# Welcome!

## Intro to the Arches Platform

## Part 3 of 4 – Data Technology Concepts

Thursday, January 21, 2021

arches®

cultural heritage data management platform

# Webinar Presenter and Q&A Moderators

Annabel Lee Enriquez

Getty Conservation Institute

David Myers

Getty Conservation Institute

Dennis Wuthrich

Farallon Geographics Inc

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# Intro to the Arches Platform Webinars

Part 1 **Capabilities**

Part 2 **Data Management Tools**

Part 3 **Data Technology Concepts**

Part 4 **Information Architecture**

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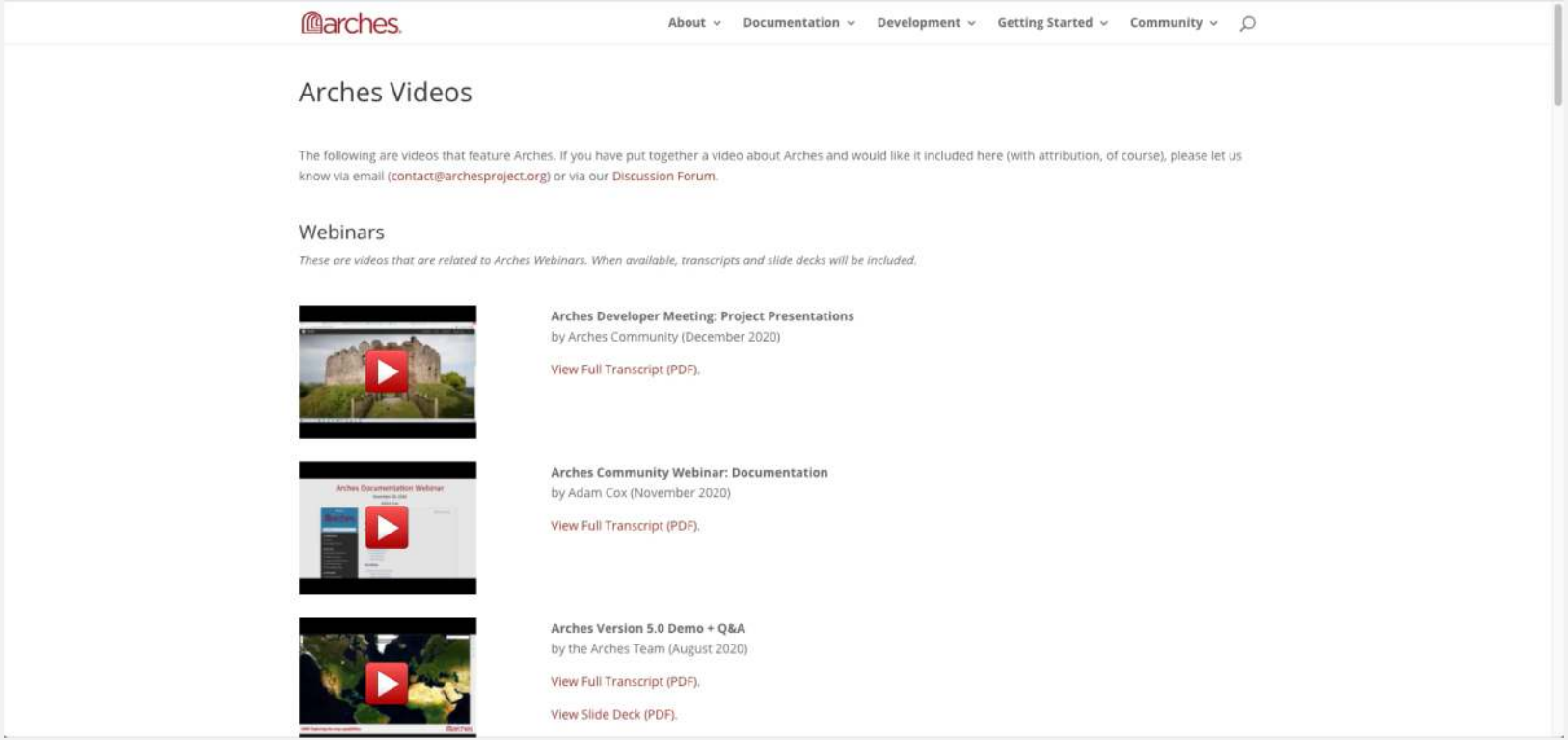
# Webinar Repository – www.archesproject.org/videos

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# Webinar Outline

- About Arches
- Arches Platform: Data Technology Concepts
  - What is data modeling in Arches?
  - Data modeling goals & concepts
  - Data modeling documentation and resources
- Q&A Session

# About Arches

Arches is an **open-source** software platform for cultural heritage **data management**, originally developed by the Getty Conservation Institute in partnership with World Monuments Fund.

# About Arches (cont'd)

- Open Source and free – no licensing fees and unlimited users.
- Enterprise-level software hosted on a server
- Independent deployment by an organization or institution
- Supported by a growing community of heritage conservation and technology professionals

# arches

A comprehensive information and task management platform for heritage institutions

archesproject.org

## Data Management

### Collect & Share

- Mobile app: on/off-line collection
- Robust import / export with notifications

### Controlled Vocabularies

- Thesauri management — *Reference Data Manager* (RDM)

### Structure & Storage

- Semantic, self-describing, & sustainable data structure
- Dynamic UI-generation
- Multiple ontologies–e.g., CIDOC CRM
- Cloud/server deployable
- API & linked data support
- Multiple data types supported

### Controlled Access, Audit & Review

- User & group secure access management
- Granular (node level) permission control
- Detailed audit of changes to data
- Provisional (unpublished) data; data review

## Data Discovery & Visualization

### Search

- Semantic & thesauri-enhanced searches
- Searchable annotations
- Support for custom indexing
- Export search results
- Geospatial search
- Saved and Advanced searches

### Spatial Data / GIS

- Integrates GIS functionality
- Seamless management of Arches data in external GIS – e.g., esri
- Changeable basemaps–e.g., historical maps
- Overlays supported
- Satellite imagery

### Relationships

- Explore relationships between resources – e.g., people, materials, activities, historic events, objects, iconography
- Discovery of previously unknown connections / new knowledge

### Time

- Temporal search
- Fuzzy date support
- Visualization of time distribution in entire dataset – *Timewheel*

### Reports, Viewers & Annotations

- Customizable reports using *Report Manager*
- IIIF viewers and image annotations
- High-resolution image support
- Extended 3-D viewers
- Interactive spectra charts with comparisons
- Customizable dashboards

## Project/Task Management

### Workflows

- Comprehensive, flexible workflow (i.e., process) management
- Task tracking
- Notifications
- *Project Status* plugin
- Correspondence management and tracking
- Letter templates with auto completion

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Data Management

Collect & Share

Structure & Storage

Cont… Auc…

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- Use… sec… ma…
- Gra… lev… con…
- De… cha…
- Provisional (unpublished data; data re…

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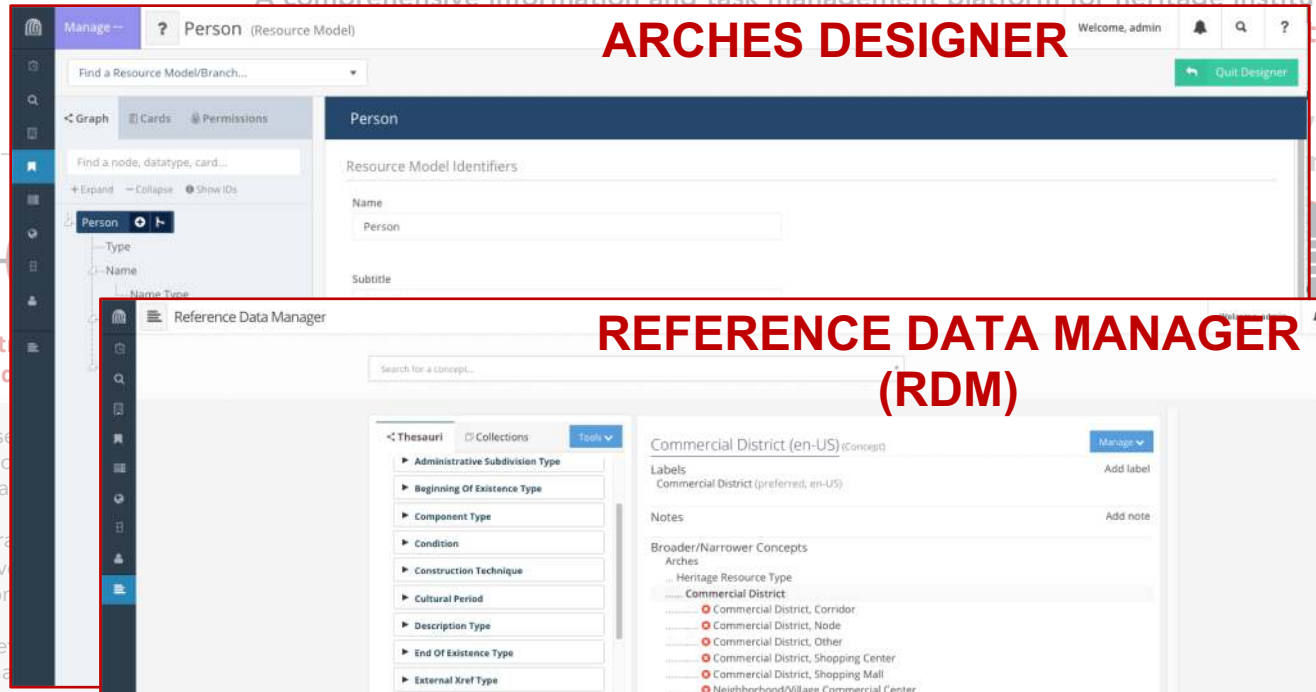

# What is data modeling in Arches?

Creation of Resource Models (data models) using Arches Designer to define:

- database structure
- data entry interface
- overall organization of information in your Arches implementation.

## Why does Arches include advanced data modeling capabilities?

To give implementers the ability to ensure that their DATA is:

- complete
- high quality
- discoverable
- shareable
- persistent

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# Modeling for COMPLETE DATA...

**Resource Models encompass all project requirements, defining what data is managed in Arches.**

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Sample Person Data

| ID | Name | Type | Description |
|---|---|---|---|
| 00001 | Mark Twain (pen name);<br>Samuel Clemens (birth name) | Writer | Samuel Clemens (November 30, 1835 – April 21, 1910), known by his pen name Mark Twain, was an American writer, humorist, entrepreneur, publisher, and lecturer. (WIKIPEDIA) |
| 00002 | Frank Lloyd Wright | Architect | Frank Lloyd Wright (June 8, 1867 – April 9, 1959) was an American architect, designer, writer, and educator. (WIKIPEDIA) |
| 00003 | Elizabeth II;<br>Elizabeth Alexandra Mary Windsor (full name) | Monarch | Elizabeth II (born 21 April 1926) is Queen of the United Kingdom and 15 other Commonwealth realms. (WIKIPEDIA) |
| 00004 | Vincent Van Gogh | Artist | Vincent Willem van Gogh (30 March 1853 – 29 July 1890) was a Dutch post-impressionist painter who posthumously became one of the most famous and influential figures in the history of Western art. (WIKIPEDIA) |

Sample Person Data

**Multiple Names for Person**

| ID | Name | Type | Description |
|---|---|---|---|
| 00001 | Mark Twain (pen name);<br>Samuel Clemens (birth name) | Writer | Samuel Clemens (November 30, 1835 – April 21, 1910), known by his pen name Mark Twain, was an American writer, humorist, entrepreneur, publisher, and lecturer. (WIKIPEDIA) |
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Sample Person Data

**WIKIPEDIA URL LINKS**

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Sample Person Data

**LIFE SPAN?**

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|---|---|---|---|
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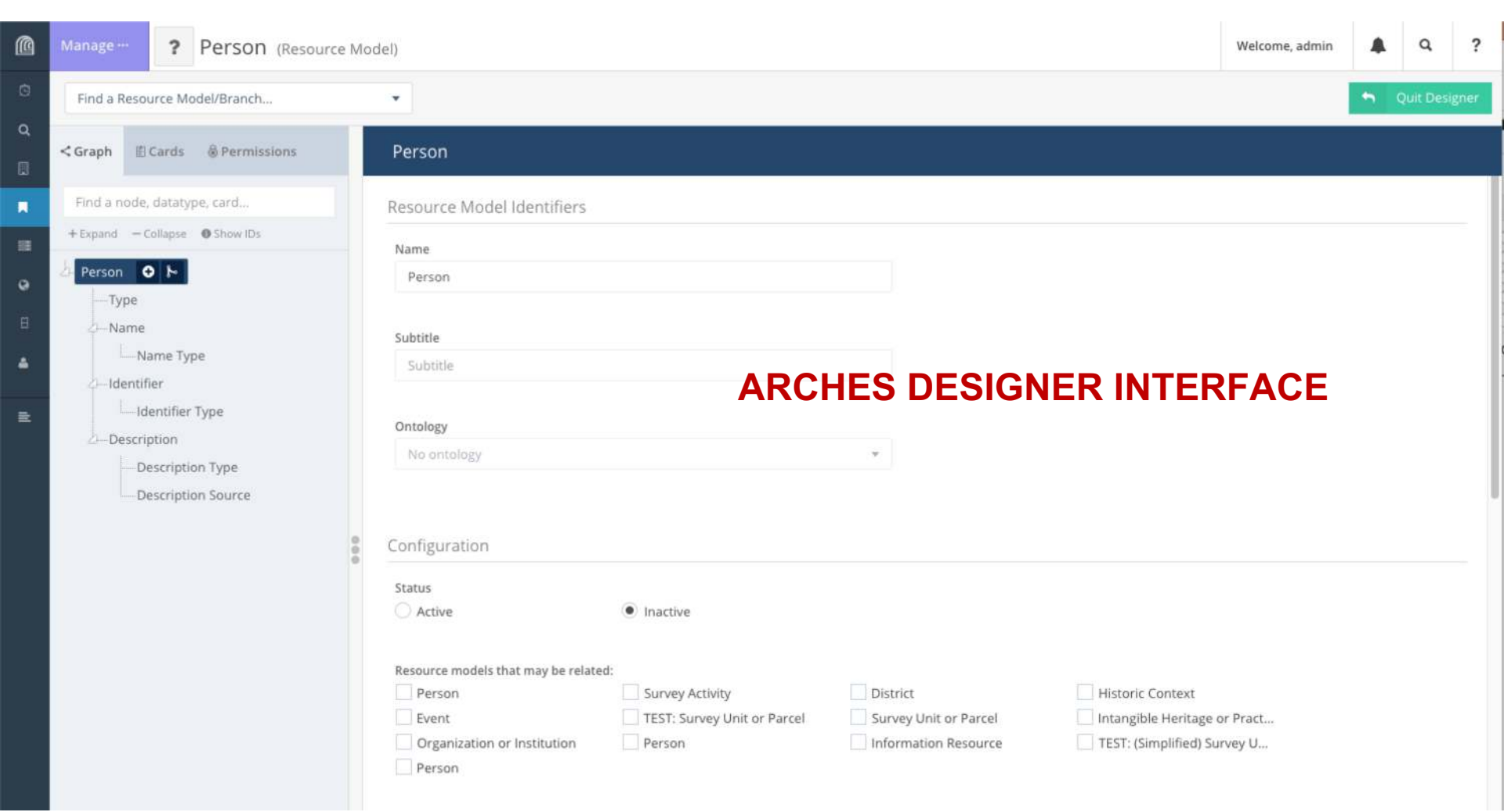
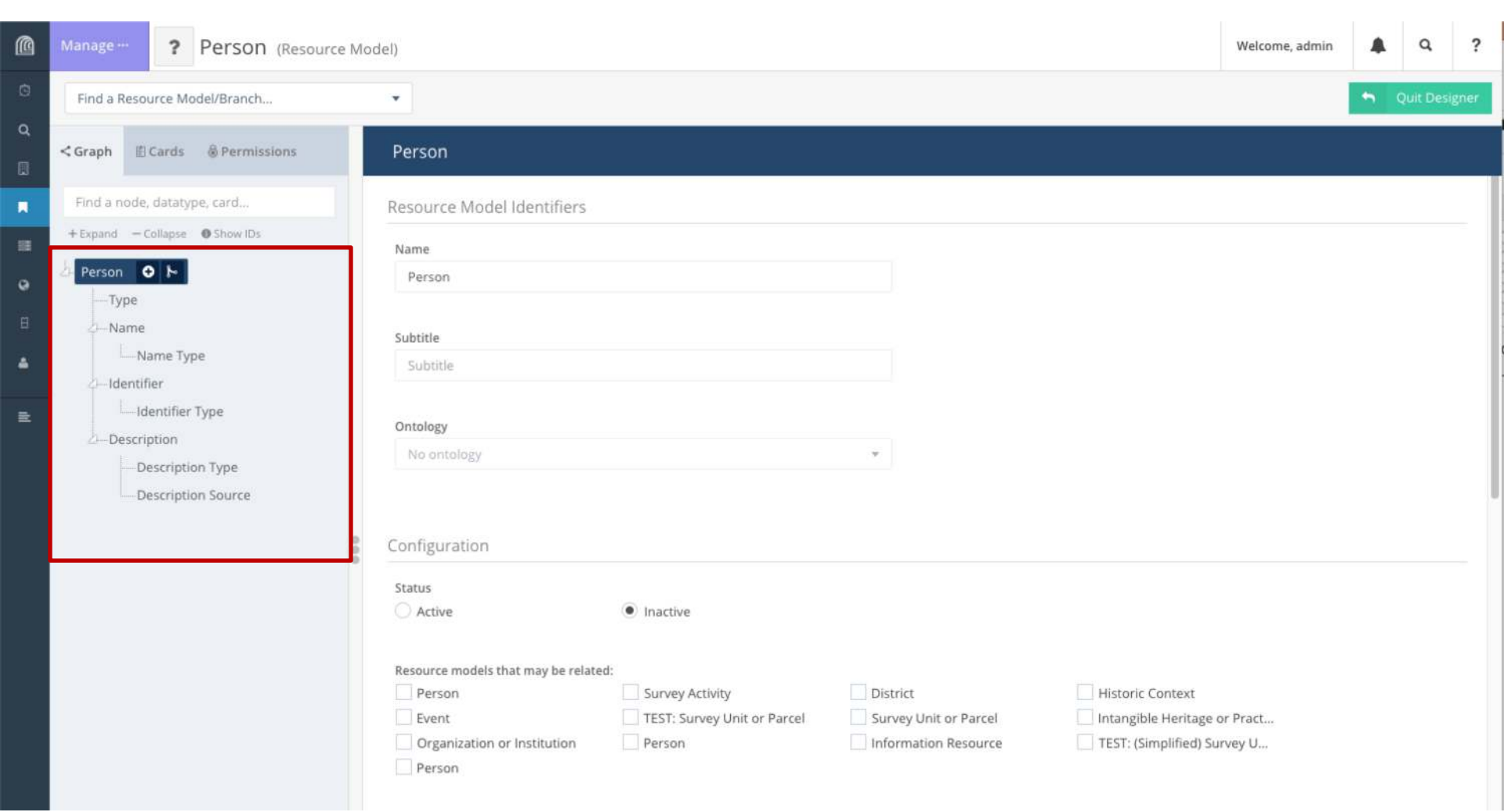

Manage ···
Person (Resource Model)
Welcome, admin
Find a Resource Model/Branch...
Quit Designer
Graph
Cards
Permissions
Find a node, datatype, card...
+ Expand
− Collapse
Show IDs
Person
Type
Name
Name Type
Identifier
Identifier Type
Description
Description Type
Description Source
Person
Resource Model Identifiers
Name
Person
Subtitle
Subtitle
Ontology
No ontology
ARCHES DESIGNER INTERFACE
Configuration
Status
Active
Inactive
Resource models that may be related:
Person
Event
Organization or Institution
Person
Survey Activity
TEST: Survey Unit or Parcel
Person
District
Survey Unit or Parcel
Information Resource
Historic Context
Intangible Heritage or Pract...
TEST: (Simplified) Survey U...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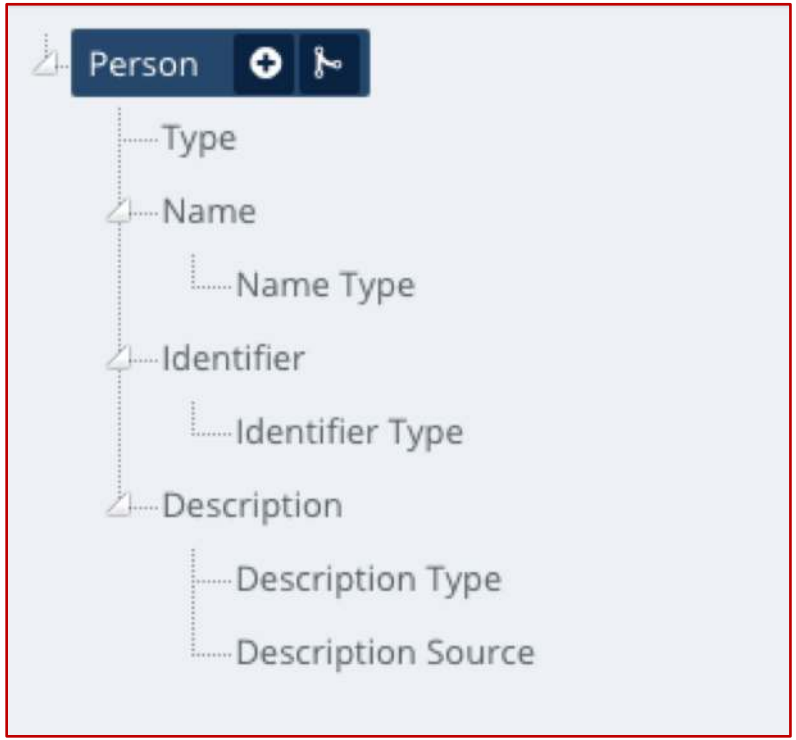
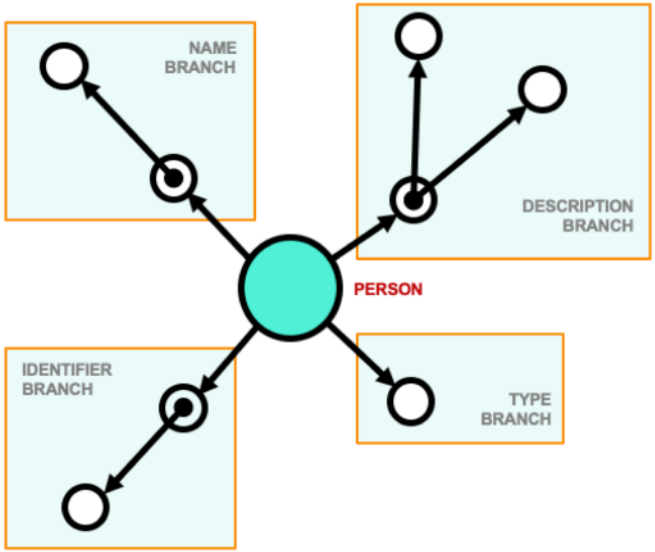
Show IDs
Person
Type
Name
Name Type
Identifier
Identifier Type
Description
Description Type
Description Source
Person
Resource Model Identifiers
Name
Person
Subtitle
Subtitle
Ontology
No ontology
Configuration
Status
Active
Inactive
Resource models that may be related:
Person
Event
Organization or Institution
Person
Survey Activity
TEST: Survey Unit or Parcel
Person
District
Survey Unit or Parcel
Information Resource
Historic Context
Intangible Heritage or Pract...
TEST: (Simplified) Survey U...

# Simple Resource Model for Person

In Arches Designer:




Graphical Representation:



# Simple Resource Model for Person

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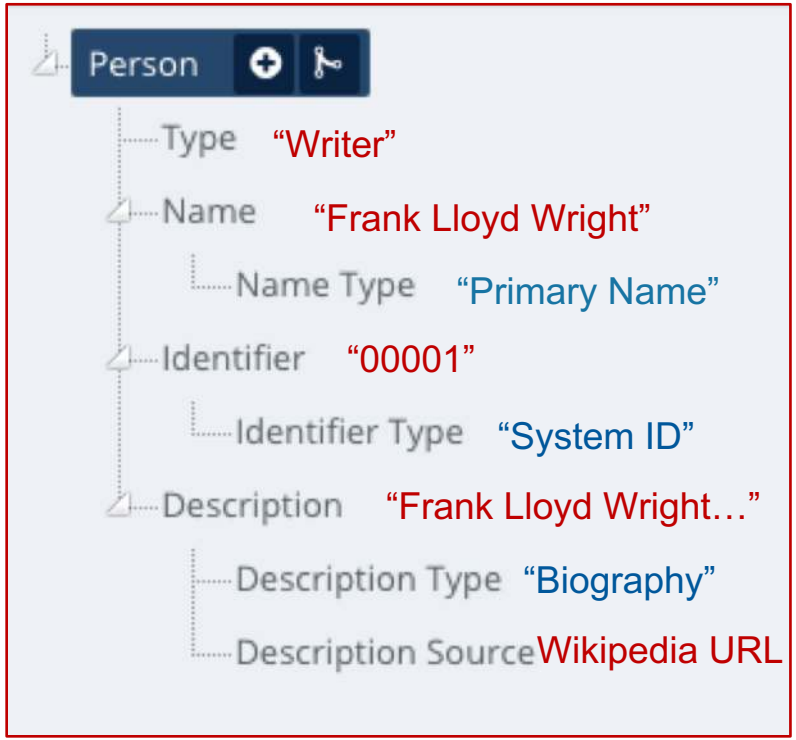


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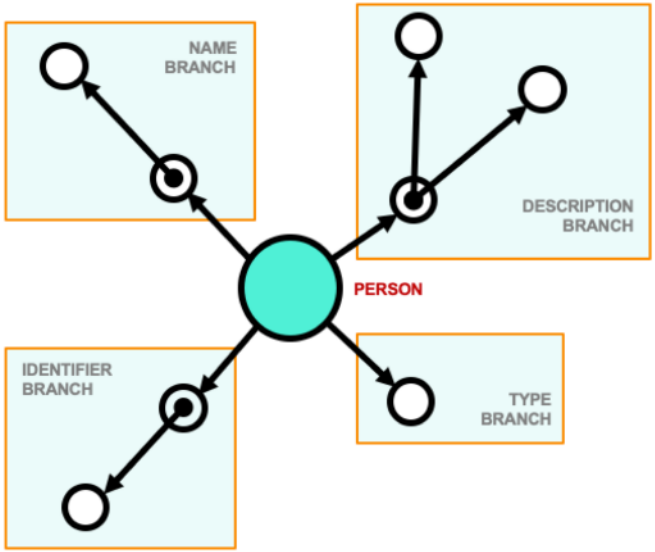
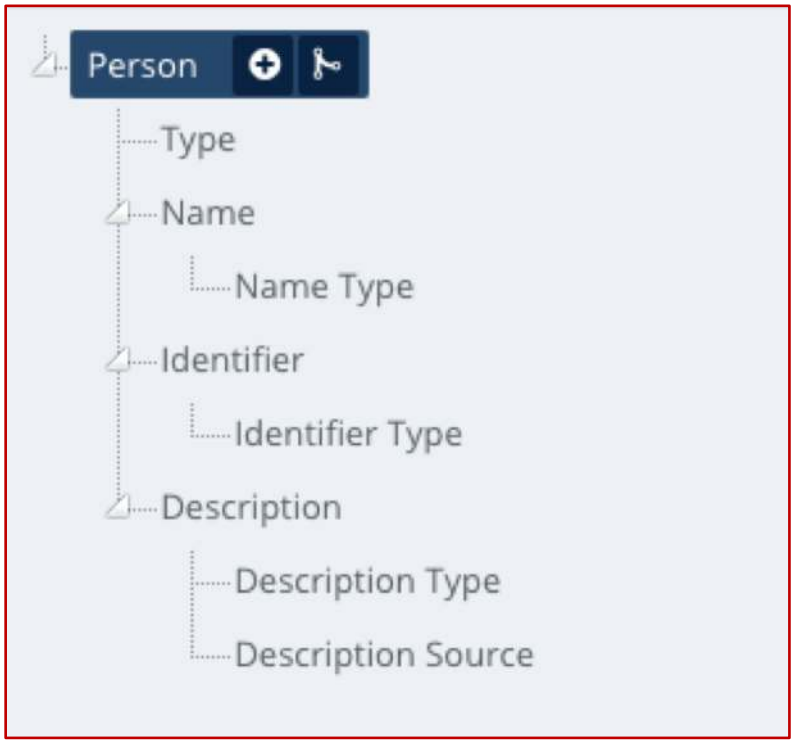
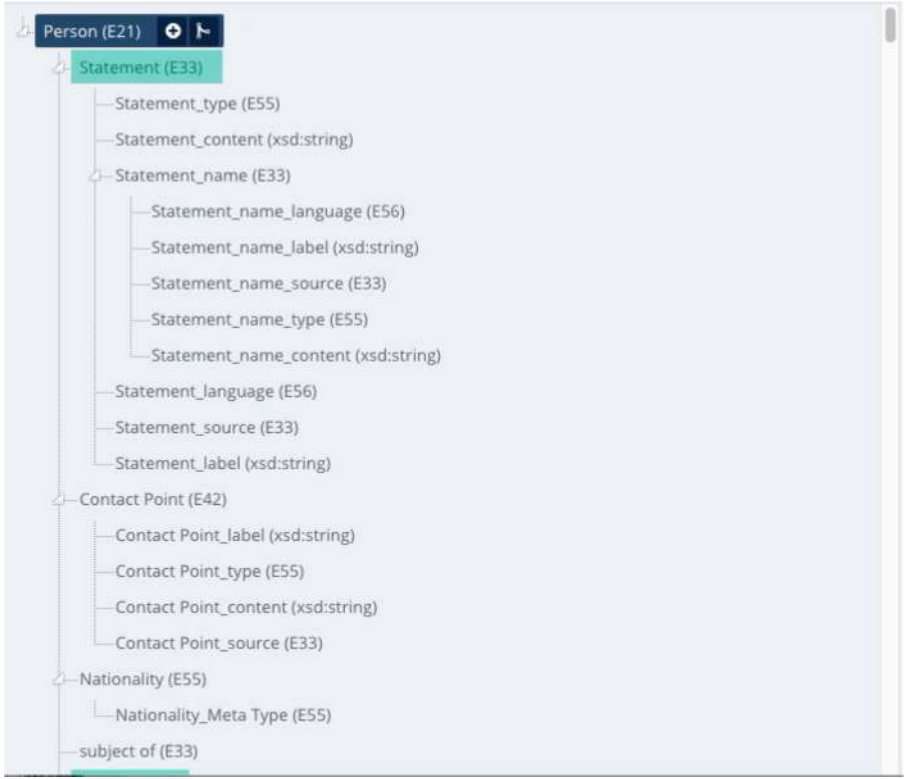


Simple Resource Model for Person




Sophisticated Resource Model for Person

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# Modeling for COMPLETE DATA…

Resource Models may correspond to a data content standard, such as:

- MIDAS Heritage
- International Core Data Standard for Archaeological and Architectural Heritage
- US SHPO requirements
- Dublin Core

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# Modeling for HIGH QUALITY DATA…

**Resource Models define the data parameters, such as:**

- **Number of entries**
- **Data types**
- **Terminology used i.e. controlled vocabularies**

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# Data Type Examples

- **String** (short or long alphanumeric text)
- **Number**
- **Boolean**
- **Date**
- **EDTF** (Extended Date Time Format)
- **Geo-json feature collection** (geospatial data)
- **Concept** (references controlled vocabulary)
- **Resource-instance** (references another Resource Model)
- **File-list** (for upload of digital files)
- **Annotation** (supports image annotations using a IIIF manifest)

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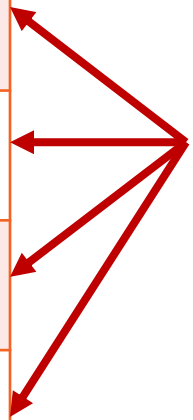
Original Date Data

| Built Date |
| --- |
| 5 million BCE |
| 1745 - 1753 |
| Autumn 1825 |
| Definitely 1753, likely June 1753 |
| March 22, 1751 |



**Fuzzy dates are incomplete or approximate dates.**

Original Date Data

| Built Date |
| --- |
| 5 million BCE |
| 1745 - 1753 |
| Autumn 1825 |
| Definitely 1753, likely June 1753 |
| March 22, 1751 |

Standardized Date Data

| Built Date |
| --- |
| -- |
| 1749 |
| 1825 |
| 1753 |
| 1751 |

Original Date Data

| Built Date |
| --- |
| 5 million BCE |
| 1745 - 1753 |
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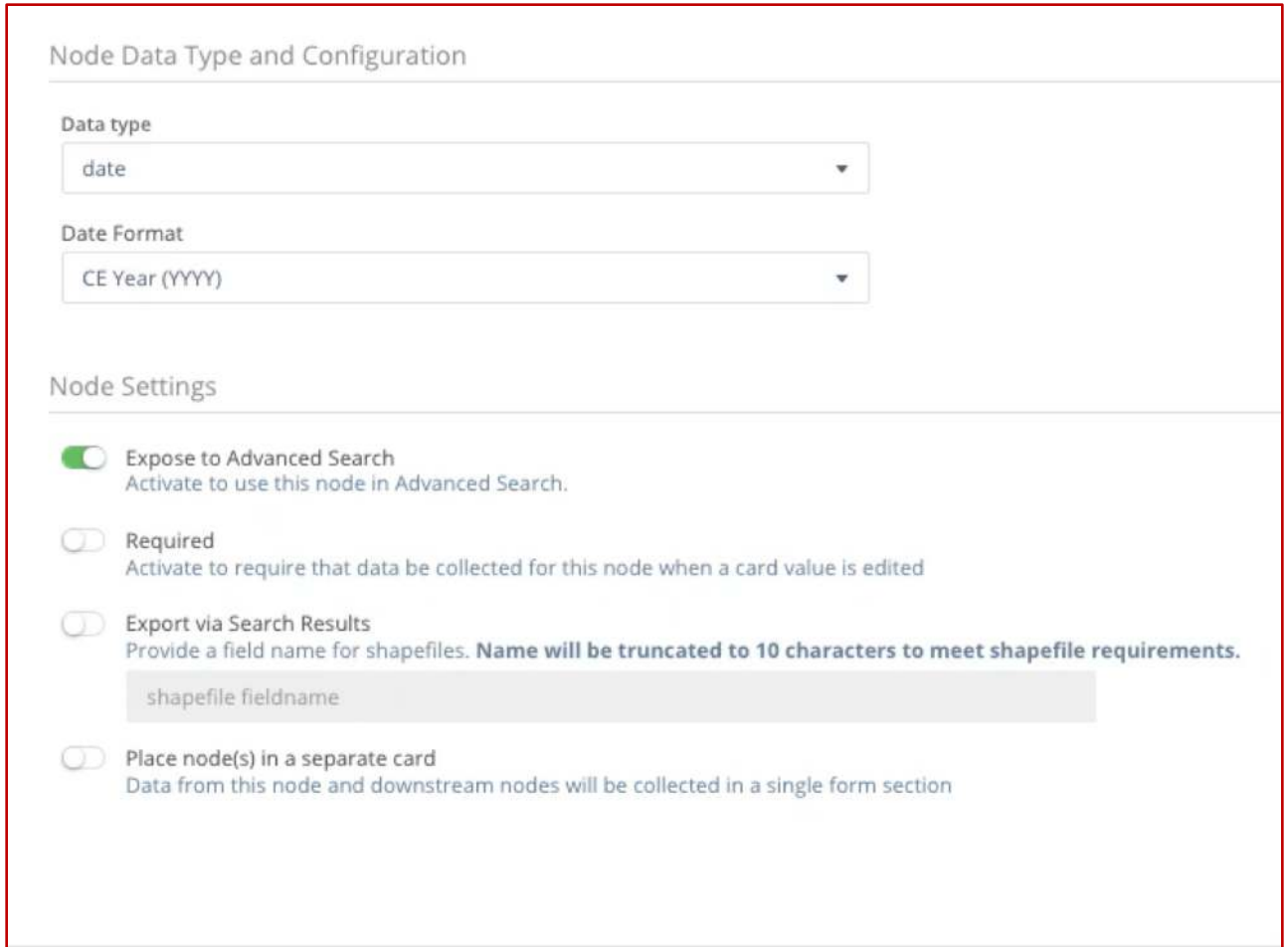
Standardized Date Data

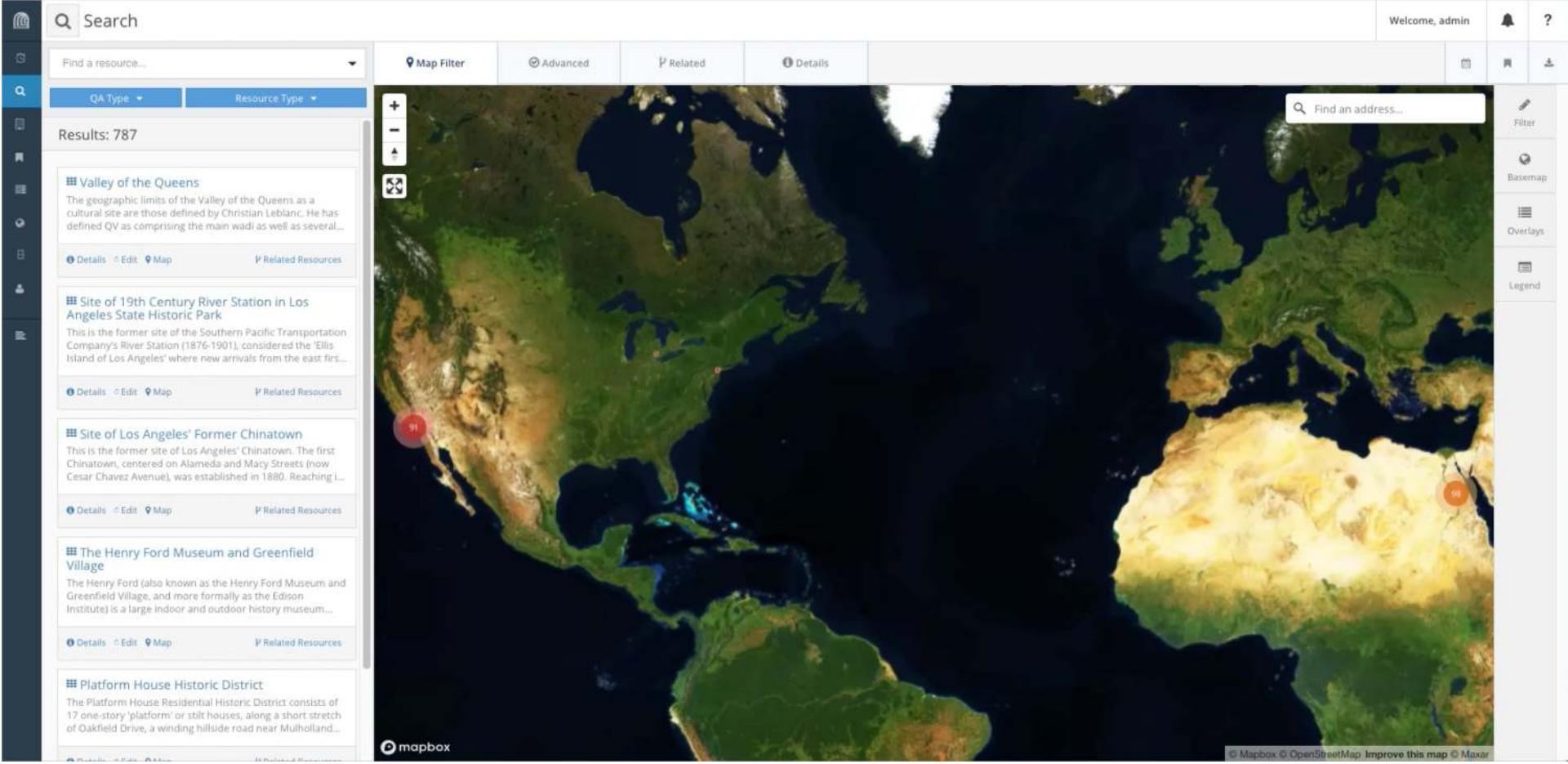
| Built Date |
| --- |
| -- |
| 1749 |
| 1825 |
| 1753 |
| 1751 |

EDTF
(Extended Date Time Format)
Date Data

| Built Date |
| --- |
| Y-5000000 |
| 1745/1753 |
| 1825-23 |
| 1753-?06 |
| 1751-03-22 |

# Data Type Setting in Arches Designer

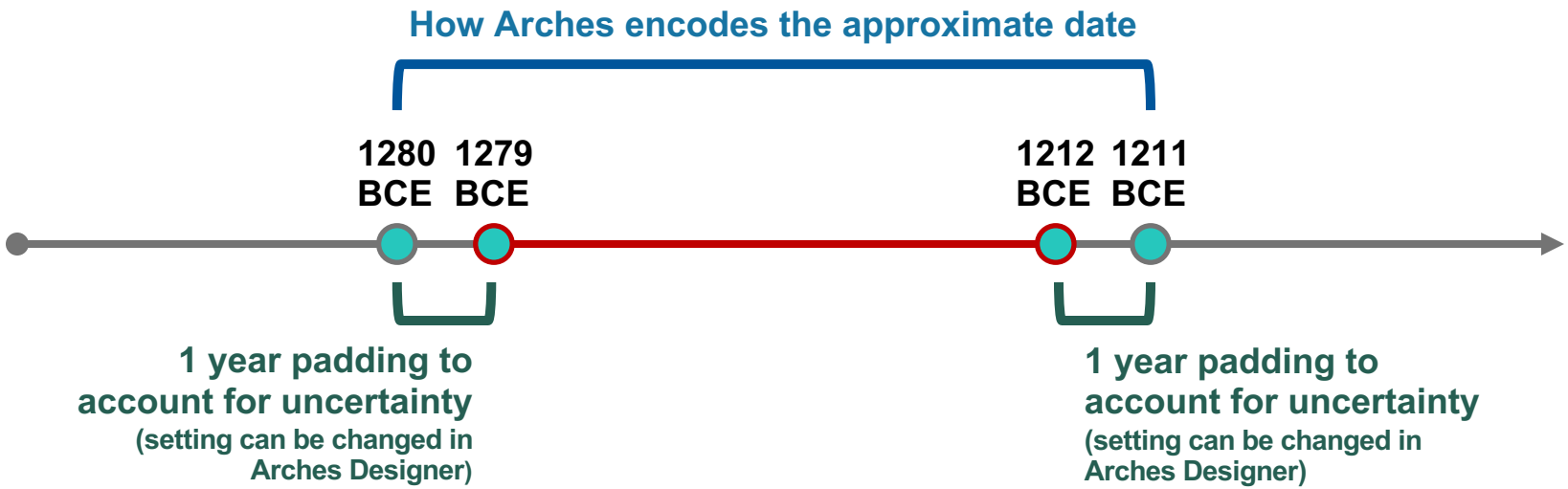





# Search: EDTF Date Format

Fuzzy Date for construction of Tomb of Nefertari (QV 66):
**approximately 1279 BCE to approximate 1212 BCE**

Date expressed using EDTF:
**-1279~/-1212~**



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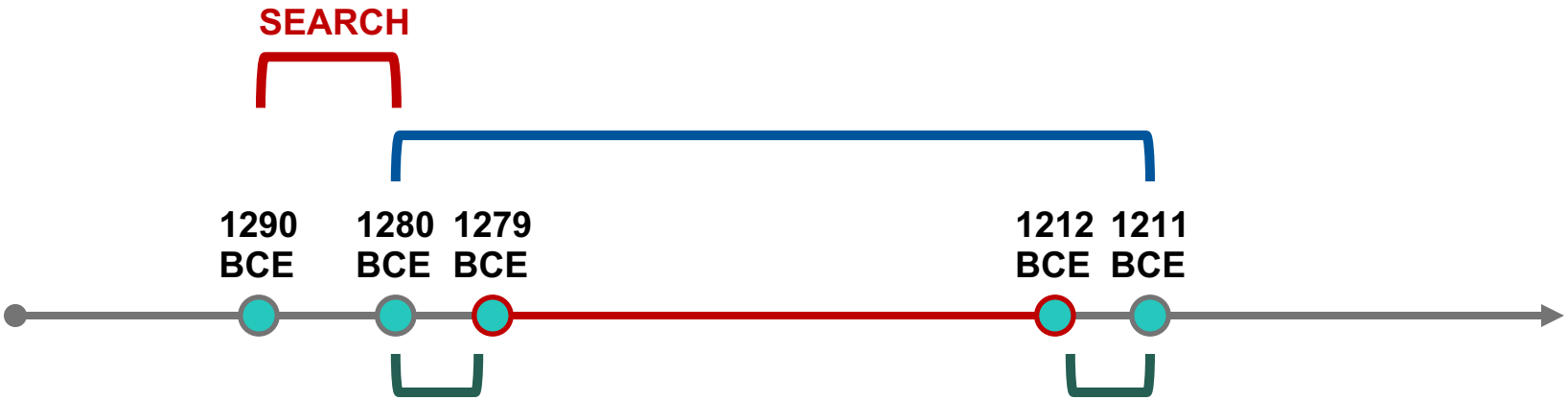

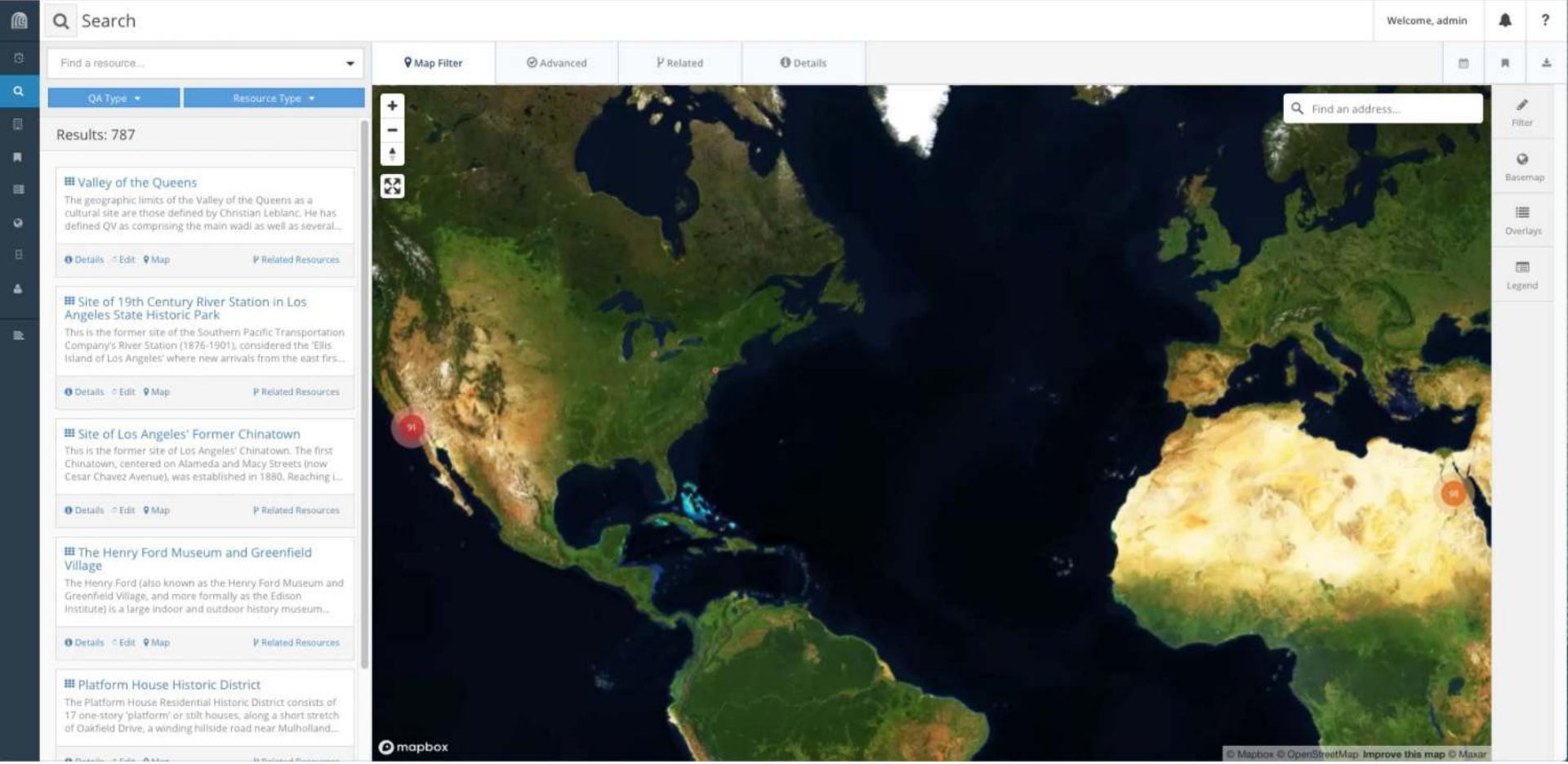


# Search: EDTF Date Format

# Modeling for DISCOVERABLE DATA...

Resource Models optimize search by employing:

- normalized structures
- controlled vocabularies to standardize terminology.

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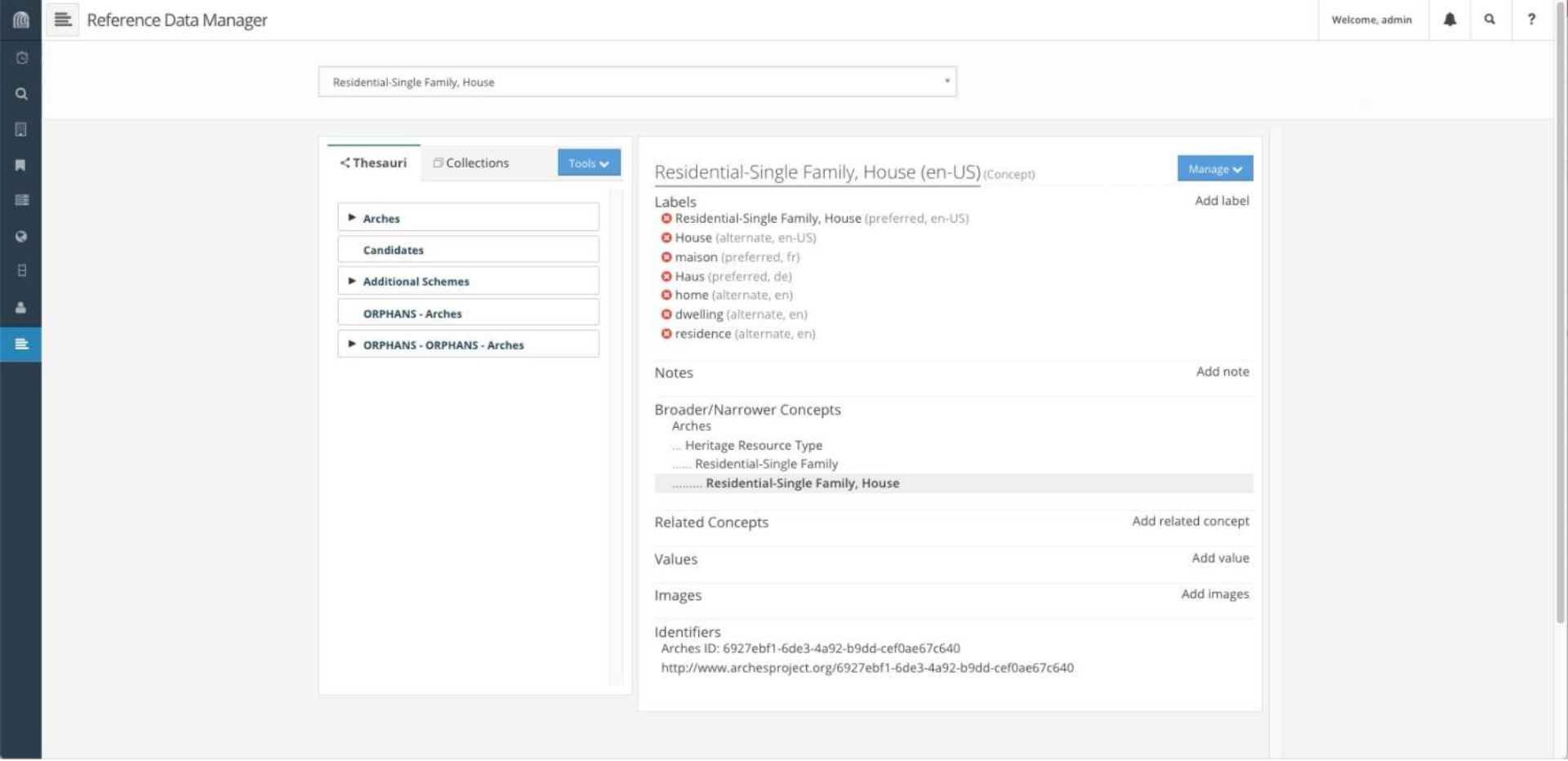


# RDM and Search: Controlled Vocabularies

# Modeling for SHAREABLE and PERSISTENT DATA...

Resource Models enable data that is interoperable and help to ensure data longevity by encoding semantic metadata.

Semantic metadata corresponds to a semantic ontology or standard, such as the CIDOC-CRM.

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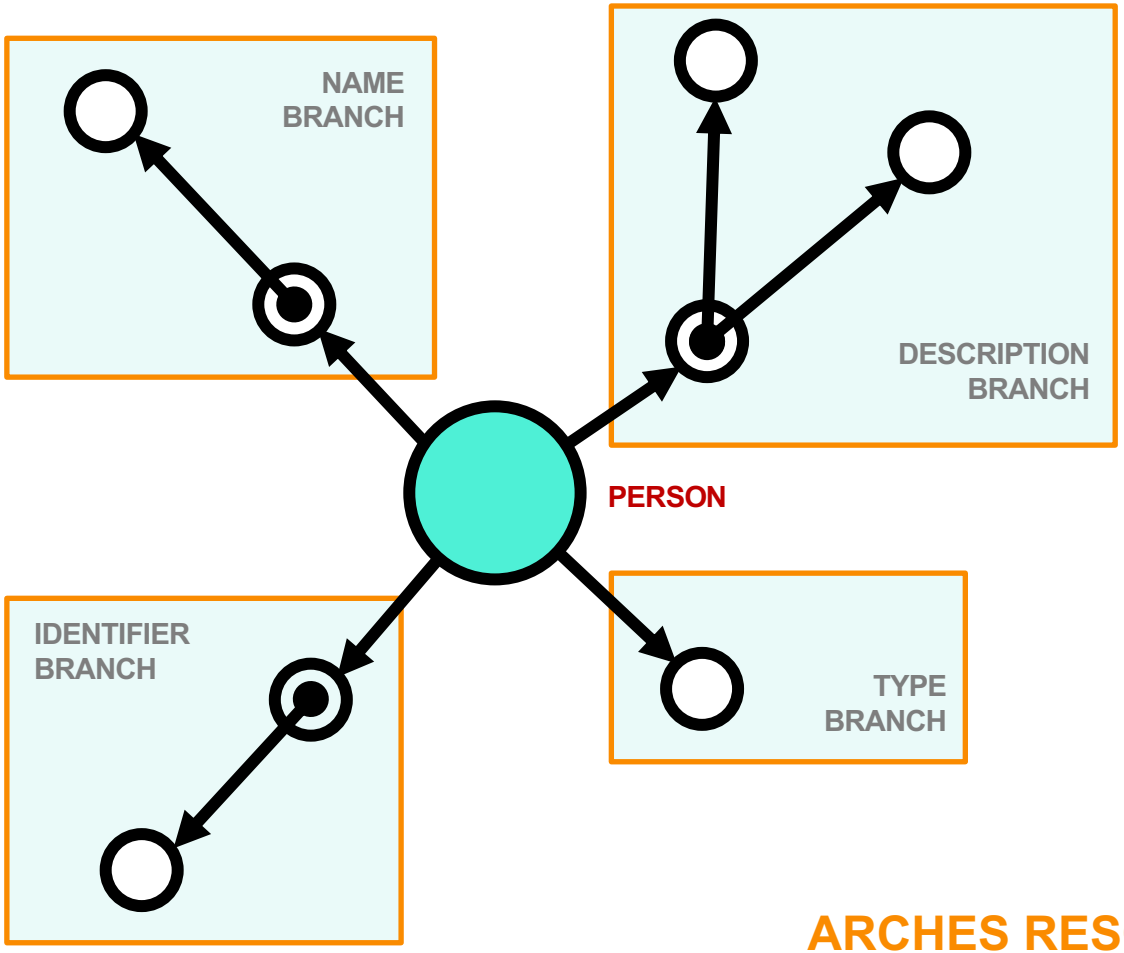
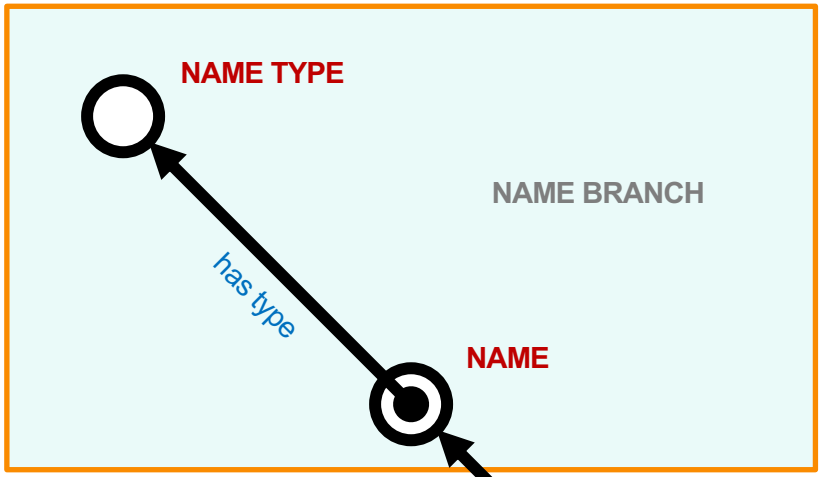
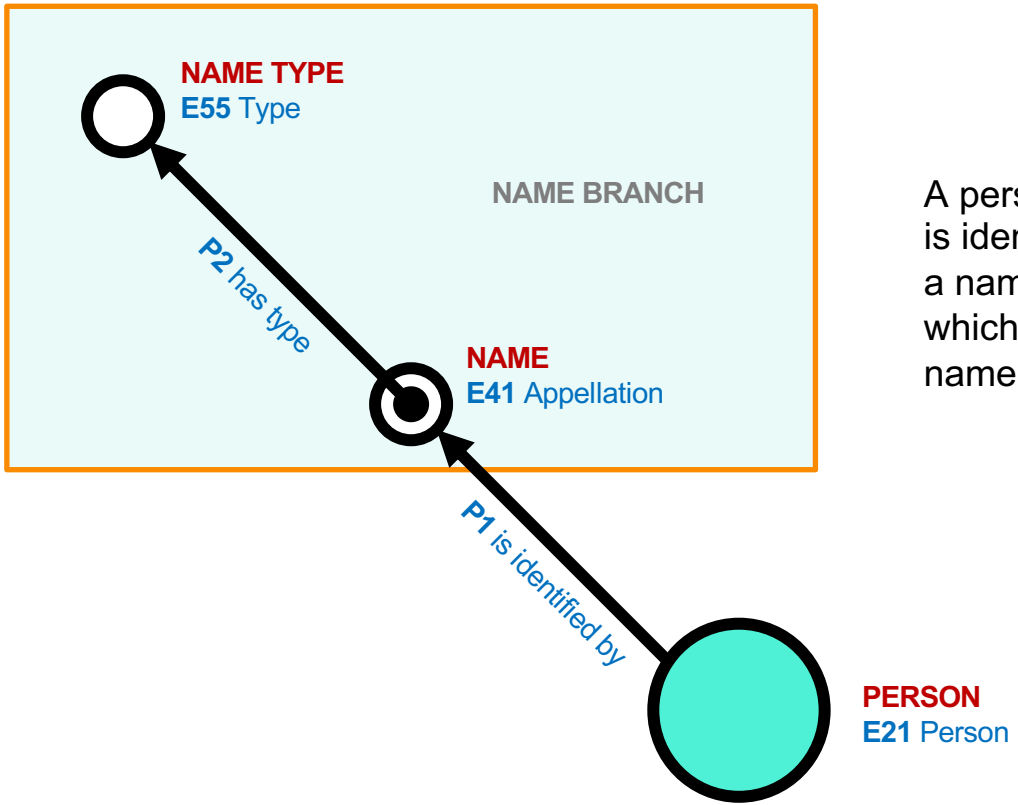



# ARCHES RESOURCE MODEL

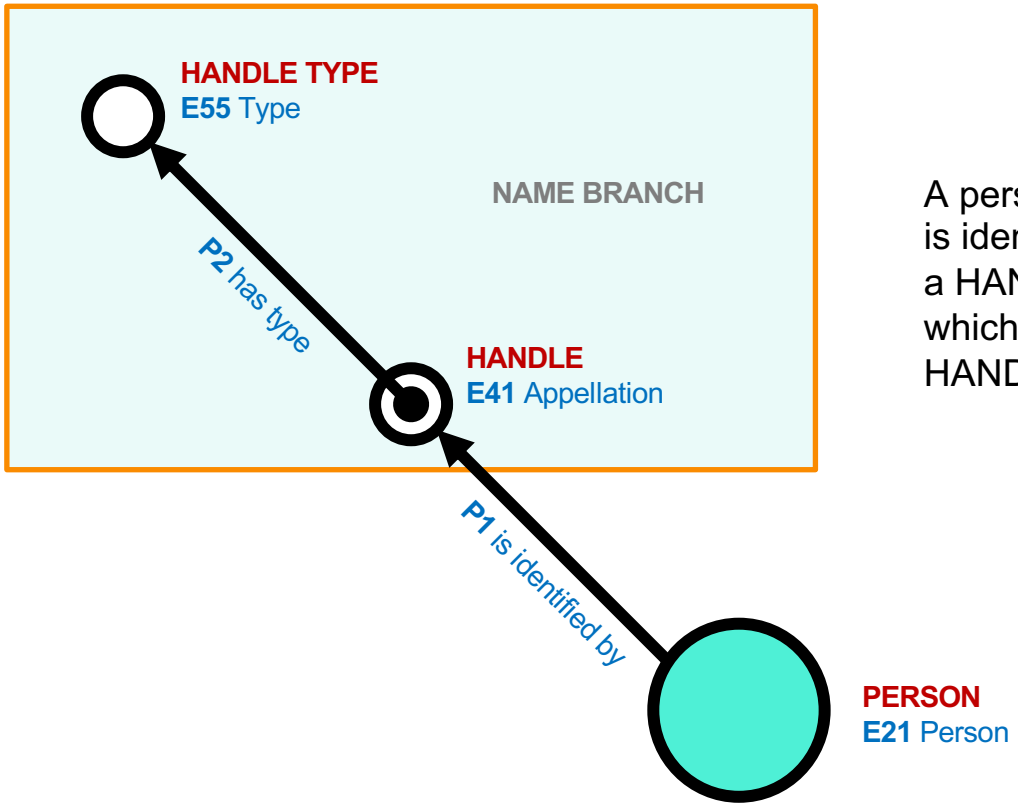



A person is identified by name which has a type.

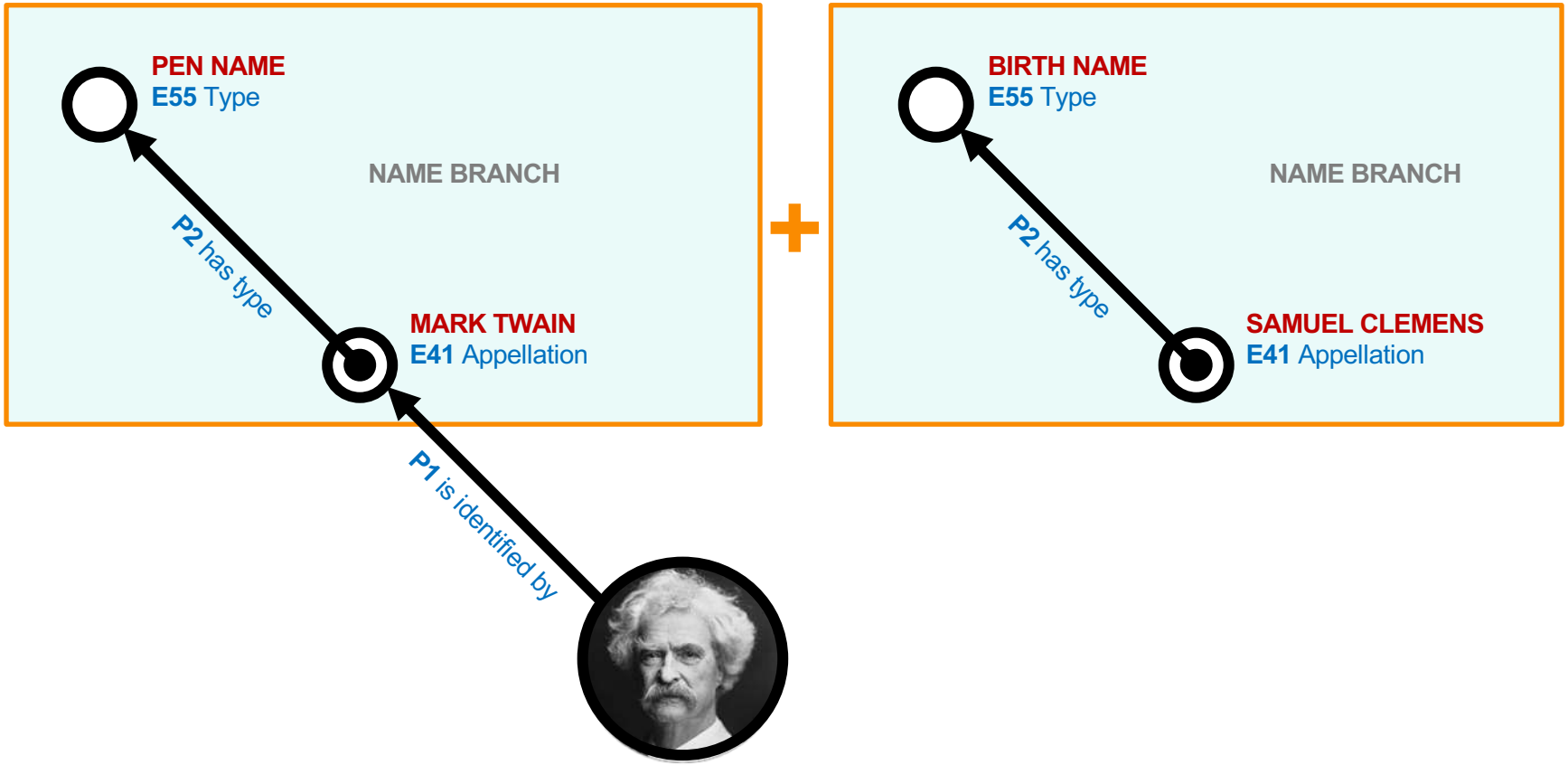

## NAME BRANCH

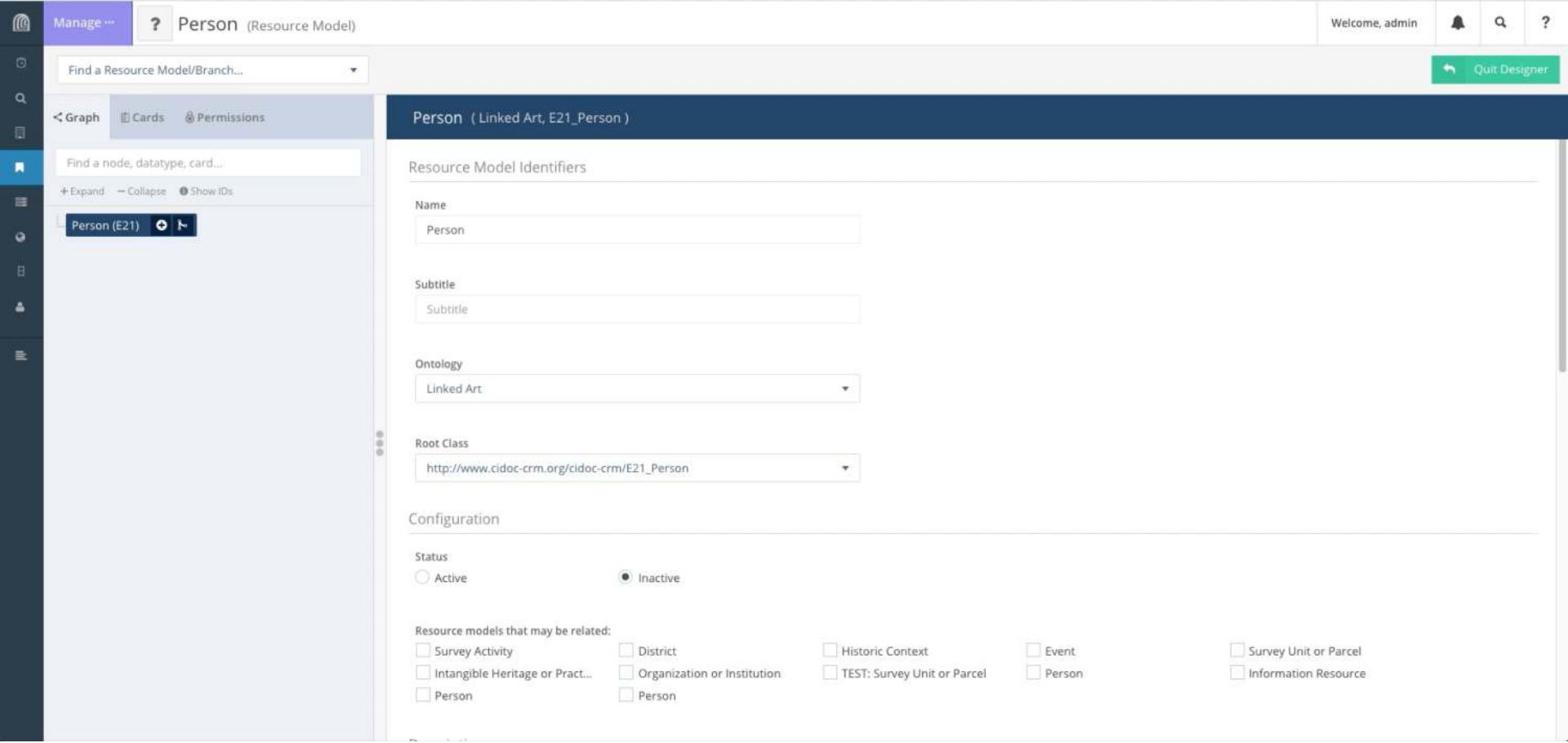



A person (E21)
is identified by (P1)
a name (E41)
which has a type (P2)
name type (E55)




A person (E21)
is identified by (P1)
a HANDLE (E41)
which has a type (P2)
HANDLE type (E55)


PEN NAME
E55 Type
NAME BRANCH
P2 has type
MARK TWAIN
E41 Appellation
P1 is identified by
BIRTH NAME
E55 Type
NAME BRANCH
P2 has type
SAMUEL CLEMENS
E41 Appellation




# Arches Designer: Embedding Semantic Metadata

# Arches Resource Models

- Data models created in Arches Designer
- Define the data structure and general organization of information in Arches implementation
- Generate the data entry forms for end users

# Arches Resource Models enable…

- Data that is complete, high quality, discoverable, shareable and persistent
- A data management platform that is tailored to your use case and end users

# Data Modeling requires...

- In-depth knowledge of your data and use case
- Experience or training in knowledge organization

# Arches Resource Model Documentation and Resources

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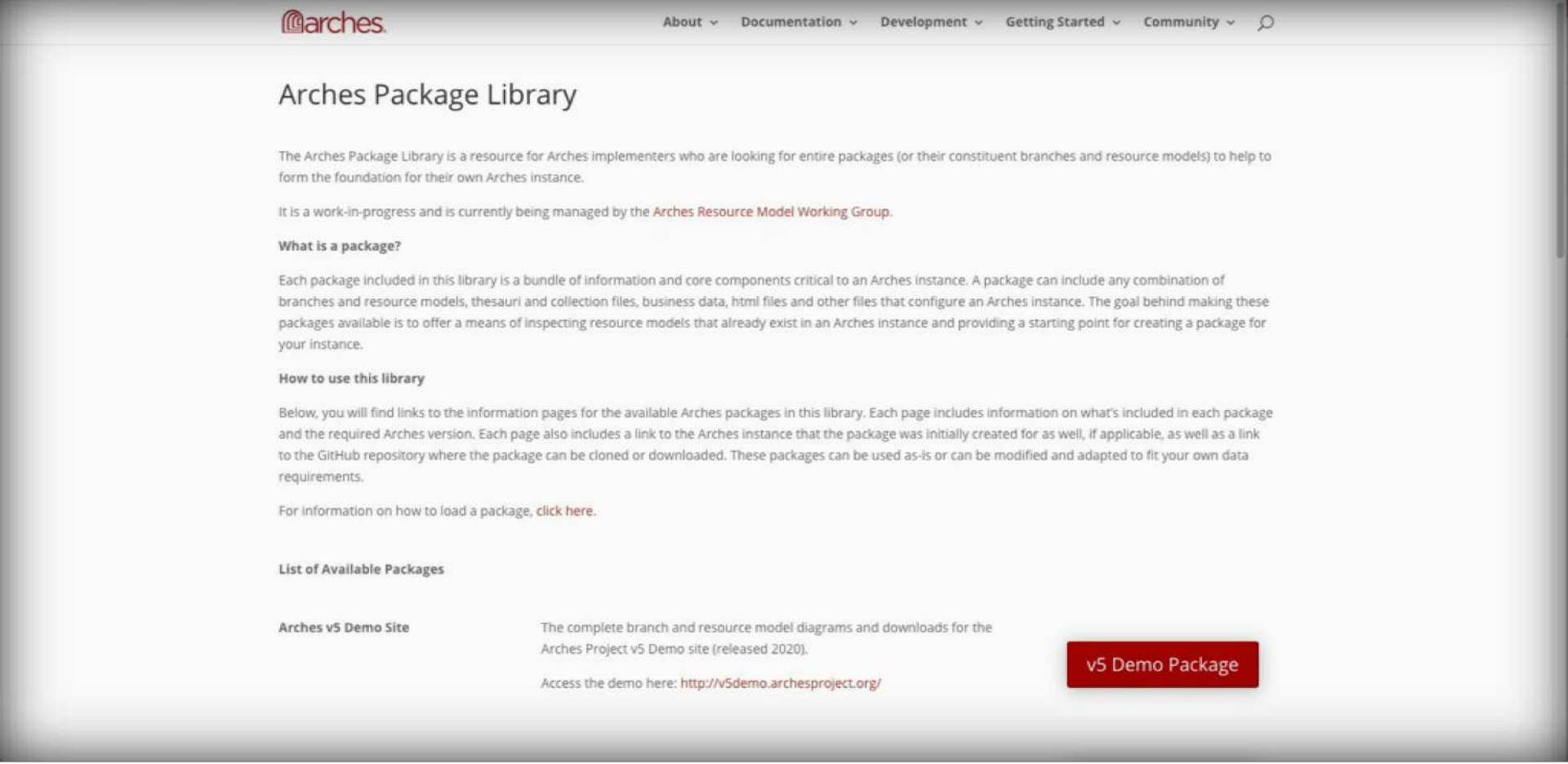
# Arches Resource Model Working Group (ARM-WG)

- **Working group of Arches community members with expertise in data modeling with the aim of generating and managing:**
  - **Arches Package Library, including Resource Models**
  - **Arches Modeling Documentation w/suggested methodology**
  - **Modeling discussion in Arches community**

# Arches Package Library

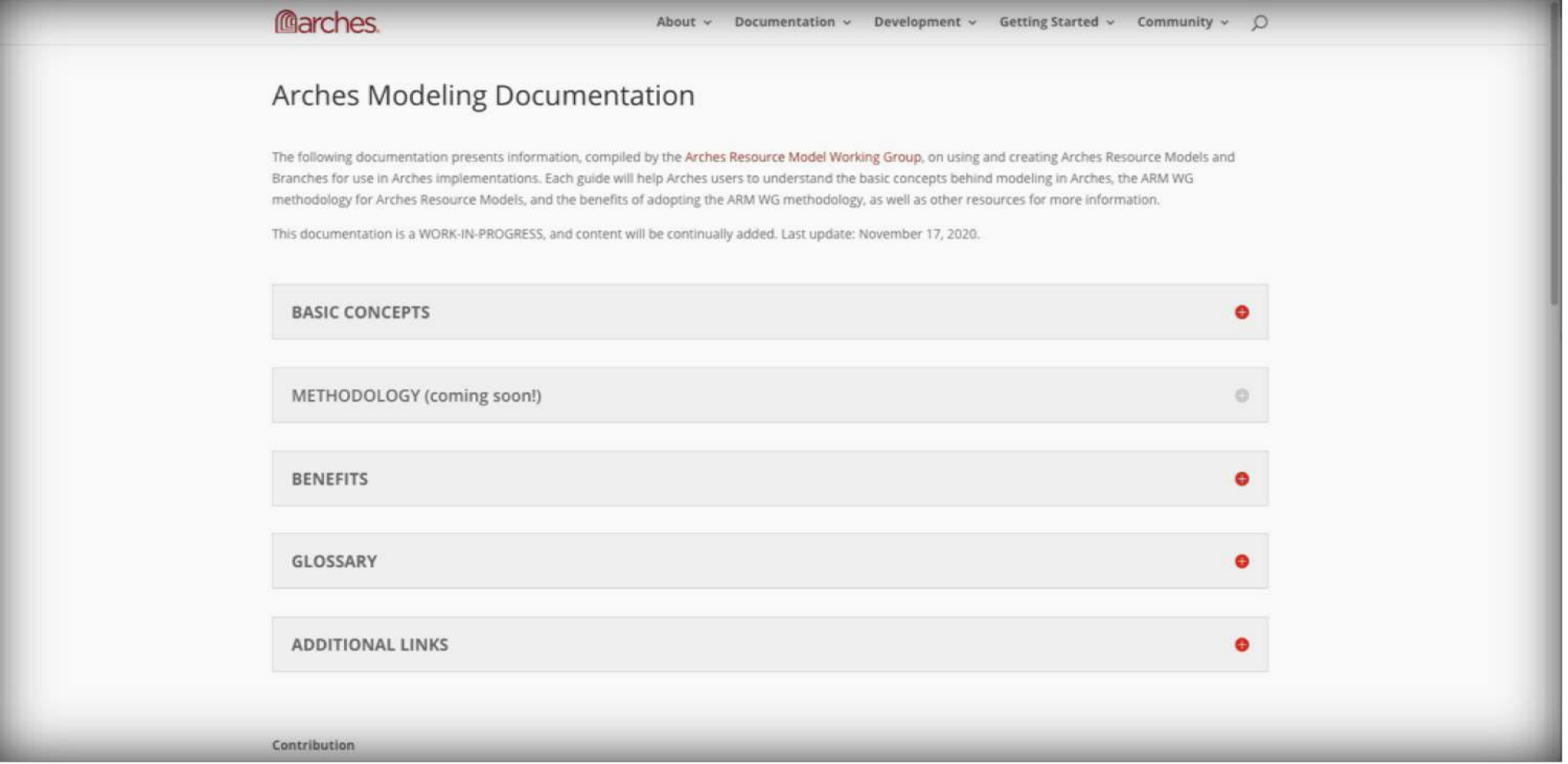
- **Package:** a configuration bundle that can be loaded into Arches. Includes **resource models**, branches, vocabularies, ontologies, sample data, and other configuration settings.
- **Library:** web page resource with links to and information on submitted packages that can be used and adapted by anyone in the Arches community




**Arches Package Library:** www.archesproject.org/package-library

# Arches Modeling Documentation

- **Foundational information on structured data and data modeling**
- **Suggested Arches modeling methodology**
- **Additional modeling resources**




**Arches Modeling Documentation:** www.archesproject.org/arm-wg-documentation

# Community Involvement

- **Community-based discussion around modeling in Arches**
- **Contributions to the package library**
- **Participation in enhancing the modeling documentation**

# Coming Next!

# Intro to the Arches Platform Upcoming Webinars

Part 1

## Capabilities

- Data Management
- Data Discovery & Visualization

Part 2

## Data Management Tools

- Arches Collector – Mobile App
- Resource Manager
- Arches Designer
- Reference Data Manager

Part 3

## Data Technology Concepts

- Data Standards
- Semantics/ Ontologies (incl. CIDOC CRM)
- Controlled Vocabularies
- Fuzzy Dates

Part 4

## Information Architecture

- Software Stack
- Software Standards

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# Arches Q&A

Annabel Lee Enriquez

Getty Conservation Institute

David Myers

Getty Conservation Institute

Dennis Wuthrich

Farallon Geographics Inc

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# - Thank you -

Share your feedback: contact@archesproject.org

Community Support - Arches Forum: www.groups.google.com/archesproject
Webinar repository – www.archesproject.org/videos

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cultural heritage data management platform