WP3 INTERLINK TECHNOLOGICAL ENABLERS

D3.2- INITIAL REPOSITORY OF INTERLINKERS AND PARTNERSHIP TOOLS

The INTERLINK project is co-funded by the European Union.
Horizon 2020 - DT-GOVERNANCE-05-2020 - Grant Agreement No 959201
<table>
<thead>
<tr>
<th><strong>Project acronym</strong></th>
<th>INTERLINK</th>
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<tbody>
<tr>
<td><strong>Project full title</strong></td>
<td>Innovating governNment and ciTizen co-dEliveRy for the digitaL siNgle marKet</td>
</tr>
<tr>
<td><strong>Call identifier</strong></td>
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<tr>
<td><strong>Type of action</strong></td>
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</tr>
<tr>
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</tr>
<tr>
<td><strong>End date</strong></td>
<td>31/12/2023</td>
</tr>
<tr>
<td><strong>Grant agreement no</strong></td>
<td>959201</td>
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| **WP** | WP3 |
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| **Version** | v1.0 |
| **Deliverable Type** | OTHER |
| **Dissemination Level** | PU |
| **Date of Delivery** | 30/04/2021 |
| **Submission Date** | 30/04/2021 |
## VERSION HISTORY

<table>
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<th>Issue Date</th>
<th>Status</th>
<th>Changes</th>
<th>Contributor</th>
</tr>
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<td>0.1</td>
<td>31/03/2022</td>
<td>Draft</td>
<td>Preliminary structure and table of contents; introductory text for the document sections</td>
<td>FBK</td>
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<tr>
<td>0.2</td>
<td>11/04/2022</td>
<td>Draft</td>
<td>Contribution by partners to the index of software and knowledge Interlinkers in the catalogue</td>
<td>FBK, DEUSTO, CNS</td>
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<tr>
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### Glossary

<table>
<thead>
<tr>
<th>ENTRY</th>
<th>DEFINITION</th>
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<tbody>
<tr>
<td>INTERLINKERS</td>
<td>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</td>
</tr>
</tbody>
</table>

### ACRONYMS

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

1 INTRODUCTION .................................................................................................................. 7

2 SCHEMA FOR INTERLINKER METADATA ........................................................................ 9

  2.1 Integration of INTERLINKERs with the Collaborative Environment .................................. 15

3 SOFTWARE INTERLINKERS ............................................................................................... 18

  3.1 IT enablers for Co-production ......................................................................................... 19
      Servicepedia (also called Augmenter) .............................................................................. 19
      Survey editor .................................................................................................................. 19
      Google Drive Manager ................................................................................................. 20
      Loomio ............................................................................................................................ 20
      Collaborative editor ...................................................................................................... 20
      W3C accessibility tools ................................................................................................. 21
      W3C Markup Validation Service .................................................................................. 21
      Trello .............................................................................................................................. 21
      Google Chart ................................................................................................................ 22
      Grafana ........................................................................................................................... 22
      Mailchimp ....................................................................................................................... 22
      Doodle ............................................................................................................................ 23

  3.2 IT enablers for building Public Services ......................................................................... 23
      ECO - Event co-designer ............................................................................................... 23
      EVO - Event Organiser ................................................................................................. 24
      AAC - Authentication and Authorization Controller .................................................... 24
      Keycloak ......................................................................................................................... 25
      WSO2 API Manager ........................................................................................................ 25

4 KNOWLEDGE INTERLINKERS AND PARTNERSHIP ENABLERS ........................................ 26

  4.1 INTERLINKERs for co-production process start ............................................................... 26
      Project description template ......................................................................................... 26
      Project description example ........................................................................................ 27

  4.2 INTERLINKERs for stakeholders engagement ............................................................... 27
      Understand the different types of stakeholders ......................................................... 27
      Stakeholders mapping canvas ................................................................................... 28
      Stakeholders identification and analysis template ...................................................... 28
      Stakeholders engagement plan template .................................................................. 28
      Communication for stakeholders engagement KIT .................................................... 28
      Guidelines for Focus Group ....................................................................................... 29
      Template for Focus Group on co-production process .................................................. 29
      Consent form INTERLINK ............................................................................................ 29
      Consent form template ................................................................................................. 29
      Information sheet INTERLINK ..................................................................................... 30
      Information sheet template .......................................................................................... 30

  4.3 INTERLINKERs for service design ................................................................................... 30
      Guidelines for online Surveys ....................................................................................... 31
      Guidelines for collaborative problem refinement ....................................................... 31
      Template for Focus Group on problem refinement ...................................................... 31
      Guidelines for interviews ............................................................................................ 31
      Template for semi-structured interviews ................................................................... 32
4.4. INTERLINKERs for service development ........................................................................................................ 33
   W3C Web Content Accessibility Guidelines ........................................................................................................... 34
   EDPB Data Protection Guidelines .......................................................................................................................... 34
   Open Source guides .............................................................................................................................................. 34
   AGID Cloud Enablement Kit (In Italian) .................................................................................................................. 34
   AGID Cloud computing migration strategy evaluation template ............................................................................ 35
   AGID Guidelines on the acquisition and reuse of software for public administrations ........................................ 35
   AGID Guidelines for the development of secure software .................................................................................. 35
   AGID Italian PA interoperability model ................................................................................................................ 36
   AGID Minimum Security Measures for Public Administration .......................................................................... 36
   Open API specification ........................................................................................................................................ 36
   EIDAS standards .................................................................................................................................................... 36
4.5. INTERLINKERs for service sustainability ........................................................................................................... 37
   Outcome marketing feature set ............................................................................................................................... 37
   Business model canvas .......................................................................................................................................... 37
   Business plan template .......................................................................................................................................... 37
4.6. INTERLINKERs for evaluation (of co-production and of service) ................................................................. 38
   Final End-Users’ Questionnaire for Quality of Service .......................................................................................... 38
   INTERLINK Co-Producers’ Perceptions Questionnaire ......................................................................................... 38
   INTERLINK Users’ Demographics and Activity Satisfaction Questionnaire .......................................................... 39
   Usability testing ..................................................................................................................................................... 39
Appendix A. JSON schema for Software INTERLINKERs metadata ......................................................................... 39
Appendix B. JSON schema for Knowledge INTERLINKERs metadata ..................................................................... 47

List of figures

Figure 1. Snapshot of the INTERLINKERs catalogue as implemented in the first prototype of the INTERLINK Collaborative Environment at M16 .................................................................................................. 8
Figure 2. Metadata, instructions, snapshots and resource files uploaded in github for the “Stakeholders Mapping Canvas” knowledge INTERLINKER ...................................................................................... 16
Figure 3. Metadata, logo, and snapshots uploaded in github for the “Collaborative Editor” software INTERLINKER ........................................................................................................................................ 16
Figure 4. Sample API exposed by the GoogleDrive software INTERLINKER to be integratable in the Collaborative Environment ........................................................................................................... 18
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,

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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.

![INTERLINKERs catalogue](https://www.silearning.eu/)

![INTERLINKERs catalogue](https://servicedesigntools.org/resources)

![INTERLINKERs catalogue](https://designers.italia.it/)

![INTERLINKERs catalogue](https://www.ideo.com/eu)

![INTERLINKERs catalogue](http://www.engage2020.eu/)

---

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.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
</table>
| NAME<sup>7</sup> | A name for the INTERLINKER. Translations in different languages may be provided. This input will be:  
  - 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 |
| DESCRIPTION<sup>8</sup> | Textual description of the INTERLINKER, its functionality, usage, etc. Translations in different languages may be provided. This input will be:  
  - Shown on the platform interface in the page showing the details of the INTERLINKER  
  VALUE = <text>, possibly in different languages.  
  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. |
| 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: |

<sup>7</sup> 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.

<sup>8</sup> 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.
- Shown on the platform interface in the page showing the details of the INTERLINKER
- Used by the internal algorithms for intelligent filtering and recommendation

Possible values:
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

VALUE = <value>

<table>
<thead>
<tr>
<th>TARGET (Stakeholders)</th>
<th>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:</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ All</td>
<td>☐ PAs</td>
</tr>
<tr>
<td>☐ Public servants</td>
<td>☐ Politicians</td>
</tr>
<tr>
<td>☐ Businesses</td>
<td>☐ SMEs</td>
</tr>
<tr>
<td>☐ Freelancers</td>
<td>☐ Large companies</td>
</tr>
<tr>
<td>☐ Private non-profit</td>
<td>☐ Citizens</td>
</tr>
<tr>
<td>☐ Potential end-users</td>
<td>☐ Expert citizens</td>
</tr>
<tr>
<td>☐ Research organisations</td>
<td>☐ Universities</td>
</tr>
<tr>
<td>☐ Other research entities</td>
<td>☐</td>
</tr>
</tbody>
</table>

VALUE = <list of keywords>

<table>
<thead>
<tr>
<th>LICENCE</th>
<th>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:</th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Public Domain</td>
<td>☐ Permissive licence</td>
</tr>
<tr>
<td>☐ Copyleft</td>
<td>☐ Non-commercial licence</td>
</tr>
<tr>
<td>☐ Proprietary licence</td>
<td>(To be evaluated in the second pilots whether more specific values for licences should be used in this field.)</td>
</tr>
</tbody>
</table>

VALUE = <keyword>

<table>
<thead>
<tr>
<th>LIST OF PROBLEM PROFILES</th>
<th>List of names of Problem Profiles associated to the INTERLINKER This input will be:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Used by the internal algorithms for mapping the INTERLINKER to the corresponding nodes of the co-production tree</td>
</tr>
</tbody>
</table>

VALUE = <list of names of problem profiles>
| **TYPE OF INTERLINKER** | Either Enabling or Enhancing Service with the corresponding sub-classification. This input will be:  
- 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  
Possible values:  
- Enabling Services  
- Implementing Software and Artifacts  
- Operation services  
- Enhancing Services  
- Onboarding services  
- Follow-up services  
- External experts  
VALUE = <list of keywords> |
| **NATURE OF INTERLINKER** | Either Software, Knowledge INTERLINKER. This input will be:  
- Used by the internal algorithms for intelligent filtering and recommendation  
Possible values:  
- Software INTERLINKER  
- Knowledge INTERLINKER  
VALUE = <keyword>  
(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) |
| **RELATED INTERLINKERS** | List of related INTERLINKERs and dependency INTERLINKERs. This input will be:  
- Shown on the platform interface in the page showing the details of the INTERLINKER  
- Used by the internal algorithms for intelligent filtering and recommendation  
VALUE = <list of names of INTERLINKERs> |
| **ADMINISTRATIVE SCOPE** | This field describes the administrative context for which this INTERLINKER is particularly suitable. The value of this field will be:  
- 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  
Multiple values are possible:  
- EU level  
- National level  
- Local level  
VALUE = <list of keywords> |
| **DOMAIN** | 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. |

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⁹ [https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Service+Offering+Canvas+Playbook](https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Service+Offering+Canvas+Playbook)  
<table>
<thead>
<tr>
<th><strong>VALUE = &lt;string&gt; (list of keywords) for second prototype)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PROCESS</strong></td>
</tr>
<tr>
<td><strong>CONSTRAINTS AND LIMITATIONS</strong></td>
</tr>
<tr>
<td><strong>REGULATIONS AND STANDARDS</strong></td>
</tr>
<tr>
<td><strong>OVERVIEW TEXT</strong></td>
</tr>
<tr>
<td><strong>SNAPSHOTS</strong></td>
</tr>
</tbody>
</table>
### SPECIFIC PROPERTIES FOR SOFTWARE INTERLINKERS

**SUPPORTERS**

Further classification of the software INTERLINKERs, according to different technical dimensions. This input will be:

- Shown to technical users of the platform to explain what is required to run the service provided by the INTERLINKER

Possible values:

- ☐ Software-As-A-Service
- ☐ On-premise software
- ☐ Installed app

VALUE = <list of options>

**DEPLOYMENT MANUAL**

Url for the deployment manual of the software INTERLINKER

This input will be:

- 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

VALUE = <url>

**USER MANUAL**

Url for the user manual of the software INTERLINKER

This input will be:

- Shown on the platform interface in the page showing the details of the INTERLINKER

VALUE = <url>

**DEVELOPER MANUAL**

Url for the developer manual of the software INTERLINKER

This input will be:

- Shown to technical users of the platform

VALUE = <url>

**SUPPORTS INTERNATIONALISATION**

Boolean field expressing whether the INTERLINKER supports internationalisation.

VALUE = <boolean>

**IS RESPONSIVE**

Boolean field expressing whether the INTERLINKER is responsive.

VALUE = <boolean>

### SPECIFIC PROPERTIES FOR PLATFORM INTEGRATION

**AUTHENTICATION METHOD**

- ☐ Header
- ☐ Cookie

VALUE = <option>

**CAPABILITIES**

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:

- ☐ 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.
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELETE</td>
<td>Boolean field expressing whether assets are deletable.</td>
</tr>
<tr>
<td>PREVIEW</td>
<td>Boolean field expressing whether assets can be opened in a preview.</td>
</tr>
<tr>
<td>OPEN IN MODAL</td>
<td>Boolean field expressing whether the INTERLINKER can be open in a modal window</td>
</tr>
<tr>
<td>PATH</td>
<td>String field used together with IS_SUBDOMAIN and DOMAIN to calculate the complete URL of the service. VALUE = &lt;string&gt;</td>
</tr>
<tr>
<td>IS_SUBDOMAIN</td>
<td>Boolean field expressing whether the INTERLINKER runs as a subdomain VALUE = &lt;boolean&gt;</td>
</tr>
<tr>
<td>LOGOTYPE</td>
<td>Url for an image which represents the logo of the software INTERLINKER. VALUE = &lt;url&gt;</td>
</tr>
</tbody>
</table>

### Specific Properties for Knowledge Interlinkers

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORM OF KNOWLEDGE</td>
<td>Type of knowledge INTERLINKER: e.g., visual template, document template, canvas, best practices, guidelines, checklist, survey template, legal agreement template Possible values are: visual template, document template, canvas, best practices, guidelines, checklist, survey template, legal agreement template other VALUE = &lt;option&gt;</td>
</tr>
<tr>
<td>FORMAT</td>
<td>Type of the format used to encode the knowledge of the INTERLINKER Possible values are: PDF, Editable source documents (word, excel), open documents, structured formats (e.g., JSON, XML, RDF, CSV) VALUE = &lt;option&gt;</td>
</tr>
<tr>
<td>RESOURCE LINK</td>
<td>File path for the actual Knowledge INTERLINKER VALUE = &lt;path&gt;</td>
</tr>
</tbody>
</table>
2.1. Integration of INTERLINKERs with the Collaborative Environment

Following a design pattern similar to the one defined in Research Object Crates (RO-CRATE)\(^\text{11}\), 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).

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).

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.

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

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.
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 environment\(^\text{12}\).

INTERLINKERs have been divided here into (i) software enablars 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

<table>
<thead>
<tr>
<th>Name</th>
<th>Servicepedia (also called Augmenter)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>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:</td>
</tr>
<tr>
<td></td>
<td>● create and improve public service descriptions, organise discussions and keep record of participation and involvement;</td>
</tr>
<tr>
<td></td>
<td>● manage moderator decisions over the improvements;</td>
</tr>
<tr>
<td></td>
<td>● generate a final improvement report.</td>
</tr>
<tr>
<td></td>
<td><strong>The Servicepedia can run as a standalone application but it has also been integrated internally to the INTERLINK platform.</strong></td>
</tr>
<tr>
<td><strong>Link</strong></td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/software/augmenter">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/software/augmenter</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Survey editor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>SurveyJS</strong></td>
<td>Uses SurveyJS javascript library to allow the creation of custom surveys.</td>
</tr>
<tr>
<td><strong>Google Drive Manager</strong></td>
<td>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. 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. <strong>Google Drive has been tightly integrated inside the Collaborative Environment.</strong></td>
</tr>
</tbody>
</table>
| **Loomio**            | 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:  
  ● 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. **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. | [https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/software/loomio](https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/software/loomio) |
<p>| <strong>Collaborative editor</strong> |                                                                             |                                                                      |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Alternative for Google Drive. Uses Etherpad to allow collaboration on text documents.</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/software/ceditor">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/software/ceditor</a></td>
</tr>
<tr>
<td><strong>Link</strong></td>
<td><strong>W3C accessibility tools</strong></td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/w3c-accessibility-tools">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/w3c-accessibility-tools</a></td>
</tr>
<tr>
<td><strong>W3C Markup Validation Service</strong></td>
<td>This validator checks the markup validity of Web documents in HTML, XHTML, SMIL, MathML, etc..</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/w3c-markup-lang-validator">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/w3c-markup-lang-validator</a></td>
</tr>
<tr>
<td><strong>Trello</strong></td>
<td>Trello (<a href="https://trello.com/">https://trello.com/</a>) 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.</td>
<td></td>
</tr>
</tbody>
</table>
### Google Chart

**Name:** Google Chart

**Description:**
Google Charts is a JavaScript library providing a way to visualise data on your website (from simple line charts to complex hierarchical tree maps).

**Link:**
https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/google-chart

---

### Grafana

**Name:** Grafana

**Description:**
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.

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.

**Link:**
https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/grafana

---

### Mailchimp

**Name:** Mailchimp

**Description:**
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.

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.

**Link:**
https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/mailchimp
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

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECO - Event co-designer</td>
<td>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</td>
</tr>
</tbody>
</table>
requests for resources, facilities and services needed to organise the event. In addition, ECO includes collaborative tools for documentating, discussing and co-evaluating the event proposal.

<table>
<thead>
<tr>
<th>Name</th>
<th>EVO - Event Organiser</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>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.</td>
</tr>
<tr>
<td>Link</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/event-codesigner">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/event-codesigner</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>AAC - Authentication and Authorization Controller</th>
</tr>
</thead>
</table>
| Description | 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.

More specifically, the tool allows for, but not limited to

- 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; |
| Link | https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalsoftware/event-organizer |
Perform role-based and attribute-based access control policy implementation for end-users and applications accessing protected APIs.

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.

**Keycloak**

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.

This INTERLINKER is a pointer to an external recommended resource.

**WSO2 API Manager**

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:
- Publish an API
- Control and monitor the access to the published API
- Document the published API

This INTERLINKER is a pointer to an external recommended resource.
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 environment.\(^\text{13}\)

4.1. INTERLINKERs for co-production process start

This category of knowledge INTERLINKERs includes:

- Project description template
- Project description example

<table>
<thead>
<tr>
<th>Name</th>
<th>Project description template</th>
</tr>
</thead>
</table>

\(^\text{13}\) [https://demo.interlink-project.eu/catal.](https://demo.interlink-project.eu/catal)
<table>
<thead>
<tr>
<th>Description</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Link</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Project-Description-Template">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Project-Description-Template</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Project description example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>This knowledge resource provides an example of project description that synthetically summarises the goals and major aspects of a co-production initiative.</td>
</tr>
<tr>
<td>Link</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Project-Description-Example">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Project-Description-Example</a></td>
</tr>
</tbody>
</table>

### 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

<table>
<thead>
<tr>
<th>Name</th>
<th>Understand the different types of stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Guidelines to understand which are the different types of stakeholder, their motivations, skills, expectations toward the project</td>
</tr>
</tbody>
</table>
## 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**

## 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:
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**

## 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**

## Communication for stakeholders engagement KIT
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Guidelines for Focus Group</strong></td>
<td>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).</td>
</tr>
<tr>
<td><strong>Template for Focus Group on co-production process</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Consent form INTERLINK</strong></td>
<td>Template to prepare a form to collect consent from participants engaged in INTERLINK research activities about the use of their personal data.</td>
</tr>
</tbody>
</table>

**Description**
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. 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.

**Link**
A draft version of this knowledge INTERLINKER has been produced and it is currently under discussion and refinement with the use case owners.

**Consent form template**

**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](https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Consent-Form-INTERLINK)
### 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
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guidelines for online Surveys</td>
<td>This resource contains instructions on how to set up a research activity based on online surveys, for a co-production project.</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Guidelines-for-online-surveys">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Guidelines-for-online-surveys</a></td>
</tr>
<tr>
<td>Guidelines for collaborative problem refinement</td>
<td>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.</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Collaborative-Problem-Refinement">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Collaborative-Problem-Refinement</a></td>
</tr>
<tr>
<td>Template for Focus Group on problem refinement</td>
<td>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.</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Focus-Group-Template-problem-exploration-functionalities">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Focus-Group-Template-problem-exploration-functionalities</a></td>
</tr>
<tr>
<td>Guidelines for interviews</td>
<td>Instructions on how to set up a research activity based on interviews, for a co-production project.</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Guidelines-for-interviews">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Guidelines-for-interviews</a></td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Link</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Template for semi-structured interviews</strong></td>
<td>Instructions and examples on how to conduct semi-structured interviews for a co-production project.</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Template-for-semi-structured-interview">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Template-for-semi-structured-interview</a></td>
</tr>
<tr>
<td><strong>Template for structured interviews</strong></td>
<td>Instructions and examples on how to conduct structured interviews for a co-production project.</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Template-for-semi-structured-interview">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Template-for-semi-structured-interview</a></td>
</tr>
<tr>
<td><strong>Template for Personas (in Italian)</strong></td>
<td>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).</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/it-agid-personas">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/it-agid-personas</a></td>
</tr>
<tr>
<td><strong>Example of Use Scenario (in Italian)</strong></td>
<td>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).</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/it-use-scenarios">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/it-use-scenarios</a></td>
</tr>
</tbody>
</table>
### 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](https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/it-workshop-service-design)

### 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](https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/it-user-journey)

### 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](https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Hackathon-Rules-Template)

### 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](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
- Open API specification
- EIDAS standards

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>W3C Web Content Accessibility Guidelines</strong></td>
<td>Web Content Accessibility Guidelines (WCAG) provide guidelines that explain how to make the Web content more accessible to the people with disabilities.</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/w3c_web_content_accessibility_guidelines">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/w3c_web_content_accessibility_guidelines</a></td>
</tr>
<tr>
<td><strong>Open Source guides</strong></td>
<td>A collection of resources for individuals, communities, and companies who want to learn how to run and contribute to an open source project.</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/Opensource-Guide">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/Opensource-Guide</a></td>
</tr>
<tr>
<td><strong>AGID Cloud Enablement Kit (In Italian)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Link</td>
</tr>
<tr>
<td>----------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>AGID Cloud computing migration strategy evaluation template</strong></td>
<td>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.</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/it-cloud-enablement-kit">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/it-cloud-enablement-kit</a></td>
</tr>
<tr>
<td><strong>AGID Guidelines on the acquisition and reuse of software for public administrations</strong></td>
<td>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.</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/it-guidelines_acquiring_reuse_sw_pa">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/it-guidelines_acquiring_reuse_sw_pa</a></td>
</tr>
<tr>
<td><strong>AGID Guidelines for the development of secure software</strong></td>
<td>Guidelines that specify the correct security policies to minimise possible data loss.</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/it-pa-guidelines-for-secure-">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/it-pa-guidelines-for-secure-</a></td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
<td>Link</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>AGID Italian PA interoperability model</td>
<td>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. <strong>This INTERLINKER is a pointer to an external recommended resource.</strong></td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/it-pa-interoperability-model">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/it-pa-interoperability-model</a></td>
</tr>
<tr>
<td>AGID Minimum Security Measures for Public Administration.</td>
<td>For a public administration, it is important to follow correct security policies to minimise possible data loss. This interlinker specifies the minimum security measures. <strong>This INTERLINKER is a pointer to an external recommended resource.</strong></td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/it-pa-minimum-security-measures">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/it-pa-minimum-security-measures</a></td>
</tr>
<tr>
<td>Open API specification</td>
<td>For a public administration, it is important to develop the new services considering future integration possibilities. OpenAPI is a standard helping in doing that. <strong>This INTERLINKER is a pointer to an external recommended resource.</strong></td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/open-APISpecification">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/externalknowledge/open-APISpecification</a></td>
</tr>
<tr>
<td>EIDAS standards</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.

This INTERLINKER is a pointer to an external recommended resource.

### 4.5. INTERLINKERs for service sustainability

This category of knowledge INTERLINKERs includes:

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

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcome marketing feature set</strong></td>
<td>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.</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/outcome-marketing-featureset">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/outcome-marketing-featureset</a></td>
</tr>
<tr>
<td><strong>Business model canvas</strong></td>
<td>This canvas can be used collaboratively, for instance, during a brainstorming or a focus group, to reflect on the most suitable business model associated to a co-produced service</td>
<td><a href="https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Business-Model-Canvas">https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/Business-Model-Canvas</a></td>
</tr>
<tr>
<td><strong>Business plan template</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This template can be edited collaboratively by the co-producing team to elaborate the business plan for a co-produced service.

**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](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](https://github.com/interlink-project/interlinkers-data/tree/master/interlinkers/knowledge/co-producers-perceptions-Questionnaire)
### 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

### 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).

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

---

**Note:** The JSON code snippet is not fully presented due to the constraints of the image. Please refer to the full text or the repository for the complete code.
"title": "Languages",
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      {
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  }
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      "all;businesses;large_companies",
      "all;businesses;private_non_profit",
      "all;citizens",
      "all;citizens;potential_end_users",
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    "best_practices",
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   },
   "edit": {
      "title": "Edit",
      "type": "boolean"
   },
   "delete": {
      "title": "Delete",
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   },
   "preview": {
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      "type": "boolean"
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   "clone",
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   "open_in_modal",
   "shortcut"
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      "type": "string"
    },
    "domain": {
      "title": "Domain",
      "type": "string"
    },
    "path": {
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).

```json
{
  "title": "Schema",
  "type": "object",
  "properties": {
    "problemprofiles": {
      "title": "Problemprofiles",
      "type": "array",
      "items": {
        "type": "string"
      }
    }
  }
}
```
"languages": {
  "title": "Languages",
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  "items": {}
},
"name_translations": {
  "title": "Name Translations",
  "type": "object"
},
"description_translations": {
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  "type": "object"
},
"constraints_and_limitations_translations": {
  "title": "Constraints And Limitations Translations",
  "type": "object"
},
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  "title": "Regulations And Standards Translations",
  "type": "object"
},
"tags_translations": {
  "title": "Tags Translations",
  "type": "object",
  "additionalProperties": {
    "type": "array",
    "items": {
      "type": "string"
    },
    "minItems": 1
  }
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"difficulty": {
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},
"targets": {
  "type": "array",
  "items": {
    "$ref": "#/definitions/Targets"
  }
},
"licence": {
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},
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  "items": {
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  }
},
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  "items": {
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},
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},
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    ]
  }
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"file_translations": {
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  "type": "object",
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  }
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"licence",
"reference",
"instructions_translations",
"softwareinterlinker",
"file_translations"
],
"additionalProperties": false,
"definitions": {
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    "title": "Difficulties",
    "description": "An enumeration.",
    "enum": [
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      "easy",
      "medium",
      "difficult",
      "very_difficult"
    ]
  },
  "Targets": {
    "title": "Targets",
    "description": "An enumeration.",
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      "all;pas",
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      "all;pas;politicals",
      "all;businesses",
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      "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"
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