and activity satisfaction scores from participants to project events and activities.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Demographic-activity-satisfaction-questionnaire

Name	Usability testing
Description	This INTERLINKER provides guidelines on how to perform usability testing to improve the usability of a digital service.
Link	https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Usability-testing

Appendix A. JSON schema for Software INTERLINKERs metadata

Version of the JSON schema for Software INTERLINKERs metadata as available in the project github repository on the 7th of April 2022. For implementation purposes, some naming conventions have been used here that slightly differ from the specification in Section 2 (e.g. the list of Problem Profiles has been named "problemprofiles" for brevity).

```
{
  "title": "Schema",
  "type": "object",
  "properties": {
    "problemprofiles": {
      "title": "Problemprofiles",
      "type": "array",
      "items": {
        "type": "string"
      }
    },
    "languages": {
```



```

        "title": "Languages",
        "type": "array",
        "items": {}
    },
    "name_translations": {
        "title": "Name Translations",
        "type": "object"
    },
    "description_translations": {
        "title": "Description Translations",
        "type": "object"
    },
    "constraints_and_limitations_translations": {
        "title": "Constraints And Limitations Translations",
        "type": "object"
    },
    "regulations_and_standards_translations": {
        "title": "Regulations And Standards Translations",
        "type": "object"
    },
    "tags_translations": {
        "title": "Tags Translations",
        "type": "object",
        "additionalProperties": {
            "type": "array",
            "items": {
                "type": "string"
            },
            "minItems": 1
        }
    },
    "difficulty": {
        "$ref": "#/definitions/Difficulties"
    },
    "targets": {
        "type": "array",
        "items": {
            "$ref": "#/definitions/Targets"
        }
    },
    "licence": {
        "$ref": "#/definitions/Licences"
    },
    "types": {
        "type": "array",
        "items": {
            "$ref": "#/definitions/InterlinkerTypes"
        }
    },
    "administrative_scopes": {
        "type": "array",
        "items": {
            "$ref": "#/definitions/AdministrativeScopes"
        }
    },
    "domain": {
        "title": "Domain",

```




```

        "type": "string"
    },
    "process": {
        "title": "Process",
        "type": "string"
    },
    "overview_text": {
        "title": "Overview Text",
        "type": "object"
    },
    "id": {
        "title": "Id",
        "type": "string"
    },
    "form": {
        "$ref": "#/definitions/FormTypes"
    },
    "format": {
        "$ref": "#/definitions/Formats"
    },
    "instructions_translations": {
        "title": "Instructions Translations",
        "type": "object",
        "additionalProperties": {
            "anyOf": [
                {
                    "type": "string",
                    "minLength": 1,
                    "maxLength": 2083,
                    "format": "uri"
                },
                {
                    "type": "string",
                    "format": "file-path"
                }
            ]
        }
    },
    "logotype": {
        "title": "Logotype",
        "format": "file-path",
        "type": "string"
    },
    "supported_by": {
        "type": "array",
        "items": {
            "$ref": "#/definitions/Supporters"
        }
    },
    "deployment_manual": {
        "title": "Deployment Manual",
        "anyOf": [
            {
                "type": "string",
                "minLength": 1,
                "maxLength": 2083,
                "format": "uri"
            }
        ]
    }

```



```

    },
    {
      "type": "string",
      "format": "file-path"
    }
  ]
},
"user_manual": {
  "title": "User Manual",
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    {
      "type": "string",
      "minLength": 1,
      "maxLength": 2083,
      "format": "uri"
    },
    {
      "type": "string",
      "format": "file-path"
    }
  ]
},
"developer_manual": {
  "title": "Developer Manual",
  "anyOf": [
    {
      "type": "string",
      "minLength": 1,
      "maxLength": 2083,
      "format": "uri"
    },
    {
      "type": "string",
      "format": "file-path"
    }
  ]
},
"supports_internationalization": {
  "title": "Supports Internationalization",
  "type": "boolean"
},
"is_responsive": {
  "title": "Is Responsive",
  "type": "boolean"
},
"integration": {
  "$ref": "#/definitions/InternalIntegration"
}
},
"required": [
  "problemprofiles",
  "languages",
  "name_translations",
  "description_translations",
  "constraints_and_limitations_translations",
  "tags_translations",
  "difficulty",

```



```

    "licence",
    "reference",
    "instructions_translations",
    "supported_by",
    "supports_internationalization",
    "is_responsive",
    "integration"
  ],
  "additionalProperties": false,
  "definitions": {
    "Difficulties": {
      "title": "Difficulties",
      "description": "An enumeration.",
      "enum": [
        "very_easy",
        "easy",
        "medium",
        "difficult",
        "very_difficult"
      ]
    },
    "Targets": {
      "title": "Targets",
      "description": "An enumeration.",
      "enum": [
        "all",
        "all;pas",
        "all;pas;public_servants",
        "all;pas;politicians",
        "all;businesses",
        "all;businesses;smes",
        "all;businesses;freelancers",
        "all;businesses;large_companies",
        "all;businesses;private_non_profit",
        "all;citizens",
        "all;citizens;potential_end_users",
        "all;citizens;expert_citizens",
        "all;research_organizations",
        "all;research_organizations;universities",
        "all;research_organizations;other_research_entities"
      ]
    },
    "Licences": {
      "title": "Licences",
      "description": "An enumeration.",
      "enum": [
        "public_domain",
        "permissive",
        "copyleft",
        "non_commercial",
        "proprietary"
      ]
    },
    "InterlinkerTypes": {
      "title": "InterlinkerTypes",
      "description": "An enumeration.",
      "enum": [

```



```

        "enabling_services",
        "enabling_services;implementing_software_and_artifacts",
        "enabling_services;operation_services",
        "enhancing_services",
        "enhancing_services;onboarding_services",
        "enhancing_services;followup_services",
        "enhancing_services:external_experts"
    ]
},
"AdministrativeScopes": {
    "title": "AdministrativeScopes",
    "description": "An enumeration.",
    "enum": [
        "eu",
        "national",
        "local"
    ]
},
"FormTypes": {
    "title": "FormTypes",
    "description": "An enumeration.",
    "enum": [
        "software",
        "visual_template",
        "document_template",
        "canvas",
        "best_practices",
        "guidelines",
        "checklist",
        "survey_template",
        "legal_agreement_template",
        "other"
    ]
},
"Formats": {
    "title": "Formats",
    "description": "An enumeration.",
    "enum": [
        "pdf",
        "editable_source_document",
        "open_document",
        "structured_format",
        "software"
    ]
},
"Supporters": {
    "title": "Supporters",
    "description": "An enumeration.",
    "enum": [
        "saas",
        "on_premise",
        "installed_app"
    ]
},
"Capabilities": {
    "title": "Capabilities",
    "type": "object",

```



```

    "properties": {
      "instantiate": {
        "title": "Instantiate",
        "type": "boolean"
      },
      "view": {
        "title": "View",
        "type": "boolean"
      },
      "clone": {
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      "edit": {
        "title": "Edit",
        "type": "boolean"
      },
      "delete": {
        "title": "Delete",
        "type": "boolean"
      },
      "preview": {
        "title": "Preview",
        "type": "boolean"
      },
      "open_in_modal": {
        "title": "Open In Modal",
        "type": "boolean"
      },
      "shortcut": {
        "title": "Shortcut",
        "type": "boolean"
      }
    },
    "required": [
      "instantiate",
      "view",
      "clone",
      "edit",
      "delete",
      "preview",
      "open_in_modal",
      "shortcut"
    ]
  },
  "CapabilitiesTranslations": {
    "title": "CapabilitiesTranslations",
    "type": "object",
    "properties": {
      "instantiate_text_translations": {
        "title": "Instantiate Text Translations",
        "type": "object",
        "additionalProperties": {
          "type": "string"
        }
      },
      "view_text_translations": {

```



```

        "title": "View Text Translations",
        "type": "object",
        "additionalProperties": {
            "type": "string"
        }
    },
    "clone_text_translations": {
        "title": "Clone Text Translations",
        "type": "object",
        "additionalProperties": {
            "type": "string"
        }
    },
    "edit_text_translations": {
        "title": "Edit Text Translations",
        "type": "object",
        "additionalProperties": {
            "type": "string"
        }
    },
    "delete_text_translations": {
        "title": "Delete Text Translations",
        "type": "object",
        "additionalProperties": {
            "type": "string"
        }
    },
    "preview_text_translations": {
        "title": "Preview Text Translations",
        "type": "object",
        "additionalProperties": {
            "type": "string"
        }
    }
}
},
"AuthMethods": {
    "title": "AuthMethods",
    "description": "An enumeration.",
    "enum": [
        "header",
        "cookie"
    ]
},
"InternalIntegration": {
    "title": "InternalIntegration",
    "type": "object",
    "properties": {
        "service_name": {
            "title": "Service Name",
            "type": "string"
        },
        "domain": {
            "title": "Domain",
            "type": "string"
        },
        "path": {

```



```

        "title": "Path",
        "type": "string"
    },
    "is_subdomain": {
        "title": "Is Subdomain",
        "type": "boolean"
    },
    "api_path": {
        "title": "Api Path",
        "type": "string"
    },
    "capabilities": {
        "$ref": "#/definitions/Capabilities"
    },
    "capabilities_translations": {
        "$ref": "#/definitions/CapabilitiesTranslations"
    },
    "auth_method": {
        "$ref": "#/definitions/AuthMethods"
    }
},
"required": [
    "service_name",
    "domain",
    "path",
    "is_subdomain",
    "api_path",
    "capabilities",
    "capabilities_translations",
    "auth_method"
]
}
}
}
}

```

Appendix B. JSON schema for Knowledge INTERLINKERs metadata

Version of the JSON schema for Knowledge INTERLINKERs metadata as available in the project github repository on the 7th of April 2022. For implementation purposes, some naming conventions have been used here that slightly differ from the specification in Section 2 (e.g. the list of Problem Profiles has been named "problemprofiles" for brevity).

```

{
  "title": "Schema",
  "type": "object",
  "properties": {
    "problemprofiles": {
      "title": "Problemprofiles",
      "type": "array",
      "items": {
        "type": "string"
      }
    },
  },
}

```



```

"languages": {
  "title": "Languages",
  "type": "array",
  "items": {}
},
"name_translations": {
  "title": "Name Translations",
  "type": "object"
},
"description_translations": {
  "title": "Description Translations",
  "type": "object"
},
"constraints_and_limitations_translations": {
  "title": "Constraints And Limitations Translations",
  "type": "object"
},
"regulations_and_standards_translations": {
  "title": "Regulations And Standards Translations",
  "type": "object"
},
"tags_translations": {
  "title": "Tags Translations",
  "type": "object",
  "additionalProperties": {
    "type": "array",
    "items": {
      "type": "string"
    },
    "minItems": 1
  }
},
"difficulty": {
  "$ref": "#/definitions/Difficulties"
},
"targets": {
  "type": "array",
  "items": {
    "$ref": "#/definitions/Targets"
  }
},
"licence": {
  "$ref": "#/definitions/Licences"
},
"types": {
  "type": "array",
  "items": {
    "$ref": "#/definitions/InterlinkerTypes"
  }
},
"administrative_scopes": {
  "type": "array",
  "items": {
    "$ref": "#/definitions/AdministrativeScopes"
  }
},
"domain": {

```




```

        "title": "Domain",
        "type": "string"
    },
    "process": {
        "title": "Process",
        "type": "string"
    },
    "overview_text": {
        "title": "Overview Text",
        "type": "object"
    },
    "id": {
        "title": "Id",
        "type": "string"
    },
    "form": {
        "$ref": "#/definitions/FormTypes"
    },
    "format": {
        "$ref": "#/definitions/Formats"
    },
    "instructions_translations": {
        "title": "Instructions Translations",
        "type": "object",
        "additionalProperties": {
            "anyOf": [
                {
                    "type": "string",
                    "minLength": 1,
                    "maxLength": 2083,
                    "format": "uri"
                },
                {
                    "type": "string",
                    "format": "file-path"
                }
            ]
        }
    },
    "softwareinterlinker": {
        "$ref": "#/definitions/SoftwareInterlinkers"
    },
    "file_translations": {
        "title": "File Translations",
        "type": "object",
        "additionalProperties": {
            "type": "string",
            "format": "file-path"
        }
    }
},
"required": [
    "problemprofiles",
    "languages",
    "name_translations",
    "description_translations",
    "constraints_and_limitations_translations",

```



```

    "tags_translations",
    "difficulty",
    "licence",
    "reference",
    "instructions_translations",
    "softwareinterlinker",
    "file_translations"
  ],
  "additionalProperties": false,
  "definitions": {
    "Difficulties": {
      "title": "Difficulties",
      "description": "An enumeration.",
      "enum": [
        "very_easy",
        "easy",
        "medium",
        "difficult",
        "very_difficult"
      ]
    },
    "Targets": {
      "title": "Targets",
      "description": "An enumeration.",
      "enum": [
        "all",
        "all;pas",
        "all;pas;public_servants",
        "all;pas;politicians",
        "all;businesses",
        "all;businesses;smes",
        "all;businesses;freelancers",
        "all;businesses;large_companies",
        "all;businesses;private_non_profit",
        "all;citizens",
        "all;citizens;potential_end_users",
        "all;citizens;expert_citizens",
        "all;research_organizations",
        "all;research_organizations;universities",
        "all;research_organizations;other_research_entities"
      ]
    },
    "Licences": {
      "title": "Licences",
      "description": "An enumeration.",
      "enum": [
        "public_domain",
        "permissive",
        "copyleft",
        "non_commercial",
        "proprietary"
      ]
    },
    "InterlinkerTypes": {
      "title": "InterlinkerTypes",
      "description": "An enumeration.",
      "enum": [

```



```

        "enabling_services",
        "enabling_services;implementing_software_and_artifacts",
        "enabling_services;operation_services",
        "enhancing_services",
        "enhancing_services;onboarding_services",
        "enhancing_services;followup_services",
        "enhancing_services:external_experts"
    ]
},
"AdministrativeScopes": {
    "title": "AdministrativeScopes",
    "description": "An enumeration.",
    "enum": [
        "eu",
        "national",
        "local"
    ]
},
"FormTypes": {
    "title": "FormTypes",
    "description": "An enumeration.",
    "enum": [
        "software",
        "visual_template",
        "document_template",
        "canvas",
        "best_practices",
        "guidelines",
        "checklist",
        "survey_template",
        "legal_agreement_template",
        "other"
    ]
},
"Formats": {
    "title": "Formats",
    "description": "An enumeration.",
    "enum": [
        "pdf",
        "editable_source_document",
        "open_document",
        "structured_format",
        "software"
    ]
},
"SoftwareInterlinkers": {
    "title": "SoftwareInterlinkers",
    "description": "An enumeration.",
    "enum": [
        "googledrive",
        "surveyeditor",
        "ceditor",
        "externalresourcemanager"
    ]
}
}
}

```



<https://interlink-project.eu/>