Share-VDE and the Share Family
Advancements towards production

BIBFRAME Workshop in Europe 2023
19th September 2023

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Share Family principles, processes and stepping stones
Developed and driven by libraries, the Share Family is a growing international community built on collaboration. Participating institutions play an active role in defining the vision, aims and progress of the Share Family and its tools.

The Share Family opens the door to a flexible, sustainable, interoperable and co-operative approach to bibliographic data, with time, expertise and costs shared across the community for the benefit of all members.

By implementing the BIBFRAME data model and facilitating interoperability with different data models and data pools, bibliographic information can be transformed into Linked Data, increasing the visibility of research and encouraging greater engagement with library, archive and museum collections.

We strive to encourage open access to data, and support diversity by freely sharing information. We apply and support open metadata policies as part of our commitment to enhancing the discovery of library and cultural heritage resources.

Enriched and structured data can be re-used in local and external systems, across library types and ILS/LSPs, enabling each institution to maintain control of its own catalogue data.

The quality of data is guaranteed both through advanced technical processes and through collaborative data modeling, enrichment and sharing, handled collectively by member organizations.
Share Family - Linked Data Ecosystem: Processes

DATA INPUT FROM INSTITUTIONS

- MARC21 bib. and holding
- MARC21 aut.
- UNIMARC
- RDF/BIBFRAME
- Other formats (eg. FOLIO)

LOD PLATFORM SERVICES

- Mapping
- URI Enrichment
- Reconciliation
- Creation of Linked Data Entities
- Conversion to RDF/BIBFRAME

RESULTS

[Data Publication]
- End user discovery portals for each initiative of the Share Family
- Search APIs for data consumption (GraphQL, REST, SPARQL)

[Data Distribution]
- API / protocols for third parties integration (eg. local LSPs and data editor such as Wikidata, Sinopia BIBFRAME editor, FOLIO etc.)
- Downloadable datasets (BIBFRAME/RDF, MARC enriched records)

[Shared Data Management]
- Editing of Share Family entities with JCricket
- Reuse of Share Family BIBFRAME data in local library systems
- Reuse of Share Family MARC representations in local library systems

[Additional Services]
- Authority control in MARC and BIBFRAME-based workflows
- SFI - Share Family Index: registry of entity URIs
Stepping stones

2017-2019: Share-VDE members' and LD4P members' data from MARC21 to BIBFRAME

2017-ongoing: Share-VDE 2.0 new Linked Data Management System and Entity Discovery Portal

2021-ongoing: Share Catalogue online

2021-ongoing: Share-VDE prototype

2019-2021: Share-VDE - environment for library LOD

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2021-ongoing: Share Family embraces all LOD Platform initiatives

2021-ongoing: Share Family - towards production

2021-ongoing: BNB in LOD progresses towards production (beta)

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2021-ongoing: Share Family - towards production

2021-ongoing: BNB in LOD progresses towards production (beta)
The Share Family is a global community built on collaboration that brings together libraries, archives, museums, consortia and Library Service Platforms (LSP) and joins their knowledge in an ever-widening network of interconnected bibliographic data.

For further details please refer to https://www.share-family.org and the dedicated Share-VDE wiki section.
Share-VDE - Virtual Discovery Environment

Berkeley Law Library
Duke University
Library of Congress
National Library of Finland
National Library of Norway
New York University
Smithsonian Libraries and Archives
Stanford University
University of Alberta / NEOS Library Consortium
University of Chicago
University of Michigan Ann Arbor
University of Pennsylvania
Vanderbilt University
Yale University

https://www.svde.org
Share Catalogue: Scholarly Heritage and Access to Research

Università degli Studi di Napoli Federico II
Università degli Studi della Basilicata
Università degli Studi del Sannio
Università degli Studi di Salerno
Università degli Studi di Napoli Parthenope
Università degli Studi del Salento
Università degli Studi di Napoli L'Orientale
Università degli studi della Campania Luigi Vanvitelli
Università degli Studi Suor Orsola Benincasa
Università degli Studi di Cassino

Share Catalogue discovery portal
National Bibliographies in Linked Open Data

The aggregation of data from National Bibliographies in a shared entity discovery environment; the first of these is the BNB - British National Bibliography, soon to go into production.

The preview of the BNB beta website is available at

https://bl.natbib-lod.org/
The Share Family hosts a dedicated tenant for the data of the PCC - Program for Cooperative Cataloging, to provide PCC-quality BIBFRAME data housed in an ad hoc data pool

https://pcc-lod.org/
Parsifal - Integrated Catalogue in Linked Open Data

Accademia Alfonsiana
Centro Pro Unione
Pontificia Facoltà di Scienze dell'Educazione "Auxilium"
Pontificia Facoltà Teologica "Marianum"
Pontificia Università Antonianum
Pontificia Università della Santa Croce
Pontificia Università di San Tommaso d'Aquino (Angelicum)
Pontificia Università Gregoriana
Pontificia Università Lateranense
Pontificia Università Urbaniana
Pontificio Ateneo Sant'Anselmo
Pontificio Istituto Biblico
Pontificio Istituto Orientale
Pontificio Istituto Teologico "Giovanni Paolo II" per le Scienze del Matrimonio e della Famiglia
Pontificium Institutum Patristicum Augustinianum
Università Pontificia Salesiana

https://parsifal.urbe.it/parsifal/?l=en
Three pilot projects for shared Linked Open Data environments in the domains of Art, Music and Manuscripts, Incunabula and Ancient books
The Share-VDE ontology
The SVDE ontology - a BIBFRAME extension

The Share-VDE Ontology supports the Share Family of initiatives (based in federated linked data discovery environments) and is developed as an extension to BIBFRAME.
Translate conceptual state into OWL

Share Family is using the BIBFRAME ontology with the extensions. As the Share-VDE initiative evolved the discovery environment, the entities were in a conceptual state. Translating the conceptual state into the ontology web language allowed the project to unambiguously define core concepts. Conceptual models are limited in defining core concepts with such precision.

More in Jim Hahn’s presentation

<!-- https://svde.org/ontology/Work -->
<Class rdf:about="https://svde.org/ontology/Work">
  <rdfs:subClassOf rdf:resource="http://id.loc.gov/ontologies/bibframe/Work"/>
  <rdfs:label>Work</rdfs:label>
  <skos:definition>The svde:Work is defined by a constellation of elements representing the specific intellectual or artistic form that an Opus takes each time it is “realised.” Individuals of the class svde:Work hold an Opus entity identity.</skos:definition>
  <svde:closeMatch rdf:resource="http://iflastandards.info/ns/1rm/lrmer/E3"/>
  <svde:closeMatch rdf:resource="http://rdataregistry.info/Elements/c/C10006"/>
</Class>
Towards an operational environment
An integrated and hybrid environment

The mutual exchanges in the BIBFRAME / linked data community are bringing the Share Family towards:

- an integrated, “hybrid” operational environment...
- ...based on a variety of tools and diverse data sources...
- ...including traditional tools (eg. new authority services for MARC workflows) as well as advanced models for data exchange
An integrated and hybrid environment

DONE

New authority services for MARC-based workflows - designed with SVDE AIMS working group and Stanford’s input

Third parties integration with ILS/LSP - local library services (eg. Alma circulation APIs)

ONGOING

Finer granularity level of the CKB - Cluster Knowledge Base to make it format-agnostic and extend input data capabilities (MARC21, UNIMARC, BF/RDF eg. Sinopia profile etc.)

Third parties integration with ILS/LSP - Sinopia

Third parties integration with ILS/LSP - FOLIO

STUDY PHASE

Third parties integration with authority sources:

- LD4P Questioning Authority
- Wikidata (initial specs by SVDE working groups)
- ISNI (initial specs by SVDE working groups)

Application of Share Family tech to other domains (Art, Music)

DONE

ONGOING

STUDY PHASE
Focus on Authority services

Automatic services for Share Family libraries, piloted by Stanford University:

- validation of MARC 21 bibliographic records (correction of MARC 21 fields and obsolete forms, update of tags and subfields etc.);
- enrichment of MARC 21 fields with SVDE original URIs and URIs from external sources according to ad hoc profiling, including LCNAF, VIAF, ISNI;
- matching processes on external authority files (LCNAF, LCSH, LCGFT, FAST);
- import of authority records from external authority files (LCNAF, LCSH, LCGFT, FAST);
- reporting features providing complete details of the validation and corrections done to the records.

Next step developments: Authority Services fully integrated in the Linked Open Data environments.
Enhance data quality and authority control
Data flows into Share-VDE from libraries, institutions and third-party sources (e.g. VIAF, ISNI, FAST).

The Share-VDE knowledge base (Sapientia) contains the integrated/clustered/enriched entities.

Data is mainly edited through JCricket, the Share-VDE entity editor.

LD4P/QA  LSP/ILS (Sinopia, Alma etc.)

Libraries  WIKIDATA

Chronos  JCricket
Entity Editor

RDF Store  RDBMS
Integration with local services - circulation info

Integration with local services, e.g. connection to Alma APIs for Penn circulation services
Integration with local services - lending
set-up the connector to fetch data from Sinopia

ingested subset of Sinopia data from Stanford

now creating the parser so that RDF data coming from Sinopia can be clustered by Share-VDE processes

at the end of this process, Sinopia data will be included in the Share-VDE CKB - Cluster Knowledge Base
**integration: high-level milestones**

**Level 1: Instance correlation**

- Folio inventory instances are retained in dedicated faces of Share-VDE prisms
- The inbound connector receives FOLIO data (instances) and feeds the Cluster Knowledge Base (CKB)
- The outbound connector communicates back data changes to FOLIO

**Level 2a: Agents (and works) correlation**

- Same interaction as above, but using authority records (agents, works), instead.

**Level 2b: JCricket UI App in FOLIO**

- Using the FOLIO built-in “pluggable” nature, the FOLIO UI SDK and the Share-VDE (GraphQL) API
Discussions are arising among the Share Family institutions and collaborative networks of libraries (such as consortia) about setting up new shared discovery environments tailored to the art and music domains. Some of the applications:

- Share-Art and Share-Music will be Share Family branches dedicated to the linked data management and discovery for institutions in the art and music domains;
- in other Share Family tenants there could be the option of filtering data about art and music and make it available through specific discovery portals.
Application to other domains - Share MIA

Exploration of related areas to build an enhanced linked data ecosystem: pilot projects for shared Linked Open Data environments in the domain of Manuscripts, Incunabula and Ancient books, an example:
JCricket Editor - The Entity Management System
A Share-VDE member (Stanford, in the example) uses FOLIO for managing its data.

FOLIO instance (or instances in case of massive export) is sent to Share-VDE

FOLIO instance data is split across the entities that form the Share-VDE domain model. In this example we focus on the properties that are assigned to a Share-VDE instance (red triangle above)
Prism, faces: the Share-VDE Entity
Properties: Attributes, Relationships, Links

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
<th>Provenance</th>
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</thead>
<tbody>
<tr>
<td>title</td>
<td>Alice in wonderland</td>
<td></td>
</tr>
<tr>
<td>titleAlternative</td>
<td>Alice’s adventures under ground</td>
<td></td>
</tr>
<tr>
<td>titleAlternative</td>
<td>Journeys in Wonderland</td>
<td></td>
</tr>
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</table>

An attribute is a data property, having a literal as value

<table>
<thead>
<tr>
<th>Name</th>
<th>Value</th>
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<tr>
<td>sameAs</td>
<td><a href="http://dbpedia.org/resource/Alice%27s_Adventures_in_Wonderland">http://dbpedia.org/resource/Alice%27s_Adventures_in_Wonderland</a></td>
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A relationship is a connection between two Share-VDE Prisms

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<tr>
<td>author</td>
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</table>
The Big Picture: Genesis, Search, Edit

Data flows into Share-VDE from libraries, institutions and third-party sources (e.g. VIAF, ISNI, FAST)

The Share-VDE knowledge base (Sapientia) contains the integrated/clustered/enriched entities.

Data is mainly edited through JCricket, the Share-VDE entity editor.

Data is searchable through the entity discovery portal.

Any third-party, authorized application can be a Share-VDE client

Third-party Applications
JCricket: Available Operations

**Edit:** A property is added/updated/deleted

<table>
<thead>
<tr>
<th>Lewis Carroll</th>
<th>Lewiss Carroll</th>
</tr>
</thead>
<tbody>
<tr>
<td>is author of</td>
<td><a href="https://svde.org/opuses/1827349">https://svde.org/opuses/1827349</a></td>
</tr>
</tbody>
</table>

**Merge:** Multiple prisms are merged into one

For example, two prisms, “Mark Twain” and “Samuel Clemens”, should be actually part of the same entity.

**Split:** A prism is split into multiple prisms

A prism (wrongly) contains information belonging to multiple entities (e.g., “Wallace David” and “David Wallace”)

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JCricket user interface

Step 1: Search on Share-VDE Main Portal

Step 2: Enter the entity details page

Step 3: Click on the edit action and enter the JCricket UI
JCricket features - The user interface
JCricket feature selection
JCricket edit
JCricket edit - open a new entity via ID
JCricket edit - Multiple entities in one screen
JCricket edit - languages
Properties: Attributes, Relationships, Links
JCricket edit - Add variant forms

- "Harry Potter and the prisoner of Azkaban" (fantasy fiction)
  - Metadata
  - External IDs
  - Basic info
  - OpusType (1)
  - Undefined
  - Title (1)
  - Undefined
  - English
  - Harry Potter and the prisoner of Azkabans
  - Danish
  - German
  - Harry Potter and the prisoner of Azkaban

Harry Potter and the prisoner of Azkabans

2 results
Sort by (A - Z)
Provenances and leader value for end users
JCricket edit - controlled value list
JCricket edit - search while editing
JCricket edit - search while editing
JCricket edit - search while editing
JCricket edit - add agent
JCricket edit - add attribute
JCricket - create an entity from scratch
JCricket merge - select merged entities
JCricket merge - select destination entity
**JCricket merge - select properties**

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<tr>
<th>Source entities (original works)</th>
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<tr>
<td>&quot;Su alcuni palazzi folgliati dei secoli XVI - XVIII&quot; (1900)</td>
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<table>
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<tr>
<th>Work</th>
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<tbody>
<tr>
<td><a href="http://vat3-base.vde.atvctl.it/works/60091">http://vat3-base.vde.atvctl.it/works/60091</a> (a0001)</td>
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<td>article (<a href="http://vat3-base.vde.atvctl.it/kbipsaTypes/7105">http://vat3-base.vde.atvctl.it/kbipsaTypes/7105</a>)</td>
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| "Indagini a S. Maria in Campis di Foligno" (4958) | Remove entity |

<table>
<thead>
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**Destination entity: Music in art (a0002) | Delta**

**Basic info**

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<td>[link]</td>
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<td>The musicians in Balthasar Wigand’s depiction of the performance of Haydn’s Die Schlöpfung, Vienna, 27 March 1808</td>
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<td>[link]</td>
<td>Picturing the players in the pit (a0304)</td>
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**End of content**
JCricket merge - select properties
Merge entities where the role is the same
Properties Automatically added (full matching)
JCricket - review process
Merge - pending review

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The musicians in Balthasar Wigand's depiction of the performance of Haydn's Die Schöpfung, Vienna, 27 March 1808

Written by Rabkin, Eric S. Published in Music in art.
### JCricket split - select properties

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What JCricket is

- it’s a linked data entity / authority editor
- it applies to linked data entities created within all tenants of the Share Family (svde.org, pcc-lod.org, natbib-lod.org)
- it’s a manual application that manages properties (attributes, relations and links) of entities in the CKB - Cluster Knowledge Base
- it’s a collaborative tool shared across member institutions
- it can be a new tool for entity sharing in LOD
What JCricket is not

❌ not a traditional bibliographic data editor

❌ not an original cataloguing tool

❌ not in contrast with Sinopia or Marva

❌ not impacting original data that reside in member libraries’ systems (unless libraries want to use ad hoc APIs for entity updates both in SVDE and in their systems)
Next generation cataloguing

The JCricket editor is an example of how the LOD Platform technology, within the Share Family Linked Data Ecosystem, is pursuing a new way of managing library cataloguing in a cooperative way:

★ aggregation of data from multiple sources
★ managed through standard protocols (linked data)
★ in a collaborative and integrated environment
★ that makes available open data and resources
★ to end users and professionals (researchers, scholars etc.)
★ for reuse in the library community and beyond
JCricket references

Useful references:

- JCricket overview
- for more technical details on JCricket
  https://wiki.share-vde.org/w/images/e/e8/JCricket_entity_editor_presentation.pdf
- on how JCricket has been conceived
Thank you!

https://www.share-family.org/
https://wiki.svde.org
info@svde.org
JCricket entity editor - What it does

- Integrated in the discovery portal web interface, **for authenticated users**
- **User types:** basic and advanced
- Entities aggregate data from different contributing libraries (aka Provenances):
  - **an entity is also called Prism**, where each face represents data coming from a given Provenance
JCricket entity editor - What it does

**Edit function** to change entities’ properties
- add, remove and amend attributes, relationships and links belonging to a single entity
- real time notifications about cluster property changes

**Merge function**: reconcile multiple entities into one (e.g. two authors who are in fact the same person)
- choose the properties to copy to the merged entity
- multiple phases: create the merge list, edit the merge list, edit clusters, request for review, approve (or deny) the merge
**Split and Create functions**: move one or more properties between two entities; optionally create a new one

- choose the properties to move from entities
- properties can be moved from an entity to create a brand new one
- multiple phases: create the split-set, edit the split-set, edit clusters, request for review, approve (or deny) the split
JCricket entity editor - What it does

**Review workflow**: edits are reviewed by advanced editors
★ notifications to manage the review workflow

**Dictionary API**: what are the available cluster types? Which attributes belong to a cluster type? What cardinality? Which relationships?

**Entity Event Log**: tracks the history of changes

**Data changes synchronization** across SVDE storages (e.g. RDF Store, Search Engine, RDBMS)
Why JCricket is valuable

★ A collaborative tool, shared across the Share Family community and improving the data created within it
★ Linked data conversion in a shared discovery environment and direct entity management capabilities in one place
★ Increases data quality where massive automated processes are necessarily lacking
★ Collaboration ensures higher quality and authoritateness of data
★ Conceived by SVDE and Share Family community, ie. real users
★ Potentially complementary to other tools, e.g. Sinopia - as they cover different aspects of the entity management flow
★ Could potentially support other workflows and connections with systems external to the Share Family
★ You can always track back to your data through the Provenance
★ JCricket will extend authority capabilities through the integration with external data sources such as Wikidata
Where we are now

★ The back-end APIs that manage JCricket behind the scenes are ready ✔

★ The respective front-end functions for the end users to actually use JCricket are under development ❋
  ○ progressive releases through 2023