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Enabling Participatory Data Perspectives for Image Archives through a Linked Art Workflow

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Introduction and Context

The University of Basel and the Bern Academy of the Arts, initiated in February 2021 a four-year research project called Participatory Knowledge Practices in Analogue and Digital Image Archives (PIA). PIA studies three representative collections from the archive of the Swiss Society for Folklore Studies (SSFS): The *Atlas of Swiss Folklore* (cartography), *Ernst Brunner* (photojournalism) and *Family Kreis* (vernacular photography), developing interfaces to enable the indexing and use of these archival materials.

PIA is a collaborative endeavour aiming to encourage participation, both within its interdisciplinary team and amongst users, whether scholars or the wider public, as well as with peer institutions and communities in the cultural heritage field. In developing participatory interfaces, PIA aims to increase the use of image archives by production of knowledge with and through these invested communities. This brings an expectation of multiple interfaces to interact with three combined collections, re-

flecting diverse perspectives in scholarship and other use. To this end, community-developed Linked Open Usable Data (LOUD) (Newbury 2018; Sanderson 2018) specifications will be deployed for flexible and repurposable access to PIA's content and associated metadata, specifically: the International Image Interoperability Framework (IIIF) (Raemy / Demleitner 2022); and Linked Art (Page et al. 2020), an RDF application profile (JSON-LD) based on CIDOC-CRM to describe object-based cultural heritage (Newbury 2018; Sanderson 2019).

Alongside an existing PIA-bespoke JSON API, a Linked Art API will provide an additional entry point for developers and scholars, as a means of conveying semantically enriched events and as a benchmark against other collections leveraging this model.

Building upon their participation in the Linked Art community, PIA has collaborated with the University of Oxford to design and implement a workflow transforming their cultural heritage collection data into Linked Art. For the already digitised Family Kreis and Ernst Brunner collections, templates have been created for the different object types. The data characteristics associated with the object types, and cataloguing practice within each sub-collection, are encapsulated within these templates.

Workflow Implementation

To generate a Linked Art representation for the combined PIA collection a data transformation workflow has been implemented through which the PIA templates are encoded in Python for each object type.

In the general case, the workflow (Figure 1) provides a software process for transforming photographic collection data into the Linked Art format that will:

1. Query the PIA JSON API for collection data
2. Map collection data to an intermediate JSON data format
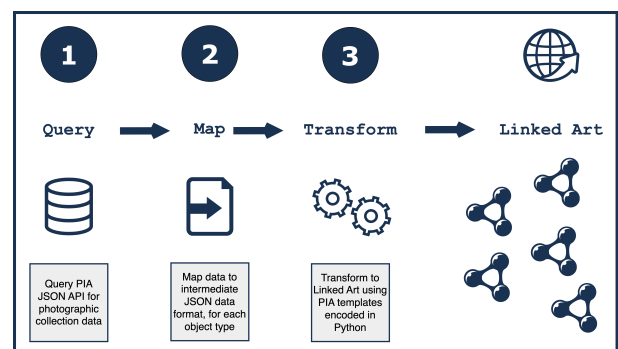3. Transform the intermediate JSON data format to Linked Art JSON-LD

Figure 1. The Linked Art transformation workflow with numeric workflow steps indicated.

An intermediate JSON data format is used so that the transformation step can be reused with different collection data sources. The intermediate JSON data files are transformed to a Linked Art representation of the PIA templates for the photographic object types. Using the Python library Cromulent to create basic Linked Art representations, the Python functions encode larger building block-type representations of the photographic object types, e.g., name, web page, and digital service. Together, the functions encode the photographic object types as defined in the PIA templates and offer the opportunity for reuse with photographic object types

in other collection data, as well as for different cultural heritage objects that share the same properties.

Challenges and Future Work

In a situation common to many collecting institutions, the digital systems used to maintain catalogues and other records do not remain unchanged indefinitely; planning and preparation for such migrations may take months or years. At PIA migration to a new data model and API was planned, to be realised after implementation of the Linked Art workflow. This presented both a challenge, but also an opportunity: to design a workflow which can be reconfigured and reused with different data sources and APIs (Figure 2).

In this scenario a new datasource query script and associated data mapping script can be written to generate the intermediate JSON format; the later stage transformation script creating Linked Art JSON-LD does not need to be modified. If new data sources also introduce new object types, then the workflow can be similarly extended to introduce new object data mappings, and/or new Linked Art patterns, while retaining the stages and cohesion of the overall workflow.

In this way the adaptability and extensibility of our workflow pattern presents not only a solution to the specific situation of PIA, but also a future opportunity to test and extend the workflow to transform the data of other collections to Linked Art.
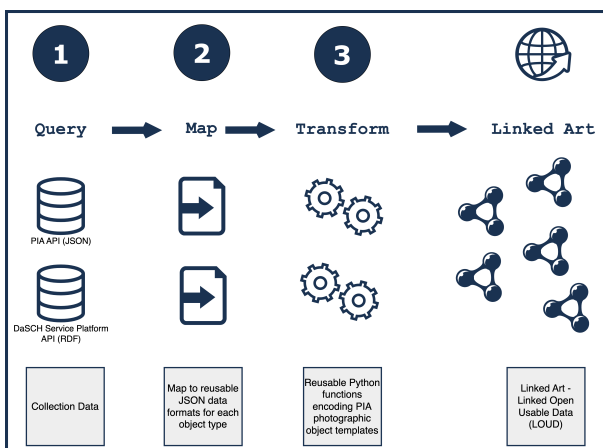

Figure 2. PIA Linked Art data workflow designed for reuse with different data sources and object types.

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