Implementation of the Albrecht Haupt collection portal based on the general-purpose semantic web application Vitro

Tatiana Walther, Georgy Litvinov, Birte Rubach
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Agenda

- **Collection Albrecht Haupt / GESAH(+) Project**

- **Ontology**

- **Technical Implementation**

- **Vitro customizations**

- **Dynamic API**

The Collection Albrecht Haupt of TIB Hannover

- Albrecht Haupt (1852-1932) was an architect and college/university lecturer in Hannover

- He left his private collection to the library of the technical college of Hannover in 1901

- The collection consists of three sections:
  - 6,000 drawings of his own hand
  - 6,200 prints and drawings from the 16th to 19th centuries from all over Europe on wide range of subjects (architecture, ornament, portraits etc.) → GESAH
  - 1,600 monographs on architecture and bound volumes of prints
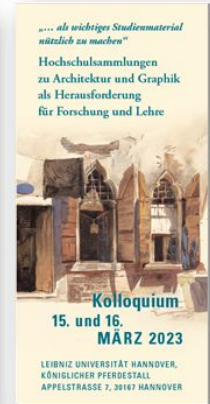
GESAH(+) Project

Cooperation with Leibniz-University Hannover, Institute for the History and Theory of Architecture, 3-year funding by DFG

6,200 single sheets were
- digitised
- indexed and
- published online
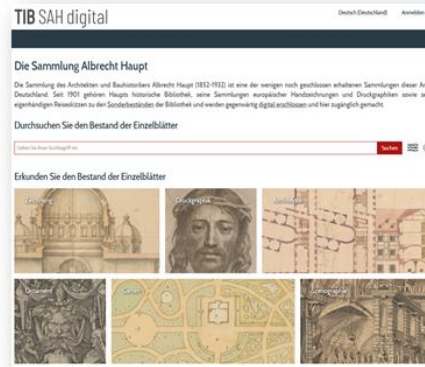
Hompage: **https://projects.tib.eu/haupt**   Online collection: **https://sah.tib.eu/**

TIB SAH Digital

The Albrecht Haupt Collection

The collection of the architect and building historian Albrecht Haupt (1852-1932) is one of the few still cohesively preserved collections of this kind in Germany. Since 1901, Haupt's historical library, his collections of European hand drawings and prints as well as his own travel sketches have been part of the library's special holdings and are currently being digitally indexed and made accessible here.

Search the collection of inidividual graphic sheets

Status of indexing: All sheets in the collection of prints and drawings have been digitised and made available here for browsing. Please note in your search that the degree of indexing still varies considerably. Objects that have been recorded only rudimentarily so far can best be filtered via the general facets of object type, geographical assignment, object category (generic term).

Explore the collection of inidividual graphic sheets
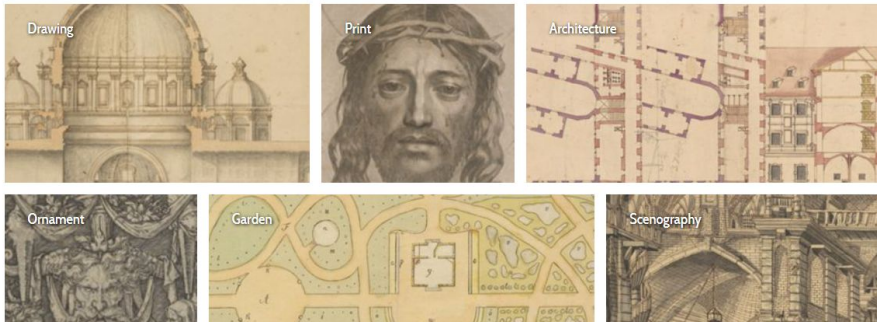
- Built with Vitro:

  - General-purpose web-based ontology and instance editor
  - Java Web application
  - Part of Open Source Software VIVO
  - Requires OWL Ontology

GESAH Graphic Arts Ontology

LIDO & CIDOC CRM

Domain requirements
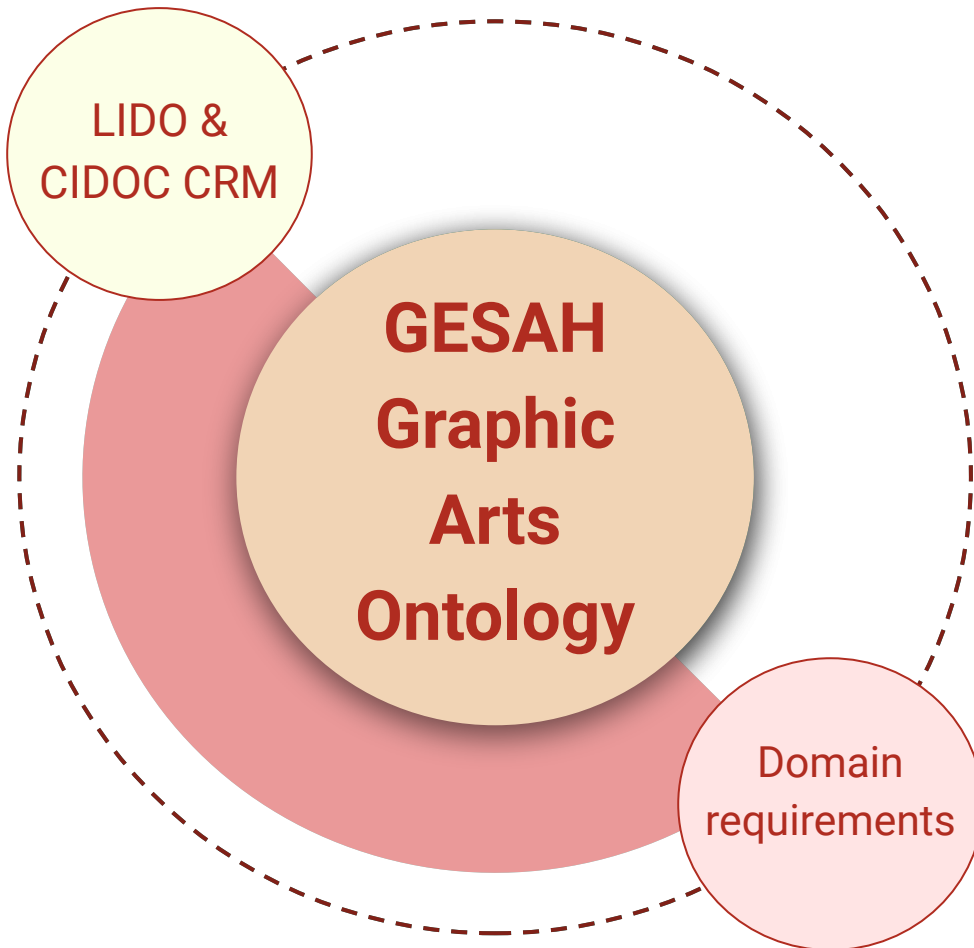
LIDO - Lightweight Information Describing Objects, XML-Schema and exchange format

CIDOC CRM - CIDOC Conceptual Reference Model
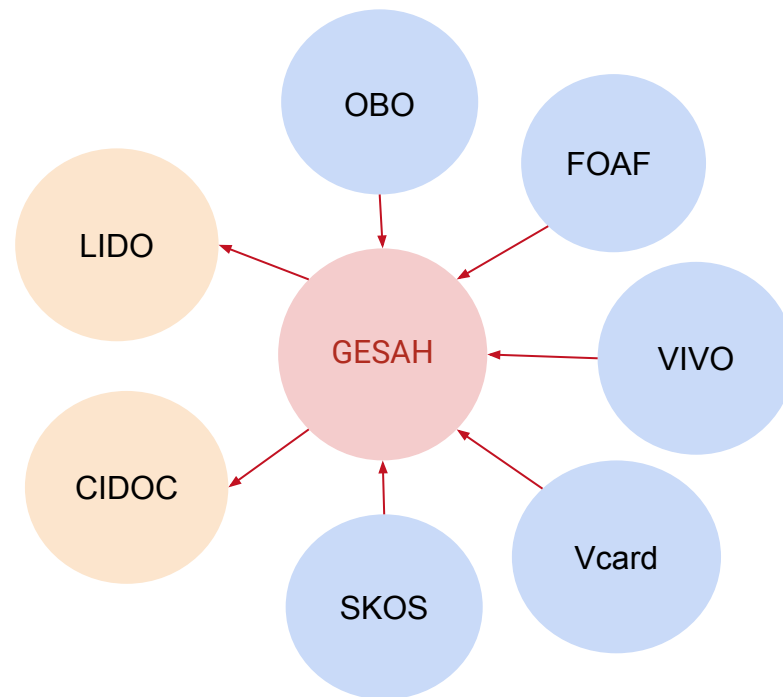
Domain Requirements

- Recording, classification and structured description of art works

- Easy access for the public and domain experts

- Curatorial documentation by the preserving institution

Competency questions

- Which German prints from before 1600 are part of the collection?
- Which Italian architectural drawings can be found in the collection?
- Which prints were issued in Antwerp?
- Which drawings were formerly attributed to Parmigianino?
- Which drawings and prints have a collector`s mark?
- Which drawings and prints were kept in the Collection of Hippolyte Destailleur (Paris)?
- Which drawings were kept under the former/current inventory no. (e.g. Albrecht Haupt's folder numbered e.g. "XXXIIIa")?
- Which drawings and prints depict the subject Adam and Eve?

Ontology - Technical Details

- Ontology development - made with Protégé

- rdfs:seeAlso references to CIDOC CRM, LIDO-Terminologie, Getty AAT

- Properties for providing data with AAT, Wikidata, GND and ICONCLASS identifiers.

- https://github.com/tibonto/gesah

Ontology and Data

Technische Informationsbibliothek (TIB), Public Domain Mark 1.0
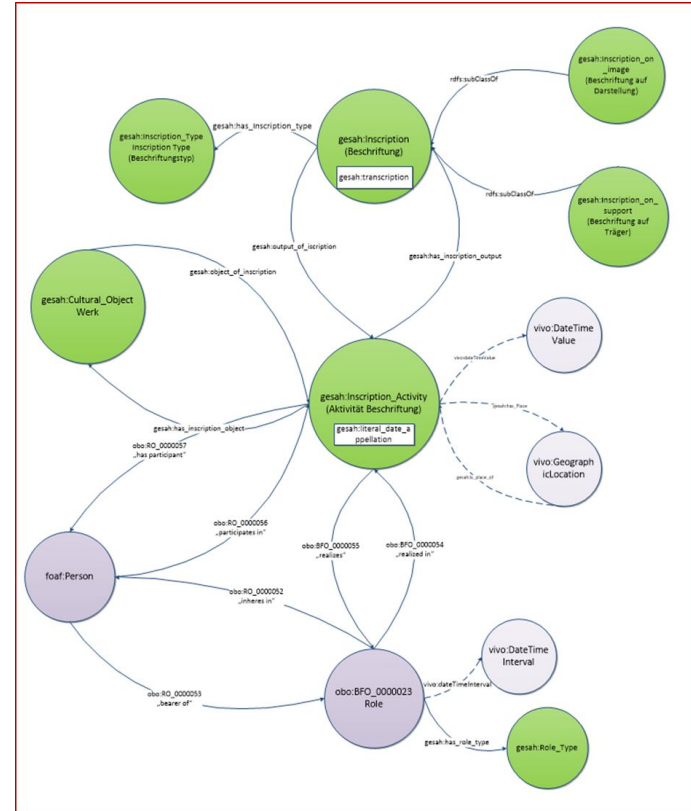
Technical Implementation
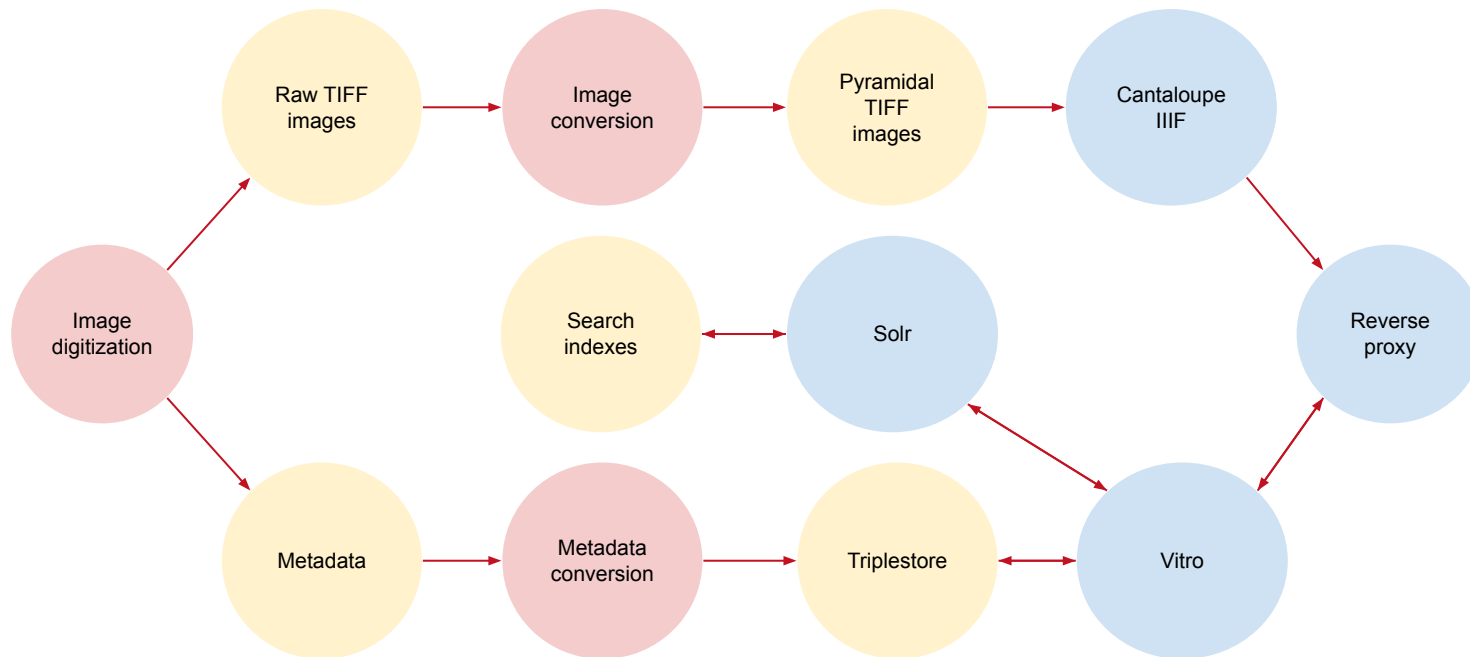
Vitro customizations

Display and Forms

Create creation entry for verschiedene Entwurfsskizzen (Theatermaske, Falter, Elfe mit Lyra)

Participant Type [Person ▾]

Selected Participant: Schaller, Ernst Johannes (Verify this match or change selection)

Role Type
[draftsman ▾]

Attribution Type
[stated on sheet ▾]

Material
[tracing paper ▾]

Technique
[pen ▾]

Place Name
[Select an existing or create a new one]

Literal Date Appelatlion
[um 1880]

Comment (supplemental information about the origin of the cultural object)
[ ]

Start Year [1870] (YYYY)

End Year [1890] (YYYY)

[Create Entry] or Cancel

*required fields

Create Object of preservation activity for Aviarium des Marco Varro

Preservation type * [Conservation ▾]

Treatment specifics * [surface cleaning ▾]

Participant Type [Organization ▾]

Selected Participant: Hochschule für angewandte Wissenschaft und Kunst (Verify this match or change selection)

Role Type
[restorers ▾]

Selected Place: Hannover (Verify this match or change selection)

Literal Date Appelatlion
[ ]

Comment (supplemental information about the origin of the cultural object)
[ ]

Start Year [2021] (YYYY)

End Year [2021] (YYYY)

[Create Entry] or Cancel

*required fields

Vitro customizations

Extended search

https://sah.tib.eu/extendedsearch

Vitro customizations

Search ontology

https://github.com/vivo-project/Vitro/pull/382

Vitro customizations

Metadata for image indexing

```
<script type="application/ld+json">
    [

    {
      "@context": "https://schema.org/",
      "@type": "ImageObject",
      "contentUrl": "https://sah.tib.eu/iiif/2/89140490191%5Econtent%5Estreams%5Emaster_89140490191_00000001.tif/full/300,/0/default.jpg",
      "license": "https://creativecommons.org/publicdomain/mark/1.0/",
      "creditText": "Technische Informationsbibliothek (TIB)",
      "creator": {
        "@type": "Organization",
        "name": "Technische Informationsbibliothek (TIB)"
      }
    }
    ,
    {
      "@context": "https://schema.org/",
      "@type": "ImageObject",
      "contentUrl": "https://sah.tib.eu/iiif/2/89140490191%5Econtent%5Estreams%5Emaster_89140490191_00000002.tif/full/300,/0/default.jpg",
      "license": "https://creativecommons.org/publicdomain/mark/1.0/",
      "creditText": "Technische Informationsbibliothek (TIB)",
      "creator": {
        "@type": "Organization",
        "name": "Technische Informationsbibliothek (TIB)"
      }
    }
    ,
    {
      "@context": "https://schema.org/",
      "@type": "ImageObject",
      "contentUrl": "https://sah.tib.eu/iiif/2/89140490191%5Econtent%5Estreams%5Emaster_89140490191_00000003.tif/full/300,/0/default.jpg",
      "license": "https://creativecommons.org/publicdomain/mark/1.0/",
      "creditText": "Technische Informationsbibliothek (TIB)",
      "creator": {
        "@type": "Organization",
        "name": "Technische Informationsbibliothek (TIB)"
      }
    }
    ]
</script>
```

Dynamic API Overview
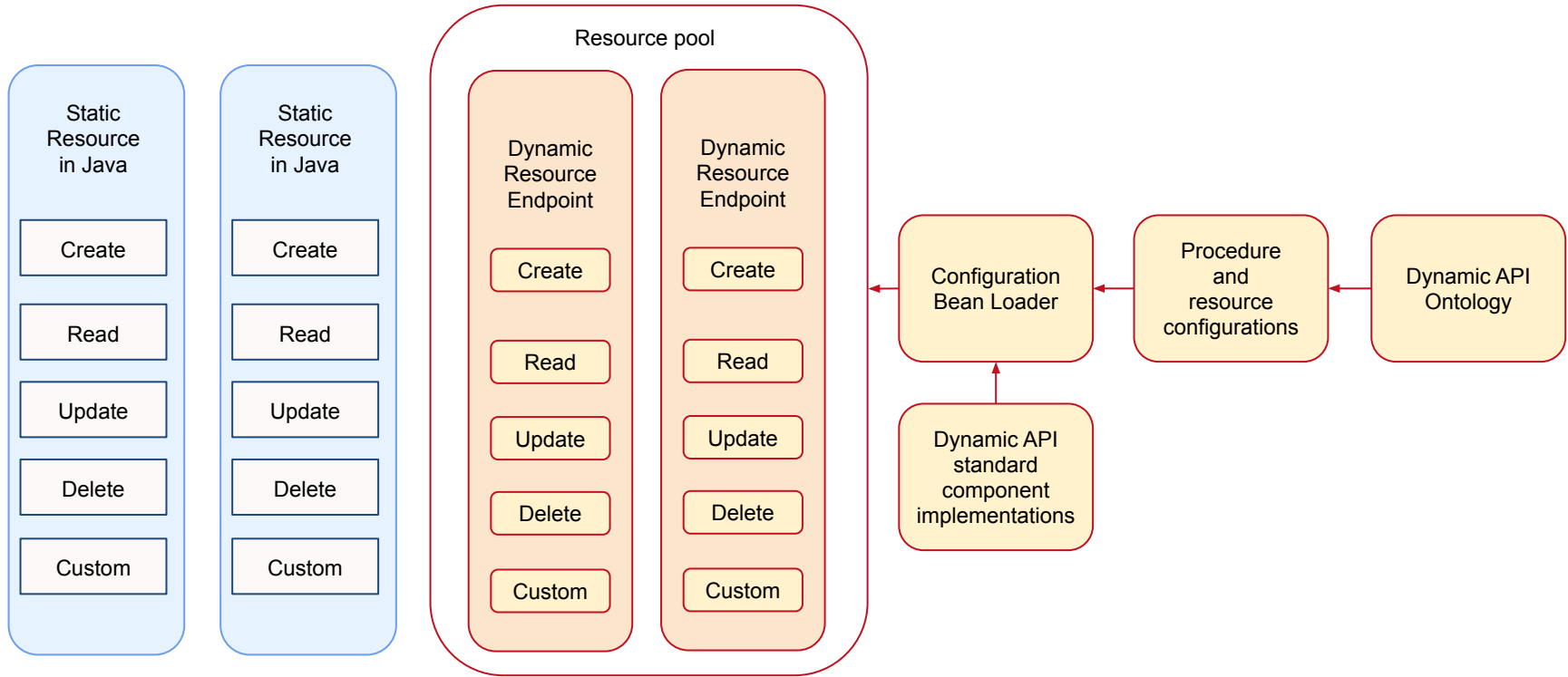
LIDO Export implemented in Dynamic API

Endpoint

Procedure

Execution

| SPARQL CONSTRUCT Query | Construct cultural object graph |

| XML Transformation | Serialize graph as RDF/XML and transform into LIDO XML |

| XML Validation | Validate produced XML with LIDO Schema |
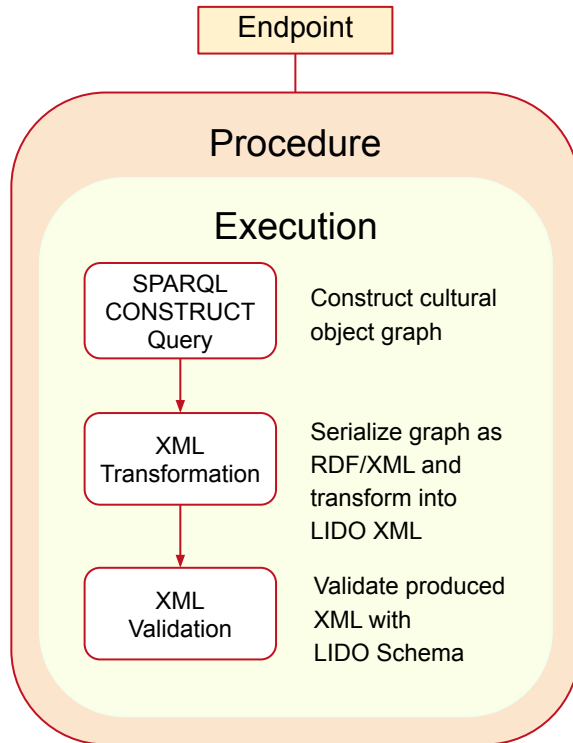
```
:procedure
            a                          dynapi:Procedure ;
            dynapi:publicAccess        "true"^^xsd:boolean ;
            dynapi:hasFirstStep        :step1 ;
            dynapi:providesParameter   :parameter_validation_errors ;
            dynapi:providesParameter   :parameter_lido_xml ;
            dynapi:providesParameter   :parameter_validation_result .

:step1
            a                          dynapi:OperationalStep ;
            dynapi:hasNextStep         :step2 ;
            dynapi:hasOperation        :operation_export_cultural_object_to_lido .

:operation_export_cultural_object_to_lido
            a                          dynapi:SparqlConstructQuery ;
            dynapi:hasModel            model:full_union ;
            dynapi:sparqlQueryText     """SPARQL CONSTRUCT Query text""" .
            dynapi:requiresParameter   :parameter_cultural_object_uri ;
            dynapi:providesParameter   :parameter_cultural_object_graph .

:step2
            a                          dynapi:OperationalStep ;
            dynapi:hasNextStep         :step3 ;
            dynapi:hasOperation        :operation_XMLTranslation .

:operation_XMLTranslation
            a                          dynapi:XMLTransformation ;
            dynapi:xslt                :parameter_xml_transformation_rules ;
            dynapi:inputXml            :parameter_cultural_object_graph ;
            dynapi:outputXml           :parameter_lido_xml .

:step3
            a                          dynapi:OperationalStep ;
            dynapi:hasOperation        :operation_XMLValidation  .

:operation_XMLValidation
            a                          dynapi:XMLValidation ;
            dynapi:xsd                 :parameter_xml_schema_rules ;
            dynapi:inputXml            :parameter_lido_xml ;
            dynapi:errorMessage        :parameter_validation_errors ;
            dynapi:result              :parameter_validation_result .
```

https://sah.tib.eu/dynapi-rest-docs

Lessons learned / outlook

- It's feasible to use Vitro for representing a collection of art works. However, considerable efforts are required for customization.

- Strong needs for making creation of custom entry forms easier

- Outlook
  - Ontology paper
  - "Building bridge" to the NFDI4Culture
  - Dynamic API for entry forms
  - Export to LIDO

Thank you for your attention!

For more information:

Hompage: **https://projects.tib.eu/haupt**
Online collection: **https://sah.tib.eu/**
GESAH Graphic Arts Ontology: https://github.com/tibonto/gesah
christian.hauschke@tib.eu
georgy.litvinov@tib.eu
birte.rubach@tib.eu
tatiana.walther@tib.eu