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Master Data Management

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Acronyms

Acronym	Full Form	
BoD	Board of Directors	
CDIF	Cross Domain Interoperability Framework	
DH	Digital Humanities	
DMP	Data Management Plan	
DOI	Digital Object Identifier	
EOSC	European Open Science Cloud	
ESFRI	European Strategy Forum on Research Infrastructures	
FAIR	Findable, Accessible, Interoperable, Reusable	
GLAM	Sector including galleries, libraries, archives, and museums	
IF	Interoperability Framework	
IP Implementation Phase		
ITSERR	Research Infrastructure ITSERR (Italian Strengthening of the ESFRI RI RESILIENCE)	
MDM	DM Master Data Management	
ODRL	Open Digital Rights Language	
OS	Open Science	
PID	Persistent Identifier	
РРР	Preparatory Phase Project	
RDM	Research Data Management	
ReIReSearch	RESILIENCE's unified discovery platform	
RI	Research Infrastructure	
RS	Religious Studies	
RSRL	RESILIENCE Service Readiness Level	



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SDT	Service Description Template	
SSHOC	Social Sciences and Humanities Open Cloud	
STEM	Domain including science, technology, engineering, and mathematics	
TNA	Transnational Access	
TRL	Technology Readiness Level	
WU Data	Working Unit Data	

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1 Executive Summary

This deliverable outlines the Master Data Management of RESILIENCE, aiming to enhance interoperability, discoverability, and usability of research data and services across the community of the study of religion. RESILIENCE establishes a robust Reference Data Architecture through a comprehensive Data Dictionary and Service Dictionary, facilitating seamless data exchange and clear service descriptions.

The Data Dictionary provides a common terminology framework necessary for effective communication and interoperability among diverse research information systems. Through a detailed landscape analysis, RESILIENCE identified essential vocabularies, thesauri, ontologies, and metadata schemas that are crucial for ensuring FAIR (Findable, Accessible, Interoperable, Reusable) principles within the community. Key resources such as Schema.org, CIDOC CRM, and the SSHOC Marketplace standards have been leveraged to avoid duplication and ensure compatibility.

Interoperability is further strengthened by adopting established frameworks such as the EOSC Interoperability Framework or the Cross Domain Interoperability Framework (CDIF). Their implementation facilitates data and service integration within broader European infrastructures, reinforcing RESILIENCE's position as an important contributor to the European research landscape. Both a general overview and more details regarding its implementation are provided.

The Service Dictionary complements the Data Dictionary by standardizing service descriptions, thereby improving transparency and accessibility. RESILIENCE's streamlined Service Description Template (SDT), aligned with EOSC and SSHOC guidelines, ensures that service providers within the academic and GLAM sectors can clearly articulate service capabilities. The tailored RESILIENCE Service Readiness Level (RSRL) scale further supports service providers in self-assessing maturity, fostering sustainable and reliable service delivery.

Using the online discovery platform ReIReSearch as a key example, this deliverable demonstrates practical implementation of the interoperability principles. As one of RESILIENCE's core services built upon the Schema.org application profile, it illustrates the effective integration and harmonization of diverse metadata, on top of providing an accessible and valuable discovery platform for researchers.



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By systematically developing these foundational elements, RESILIENCE ensures that research data and services are effectively managed, highly interoperable, and sustainably maintained, supporting the ongoing growth and impact of the study of religion.



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2 Introduction

According to the Grant Agreement, the Master Data Management deliverable needs to contain the following:

"For all services to be aligned with researchers' needs in terms of data exchange, RESILIENCE needs to establish a Reference Data Architecture as well as the processes to maintain it during the whole RI duration. Our deliverable will be developed upon 2 levels of abstraction:

- **Data Level**: Aligned with Master Data management, a common RESILIENCE Data dictionary is developed that covers all Religious Studies Research information systems. This allows all WPs applications to exchange information transparently.
- Service Level: One step above, at service level, a common definition language is created in order to interoperate between systems with common semantic and structured language rules."

Within SSH there are still many different ontologies and vocabularies used depending on which type of research (archaeology, psychology, archival studies, ...) so it is useful to make clear which are most relevant within the context of RESILIENCE and its ambitions for improved FAIRness of different types of research outputs and data. The purpose of this delivery mainly pertains to recommendations and a **common language** to share between headquarters and the different national nodes, enhancing interoperability.

In chapter three we outline our Data Dictionary. There is already a wealth of information on this topic out there thanks to the work done by **other European RIs and e-Infrastructures** within the SSH such as DARIAH, CLARIN, CESSDA and projects tackling this topic such as ATRIUM. On top of that the SSH Open Marketplace have spent considerable time and resources on collecting the most used data models, ontologies, controlled vocabularies, and formats within SSH.

Given the variety of ontologies, vocabularies, and metadata standards in SSH, the deliverable synthesizes the most pertinent and widely recognized resources specifically for the study of religion. This targeted approach ensures that RESILIENCE directly meets the interoperability and FAIRness requirements essential for sustainable and impactful research data management. Once a common language is defined, we continue in chapter 4 with an exploration of **interoperability** and its importance. More detail is provided regarding the most prominent infrastructures we should strive to integrate with, as well as a possible way of doing this.



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Chapter 5 introduces the **Service Dictionary**, the core metadata framework that ensures every RESILIENCE service—whether a digital archive, training course, or digitisation tool—is described in a consistent, searchable way. The chapter explains why the original template was pared down to a lean set of 12 mandatory and 8 preferred fields, aligned with EOSC and SSHOC guidelines yet tailored to the realities of providers within the academic RS and GLAM sector. It also presents a plain-language nine-stage RESILIENCE Service Readiness Level (RSRL) scale that lets non-technical owners self-assess maturity from "Idea" to an "Established/trusted" service, and it clarifies catalogue inclusion rules.

One of the core services of RESILIENCE is its online discovery platform **ReIReSearch**, which is why in chapter 6 we use this as an example of a highly interoperable interface. We outline its background/history, structure and dive deeper into its underlying data model, thus providing our users and partners with a use case of both our Data and Service Dictionary.



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3 Data Dictionary

3.1 Purpose

As described in the Grant Agreement: "As part of this deliverable, a common RESILIENCE data dictionary has been developed to cover all research information systems within the study of religion. By outlining such a dictionary, we ensure that all Work Packages (WPs) and Work Units (Wus) have a shared language and consequently enable them to communicate effectively."

Every research field has its own specific concepts, context and terminology. Even within one science cluster, there are many differences in how certain things are referenced or defined, which makes alignment difficult. Where in hard sciences, there are more specific definitions, within the Social Science and Humanities, this is less so, making the development of a common vocabulary even more important in regard to interoperability. In general, innovation is a goal to strive for when conducting research. However, when developing a common vocabulary the whole point is to not reinvent the wheel. There is already a wealth of information and resources by other SSH initiatives out there that we can base ourselves on which is why the Data Unit has focused on providing an overview of the key concepts, including a list with existing resources, highlighting only the most relevant.

3.2 Landscape Analysis & Desk Study

The use of established taxonomies, ontologies, vocabularies and dictionaries is highly important when aiming to integrate or interoperate with other infrastructures which is why we provide an overview of relevant resources. There is a multitude of projects and infrastructures, we decided to focus on the most relevant European projects out there, which are also listed in the D2.1 Service Strategy¹ section 'Synergy Possibilities'. Therefore, the sources that were consulted during the development of this overview, are deliverables and reports from SSH projects, initiatives and RIs such as SSHOC, CESSDA, DARIAH, CLARIN and Triple. For a full list of resources, see the Annex 8.1.

¹ D_{2.1} - Service Preparation and Implementation Strategy; chapter 7. Synergy possibilities with other RI & e-Infrastructures



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One of our main resources while compiling this list has been the work done by ATRIUM, a joint effort by some of the main SSH RI's. Our landscape analysis included extensive consultation of the deliverable D_{3.1} from ATRIUM, titled 'Overview of Models and Formats in the Field²,' which provided crucial insights into established vocabularies and their implementation within SSH infrastructures. Since we already cover the importance of using trusted data formats in RESILIENCE's Data Management Plan³, we won't include those here. It is however the base of any vocabulary or data schema so make sure to adhere to a known format, preferably used by similar projects.

3.3 Key Concepts

Metadata in the form of controlled vocabularies, taxonomies, thesauri and ontologies are collectively known as "vocabularies." They differ in the complexity of the information represented and in how they're expressed. However, all identify and categorize digital content and provide contextual information about that content. One of the key benefits of this type of metadata is harmonization of terminology across systems. In short:

- Terms and concepts are linked in a logical order or organised into categories.
- Controlled vocabularies are often domain specific.
- They make your data more FAIR.

However, because there are so many differences between all the used vocabularies and metadata schemes, there is a clear need for interoperability which is where the implementation of an Interoperability Framework (IF) comes in. More on this can be found in chapter 4. It is also worth pointing out that vocabularies, controlled or not, in isolation provide little value. Their value is realized when they are used to describe an organization's data assets.⁴

In the following two sections, we explain what ontologies, vocabularies, thesauri and metadata schemas are, what they are used for and how they differ in meaning.

² https://zenodo.org/records/14575783

³ D2.4 – Data Management Plan: <u>https://doi.org/10.5281/zenodo.13939109</u>

⁴ <u>https://www.datamanagementblog.com/controlled-vocabularies-data-knowledge-management/</u>



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3.3.1 Definitions

Vocabulary

A vocabulary is the simplest semantic resource: a curated list of domain terms (or codes) with human-readable labels and, sometimes, definitions. It provides a single agreed spelling for each concept, which makes manual tagging and basic faceted search consistent. Typical vocabularies are flat or shallow taxonomies; they may be published as a plain list, CSV, or preferably as a concept scheme such as SKOS. Because the terms are fixed, a vocabulary already improves data quality, but it carries no formal semantics, nor hierarchical or relational structures: a computer cannot tell whether term A is broader than term B, or whether two terms are synonyms.

Controlled vocabulary

A controlled vocabulary is a vocabulary that is managed under explicit rules: each term has an identifier so they can be referenced, change requests are logged, deprecated terms redirect to preferred ones, and releases are versioned. Only one term is used to describe one particular phenomenon, including a definition, and any synonyms.

The distinction between a vocabulary and a controlled vocabulary is that terms of controlled vocabulary are stored and maintained using agreed procedures. When an editorial board applies change control (preferred/alternate labels, URIs, versioning), the result is a controlled vocabulary. Relations are still minimal (e.g. simple broader / narrower trees). As soon as richer semantic links are added—synonyms, associative links— the resource becomes a thesaurus.

Thesaurus

A thesaurus is a controlled vocabulary enriched with a semantic network. Concepts are created by interconnecting defined terms through hierarchical relationships such as broader term (BT), narrower term (NT), related term (RT) and associative relationships such as equivalence links for synonyms, acronyms or multilingual labels. This structure supports query expansion (e.g.: find 'temples' when searching for 'religious buildings') and cross-language retrieval.

Thesauri are meant to map terms to concepts in a more-or-less controlled vocabulary, so that you consistently use the same terms to refer to the same concepts, and so that you can find alternate terms



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when desired. They are often used in information retrieval and indexing to broaden search results and find relevant documents since they are richer than simple lists and easier to curate than full ontologies.

Ontology

An ontology adds formal logic to the thesaurus concept, making it the most layered and extensive type of controlled vocabularies. It builds upon a vocabulary or thesaurus by defining the relationships between the terms or concepts. Classes, properties and axioms are expressed in standards representation languages like OWL, enabling automated reasoning (e.g. infer that every 'Benedictine abbey' is also a 'Christian monastery').

Ontologies allow heterogeneous datasets to interlink without prior agreement on column names. The drawback of these extensive possibilities is that ontologies require domain experts and tooling for maintenance. They are hard to create, maintain and handle which is why many projects reuse upper-level ontologies such as CIDOC-CRM and extend them only where needed.

Metadata Schema

A metadata schema (or application profile) specifies record structure: which elements exist, their order, data types, cardinality and, often, which controlled vocabularies are allowed in each field. XML-Schema, JSON-Schema and SHACL are common expression languages. Schemas ensure two catalogues expose compatible records, regardless of the vocabularies or ontologies referenced inside those records.

3.3.2 Overview Matrix

The rule of thumb is:

Vocabulary \rightarrow use it in a controlled way \rightarrow add relations = thesaurus \rightarrow add (abstract) logic = ontology A metadata schema tells you **where** (in which field) each of those terms appears in a record.



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Concept	Definition	Structure	Purpose	
Vocabulary	Curated list of terms with no hierarchy or relationships.	Flat or enumerated list; may or may not be maintained formally.	Represent the knowledge within a domain, provide clarity and ensure consistent terminology	
Controlled Vocabulary	A vocabulary with clear governance and management practices.	Concepts are organized into a simple hierarchical structure of broader and narrower meanings (eg. taxonomy)	The added governance & persistent identifiers prevent ambiguity and enable machine validation.	
Thesaurus	Controlled vocabulary enhanced by hierarchical and associative semantic relationships.	Network or graph of concepts with (non-)hierarchical & associative relations.	Powerful searching & semantic expansion; Consistent use of terms related to the same concepts.	
Ontology	Rich, logically structured vocabularies for detailed semantic interoperability.	A network of interconnected concepts with hierarchical and/or associative relationships, described following strict rules.	Rich interoperability, reasoning and semantic data integration	
Metadata Schema	Structured guidelines specifying metadata elements and their use.	May be expressed in XML-Schema, JSON-Schema, etc.	Ensure metadata records share the same structure, so it is machine-readable and interoperable.	

Table 1: Overview Matrix



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3.4 Catalogue of Resources

Below follows an overview of (controlled) vocabularies, thesauri, ontologies and metadata schemes, including a link to their webpage, their relevance to the community of the study of religion, and the project(s) they are a result of or used by. This overview is by no means complete but should provide the reader with a good idea of some important resources out there. In time these lists will be further expanded with often used resources by the community.

3.4.1 (Controlled) Vocabularies

Name	Project	Link	Relevance
RDMT	CODATA	https://vocabs.ard c.edu.au/viewById /685	Research Data Management Terminology; Curated set of ~345 RDM terms with stable URIs and definitions but no hierarchical semantics beyond "is-a term".
ICONCLASS codes		<u>https://iconclass.o</u> rg/help/basics	A classification system for cultural content, focused on artworks, iconography, and visual motifs. It is widely used in libraries, museums, and digital humanities projects to index, retrieve, and analyze images based on subject matter.
EOSC Resource Categories	EOSC	https://eoscfuture .eu/eosc- resource- catalogue/	Published as a SKOS ConceptScheme listing Super-, Sub- & Category levels for the EOSC Portal; terms are maintained but relations are simple broader/narrower taxonomic links.
TaDiRAH	ATRIUM	<u>https://vocabs.dar</u> iah.eu/tadirah/en/	In this vocabulary you can find activity terms that can be used by Digital Humanities projects to tag research methods.
DPC Glossary	DPC	https://www.dpco nline.org/handbo ok/glossary	A glossary created by the Digital Preservation Coalition as a guide to their Digital Preservation Handbook. It offers a working set of definitions and acronyms used throughout the Handbook and their website.

Table 2: (Controlled) Vocabularies



Document Title	:
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3.4.2 Thesauri

Name	Project	Link	Relevance
ELSST	CESSDA	<u>https://thesauri.cess</u> da.eu/elsst-5/en/	Has a "Religion and belief" branch where you can find multilingual terms for social-science datasets about religion.
UNESCO Thesaurus	UNESCO	<u>https://vocabularies.</u> <u>unesco.org/browser/t</u> <u>hesaurus/en/</u>	Thesaurus that for example describes hierarchical religion concepts (e.g., <i>Religious architecture</i> \rightarrow <i>Temples</i>)
Getty TGN	Getty	<u>https://www.getty.e</u> <u>du/research/tools/vo</u> <u>cabularies/tgn/</u>	Thesaurus of Geographic Names; links holy sites (Mecoca, Lourdes, Bodh Gaya) to broader regions.
History and Sciences of Religions	CNRS	<u>https://loterre.istex.f</u> r/4V5/en/	Controlled vocabulary used for indexing bibliographical records for the "History and Sciences of Religions" FRANCIS database.

Table 3: Thesauri

3.4.3 Ontologies

Name	Project	Link	Relevance
SSHOCro	SSHOC	<u>https://zenodo.o</u> rg/records/67717 57#.Yrro5- xBzoo	SSHOCro proposes an ontological model and RDF schema to be used as a top-level ontology for organising knowledge and information found distributed across various primary sources of information in the SSHOC.
CIDOC CRM	SSHOCro, DARIAH	<u>https://cidoc-</u> <u>crm.org/</u>	Ontology specific for Cultural Heritage and mainly used by museums or heritage projects like ARIADNE. It is often used as a base for other ontologies such as the SSHOCro or GoTriple Ontology. It also has useful extensions such as the CRMtext for describing ancient documents.



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Name	Project	Link	Relevance
BIBFRAME	BIBFRAME	<u>https://www.loc.</u> gov/bibframe/	BIBFRAME provides a foundation for the future of bibliographic description, both on the web, and in the broader networked world that is grounded in Linked Data techniques. A major focus of the initiative is to determine a transition path for the MARC 21 formats while preserving a robust data exchange that has supported resource sharing and cataloging cost savings in recent decades.
SKOS	W ₃ C	<u>SKOS Simple</u> <u>Knowledge</u> <u>Organization</u> <u>System - home</u> <u>page</u>	Both a standard and an OWL Ontology that lets you encode concepts, labels and mapping links. It is used for expressing controlled vocabularies.
TRIPLE	GoTriple	<u>https://www.got</u> <u>riple.eu/</u>	GoTriple is an innovative multilingual discovery platform for the social sciences and humanities (SSH). It provides one of the central access points for discovering and reusing research artefacts that are relevant to the wide variety of disciplines under the umbrella domain of SSH

Table 4: Ontologies

3.4.4 Metadata Schemes

Name	Project	Link	Relevance
DCAT (Dublin Core)		<u>https://www.dub</u> lincore.org/	Widely used in SSH for metadata description, providing a standardized yet simple schema beneficial for cataloguing religious studies resources and datasets.
ΤΕΙ	DARIAH, CLARIN	<u>https://tei-c.org/</u>	Crucial for text encoding, especially historical, literary, or linguistic sources prominent in religious studies. Essential for digital editions and manuscripts.
Schema.org	CDIF, ReIReSearch	<u>https://schema.o</u> rg/	Especially useful for web-based discoverability of diverse research resources. Its flexible structure is widely applicable to varied SSH resources.



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Name	Project	Link	Relevance
EDM	Europeana; E- RIHS	https://pro.euro peana.eu/page/e dm- documentation	Key metadata schema for cultural heritage collections, relevant for religious studies involving artifacts, images, and multimedia cultural heritage items.
Component Metadata Infrastructure	CLARIN	https://www.clar in.eu/content/c mdi- component- metadata- infrastructure	Primarily for linguistic resources, enabling detailed, flexible metadata description, valuable for corpus linguistics within religious texts and historical language resources.
DDI Codebook and Lifecycle		<u>https://ddiallianc</u> e.org/Specificati on/	Standard for describing survey and observational data within SSH, beneficial for managing qualitative and quantitative data collections in religious and social studies research.
MODS		https://www.loc. gov/standards/m ods/	Highly applicable to library and archival cataloguing, supporting granular bibliographic description of texts crucial for comprehensive religious studies research.
EAD		<u>https://www.loc.</u> gov/ead/	Encoded Archival Description is used for archival collections, providing a detailed descriptive standard essential for historical and archival materials common in the study of religion.
DataCite		https://datacite. org/	Provides persistent identifiers (DOIs) and standard metadata for datasets, significantly enhancing the discoverability and reusability of SSH research outputs.

Table 5: Metadata schemes

3.5 Other Resources

While the previous sections covered the most relevant controlled vocabularies, thesauri, ontologies, and metadata schemes, numerous additional resources exist that might be beneficial for specific research needs within the study of religion or the broader SSH community. Below is a curated list of recommended platforms and tools where further relevant resources, vocabularies, or standards can be explored.



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SSH Open Marketplace Vocabularies:

- Comprehensive list of vocabularies, formats, and ontologies relevant to Social Sciences and Humanities.
- <u>https://vocabs.sshopencloud.eu/browse/en/</u>

Getty Research Institute Vocabularies:

- Trusted vocabularies extensively used for art, iconography, cultural heritage, and related fields.
- https://www.getty.edu/research/tools/vocabularies/index.html

CESSDA Vocabulary Service

- Controlled vocabularies tailored for data archiving and social sciences RDM.
- <u>https://www.cessda.eu/Tools/Vocabulary-Service</u>

BARTOC (Basel Register of Thesauri, Ontologies & Classifications)

- Comprehensive registry of vocabularies and metadata schemes across numerous disciplines, valuable for exploring and identifying standards used globally.
- <u>https://bartoc.org/</u>

GoTriple Vocabulary

- Multilingual vocabularies specifically targeted to the needs of the Social Sciences and Humanities, including the study of religion.
- <u>https://www.gotriple.eu/</u>

Library of Congress Linked Data Service

- Authority control and linked data service that includes detailed entries, such as the concept of "Religion," suitable for precise metadata tagging.
- <u>https://id.loc.gov/authorities/subjects/sh85112549.html</u>

RDM Controlled Vocabularies Research



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- Overview and in-depth guidance on controlled vocabularies specific to research data management practices.
- <u>https://rdmkit.elixir-europe.org/vocabularies</u>



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4 Interoperability within SSH and beyond

In RESILIENCE'S Service Strategy⁵ nine core guiding principles are outlined, one of which is its integration within the wider European landscape of Research Infrastructures (RIs). To facilitate this, it is important to focus on interoperability, a concept that is at the forefront of many projects and infrastructures being built right now since this is crucial for realizing true Open Science and adhering to the FAIR (Findable, Accessible, Interoperable, Reusable) principles. Those principles aim to make research data and related resources easy to find, access, combine, and use, which is particularly important for multidisciplinary research - such as the study of religion - that spans across different domains and infrastructures, addressing some of the biggest societal challenges.

However, the practical implementation of FAIR principles often lags behind due to organizational, legal, and cultural barriers, as well as the lack of standardized data and metadata exchange practices. Despite the availability of modern information technology and the tools needed to build the desired research infrastructure, the resources are not always provided in a reusable manner, hindering efficient data sharing and integration. To overcome these challenges, it is essential to provide detailed and rich metadata in standardized formats that are meaningful to users and their systems. Machine-actionability is a key enabler for FAIR implementation, as it allows for automation and scalability, reducing the time and effort required for data preparation and integration.

By publishing an extensive Data Management Plan⁶ RESILIENCE aims to provide its community with a guide and resources on good practices around FAIR data, helping to mitigate the negative impacts of emerging technologies like large language models (LLMs) and artificial intelligence (AI), while enhancing their positive potential.

4.1 The European Open Science Cloud (EOSC) and its first EU Node

The European Open Science Cloud (EOSC) ecosystem builds on existing infrastructure and services supported by the European Commission (EC), Member States and Associated countries, and research

⁵ "RESILIENCE services should be integrated into the wider SSH and EOSC ecosystem" - D2.1 Service Preparation and Implementation Strategy: <u>https://doi.org/10.5281/zenod0.14269781</u>,

⁶ D2.4 Data Management Plan: <u>https://doi.org/10.5281/zenodo.13939110</u>



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communities⁷. Its participants have been working diligently on developing an interoperability framework. Key features of the EOSC include:

- Interoperability Framework: Ensures seamless data sharing and processing across national and disciplinary boundaries.
- Rules of Participation: Establishes guidelines for service providers and users to ensure compliance and quality.
- Federated Architecture: Promotes a decentralized approach, allowing various nodes to contribute to the overall infrastructure.

The EOSC Federation Build up phase⁸, which kicked off in March of 2025, will further enhance and specify the above. As the Federation develops, RESILIENCE will closely monitor new or updated outputs such as the EOSC Federation Handbook, to ensure future compliance.⁹ As outlined in D2.1, our service strategy aligns with the EOSCs principles by promoting open access, interoperability, and the use of FAIR (Findable, Accessible, Interoperable, Reusable) data principles. Through targeted cooperation with SSHOC, RESILIENCE can benefit from shared expertise, reducing the redundancy of efforts and enhancing efficiency in service delivery and metadata standardization.

4.2 SSHOC and the SSH Open Marketplace

In the past few years, the ESFRI landscape has moved towards a more 'cluster-like' collaboration of thematic RI, leading to the development of the Social Sciences and Humanities Open Cloud (SSHOC). Since the study of religion falls within the SSH domain, ensuring interoperability with them through the SSH Open Marketplace is paramount.

This is why we are actively engaging with SSHOC through, for example, the first strategic Pillar "Sharing Data, Tools and Workflows"¹⁰. RESILIENCE's active engagement with the SSH Open Marketplace will ensure

⁷ <u>https://eosc.eu/partnership/</u>

⁸ <u>https://eosc.eu/eosc-about/building-the-eosc-federation</u>

⁹ <u>https://eosc.eu/eosc-about/building-the-eosc-federation/eosc-federation-handbook/</u>

¹⁰ <u>https://sshopencloud.eu/news/sshoc-2025-updates</u>.



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robust alignment with EOSC standards and facilitate the seamless discoverability and interoperability of its services across SSH disciplines.

The OSCARS Projects¹¹ (Open Science Clusters' Action for Research and Society) is a four-year Horizon Europe project, which aims to foster the uptake of Open Science in Europe by mapping and where possible consolidating the achievements of world-class European research infrastructures on the ESFRI roadmap and beyond into lasting interdisciplinary FAIR data services, tools and working practices. In December 2024, they published a report¹² which focuses on the mapping, creation, refinement, and exploitation of a Services and Data Sources Portfolio. In this report they consider the different starting points of the involved Science Clusters, one of which is the SSHOC.

4.3 Interoperability Frameworks

European Research Infrastructures (RIs) live or die by their ability to let heterogeneous systems "speak the same language". An interoperability framework provides that lingua franca: a shared set of policies, standards and implementation patterns that make data, services and workflows understandable and actionable across organisational, national and disciplinary borders. For RESILIENCE—with partners spread over several countries and holding very different types of religious-studies materials—this is not a luxury but a prerequisite. Without an agreed framework, curated corpora of Syriac manuscripts, a sociological survey on contemporary pilgrimages and a digital 3-D model of a medieval synagogue remain isolated assets; with one, they become mutually discoverable, citable and reusable in new, mixed-method research.

The need is particularly acute in the Social Sciences and Humanities (SSH) since, unlike many STEM domains, its data lacks universally adopted schemas; terminology varies with language, tradition and school. Religious-studies scholarship amplifies that diversity because it routinely crosses into sociology, archaeology, architecture, psychology, classical and modern languages, literary studies and more. An interoperability framework therefore acts as the connective tissue that lets an archaeologist's stratigraphic dataset be joined with a corpus-linguistic analysis of liturgical texts, or allows climate historians to query

¹¹ <u>https://oscars-project.eu/science-clusters</u>

¹² OSCARS D2.1 Clusters' Services and Data Source Portfolios: <u>https://doi.org/10.5281/zenodo.14269781</u>



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monastic annals for extreme-weather references. In short, it is the engine that turns disciplinary silos into a genuine, FAIR-by-design knowledge commons.

Examples:

Name	Project	Link	Relevance
SKG-IF	RDA	<u>Scientific</u> <u>Knowledge Graphs –</u> <u>Interoperability</u> <u>Framework (SKG-IF)</u> <u>WG - RDA</u>	Provides a framework and standards for creating interoperable scientific knowledge graphs, critical for structured representation and linking of SSH datasets including religious studies materials.
EIF	European Commission	<u>eif_brochure_final.p</u> <u>df</u>	Provides broad recommendations for interoperability across all EU Member States; essential baseline standards for RESILIENCE's cross-border SSH integration.
CDIF	WorldFAIR	<u>DiscoverabilityDraft</u> ForZenodo.pdf	Detailed interoperability recommendations, especially on metadata discoverability; directly aligns with RESILIENCE's aim for enhanced visibility and discoverability of religious datasets.
EOSCIF	EOSC	eosc interoperability framework.pdf	Crucial standard for integrating RESILIENCE data and services into the EOSC federation; facilitates broad interoperability and reuse across multiple scientific communities.
GORC-IM	Global Open Research Commons	GORC_DataScience .pdf, https://zenodo.org/r ecords/10040098	Provides a standardized international model for research data commons; beneficial for RESILIENCE in creating a globally aligned SSH research infrastructure.
SIMPL	European Commission	<u>https://digital-</u> <u>strategy.ec.europa.</u> <u>eu/en/policies/simpl</u>	Specifically designed to enhance interoperability and federation between data spaces; directly relevant for RESILIENCE's goal to federate resources related to the study of religion across Europe.



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Name	Project	Link	Relevance
CCR / CMDI	CLARIN	https://www.clarin.e u/content/cmdi- component- metadata- infrastructure	Fundamental for metadata interoperability within language resources; valuable for integrating linguistic and textual resources related to religious studies in RESILIENCE.

Table 6: Interoperability frameworks examples

4.4 The Cross Domain Interoperability Framework (CDIF)

The CDIF, delivered in 2024 by the Horizon-Europe WorldFAIR project, tackles exactly the questions RESILIENCE now faces: which open domain-agnostic standards should be used, and how should they be profiled so that machines can act on them? CDIF's goal is to "reduce the volume of mappings needed to interoperate effectively for core FAIR functions in multi-disciplinary scenarios" by converging on a small, well-supported standards stack and concrete implementation recipes. It does not replace community schemas; it supplements them so that cross-domain exchange becomes feasible at scale.

CDIF distils its guidance into five Core Profiles that map neatly onto everyday research tasks:

- Discovery minimal, JSON-LD–encoded Schema.org/DCAT metadata that make resources "craw-lable" and indexable;
- Access machine-actionable expressions of licences, embargoes or registration requirements using ODRL¹³;
- Controlled vocabularies publication of thesauri and ontologies in SKOS/OWL, ensuring terminological alignment;
- 4. Data integration granular structural and semantic description of tabular (DDI-CDI) and other formats so that datasets are "integration-ready";
- 5. Universals common treatments of time, geography and units to avoid silent inconsistencies.

¹³ Open Digital Rights Language



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Behind these profiles sit a set of design principles—pragmatism, use of "mainstream" Web standards, atomicity of metadata, and a commitment to "show and tell" through living examples—that resonate with the way RESILIENCE already exposes resources via ReIReSearch and Schema.org.

Benefits and concrete actions for RESILIENCE

Adopting CDIF gives RESILIENCE an off-the-shelf roadmap that is fully compatible with the EOSC Interoperability Framework and the SSH Open Marketplace. If implemented, it would allow us to:

- **Standardise discovery metadata** across digitised manuscripts, archaeological datasets and linguistic corpora, so that a single EOSC-harvester can index them without adapters;
- Express complex access regimes—for example, images under monastery copyright or sensitive ethnographic interviews—in a reusable ODRL vocabulary that 'intermediaries?' such as the European Data Spaces can interpret automatically;
- Publish existing glossaries of liturgical terms or prosopographical (the common characteristics of a group of people) entities as SKOS concept schemes, making them referenceable in other SSH projects;
- **Describe tabular survey data** (e.g., parish demographics) with DDI-CDI so that it can be merged with archaeological context tables or GIS layers without losing any data.

These steps could be phased in: initial alignment on the Discovery profile immediately improves findability, while the Data-integration profile informs the medium-term overhaul of our ReIReSearch ingestion pipeline. Because CDIF deliberately "builds on technology that exists today", each action leverages tools (JSON-LD, PID services, SHACL validators) that our technical partners already deploy, minimising cost and training overhead.

4.5 Positioning RESILIENCE in the European Landscape

Implementing CDIF would position RESILIENCE as a reliable, EOSC-ready RI that speaks the same language as CESSDA in the social sciences or CLARIN in language resources. It demonstrates that RESILIENCE invests in sustainable, standards-based solutions rather than project-specific shortcuts, aligning with review criteria for continued funding. Most importantly, it unlocks new, cross-disciplinary research: theologians can correlate homiletic motifs with climate data, architects can reuse 3D models within wider heritage pipelines,



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and sociologists can enrich survey microdata with linguistic sentiment analysis—all without re-engineering every dataset from scratch.



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5 Service Dictionary

Per the Grant Agreement: "Service Level: One step above, at service level, a common definition language is created in order to interoperate between systems with common semantic and structured language rules."

The Service Dictionary, developed by the Data Unit, establishes a common language for describing every RESILIENCE service, from a simple in-kind contribution to an extensive online discovery platform. It sits one level above the Data Dictionary and underpins (a) the User Services Catalogue (D2.2) and (b) future onboarding to the SSHOC Marketplace or EOSC EU Node. While the Data Dictionary harmonises **what** we talk about, the Service Dictionary harmonises **how** we talk about it.

In this chapter we will outline RESILIENCE's Service Description Template (SDT), its terminology and the S/TRL scale. For more details regarding the development of the service catalogue, its content and the categories we apply, see the D2.2 User Services Catalogue¹⁴. The governance is lightweight: the Data Unit stewards the template, annual text tweaks accompany the User Services Catalogue, and full definitions plus a legacy example are stored in the annexes for transparency.

The chapter closes with concrete next-step actions—publishing the template on Zenodo, onboarding remaining services, launching a one-page submission form, and planning info-sessions—to keep the Service Dictionary current as RESILIENCE transitions towards the next phase.

5.1 Guiding Principles

Early in the RESILIENCE PPP, it was decided that we would base ourselves on nine guiding principles while developing our service catalogue. The most relevant during the development of the service description template are:

- RESILIENCE should be transparent about its service offerings.
- RESILIENCE services should have a clear and concrete service description.
- RESILIENCE services should be findable and accessible for the end-users.

¹⁴ D2.2 User Services Catalogue: <u>https://www.resilience-ri.eu/wp-</u> <u>content/uploads/2024/05/RESILIENCE_WP2_D2.2_User-Services-Catalogue_01.00_FINAL.pdf</u>



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The last one in particular has guided our efforts. In the service strategy it is more specifically outlined that our catalogue should:

- include a clear and standardised service description and value proposition.
- provide transparency on their T/SRL and mode of access (e.g., short/long term, selection only, paid access).
- be accessible via a persistent link to the service/tool/database which
 - has a minimum T/RSRL of 4 (only in certain cases with clear added value for the community and with transparency on its experimental status! These services will also not comply with the EOSC Federation rules of participation which require a min. TRL 7 and will thus only be findable and accessible through the RESILIENCE service catalogue),
 - o provides supporting documentation as well as contact information (e.g. helpdesk).

5.2 Development Process

The guiding principles mentioned before can only be achieved by including a clear and standardised service description. Because of its importance as the base of our future service catalogue, considerable effort has been put in its development and refinement. During the four-year course of the RESILIENCE PPP a desk study and multiple iterations of the Service Description Template (SDT) have been performed. To ensure interoperability, its development began with a comprehensive desk study of the European RI and e-Infrastructure landscape. This initial analysis aimed to understand the current state of services, catalogues, service descriptions, and best practices. Given that the study of religion falls within the Social Sciences and Humanities (SSH), the SSH Open Marketplace was identified as a crucial starting point, together with the higher level (by now decommissioned) EOSC Marketplace and guided the drafting of our service templates and the categorization of those services.

This process was carried out in collaboration with the RESILIENCE WU Users to ensure that the templates were user-friendly for partners and aligned with the relevant EOSC categories.¹⁵ Key resources that were used to inform this effort included EOSC's Portal Profiles and the SSHOC Metadata Guidelines.¹⁶ To further

¹⁵ <u>https://wiki.ni4os.eu/index.php/Resource_Category_and_Subcategory_</u>

¹⁶ <u>https://wiki.eoscfuture.eu/display/PUBLIC/EOSC+Portal+Profiles</u>

https://marketplace.sshopencloud.eu/contribute/metadata-guidelines



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refine the template, the EOSC Provider Platform was examined. The EOSC Resource Profile and Data Source Profiles¹⁷ were compared with the SSH Open Marketplace metadata guidelines to enhance understanding of resource information collection and description. After several consultations with WU Data and RESILIENCE partners, it was decided to adopt EOSC profiles for developing information collection templates. This decision led to the creation of multiple iterations of service analysis templates, which were tested and refined to produce a practical and comprehensive template, along with detailed instructions and guidelines.

After the first round of collecting in-kind services, which resulted in detailed information on 14 community services, feedback from partners taught us that the first version of the SDT was too complex and exhaustive, resulting in frustration by those who had to fill it out. One of the difficulties encountered was the diversity in fields and more specifically the high number of fields that was sometimes present or even required, which is a problem other RIs and European projects have struggled with as well. An additional desk study was carried out to learn how others dealt with this problem. The work carried out by the OSCARS proved particularly useful. The following paragraph and table is an extract from their deliverable D2.1 Clusters' Services and Data Sources Portfolios¹⁸:

"The best way to describe the portfolio resources was naturally one of the first questions discussed as part of the WP2 work. Some "generic" information was easily identified. In particular, by considering the v4.00 of the EOSC Resource Profiles, we identified the metadata descriptors listed in Tab. 2 as mandatory in any service and data sources cataloguing efforts, while some of them led to discussion, as their use leads to open questions."

 ¹⁷ <u>https://wiki.eoscfuture.eu/display/PUBLIC/B.+v4.oo+EOSC+Resource+Profile</u> <u>https://wiki.eoscfuture.eu/display/PUBLIC/D.+v4.oo+EOSC+Data+Source+Profile</u>
 ¹⁸ https://zenodo.org/records/14881627



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Field name in the current Cluster portfolio	v4.00 of the EOSC Resource Profiles – field name equivalent	comments/ open questions
Full name	Name	
Institute	Resource Organisation	External identifier to use: ROR Importance to distinguish some roles. See for example Distinction between Resource Organisation and Resource Providers
Link	Webpage	
Description	Description	
Scientific domain	Scientific Domain	Scientific Subdomain also exists in the EOSC Profile, hierarchic vocabulary
keywords	Tags	Where the Cluster affiliation was sometimes recorded in the EOSC catalogue
Hosted in Europe?	Resource Geographic Location	
Order type (fully open access, open access, restricted,), e.g. COAR Access Rights	Order Type	
Type of software/resources	Category	TaDiRAH: covers a good share of tasks within PaN, but many unmapped tasks. Alternatives?
Technical Readiness Level (TRL)	Technology Readiness Level	Hard to determine, often developers don't know themselves. Alternatives mentioned during workshop: <u>Business Readiness Level</u> (BRL) <u>Societal Readiness Level</u> (SRL)
General or Cluster specific service? (more or less the scientific domain used in PaN currently)		In the new resource Hub, the distinction between "horizontal services" and others is kept

Table 7: Main information fields the Science Cluster service description should include



5.3 Service Description Template (SDT)

5.3.1 From Pilot to Working Version

As mentioned before, the first version of our SDT was an exact copy of the Resource Profile from the by now decommissioned EOSC Open Marketplace. However, as you can see in the example provided in the annex, partner feedback after the first collection round showed that many fields—e.g. Multimedia and Use case—were left blank by almost all providers, proving they added burden without value.

Since some of the consortium partners also offer technical services, we couldn't simply take out all the more specific fields which is why a lightweight "minimum–preferred–technical–optional" rule was adopted:

- Minimum (M) 12 fields mandatory for catalogue inclusion (Name, Resource Provider, Webpage, EOSC category, S/TRL, etc.).
- Preferred (P) 8 fields that enrich discovery but are not gating (Tag, Geographic Location, Terms of Use).
- Technical (T) Fields that only have to be filled out when the service is of a technical nature.
- Optional (O) Everything else has dropped or moved to a future 'enhanced' tier, especially in regards to the more technical services.

This pruning cut the template from 42 to 20 fields, slashing average completion time by more than half and aligning with OSCARS' mandatory-only approach.

5.3.2 Current Version

After the Data Unit carried out the rework of the RESILIENCE SDT, based on the experiences from the first collection round, we landed on a new and improved list of mandatory, preferred and optional metadata. Table 6-1 lists only the **Minimum** attributes, while table 6-2 shows an overview of the **Preferred** ones; the full schema, including technical & optional attributes and code-lists sit in the Annex 8.4.

Minimum Fields (M)

Field	Description	Туре	Example
ID	Unique Identifier within the RESILIENCE platform; this is	Unique Identifier	?



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Field	Description	Туре	Example
	assigned by the RI		
Name	Human-Readable Label	String	RelReSearch
Resource Organisation	The name of the organisation that manages or delivers the service, or that coordinates the Service delivery in a federated scenario.	?	LIBIS - KU Leuven
Webpage	Persistent Link (or Webpage) of the Service or its information	Persistent Link	https://reiresearch.eu/
Description		String	RelReSearch is an online discovery platform where disparate digital resources and databases are searchable in a unified and standardized way.
Category	The type of Service; e.g. Data Analysis, Scholarly Communication	Pre-defined list	
Access Type	The way a user can access the Service (Remote, Physical, etc.)	Pre-defined List	Virtual
Order Type	Whether the service is fully open access, partly, restricted, etc.	Pre-defined List	Open Access
Language	The language in which the Service is provided	?	English
RSRL or TRL	See Section on RSRL	Integer Range 1-9	S9 - Established / Trusted
Contact	The email address or form through which a contact person can be reached for questions	Email or Form- link	
Helpdesk Information	The web address where the Helpdesk details are provided	Webpage/Link	https://reiresearch.helpdocsi te.com/

Table 8: Minimum fields



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Preferred Fields (P)

Field Name	Description	Туре	Example
Sub Category	A more detailed categorisation of the type of Service; e.g. Data Analysis: Machine Learning, Scholarly Communication: Assessment	Pre-defined List	
Access Mode	Eligibility/criteria for granting access to users (excellence-based, free-conditionally, etc.)	String	Account is only possible for people with a KU Leuven account
Access Process	Information on the access or ordering (if paying service) process.	String or Link	https://reiresearch.eu/#/eula
Access Policy	Information about the access policies that apply.	String or Link	https://reiresearch.eu/#/eula
Target Users	Type of users that the Service is intended for; e.g. researchers, librarians, citizen scientists, etc.	String	Researchers, Librarians
Tags	Keywords associated to the Service to simplify search by relevant keywords	String	
Geographical Location	Where the Service is hosted	String	Leuven
Terms of Use	Webpage or explanation describing the rules, conditions and usage policy which one must agree to abide by in order to use the Service.	String or Link	https://reiresearch.eu/#/eula
User Manual	Link to the Resource user manual and documentation.	Link	https://reiresearch.helpdocsi te.com/

Table 9: Preferred fields




5.4 RESILIENCE Services Readiness Level (RSRL) Scale

In alignment with RESILIENCE's guiding principles, we ensure that our services maintain a high level of maturity, supported by a robust infrastructure and a dedicated support team. This guarantees that resources remain Findable, Accessible, Interoperable, and Reusable (FAIR). The RESILIENCE Services Readiness Level (RSRL) scale is employed to assess the maturity of services, ensuring that users have access to reliable and sustainable tools and is based on the (S/)TRL scale that is widely used within a plethora of businesses and projects (e.g.: EOSC, DARIAH,...).

5.4.1 Adapting the Scale

Most of our service providers originate from the academic and GLAM sector within the Social Sciences and Humanities (SSH), encompassing among others libraries, archives, and researchers. Since the TRL scale was originally designed for technical services¹⁹, its terminology is highly technical which poses a challenge for our service providers who are not all well-versed in technical terminologies such as "system prototype demonstration in operational environment," which is the qualification for TRL 7. To facilitate a clearer understanding, the WU Data has composed a list of SSH-specific explanations for this scale, enabling providers to accurately assess the maturity and readiness level of their services. To ensure alignment with other SSH RIs such as DARIAH, we made sure to map our scale exactly to the TRL one.

- Red = Theoretical, in Preparation
- Orange = Demo
- Yellow = Pilot Version, Limited Production
- Green = Public Release, Operational

SRL	Plain Description	Typical Evidence	Example
Sı – Idea	You can explain the concept on paper, but no code or workflow exists yet.	One-pager, slide deck.	A professor sketches an annotated digital edition she <i>would like</i> to build.

¹⁹ https://wiki.ni4os.eu/index.php/Technology_Readiness_Level



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S2 – Concept outlined	Key functions are described; basic feasibility checked; no users yet.	Short requirements doc, draft data model.	Same professor drafts a MARC-XML profile for her manuscripts.
S3 – Feasibility prototype	A rudimentary demo runs on a laptop; shows the core feature to colleagues.	GitHub repo, screenshots.	Doctoral student codes a prototype Jupyter notebook that classifies hymn lyrics.
S4 – Lab prototype	Prototype is stable enough to be tested by invited colleagues; feedback loop open.	Test report from 3- 5 peers.	The notebook is put on Binder and three students try it.
S5 – Pilot (limited public)	Service is reachable on the internet, advertised as <i>beta</i> ; documentation draft exists.	Public URL, read- me, contact email.	The manuscript portal runs on the university server; Access on request.
S6 – Community pilot	≥ 20 external users; bug tracker active; privacy / IPR statements drafted.	Usage stats, helpdesk log.	Notebook turned into a small MOOC with 30 attendees.
S7 – Operational	Open to everyone; SLA or ToU* light ("best effort"); user guide and helpdesk active.	Stable URL, versioned releases, uptime metrics.	Searchable via platforms (eg: ReIReSearch); Helpdesk via form or e-mail
S8 – Managed service	Formal SLA or MoU signed; backups, monitoring, sustainability plan for ≥3 years.	SLA, Terms of Use or Policies available; DMP.	Institution IT takes over hosting; Annual review
S9 – Established / trusted	Proven track-record of ≥ 3 years at SRL 8; cited or reused by third parties	Citations, audit certificate.	Portal included in (inter)national registry; DOIs minted for datasets.

Table 10: Adapted SRL scale

5.4.2 Application of the RSRL Scale

For services to be included in the RESILIENCE Service Catalogue, they must meet a minimum RSRL of 7, indicating that the service is well-developed and ready for operational use. This requirement ensures that the services are not only accessible and usable at the time of onboarding but also sustainable in the long term. Additionally, clear documentation and a helpdesk must be available to assist users with technical and



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usability issues, ensuring that the resources are mature and reliable. This approach allows RESILIENCE to offer high-quality services to the community while maintaining transparency about the readiness and experimental nature of innovative tools.

Practical illustrations of every RSRL maturity stage are provided in Annex 8.5 which maps three contrasting services—a digital research platform (ReIReSearch), a capacity-building course ("Training on AI Tools"), and a physical digitisation facility (KU Leuven's Book Heritage Lab)—across the nine-level scale. These examples allow prospective providers to benchmark their own service proposals against clearly defined, discipline-specific milestones.

Regarding the assignment of a RSRL level to a service, the following steps need to be taken:

- Providers self-assess based on the clarification table in the previous section and the examples provided in Annex 8.5; the Data Unit verifies plausibility.
- When a record changes RSRL, date stamps need to be added and history kept
- Services < S4 appear only in a "*sandbox"* tab visible to consortium login.

The Data Unit remains the steward of the SDT and RSRL scale; minor textual clarifications will be released annually with updates of the D2.2 User Services Catalogue.

5.5 Next Steps

Short term (by Sept 2025)

- 1. Publish the current SDT and SRL poster on Zenodo with a DOI; cite it in partner guidance.
- 2. On-board the remaining legacy services (\geq 10) using the new template.
- 3. Launch a one-page online form (MS Forms or LimeSurvey) that mirrors the Mandatory 12 fields.

Medium term (2026)

- 4. Offer three "service metadata sessions" at partner institutions to raise completion quality.
- Implement an SRL change log column in the catalogue spreadsheet; add a monthly reminder to providers whose services are still < 4.



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Long term (2027 and beyond)

- Introduce enhanced (optional) metadata tier for technical services—only after ≥ 50 % of providers request it.
- 7. Expose RESILIENCE services in JSON-LD so that EOSC or SSHOC can harvest directly.
- 8. Explore Handbook from the EOSC Federation and the new Rules of Participation for EOSC EU Nodes once they are finalised.
- 9. Hand over catalogue stewardship from the PPP/IP Data Unit to the permanent RESILIENCE ERIC service team.



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6 RelReSearch

One of RESILIENCE's core services is RelReSearch, an online discovery platform. It federates heterogeneous metadata supplied by partner institutions, harmonises it through a light-weight application profile based on Schema.org, validates it for quality and exposes it through an intuitive search interface backed by Elasticsearch. Because of its importance within our infrastructure and its proven stability and interoperability, we use it as an example to base future developments and integrations on.

6.1 History

RelReSearch was first developed back in 2019 when RESILIENCE's predecessor, the Horizon 2020 RelReS Project first started. It addresses the growing need of scholars in the study of religion to discover more data, regardless of location, with one platform where disparate digital resources and databases are searchable in a unified and standardised way. It brings together metadata from different collection holders or data providers who can have the metadata of their relevant collections included in the platform.

At the start of the PPP, it was decided to onboard RelReSearch as a core RESILIENCE service. As a consequence, it was rebranded to fit the RESILIENCE branding (cf. to D2.1 Service strategy: "an in-kind contribution can become a core service ..."). It serves as a prime example due to Schema.org being its underlying vocabulary as this is one of the most common and often used vocabulary within the SSH and can easily be adapted towards a project or researcher's needs.



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6.2 Data Flow



Figure 1: Data Flow

Why this matters:

1. **Transparency & quality**: The explicit pipeline resonates with Guiding Principle ₃ (transparency of service offerings). Errors are caught early and can be fixed by the source holder.





- 2. **FAIR compliance**: Steps 3–5 implement the I and R of FAIR; persistent identifiers and open licence checks ensure F and A.
- 3. **Scalability**: New providers plug in at step 1 without forcing infrastructure changes an illustration of Principle 8 (services that serve a wide user base).

6.3 Data Level

6.3.1 Interoperability

Interoperability is ensured by ReIReSearch's JSON-LD application profile, which is compliant with EOSC's CDIF Discovery Profile. This structured approach facilitates seamless integration with diverse external metadata sources, ensuring ReIReSearch can function as a universal gateway within the European SSH research ecosystem. Because of the presence of externally minted where available (DOI, URN) or HTTP-persistent URI where there aren't, its stability is ensured.

As explained in previous chapters, a discovery environment needs a shared data model in order to store metadata from different sources and make it findable and accessible in a single location. This is important in order to collect and present data from different data providers in a uniform way and to make it accessible in an interoperable and reusable format which is why the selected data model for ReIReSearch takes into account those requirements for standardized data access with a wide outreach potential. The detailed description of the data model and reasoning behind it can be found in D6.2 Integrated Metadata Model²⁰.

6.3.2 Ontology

Although it is not supported in its entirety, the ReIReSearch application profile is based on the Schema.org vocabulary, which was selected for the following reasons:

- It enables semantic interlinking
- Is suitable for any type of data
- Is flexible and extendable

²⁰ https://zenodo.org/records/5785828



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Is human- and machine-readable

However, the downside is that it is too extensive. Because of this, an application profile was created specifically for ReIReSearch with a selection of classes and properties based on the information that is applicable to the community. The most used class is **CreativeWork** with its subclasses being Article, Book, PublicationIssue and PublicationVolume. There are five more Classes – MediaObject, Person, Organization, Place and Event – defined and supported though they are usually created by the system during the import based on the metadata provided (e.g. dc:creator will be mapped to the 'Name' property of the Schema.org class 'Person').

In time the application profile can and will be extended with new classes and properties for inclusion of other data types. For the integration of data in RelReSearch, there are mandatory, recommended and optional metadata elements. The current profile, including the supported classes (the "record types", referred to as "Things" in Schema.org) and properties are listed in the Annex 8.1.

6.4 Service Level

6.4.1 Alignment with the Strategy Strategy

RelReSearch puts several principles spelled out in the D2.1 Service Strategy into practice:

- Findable & accessible: it presents heterogenous metadata in a unified way and adds PIDs; it's machine-readable, making it consumable by major search engines.
- **User-driven**: early pilots incorporated feedback from users, and during an upcoming RESILIENCE workshop in Münster in May 2025 a new set of users will evaluate the platform.
- **Sustainability**: the underlying technology is open-source and containerised.
- Integrability: the JSON-LD application profile already maps to the core fields of the EOSC CDIF "Discovery" profile.

6.4.2 Implementation of the Service Dictionary

RelReSearch effectively demonstrates the implementation of RESILIENCE's Service Dictionary by fulfilling all mandatory fields (e.g.: title, category, provider, access mode, RSRL 7, documentation, etc.) thus



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providing a good example of a qualitative and sustainable service. A detailed overview of its SDT can be found in chapter 5 (Minimal and Preferred fields) and in Annex 8.4 (Optional and Technical fields). A detailed, level-by-level assessment of ReIReSearch against the nine RSRL maturity stages is presented in Annex 8.5. Readers may consult this table for a concise overview of the platform's current status and its planned progression toward a fully managed and trusted service within RESILIENCE.

6.5 Future Plans

Where the focus of RESILIENCE's current Preparation Phase was the maintenance and rebranding of ReIReSearch, we hope to further extend the platform in the future. Thanks to RESILIENCE's participation in the GRAPHIA project²¹, some steps will be taken towards that goal before its end in 2027. Our first objective will be to add additional data types such as archival records and research dataset descriptions to the existing data model. In time, we will also work on accepting more metadata standards such as EAD XML. This will result in onboarding more heterogeneous data collections, such as the archival data from the Second Vatican Council available at KU Leuven²² and integrating it with the first comprehensive SSH Knowledge Graph (KG) through the GRAPHIA Project²³, in which RESILIENCE is participating.

²¹ <u>https://cordis.europa.eu/project/id/101188018</u>

²² <u>https://theo.kuleuven.be/en/research/centres/centr_vatii/centr_vatii-arch</u>

²³ https://cordis.europa.eu/project/id/101188018; https://graphia-ssh.eu/



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7 Conclusion

The Master Data Management deliverable encapsulates RESILIENCE's comprehensive strategy for ensuring effective and sustainable management of data and services. By establishing clear and coherent Data and Service Dictionaries, RESILIENCE sets the foundation for robust interoperability, enabling seamless communication and data exchange across diverse research systems and services within the study of religion.

The Data Dictionary systematically clarifies essential terminologies, identifies critical semantic resources, and leverages existing standards to ensure adherence to FAIR principles. Concurrently, the Service Dictionary standardizes service descriptions through a simplified, yet comprehensive Service Description Template, enhancing transparency, discoverability, and usability of RESILIENCE services.

Through strategic adoption of interoperability frameworks such as the EOSC and CDIF, RESILIENCE positions itself as a critical player within the broader European research landscape. The example of ReIReSearch highlights practical application of these frameworks, illustrating successful integration of diverse metadata standards into an accessible and valuable discovery tool.

In conclusion, this deliverable provides a solid and actionable roadmap for RESILIENCE to continue developing and maintaining a high-quality, interoperable, and sustainable distributed RI. By fostering collaboration, standardization, and clear communication, RESILIENCE significantly enhances the capacity and impact of research within the study of religion across Europe and beyond.



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8 Annex

8.1 Resource List

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8.2 RelReSearch Application Profile

8.2.1 Introduction

The RelReSearch application profile was developed during the RelReS project²⁴ and is based on the Schema.org vocabulary²⁵. Not the entire Schema.org vocabulary is supported. The RelReSearch application profile is limited to a subset of types and properties according to what information is applicable to the community. Current supported classes and subclasses include: CreativeWork with subclasses Article, Book, PublicationIssue, PublicationVolume. The classes MediaObject, Person, Organization, Place and Event are also defined and supported though they are usually created by the system on import based on the metadata provided (e.g. dc:creator will be mapped to the 'Name' property of the Schema.org class 'Person'). In time the application profile can be extended with new classes and properties for inclusion of other data types.

For the integration of data in ReIReSearch, there are mandatory, recommended and optional metadata elements. The supported classes (the "record types", referred to as "Things" in Schema.org) and properties are listed below. The following information is included for each element:

- Schema.org property including link to the Schema.org property page
- the definition of that property
- the scheme it belongs to (i.e. CreativeWork, MediaObject, Person, Organization, Place and Event)
- common name for the data element (e.g. author, title, publication date ...)
- the class and subclasses it applies to
- expected values/data type (e.g. text, a numerical value, a URL)
- status (i.e. M mandatory, R recommended, O optional)

8.2.2 Scheme CreativeWork - https://schema.org/CreativeWork

Property	identifier
Definition	The identifier property represents any kind of identifier for any kind of Thing, such as ISBNs, GTIN codes, UUIDs etc. Schema.org provides dedicated properties for representing many of these, either as textual strings or as URL (URI) links.
Scheme	CreativeWork

 ²⁴ D6.2 Integrated metadata model (<u>https://reires.eu/wp-</u> <u>content/uploads/2019/04/ReIReS_Deliverable_6.2_vo4.oo.pdf</u>)
 ²⁵ https://schema.org/



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Status: Version:

Used for	Identifier (a meaningful ID besides a unique record identifier)
Class & Subclasses	Thing
Values expected	Text, URL

	license (Created by system if not provided by partner.)
Definition	A license document that applies to this content, typically indicated by URL.
Scheme	CreativeWork
Used for	Work license
Class & Subclasses	CreativeWork
Values expected	URL

	name
Definition	The name of the item.
Scheme	CreativeWork
Used for	Title
Class & Subclasses	Thing
Values expected	Text

	provider
Definition	The service provider, service operator, or service performer; the goods producer. Another party (a seller) may offer those services or goods on behalf of the provider. A provider may also serve as the seller.
Scheme	CreativeWork (system element)
Used for	Data provider
Class & Subclasses	CreativeWork
Values expected	Person, Organization

	<u>sdDatePublished</u>
Definition	Indicates the date on which the current structured data was generated / published. Typically used alongside sdPublisher
Scheme	CreativeWork (system element)
Used for	Record publication date
Class & Subclasses	CreativeWork
Values expected	Date

	<u>sdLicense</u>
Definition	A license document that applies to this structured data, typically indicated by URL.
Scheme	CreativeWork (system element)
Used for	Record license
Class & Subclasses	CreativeWork



Values expected

Document Title:

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URL

	<u>sdPublisher</u>
Definition	Indicates the party responsible for generating and publishing the current structured data markup, typically in cases where the structured data is derived automatically from existing published content but published on a different site. For example, student projects and open data initiatives often re-publish existing content with more explicitly structured metadata. The sdPublisher property helps make such practices more explicit.
Scheme	CreativeWork (system element)
Used for	Record publisher
Class & Subclasses	CreativeWork
Values expected	Organization

	<u>url</u>
Definition	URL of the item.
Scheme	CreativeWork (system element)
Used for	Persistent RelReSearch link
Class & Subclasses	Thing
Values expected	URL

	additional Type
Definition	An additional type for the item, typically used for adding more specific types from external vocabularies in microdata syntax. This is a relationship between something and a class that the thing is in. In RDFa syntax, it is better to use the native RDFa syntax - the 'typeof' attribute - for multiple types. Schema.org tools may have only weaker understanding of extra types, in particular those defined externally.
Scheme	CreativeWork
Used for	Туре
Class & Subclasses	Thing
Values expected	URL

	<u>alternateName</u>
Definition	An alias for the item.
Scheme	CreativeWork
Used for	Other title
Class & Subclasses	Thing
Values expected	Text

	<u>associated Media</u>
Definition	A media object that encodes this CreativeWork. This property is a synonym for encoding.



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Status: Version:

Scheme	CreativeWork
Used for	Media
Class & Subclasses	CreativeWork
Values expected	MediaObject > Allowed subtypes are ImageObject, VideoObject, SoundObject, DataDownload

	author
Definition	HTML 5 provides a special mechanism for indicating authorship via the rel tag. That is equivalent to this and may be used interchangeably.
Scheme	CreativeWork
Used for	Author
Class & Subclasses	CreativeWork
Values expected	Person, Organization

	<u>creator</u>
Definition	The creator/author of this CreativeWork. This is the same as the Author property for CreativeWork.
Scheme	CreativeWork
Used for	Creator
Class & Subclasses	CreativeWork
Values expected	Person, Organization

	<u>contributor</u>
Definition	A secondary contributor to the CreativeWork or Event.
Scheme	CreativeWork
Used for	Contributor
Class & Subclasses	CreativeWork
Values expected	Person, Organization

	<u>dateCreated</u>
Definition	The date on which the CreativeWork was created or the item was added to a DataFeed.
Scheme	CreativeWork
Used for	Creation/Publication date
Class & Subclasses	CreativeWork
Values expected	Date, DateTime

	<u>datePublished</u>
Definition	Date of first broadcast/publication.
Scheme	CreativeWork
Used for	Publication date
Class & Subclasses	CreativeWork



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Status: Version:

Values expected Date			
	Values expected	Date	

	description
Definition	A description of the item.
Scheme	CreativeWork
Used for	Description
Class & Subclasses	Thing
Values expected	Text

	<u>editor</u>
Definition	Specifies the Person who edited the CreativeWork.
Scheme	CreativeWork
Used for	Editor
Class & Subclasses	CreativeWork
Values expected	Person

	g <u>enre</u>
Definition	Genre of the creative work, broadcast channel or group.
Scheme	CreativeWork
Used for	Discipline/Classification
Class & Subclasses	CreativeWork
Values expected	Text, URL

	<u>hasPart</u>
Definition	Indicates an item or CreativeWork that is part of this item, or CreativeWork (in some sense). Inverse-property: isPartOf.
Scheme	CreativeWork
Used for	Has part
Class & Subclasses	CreativeWork
Values expected	CreativeWork

	<u>inLanguage</u>
Definition	The language of the content or performance or used in an action. Please use one of the language codes from the IETF BCP 47 standard. See also availableLanguage.
Scheme	CreativeWork
Used for	Language
Class & Subclasses	CreativeWork
Values expected	Language, Text

isbn	



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Status: Version:

Definition	The ISBN of the book.
Scheme	CreativeWork
Used for	ISBN
Class & Subclasses	CreativeWork, Book
Values expected	Text

	<u>is Part Of</u>
Definition	Indicates an item or CreativeWork that this item, or CreativeWork (in some sense), is part of. Inverse-property: hasPart.
Scheme	CreativeWork
Used for	ls part of
Class & Subclasses	CreativeWork
Values expected	CreativeWork, Collection

	issn
Definition	The International Standard Serial Number (ISSN) that identifies this serial publication. You can repeat this property to identify different formats of, or the linking ISSN (ISSN-L) for, this serial publication.
Scheme	CreativeWork
Used for	ISSN
Class & Subclasses	CreativeWork, CreativeWorkSeries
Values expected	Text

	<u>issueNumber</u>	
Definition	Identifies the issue of publication; for example, "iii" or "2".	
Scheme	CreativeWork	
Used for	Issue number	
Class & Subclasses	CreativeWork, PublicationIssue	
Values expected	Integer, Text	

	<u>keywords</u>
Definition	Keywords or tags used to describe this content. Multiple entries in a keywords list are typically delimited by commas.
Scheme	CreativeWork
Used for	Keywords
Class & Subclasses	CreativeWork
Values expected	Text

	locationCreated
Definition	The location where the CreativeWork was created, which may not be the same as the location depicted in the CreativeWork.
Scheme	CreativeWork



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Used forPlace of creation/publicationClass & SubclassesCreativeWorkValues expectedPlace

	pagination
Definition	Any description of pages that is not separated into pageStart and pageEnd; for example, "1-6, 9, 55" or "10-12, 46-49".
Scheme	CreativeWork
Used for	Pagination
Class & Subclasses	CreativeWork, Article, PublicationIssue, PublicationVolume
Values expected	Text

	publisher
Definition	The publisher of the creative work.
Scheme	CreativeWork
Used for	Publisher
Class & Subclasses	CreativeWork
Values expected	Person, Organization

	<u>sameAs</u>
Definition	URL of a reference Web page that unambiguously indicates the item's identity. E.g. the URL of the item's Wikipedia page, Wikidata entry, or official website.
Scheme	CreativeWork
Used for	Source record
Class & Subclasses	Thing
Values expected	URL

	<u>volumeNumber</u>
Definition	Identifies the volume of publication or multi-part work; for example, "iii" or "2".
Scheme	CreativeWork
Used for	Volume number
Class & Subclasses	CreativeWork, PublicationVolume
Values expected	Integer, Text

	<u>about</u>
Definition	The subject matter of the content. Inverse-property: subjectOf.
Scheme	CreativeWork
Used for	Subject
Class & Subclasses	CreativeWork
Values expected	Thing



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	article Body
Definition	The actual body of the article.
Scheme	CreativeWork
Used for	Full text/Transcription/Annotation
Class & Subclasses	CreativeWork, Article
Values expected	Text

	bookEdition
Definition	The edition of the book.
Scheme	CreativeWork
Used for	Edition
Class & Subclasses	CreativeWork, Book
Values expected	Text

	<u>contentLocation</u>
Definition	The location depicted or described in the content. For example, the location in a photograph or painting. E.g.: The Church at Auvers by Vincent van Gogh depicts a church in Auvers-sur-Oise, but was created in Saint-Rémy-de-Provence.
Scheme	CreativeWork
Used for	Subject: Location
Class & Subclasses	CreativeWork
Values expected	Place

	<u>copyrightHolder</u>
Definition	The party holding the legal copyright to the CreativeWork.
Scheme	CreativeWork
Used for	Copyright holder
Class & Subclasses	CreativeWork
Values expected	Person, Organization

	<u>copyrightYear</u>
Definition	The year during which the claimed copyright for the CreativeWork was first asserted.
Scheme	CreativeWork
Used for	Copyright year
Class & Subclasses	CreativeWork
Values expected	Number

	<u>dataset</u>
Definition	A dataset contained in this catalog. Inverse property: includedInDataCatalog.
Scheme	CreativeWork



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Status: Version:

Used for	Has datasets
Class & Subclasses	CreativeWork
Values expected	Dataset

	distribution
Definition	A downloadable form of this dataset, at a specific location, in a specific format.
Scheme	CreativeWork
Used for	Data download
Class & Subclasses	CreativeWork, Dataset
Values expected	DataDownload

	<u>endDate</u>
Definition	The end date and time of the item (in ISO 8601 date format).
Scheme	CreativeWork
Used for	Publication date - end of series
Class & Subclasses	CreativeWork, CreativeWorkSeries
Values expected	Date, DateTime

	<u>illustrator</u>
Definition	The illustrator of the book.
Scheme	CreativeWork
Used for	Illustrator
Class & Subclasses	CreativeWork, Book
Values expected	Person

	<u>itemReviewed</u>
Definition	The item that is being reviewed/rated.
Scheme	CreativeWork
Used for	Item reviewed
Class & Subclasses	CreativeWork
Values expected	Thing

	<u>material</u>
Definition	A material that something is made from, e.g. leather, wool, cotton, paper.
Scheme	CreativeWork
Used for	Material
Class & Subclasses	CreativeWork
Values expected	Text, URL

mentions	



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Status: Version:

Definition	Indicates that the CreativeWork contains a reference to, but is not necessarily about a concept.	
Scheme	CreativeWork	
Used for	Subject: Persons	
Class & Subclasses	CreativeWork	
Values expected	Thing	

	<u>numberOfPages</u>
Definition	The number of pages in the book.
Scheme	CreativeWork
Used for	Number of pages
Class & Subclasses	CreativeWork, Book
Values expected	Integer

	pageEnd
Definition	The page on which the work ends; for example "138" or "xvi".
Scheme	CreativeWork
Used for	Pagination
Class & Subclasses	CreativeWork, Article, PublicationIssue, PublicationVolume
Values expected	Integer, Text

	<u>pageStart</u>
Definition	The page on which the work starts; for example "135" or "xiii".
Scheme	CreativeWork
Used for	Pagination
Class & Subclasses	CreativeWork, Article, PublicationIssue, PublicationVolume
Values expected	Integer, Text

	<u>reviews</u>
Definition	A review of the item.
Scheme	CreativeWork
Used for	Review
Class & Subclasses	CreativeWork
Values expected	Review

	<u>spatial Coverage</u>
Definition	The spatialCoverage of a CreativeWork indicates the place(s) which are the focus of the content. It is a sub property of contentLocation intended primarily for more technical and detailed materials. For example with a Dataset, it indicates areas that the dataset describes: a dataset of New York weather would have spatialCoverage which was the place: the state of New York.
Scheme	CreativeWork



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Used forSubject: Specific areaClass & SubclassesCreativeWorkValues expectedPlace

	<u>startDate</u>
Definition	The start date and time of the item (in ISO 8601 date format).
Scheme	CreativeWork
Used for	Publication date - start of series
Class & Subclasses	CreativeWork, CreativeWorkSeries
Values expected	Date, DateTime

	<u>subjectOf</u>
Definition	A CreativeWork or Event about this Thing. Inverse property: about.
Scheme	CreativeWork
Used for	Subject of
Class & Subclasses	CreativeWork
Values expected	CreativeWork, Event

	<u>temporal</u>
Definition	The "temporal" property can be used in cases where more specific properties (e.g. temporalCoverage, dateCreated, dateModified, datePublished) are not known to be appropriate.
Scheme	CreativeWork
Used for	Approximate Publication date
Class & Subclasses	CreativeWork
Values expected	DateTime, Text

	<u>temporalCoverage</u>
Definition	The temporalCoverage of a CreativeWork indicates the period that the content applies to, i.e. that it describes, either as a DateTime or as a textual string indicating a time period in ISO 8601 time interval format. In the case of a Dataset it will typically indicate the relevant time period in a precise notation (e.g. for a 2011 census dataset, the year 2011 would be written "2011/2012"). Other forms of content e.g. ScholarlyArticle, Book, TVSeries or TVEpisode may indicate their temporalCoverage in broader terms - textually or via well-known URL. Written works such as books may sometimes have precise temporal coverage too, e.g. a work set in 1939 - 1945 can be indicated in ISO 8601 interval format format via "1939/1945".
Scheme	CreativeWork
Used for	Subject: Date/Period
Class & Subclasses	CreativeWork
Values expected	DateTime, Text, URL



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	<u>text</u>
Definition	The textual content of this CreativeWork.
Scheme	CreativeWork
Used for	Full text/Transcription/Annotation
Class & Subclasses	CreativeWork
Values expected	Text

	<u>thumbnailUrl</u>
Definition	A thumbnail image relevant to the Thing.
Scheme	CreativeWork
Used for	Thumbnail
Class & Subclasses	CreativeWork
Values expected	URL

	<u>translator</u>
Definition	Organization or person who adapts a creative work to different languages, regional differences and technical requirements of a target market, or that translates during some event.
Scheme	CreativeWork
Used for	Translator
Class & Subclasses	CreativeWork
Values expected	Person, Organization

	translation Of Work
Definition	The work that this work has been translated from. e.g. 物种起源 is a translationOf "On the Origin of Species".
Scheme	CreativeWork
Used for	Translation of work
Class & Subclasses	CreativeWork
Values expected	CreativeWork

	version
Definition	The version of the CreativeWork embodied by a specified resource.
Scheme	CreativeWork
Used for	Version
Class & Subclasses	CreativeWork
Values expected	Number, Text

	workTranslation
Definition	A work that is a translation of the content of this work. e.g. 西遊記 has an English workTranslation "Journey to the West",a German workTranslation "Monkeys Pilgerfahrt" and a Vietnamese translation Tây du ký bình khảo.



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Scheme	CreativeWork	
Used for	Has translation	
Class & Subclasses	CreativeWork	
Values expected	CreativeWork	

1.1.1 Scheme MediaObject - https://schema.org/MediaObject

	identifier [Created by system if not provided by partner]
Definition	The identifier property represents any kind of identifier for any kind of Thing, such as ISBNs, GTIN codes, UUIDs etc. Schema.org provides dedicated properties for representing many of these, either as textual strings or as URL (URI) links. See background notes for more details.
Scheme	MediaObject
Used for	Identifier
Class & Subclasses	Thing
Values expected	Text, URL

	license
Definition	A license document that applies to this content, typically indicated by URL.
Scheme	MediaObject
Used for	Work license
Class & Subclasses	CreativeWork
Values expected	URL

	provider
Definition	The service provider, service operator, or service performer; the goods producer. Another party (a seller) may offer those services or goods on behalf of the provider. A provider may also serve as the seller.
Scheme	MediaObject (system element)
Used for	Data provider
Class & Subclasses	CreativeWork
Values expected	Person, Organization

	<u>sdDatePublished</u>
Definition	Indicates the date on which the current structured data was generated / published. Typically used alongside sdPublisher
Scheme	MediaObject (system element)
Used for	Record publication date
Class & Subclasses	CreativeWork
Values expected	Date



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	<u>sdLicense</u>
Definition	A license document that applies to this structured data, typically indicated by URL.
Scheme	MediaObject (system element)
Used for	Record license
Class & Subclasses	CreativeWork
Values expected	URL

	<u>sdPublisher</u>
Definition	Indicates the party responsible for generating and publishing the current structured data markup, typically in cases where the structured data is derived automatically from existing published content but published on a different site. For example, student projects and open data initiatives often re-publish existing content with more explicitly structured metadata. The sdPublisher property helps make such practices more explicit.
Scheme	MediaObject (system element)
Used for	Record publisher
Class & Subclasses	CreativeWork
Values expected	Organization

	<u>url</u>
Definition	URL of the item.
Scheme	MediaObject (system element)
Used for	Persistent RelReS link
Class & Subclasses	Thing
Values expected	URL

	<u>name</u> (Created by system if not provided by partner.)
Definition	The name of the item.
Scheme	MediaObject
Used for	Name
Class & Subclasses	Thing
Values expected	Text

	<u>sameAs</u>
Definition	URL of a reference Web page that unambiguously indicates the item's identity. E.g. the URL of the item's Wikipedia page, Wikidata entry, or official website.
Scheme	MediaObject
Used for	Source record
Class & Subclasses	Thing
Values expected	URL



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	<u>copyrightHolder</u>
Definition	The party holding the legal copyright to the CreativeWork.
Scheme	MediaObject
Used for	Copyright holder
Class & Subclasses	CreativeWork
Values expected	Person, Organization

	<u>copyrightYear</u>
Definition	The year during which the claimed copyright for the CreativeWork was first asserted.
Scheme	MediaObject
Used for	Copyright year
Class & Subclasses	CreativeWork
Values expected	Number

	creator
Definition	The creator/author of this CreativeWork. This is the same as the Author property for CreativeWork.
Scheme	MediaObject
Used for	Creator
Class & Subclasses	CreativeWork
Values expected	Person, Organization

	<u>embedUrl</u>
Definition	A URL pointing to a player for a specific video. In general, this is the information in the src element of an embed tag and should not be the same as the content of the loc tag.
Scheme	MediaObject
Used for	Embed URL
Class & Subclasses	MediaObject
Values expected	URL

	<u>encodingFormat</u>
Definition	Media type typically expressed using a MIME format (see IANA site and MDN reference) e.g. application/zip for a SoftwareApplication binary, audio/mpeg for .mp3 etc.). In cases where a CreativeWork has several media type representations, encoding can be used to indicate each MediaObject alongside particular encodingFormat information. Unregistered or niche encoding and file formats can be indicated instead via the most appropriate URL, e.g. defining Web page or a Wikipedia/Wikidata entry. Supersedes fileFormat.
Scheme	MediaObject
Used for	Format



D2.11 Master Data Management

Status: Version: FINAL

Class & Subclasses	MediaObject
Values expected	Text, URL

	sourceOrganization
Definition	The Organization on whose behalf the creator was working.
Scheme	MediaObject
Used for	Affiliated organisation
Class & Subclasses	CreativeWork
Values expected	Organization

	text
Definition	The textual content of this CreativeWork.
Scheme	MediaObject
Used for	Full text/Transcription/Annotation
Class & Subclasses	CreativeWork
Values expected	Text

	<u>thumbnailUrl</u>
Definition	A thumbnail image relevant to the Thing.
Scheme	MediaObject
Used for	Thumbnail
Class & Subclasses	CreativeWork
Values expected	URL

	<u>transcript</u>
Definition	If this MediaObject is an AudioObject or VideoObject, the transcript of that object.
Scheme	MediaObject
Used for	Transcript
Class & Subclasses	CreativeWork, AudioObject, VideoObject
Values expected	Text

1.1.2 Scheme Person - https://schema.org/Person

	<u>identifier</u> [Created by system if not provided by partner]
Definition	The identifier property represents any kind of identifier for any kind of Thing, such as ISBNs, GTIN codes, UUIDs etc. Schema.org provides dedicated properties for representing many of these, either as textual strings or as URL (URI) links. See background notes for more details.
Scheme	Person



D2.11 Master Data Management

Status: Version:

Used for	Identifier	
Class & Subclasses	Thing	
Values expected	Text, URL	

	name
Definition	The name of the item.
Scheme	Person
Used for	Full name
Class & Subclasses	Thing
Values expected	Text

	provider
Definition	The service provider, service operator, or service performer; the goods producer. Another party (a seller) may offer those services or goods on behalf of the provider. A provider may also serve as the seller.
Scheme	Person (system element)
Used for	Data provider
Class & Subclasses	Extension
Values expected	Person, Organization

	<u>sdDatePublished</u>
Definition	Indicates the date on which the current structured data was generated / published. Typically used alongside sdPublisher
Scheme	Person (system element)
Used for	Record publication date
Class & Subclasses	Extension
Values expected	Date

	<u>sdLicense</u>
Definition	A license document that applies to this structured data, typically indicated by URL.
Scheme	Person (system element)
Used for	Record license
Class & Subclasses	Extension
Values expected	URL

	<u>sdPublisher</u>
Definition	Indicates the party responsible for generating and publishing the current structured data markup, typically in cases where the structured data is derived automatically from existing published content but published on a different site. For example, student projects and open data initiatives often re-publish existing content with more explicitly structured metadata. The sdPublisher property helps make such practices more explicit.



D2.11 Master Data Management

Status: Version:

Scheme	Person (system element)
Used for	Record publisher
Class & Subclasses	Extension
Values expected	Organization

	<u>url</u>
Definition	URL of the item.
Scheme	Person (system element)
Used for	Persistent ReIReS link
Class & Subclasses	Thing
Values expected	URL

	<u>alternateName</u>
Definition	An alias for the item.
Scheme	Person
Used for	Alternate name
Class & Subclasses	Thing
Values expected	Text

	<u>birthDate</u>
Definition	Date of birth.
Scheme	Person
Used for	Date of birth
Class & Subclasses	Person
Values expected	Date

	birthPlace
Definition	The place where the person was born.
Scheme	Person
Used for	Birth place
Class & Subclasses	Person
Values expected	Place

	<u>deathDate</u>
Definition	Date of death.
Scheme	Person
Used for	Date of death
Class & Subclasses	Person
Values expected	Date



D2.11 Master Data Management

Status: Version:

	<u>deathPlace</u>
Definition	The place where the person died.
Scheme	Person
Used for	Death place
Class & Subclasses	Person
Values expected	Place

	description
Definition	A description of the item.
Scheme	Person
Used for	Description
Class & Subclasses	Thing
Values expected	Text

	<u>familyName</u>
Definition	Family name. In the U.S., the last name of a Person. This can be used along with givenName instead of the name property.
Scheme	Person
Used for	Family name
Class & Subclasses	Person
Values expected	Text

	<u>givenName</u>
Definition	Given name. In the U.S., the first name of a Person. This can be used along with familyName instead of the name property.
Scheme	Person
Used for	Given name
Class & Subclasses	Person
Values expected	Text

	<u>nationality</u>
Definition	Nationality of the person.
Scheme	Person
Used for	Nationality
Class & Subclasses	Person
Values expected	Country

	<u>sameAs</u>
Definition	URL of a reference Web page that unambiguously indicates the item's identity. E.g. the URL of the item's Wikipedia page, Wikidata entry, or official website.
Scheme	Person



D2.11 Master Data Management

Status: Version:

Used for	Source record
Class & Subclasses	Thing
Values expected	URL

	additionalName
Definition	An additional name for a Person, can be used for a middle name.
Scheme	Person
Used for	Additional name
Class & Subclasses	Person
Values expected	Text

	affiliation
Definition	An organization that this person is affiliated with. For example, a school/university, a club, or a team.
Scheme	Person
Used for	Affiliation
Class & Subclasses	Person
Values expected	Organization

	<u>alumniOf</u>
Definition	An organization that the person is an alumni of.
Scheme	Person
Used for	Alumni
Class & Subclasses	Person
Values expected	Organization, EducationalOrganization

	<u>children</u>
Definition	A child of the person.
Scheme	Person
Used for	Child
Class & Subclasses	Person
Values expected	Person

	<u>colleague</u>
Definition	A colleague of the person.
Scheme	Person
Used for	Colleague
Class & Subclasses	Person
Values expected	Person, URL



D2.11 Master Data Management

Status: Version:

Definition	The most generic uni-directional social relation.	
Scheme	Person	
Used for	Follows	
Class & Subclasses	Person	
Values expected	Person	

	<u>funder</u>
Definition	A person or organization that supports (sponsors) something through some kind of financial contribution.
Scheme	Person
Used for	Funder
Class & Subclasses	Person
Values expected	Person, Organization

	<u>gender</u>
Definition	Gender of the person. While http://schema.org/Male and http://schema.org/Female may be used, text strings are also acceptable for people who do not identify as a binary gender.
Scheme	Person
Used for	Gender
Class & Subclasses	Person
Values expected	GenderType, Text

	hasOccupation
Definition	The Person's occupation. For past professions, use Role for expressing dates.
Scheme	Person
Used for	Occupation
Class & Subclasses	Person
Values expected	Occupation

	<u>honorificPrefix</u>
Definition	An honorific prefix preceding a Person's name such as Dr/Mrs/Mr.
Scheme	Person
Used for	Honorific prefix
Class & Subclasses	Person
Values expected	Text

	<u>honorificSuffix</u>
Definition	An honorific suffix preceding a Person's name such as M.D. /PhD/MSCSW.
Scheme	Person
Used for	Honorific suffix



D2.11 Master Data Management

Status: Version:

Class & Subclasses	Person
Values expected	Text

	<u>image</u>
Definition	An image of the item. This can be a URL or a fully described ImageObject.
Scheme	Person
Used for	Image
Class & Subclasses	Thing
Values expected	ImageObject, URL

	<u>jobTitle</u>
Definition	The job title of the person (for example, Financial Manager).
Scheme	Person
Used for	Job title
Class & Subclasses	Person
Values expected	Text

	<u>knows</u>
Definition	The most generic bi-directional social/work relation.
Scheme	Person
Used for	Knows
Class & Subclasses	Person
Values expected	Person

	<u>memberOf</u>	
Definition	An Organization to which this Person or Organization belongs. Inverse property: member.	
Scheme	Person	
Used for	Membership	
Class & Subclasses	Person	
Values expected	Organization	

	parent
Definition	A parent of this person.
Scheme	Person
Used for	Parent
Class & Subclasses	Person
Values expected	Person

	<u>relatedTo</u>	
Definition	The most generic familial relation.	1



D2.11 Master Data Management

Status: Version:

Scheme	Person	
Used for	Family	
Class & Subclasses	Person	
Values expected	Person	

sibling
Definition A sibling of the person.
Scheme Person
Used for Sibling
Class & Subclasses Person
Values expected Person

	<u>sponsor</u>
Definition	A person or organization that supports a thing through a pledge, promise, or financial contribution. e.g. a sponsor of a Medical Study or a corporate sponsor of an event.
Scheme	Person
Used for	Sponsor
Class & Subclasses	Person
Values expected	Person, Organization

	<u>spouse</u>
Definition	The person's spouse.
Scheme	Person
Used for	Spouse
Class & Subclasses	Person
Values expected	Person

	<u>subjectOf</u>
Definition	A CreativeWork or Event about this Thing. Inverse property: about.
Scheme	Person
Used for	Subject of
Class & Subclasses	Thing
Values expected	CreativeWork, Event

	worksFor
Definition	Organizations that the person works for.
Scheme	Person
Used for	Employer
Class & Subclasses	Person
Values expected	Organization



D2.11 Master Data Management

Status: Version: FINAL 01.00

8.2.3 Scheme Organization - https://schema.org/Organization

	<u>identifier</u> [Created by system if not provided by partner]
Definition	The identifier property represents any kind of identifier for any kind of Thing, such as ISBNs, GTIN codes, UUIDs etc. Schema.org provides dedicated properties for representing many of these, either as textual strings or as URL (URI) links. See background notes for more details.
Scheme	Organization
Used for	Identifier
Class & Subclasses	Thing
Values expected	Text, URL

	name
Definition	The name of the item.
Scheme	Organization
Used for	Name
Class & Subclasses	Thing
Values expected	Text

	provider
Definition	The service provider, service operator, or service performer; the goods producer. Another party (a seller) may offer those services or goods on behalf of the provider. A provider may also serve as the seller.
Scheme	Organization (system element)
Used for	Data provider
Class & Subclasses	Extension
Values expected	Person, Organization

	<u>sdDatePublished</u>
Definition	Indicates the date on which the current structured data was generated / published. Typically used alongside sdPublisher
Scheme	Organization (system element)
Used for	Record publication date
Class & Subclasses	Extension
Values expected	Date

	<u>sdLicense</u>
Definition	A license document that applies to this structured data, typically indicated by URL.
Scheme	Organization (system element)
Used for	Record license


D2.11 Master Data Management

Status: Version:

Class & Subclasses	Extension
Values expected	URL

	<u>sdPublisher</u>
Definition	Indicates the party responsible for generating and publishing the current structured data markup, typically in cases where the structured data is derived automatically from existing published content but published on a different site. For example, student projects and open data initiatives often re-publish existing content with more explicitly structured metadata. The sdPublisher property helps make such practices more explicit.
Scheme	Organization (system element)
Used for	Record publisher
Class & Subclasses	Extension
Values expected	Organization

	<u>url</u>	
Definition	URL of the item.	
Scheme	Organization (system element)	
Used for	Persistent ReIReS link	
Class & Subclasses	Thing	
Values expected	URL	

	<u>alternateName</u>
Definition	An alias for the item.
Scheme	Organization
Used for	Alternate name
Class & Subclasses	Thing
Values expected	Text

	description
Definition	A description of the item.
Scheme	Organization
Used for	Description
Class & Subclasses	Thing
Values expected	Text

	<u>sameAs</u>
Definition	URL of a reference Web page that unambiguously indicates the item's identity. E.g. the URL of the item's Wikipedia page, Wikidata entry, or official website.
Scheme	Organization
Used for	Source record
Class & Subclasses	Thing



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Status: Version: FINAL

Values expected URL

	<u>alumni</u>
Definition	Alumni of an organization. Inverse property: alumniOf.
Scheme	Organization
Used for	Alumni
Class & Subclasses	Organization
Values expected	Person

	<u>department</u>
Definition	A relationship between an organization and a department of that organization, also described as an organization (allowing different urls, logos, opening hours). For example: a store with a pharmacy, or a bakery with a cafe.
Scheme	Organization
Used for	Department
Class & Subclasses	Organization
Values expected	Organization

	image
Definition	An image of the item. This can be a URL or a fully described ImageObject.
Scheme	Organization
Used for	Image
Class & Subclasses	Thing
Values expected	ImageObject, URL

	<u>founder</u>
Definition	A person who founded this organization. Supersedes founders.
Scheme	Organization
Used for	Founder
Class & Subclasses	Organization
Values expected	Person

	<u>foundingDate</u>
Definition	The date that this organization was founded.
Scheme	Organization
Used for	Founding date
Class & Subclasses	Organization
Values expected	Date

		<u>foundingLocation</u>	
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D2.11 Master Data Management

Status: Version:

Definition	The place where the Organization was founded.	
Scheme	Organization	
Used for	Founding location	
Class & Subclasses	Organization	
Values expected	Place	

	<u>funder</u>
Definition	A person or organization that supports (sponsors) something through some kind of financial contribution.
Scheme	Organization
Used for	Funder
Class & Subclasses	Organization
Values expected	Person, Organization

	location
Definition	The location of for example where the event is happening, an organization is located, or where an action takes place.
Scheme	Organization
Used for	Location
Class & Subclasses	Organization
Values expected	Place, Text

	logo
Definition	An associated logo.
Scheme	Organization
Used for	Logo
Class & Subclasses	Organization
Values expected	ImageObject, URL

	member
Definition	An Organization to which this Person or Organization belongs. Inverse property: memberOf.
Scheme	Organization
Used for	Member
Class & Subclasses	Organization
Values expected	Person, Organization

	memberOf
Definition	An Organization (or ProgramMembership) to which this Person or Organization belongs. Inverse property: member.
Scheme	Organization



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Status: Version: FINAL

Used for	Member of
Class & Subclasses	Organization
Values expected	Organization

	parentOrganization
Definition	The larger organization that this organization is a subOrganization of, if any. Supersedes branchOf. Inverse property: subOrganization.
Scheme	Organization
Used for	Parent organization
Class & Subclasses	Organization
Values expected	Organization

	<u>sponsor</u>
Definition	A person or organization that supports a thing through a pledge, promise, or financial contribution. e.g. a sponsor of a Medical Study or a corporate sponsor of an event.
Scheme	Organization
Used for	Sponsor
Class & Subclasses	Organization
Values expected	Person, Organization

	<u>subjectOf</u>
Definition	A CreativeWork or Event about this Thing. Inverse property: about.
Scheme	Organization
Used for	Subject of
Class & Subclasses	Thing
Values expected	CreativeWork, Event

	subOrganization
Definition	A relationship between two organizations where the first includes the second, e.g., as a subsidiary. See also: the more specific 'department' property. Inverse property: parentOrganization.
Scheme	Organization
Used for	Subordinate organization
Class & Subclasses	Organization
Values expected	Organization

8.2.4 Scheme Place - https://schema.org/Place

identifier	
[Created by system if not provided by partner]	



D2.11 Master Data Management

Status: Version:

Definition	The identifier property represents any kind of identifier for any kind of Thing, such as ISBNs, GTIN codes, UUIDs etc. Schema.org provides dedicated properties for representing many of these, either as textual strings or as URL (URI) links. See background notes for more details.
Scheme	Place
Used for	Identifier
Class & Subclasses	Thing
Values expected	Text, URL

	name
Definition	The name of the item.
Scheme	Place
Used for	Name
Class & Subclasses	Thing
Values expected	Text

	provider
Definition	The service provider, service operator, or service performer; the goods producer. Another party (a seller) may offer those services or goods on behalf of the provider. A provider may also serve as the seller.
Scheme	Place (system element)
Used for	Data provider
Class & Subclasses	Extension
Values expected	Person, Organization

	<u>sdDatePublished</u>
Definition	Indicates the date on which the current structured data was generated / published. Typically used alongside sdPublisher
Scheme	Place (system element)
Used for	Record publication date
Class & Subclasses	Extension
Values expected	Date

	<u>sdLicense</u>
Definition	A license document that applies to this structured data, typically indicated by URL.
Scheme	Place (system element)
Used for	Record license
Class & Subclasses	Extension
Values expected	URL

<u>sdPublisher</u>	



D2.11 Master Data Management

Status: Version:

Definition	Indicates the party responsible for generating and publishing the current structured data markup, typically in cases where the structured data is derived automatically from existing published content but published on a different site. For example, student projects and open data initiatives often re-publish existing content with more explicitly structured metadata. The sdPublisher property helps make such practices more explicit.
Scheme	Place (system element)
Used for	Record publisher
Class & Subclasses	Extension
Values expected	Organization

	<u>url</u>
Definition	URL of the item.
Scheme	Place (system element)
Used for	Persistent ReIReS link
Class & Subclasses	Thing
Values expected	URL

	description
Definition	A description of the item.
Scheme	Place
Used for	Description
Class & Subclasses	Thing
Values expected	Text

	<u>sameAs</u>
Definition	URL of a reference Web page that unambiguously indicates the item's identity. E.g. the URL of the item's Wikipedia page, Wikidata entry, or official website.
Scheme	Place
Used for	Source record
Class & Subclasses	Thing
Values expected	URL

	address
Definition	Physical address of the item.
Scheme	Place
Used for	Address
Class & Subclasses	Place
Values expected	PostalAddress, Text

	<u>alternateName</u>
Definition	An alias for the item.



D2.11 Master Data Management

Status: Version:

Scheme	Place
Used for	Alternate name
Class & Subclasses	Thing
Values expected	Text

	<u>geo</u>
Definition	The geo coordinates of the place.
Scheme	Place
Used for	Geo coordinates
Class & Subclasses	Place
Values expected	GeoCoordinates, GeoShape

	<u>hasMap</u>		
Definition	A URL to a map of the place. Supersedes map, maps.		
Scheme	Place		
Used for	Мар		
Class & Subclasses	Place		
Values expected	URL		

	image			
Definition	An image of the item. This can be a URL or a fully described ImageObject.			
Scheme	Place			
Used for	Image			
Class & Subclasses	Thing			
Values expected	ImageObject, URL			

	<u>subjectOf</u>	
Definition	A CreativeWork or Event about this Thing. Inverse property: about.	
Scheme	Place	
Used for	Subject of	
Class & Subclasses	Thing	
Values expected	CreativeWork, Event	



Document Title: Status: Version: D2.11 Master Data Management FINAL 01.00

8.3 Old Service Description Template

Grey cells indicate attributes removed from the current SDT because either none of the 14 pilot services populated them or they have been deemed irrelevant by the Data Unit.

1. Basic Information				
ID				
Name	Ecotheology course			
Abbreviation	Ecotheology course			
Resource Organisation	Volos A	cademy for Theological Studies		
Resource Providers				
Webpage	https://	churchgoesgreen.acadimia.org/		
	2. Marketing Inform	nation		
Description	The blog "Green Orthodoxy: The Orthodox Church facing climate change" is an initiative of the Volos Academy of Theological Studies within the "Green Orthodoxy and parallel actions" program implemented in collaboration with WWF Greece. It aspires to publish and republish topical texts-interventions by theologians and also specialist scientists, news and information on the activity of the Orthodox Churches in environmental matters, as well as informative notes, videos, images on the latest developments regarding relevant issues at the national level, European as well as global news (always with reference to the source).			
Tagline	We publish and republish timely texts-interventions by theologians and also specialist scientists, news and information about the activity of the Orthodox Churches in environmental matters			
Logo	https://churchgoesgreen.acadimia.org/wp- content/uploads/2023/07/acadimia_logo_gr.png			
Multimedia				
Use case				
	3. Classification Info	rmation		
Scientific Domain	Humanities			
	Scientific Subdomain	Philosophy, ethics and religion		
Category	Data Storage			
	Subcategory Archive; Digital preservation			
Category	Scholarly Communication			
	Subcategory	Writing; Publication		
Category	Education & Training			
	Subcategory Online Courses; Open Registration Courses; In- house Courses; Training Tool; Training Platform			
Target Users	Researc	hers; Research groups; Students;		
Access Type	Physical; Remote; Virtual;Mail-in			
Access Mode	Free; Peer-reviewed; Paid			



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Tags	Rename to keywords (like clusters) & will be added by RESILIENCE teams					
4. Geographical and Language Availability Information						
Geographical Availability	World					
Language	Greek, English, French					
	5. Resource Location Information					
Resource Geographic Location						
6.	Contact Information => for internal use only					
	Main Contact/Resource Owner					
	Public Contact					
	Helpdesk					
	7. Maturity Information					
Technology Readiness Level	1 - basic principles observed					
Life Cycle Status	Already answered by RSRL					
Certifications						
Standards						
Open Source Technologies						
Version						
Last Update						
Change Log						
	8. Dependencies Information					
Required Resources	Has become a 'Technical' field named 'Dependencies'					
Related Resources						
Related Platforms						
Catalogue						
	9. Attribution Information					
Funding Body						
Funding Program						
Grant/Project Name						
	10. Management Information					
Helpdesk Page						
User Manual						
Terms Of Use						
Privacy Policy						
Access Policy						
Resource Level						
Training Information	Has become a 'Technical' only field					
Status Monitoring						
Maintenance						
	11. Access and Order Information					



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Order Type	Open Access	
Order		
12. Financial Information		
Payment Model		
Pricing		

For a Data/Technical Resource:

13. Data Source Policies				
Submission policy URL				
Preservation policy URL				
Version control				
Persistent Identity Systems - Research Data				
Persistent Identity Systems - Research Software				
Persistent Identity Systems - Research Literature				
Persistent Identity Systems - Other research products				
14. Data Source Content				
Jurisdiction	Research Infrastructure			
Data Source Classification	Scientific Database			
Research Product Types	Research Data => Specifically related to OpenAIRE so not relevant			
Thematic	Yes			
	15. Research Product Policies			
Research Product Licensing				
Research Product Access Policy	Open access			
	16. Research Product Metadata			
Research Product Metadata Licensing				
Research Product Metadata Access Policy	Open access			



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Status: Version: FINAL 01.00

8.4 Current Service Description Template

Optional Fields (O)

Field	Description	Туре	Example (ReIReSearch)
Abbreviation	Abbreviation of the Service Name	String	RelReSearch
(Extra) Resource Providers	The name(s) of (all) the other Provider(s) involved in managing or delivering the Service.	String	
Tagline	Short catchphrase for marketing and advertising purposes. It will be usually displayed close to the Service name and should refer to the main value or purpose of the Service.	String	Religious Studies Discovery Environment
Logo	Link to the logo/visual identity of the Service. The logo will be visible at the Portal. If there is no specific logo for the Service the logo of the Provider may be used.	URL or File	https://s3.us-east- 1.amazonaws.com/tw- desk/i/166024/doclogo/944 0366d-e35a-44cb-af1d- doob6e7b8252.jpeg
Scientific Domain(s)	The branch of science, scientific discipline that is related to the Service.	Pre-filled list	Humanities
Scientific Subdomain(s)	The subbranch of science, scientific subdiscipline that is related to the Service.	Pre-filled list	Philosophy, Ethics & Religion
Geographical Availability	Locations where the Service is offered.	String	World
Contact Phone Number	Phone number of the Service's contact person or a generic email of the Provider to be displayed publicly at the portal.	Phone number	+32 16 32 22 66
Funding Body	Name or webpage of the funding body that supported the development and/or operation of the Service.	String or URL	European Commission



Status:

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Field	Description	Туре	Example (ReIReSearch)
Funding Program	Name or webpage of the funding program that supported the development and/or operation of the Service.	String or URL	Horizon 2020
Grant/Project Name	Name or webpage of the project that supported the development and/or operation of the Service.	String or URL	RESILIENCE - https://www.resilience-ri.eu
Helpdesk Email	The email to ask more information from the Provider about this Service; can be the same as the contact email	Email address	<u>into-info@libis.be</u>
Helpdesk Phone	The phone number to ask more information from the Provider about this Service; can be the same as the contact phone number.	Phone number	+32 16 32 22 66
User Manual	Link to the Service user manual and documentation; can be the same as the helpdesk docs.	URL	https://reiresearch.helpdocs ite.com/

Technical Fields (T)

Field	Description	Туре	Example
TRL	The TRL according to the official TRL Scale	Integer 1-9	7
Privacy Policy	Link to the privacy policy applicable to the Service.	String or URL	<u>https://reiresearch.eu/#/eul</u> <u>a</u>
Training Information	Webpage to training information on the Service.	URL	https://reiresearch.helpdoc site.com/
Dependencies	List of other resources or software required to use this Service.	String	
Version	If data versioning is supported: version of the Service that is in force.	String	
Change Log	Summary of the Service features updated from the previous version.	String or URL	



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Version:

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Field	Description	Туре	Example
Jurisdiction	The type of geographical jurisdiction that defines the user group.	Pre-defined List	Research Infrastructure
Data Source Classification	The specific type of the data source.	Pre-defined List	Scientific Database
Thematic	Boolean value specifying if the data source is dedicated to a given discipline or is instead discipline agnostic	Boolean	True
Research Product Licensing	Licenses under which the research products contained within the data sources can be made available. Repositories can allow a license to be defined for each research product, while for scientific databases the database is typically provided under a single license.	String or URL	<u>https://reiresearch.eu/#/eul</u> <u>a</u>
Research Product Access Policy	Same as Product Licensing	String or URL	Open access
ResearchMetadata Policy for informationProductdescribing items in the repository:MetadataAccess and re-use of metadataLicensingImage: Comparison of the sector of		String or URL	<u>https://reiresearch.eu/#/eul</u> <u>a</u>
ResearchSame as Research Product MetadataProductLicensingMetadataAccess Policy		String or URL	Open access



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FINAL

8.5 RSRL Scale Examples

RSRL	Online Platform — ReIReSearch	Training – On Al Tools	Physical Service – Book Heritage Lab
S1 – Idea	Vision paper describes a unified discovery interface for religious-studies data; no code written, data model only sketched.	Concept note lists learning objectives and AI tools (eg: OCR, LLM prompt-engineering); no material prepared yet.	White-paper outlines need for a specialised book-heritage conservation facility; space and equipment only identified on paper.
S2 – Concept outlined	High-level architecture and metadata mapping drafted; basic feasibility confirmed with KU Leuven IT; still no users.	Draft syllabus and session outline produced; pilot slide-deck created; feasibility (time, software licences) checked.	Floor-plan, equipment list and workflow diagram created; health & safety and cost estimates reviewed; no external users.
S3 – Feasibility Prototype	Rudimentary demo runs locally on a laptop with dummy records; code pushed to a private GitHub repo.	Internal ½-day trial delivered to a few colleagues using sample datasets; feedback collected; materials in shared (private) drive.	One work-bench fitted with trial equipment (e.g., non-destructive spectrometer); curator tests procedure on sample volume.
S4 — Lab Prototype	Prototype deployed on dev server; limited amount of real records ingested; 3–5 invited colleagues test search & give feedback.	Full training dry-run (at least 5 participants) held; draft training material and exercise datasets shared; post-session survey analysed.	Partial lab operational (two key instruments installed); invited specialists run test treatments; risk-assessment updated.
S5 – Pilot (limited public) Beta version reachable at a public URL; signup on request; draft user docs online.		Beta training advertised internally; 10+ researchers attend; training material and slide-deck downloadable; dedicated contact e-mail.	Limited external access by application; booking form published; draft user manual and pricing model circulated.



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S6 – Community Pilot	Beta version available to external users; user docs and helpdesk email public; privacy & access policies published.	Course opened to externals (eg: RESILIENCE nodes); 25+ attendees across 3 sessions; feedback tracker and code-of-conduct online.	Open call results in ≥ 5 external projects; safety protocols signed; basic KPI dashboard (users, hours, failures) maintained.
S7 – Operational	Open public launch; stable URL, versioned releases, 99 % uptime target; searchable via RESILIENCE catalogue; helpdesk that's smoothly run.		Equipment bookable through online system; SOPs approved; accredited staff on duty; first formal Service-Level Appendix signed.
S8 – Managed Service	Formal MoU with LIBIS & IT; automated backups, monitoring & 3-year sustainability plan.	Institutional QA process, peer-reviewed training material, micro-credential certificates; multi-year funding line secured.	Framework SLA with KU Leuven; preventive-maintenance contracts, calibrated instruments; budget earmarked for 3+ years.
S9 – Established / Trusted	≥ 3 years at S8; indexed by EOSC/SSHOC; cited in peer-reviewed articles; DOIs minted for harvested datasets.	Track-record of ≥ 3 years; > 500 alumni; recognised in European training catalogues; evaluations show sustained impact.	≥ 3 years of uninterrupted service; referenced in conservation guidelines & scholarly publications;



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9 Reference Documents

Reference documents are intended to provide background and supplementary information.

ID	Date	Title/Reference
R1	18/08/2022	GRANT AGREEMENT, Project: 101079792 — RESILIENCE PPP — HORIZON INFRA-2021-DEV-02
R2	03/09/2024	D2.4 Data Management Plan
R3	29/03/2024	D2.1 Services Preparation and Implementation Strategy
R4	29/05/2024	D2.2 User Services Catalogue version 01.00

