

# Rare Materials Ontology Extension

## About the Rare Materials Ontology Extension

In conjunction with the ACRL Rare Books and Manuscript Section's [Bibliographic Standards Committee](#) (RBMS-BSC), Cornell University Library led an effort to build an ontology extension for the description of rare materials. This collaborative effort was intended to provide RBMS-BSC with a model for handling the complexity of rare materials, particularly item-level description not addressed in [BIBFRAME 2.0](#). For questions or comments, please contact Jason Kovari, Director of Cataloging & Metadata Services, Cornell University Library: jak473 [ at ] cornell dot edu

[Cornell Project Proposal](#)

[View RareMat's work on GitHub](#)

**NOTE:** As described in the next section, this effort developed into the Art & Rare Materials BIBFRAME Ontology Extension.

**NOTE:** As of June 2018, [RBMS' Bibliographic Standards Committee](#) committed to development and maintenance of ARM, in partnership with community partners.

## The Art & Rare Materials BIBFRAME Ontology Extension

The Art & Rare Materials BIBFRAME Ontology Extension (ARM), and the ontologies housed in the [ARM GitHub repository](#) have been developed as extensions of the [BIBFRAME ontology](#) for generalized bibliographic description to provide specialized modeling in the art and rare materials domains. These were originally conceived of as two separate projects: Columbia University led [ArtFrame](#), an ontology extension for the description of two- and three-dimensional artworks, in collaboration with the Art Libraries Society of North America's [Cataloging Advisory Committee](#) (ARLIS CAC), the Library of Congress Prints and Photographs Division, The Clark Library, and the Morgan Library & Museum. Meanwhile, Cornell University led the [Rare Materials Ontology Extension](#) (RareMat) in collaboration with the ACRL Rare Books and Manuscript Section's [Bibliographic Standards Committee](#) (RBMS-BSC); RareMat was intended to provide modeling for the complexity of rare materials, particularly item-level description not addressed in BIBFRAME.

As work proceeded, it became apparent that many of the modeling needs of the two groups overlapped: physical description, physical condition and conservation, custodial history, measurements, awards and exhibitions, and so on. It was thus decided to merge the projects and jointly develop a single set of models.

Meanwhile, select models were considered separable from the core models, amenable to independent implementation by users within and outside the bibliographic domain. These models have been pulled out of the core ontology into three modularized ontologies: awards, custodial history, and measurements.

In addition to the ontologies, the group has generated several other outputs:

- [A set of controlled vocabularies](#) for arrangement of physical objects (e.g., rolled and unrolled), origin (e.g., of titles), status (e.g., of identifiers), typefaces, and handwriting types.
- [Detailed documentation of each model](#). These include use cases; model overviews, with motivation and rationale in reference to the use cases and legacy data; diagrams; RDF samples; term specifications; recommendations for future modifications to BIBFRAME, where applicable; and lists of related topics out-of-scope of the current project but of interest for future research.
- [Application profiles](#), formalized in SHACL and accompanied by external ontologies and vocabularies, to support form and display interfaces in [VitroLib](#), an RDF cataloging tool under development in the associated [Linked Data for Libraries Labs](#) project. Two application profiles are under development: art and rare monographs. Also included are fragments of source ontologies and vocabularies used in the application profiles and modeling recommendations.
- Experimental: SHACL validation profiles stored with the associated ontologies, which can be used as a basis for application profiles but whose primary purpose is to define expected implementation of the ontologies independent of any application. Some proof-of-concept application profiles are built on the validation SHACL in this way; when the profiles are complete we will evaluate the feasibility and usefulness of refactoring all the application profiles according to this model. Currently available are [core validation](#) and [custodial\\_history](#) SHACL shapes.

## Completed Work

### Use Case Development

- Defined [use cases for description of rare materials](#)
- Classified use cases into entity types
- Identified areas for modeling based on DCRM and other standards
- Compared Rare Material use cases to [ArtFrame](#) use cases and identified commonalities

### Analysis/Modeling

- [Accession Number](#)
- [Attributions](#)
- [Awards](#)
- [Bibliographic Citation](#)
- [Bindings](#)
- [Carriers & Bound-withs](#)
- [Custodial History](#)
- [Exhibitions](#)
- [Fonts, Handwriting Types and Notations](#)
- [Limitation Statement](#)
- [Markings](#)
- [Materials](#)
- [Measurements of Part, Whole and Arrangement](#)
- [Notes in Art](#)
- [Pagination and Foliation](#)
- [Physical Condition](#)
- [Signature Statements](#)
- [Style/Period](#)
- [Titles in Art](#)

### OWL file development

- **Core Ontology**
  - Core ontology used in the description of art and rare materials.
  - [Ontology specification](#)
  - [Human-readable documentation](#)
- **Award Ontology**
  - Specialized ontology for the description of awards received by bibliographic resources or agents; reusable in contexts beyond the bibliographic domain.
  - [Ontology specification](#)
  - [Human-readable documentation](#)
- **Custodial History Ontology**
  - Specialized ontology for the description of an object's custodial history or provenance; reusable in contexts beyond the bibliographic domain.
  - [Ontology specification](#)
  - [Human-readable documentation](#)
- **Measurement Ontology**
  - Specialized ontology for the description of an object's measurements; reusable in contexts beyond the bibliographic domain.
  - [Ontology specification](#)
  - [Human-readable documentation](#)
- **Activity Ontology**
  - The issue of whether to adopt the BIBFRAME Contribution model or the biblotek-o Activity model has not yet been resolved. As a temporary accommodation, the Activity model is used, but the terms are stored in a separate ontology file with a distinct namespace for easy separation. The expectation is that either (1) the Activity model will be adopted, and the terms merged into the ARM Core Ontology, or (2) the BIBFRAME Contribution model will be adopted, the Activity ontology deprecated, and other associated revisions to the ARM ontologies and vocabularies be implemented.
  - [Ontology specification](#)
  - [Human-readable documentation](#)

### Application Profiles (SHACL)

- **Rare Monograph:** [https://github.com/LD4P/arm/tree/master/application\\_profiles/raremat\\_monograph/shacl](https://github.com/LD4P/arm/tree/master/application_profiles/raremat_monograph/shacl)
- [Recommendation for SHACL maintenance and development](#)

### In-Person Meetings

- [In-Person Meeting of ARTframe + Rare Materials Ontology Extension \(January 2018\)](#)
- [In-Person Meeting of ARTframe + Rare Materials Ontology Extension \(March 2017\)](#)
- Virtual meetings occurred weekly between June 2016 and July 2018

## Team

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[ArtFrame Collaborators](#)

## Presentations and Workshops

- (accepted) 2018.09.10 - Kovari, Wacker, Khan and Folsom. "Modeling and application profiles in the Art and Rare Materials BIBFRAME Ontology Extension". DCMI, Porto, Portugal
- 2018.06.23 - Kovari and Lapka. "Art & Rare Materials BIBFRAME Ontology Extension : from Modeling to Implementation". ALCTS Metadata Interest Group: Implementing Linked Open Data in the Real World, ALA Annual Conference, New Orleans, LA
- 2018.06.19 - Kovari, Isaac and Pearson. "Art & Rare Materials BIBFRAME Ontology Extension : from Modeling to Implementation". RBMS Conference, New Orleans, LA
- 2018.06.08 - Kovari, Isaac and Pearson. "Art & Rare Materials BIBFRAME Ontology Extension : from Modeling to Implementation". Yale University, New Haven, CT