

Designing Knowledge Bases for Humanities Research: challenges and approaches

Alex Poulouvassilis

Birkbeck Knowledge Lab

Department of Computer Science & Information
Systems, Birkbeck, University of London

www.dcs.bbk.ac.uk/~ap

Knowledge Lab



Challenges of interdisciplinary research

- requires gradual development of a common “language of discourse” between researchers from different disciplines:
 - often, a term has different meanings in different disciplines e.g. “data”, “ontology”, “design”, “implementation”
- requires sensitivity to the research challenges and the ways of working of the other disciplines
- there is typically a lack of well-defined software requirements at the outset of the research project:
 - Identifying initial outline requirements on the basis of which to begin to research and design initial prototype software is a necessary first step

Challenges of interdisciplinary research

- the research typically then progresses in an ***iterative and collaborative*** fashion, comprising successive cycles of
 - requirements elicitation
 - research
 - design
 - implementation
 - triallingin collaboration with groups of domain experts and users/user stakeholders

Challenges of developing specialised KBs to support Humanities research

- lack of existing ontologies or datasets on which to base the design of the KB, due to the specialisation of the domain
- the development of conceptualisations and knowledge models by the domain experts is part of the research itself
- incremental collection and collation of data from diverse sources; additional data sources become known/available during the course of the research project
- incremental development of the domain experts' conceptual model in tandem with the incremental collection of the data
- sometimes uncertainty, controversy and multiple viewpoints from the range of domain expert stakeholders, that need to be resolved

Challenges of developing specialised KBs to support Humanities research

- incompleteness, imprecision and contradictions in the data; data quality improves during the course of the research
- difficulty in specifying requirements for facilities to Search, Visualise and Analyse the data while the conceptual model development and data collection are still in progress
- this cannot begin until the conceptual model and data collection have progressed to some extent; the requirements continue to evolve as long as the conceptual model and data continue to evolve
- gradual collection of diverse data and gradual development of understanding points to the need for adopting ***semantic technologies*** and ***iterative, agile development***

Example 1 – Weaving Communities of Practice (AHRC, 2009-2013)

- This was a pilot project to create a Knowledge Base of Andean Weaving textiles history and practice, with the aim of contributing to curatorial practice and heritage policy (see <http://www.weavingcommunities.org>)
- The research team gathered data on activities, instruments, resources, peoples, places, and knowledge involved in the production of textiles, relating to over 700 textile samples
- A major part of the project was the modelling and representation of the knowledge of domain experts, and information about the textile objects themselves, in the form of an **OWL ontology**
- Followed by the development of a suite of **search facilities** to be supported by the ontology

Weaving Communities of Practice

- The project was the first to undertake ontological modelling for the domain of Andean Weaving
- It brought together a multidisciplinary team of ethnographers, linguists, archaeologists, museum curators, weavers, art historians, cultural geographers and computer scientists with the aim of creating the Knowledge Base
- The project took into account weaving terminology found in the Andean languages of Aymara and Quechua, obtained by a working group of Andean linguists and native language speakers and weavers

Weaving Communities of Practice

- The domain experts gathered information relating to over 700 textile samples, ranging from the Archaeological period (1800 BC – 1535 AD) to the Historical (1535 – 1900 AD) and Contemporary (1900 – present) periods, with production sites across Bolivia, Chile, Peru
- Primary data was gathered in the Aymara, Quechua, Spanish and English languages
- The outcome of the data gathering phase ultimately consisted of approximately 30 different spreadsheets, containing about 1000 rows in total

Weaving Communities of Practice

- Data was collected in collaboration with several museums holding extensive Andean textile collections
- Small weaving models of techniques found in museum collections were also prepared by the project's textile team
- The project domain experts also visited communities in the Andes in places such as Qaqachaka, Bolivar, Sacaca and Mollo in Bolivia, Puno, Pitumarca and Chawaytiri in Peru, and Colchane and Pisigacarpa in Northern Chile, interviewing active weavers, observing their techniques and styles, and examining their weavings

Research Challenges

- The information relating to Andean textiles is **complex** and even for a domain expert it is far from straightforward to model this domain knowledge
- The knowledge of domain experts is also often **incomplete**, due to the fact that Andean textile collections are scattered around the globe, making it hard for individual researchers to gain a full perspective
- Different experts may also **disagree** on how to model certain aspects of the knowledge related to textiles.
- During several workshops and visits, interviews and informal meetings were held with groups of domain experts to **discuss and affirm the validity of the data** being gathered

Research Challenges

- Both the knowledge model and the data gathered for the project were ***rapidly evolving***, particularly in the early stages of the research
- This meant that the requirements for the search facilities that the KB would support could not be elicited until the KB had itself reached a reasonably stable state
- Other challenges encountered included:
 - ***cognitive mismatch*** between the domain experts and computer scientists: different groups understanding and describing the same real-world concept in different ways
 - ***modelling imprecision***: occasionally the real world is just too complex to be mapped precisely into a computer model!

Research Approach

- The project opted to develop an **ontology** rather than a relational database/other structured database to represent the domain knowledge and the data being gathered:
 - An ontology gives more **flexibility** in integrating new domain knowledge and data as this becomes available and evolves
 - An added advantage is that **formal reasoning** can be applied to validate the evolving knowledge model
- An **iterative approach** was adopted in which **domain experts participated fully** in the requirements, design and evaluation aspects of the software development throughout the project

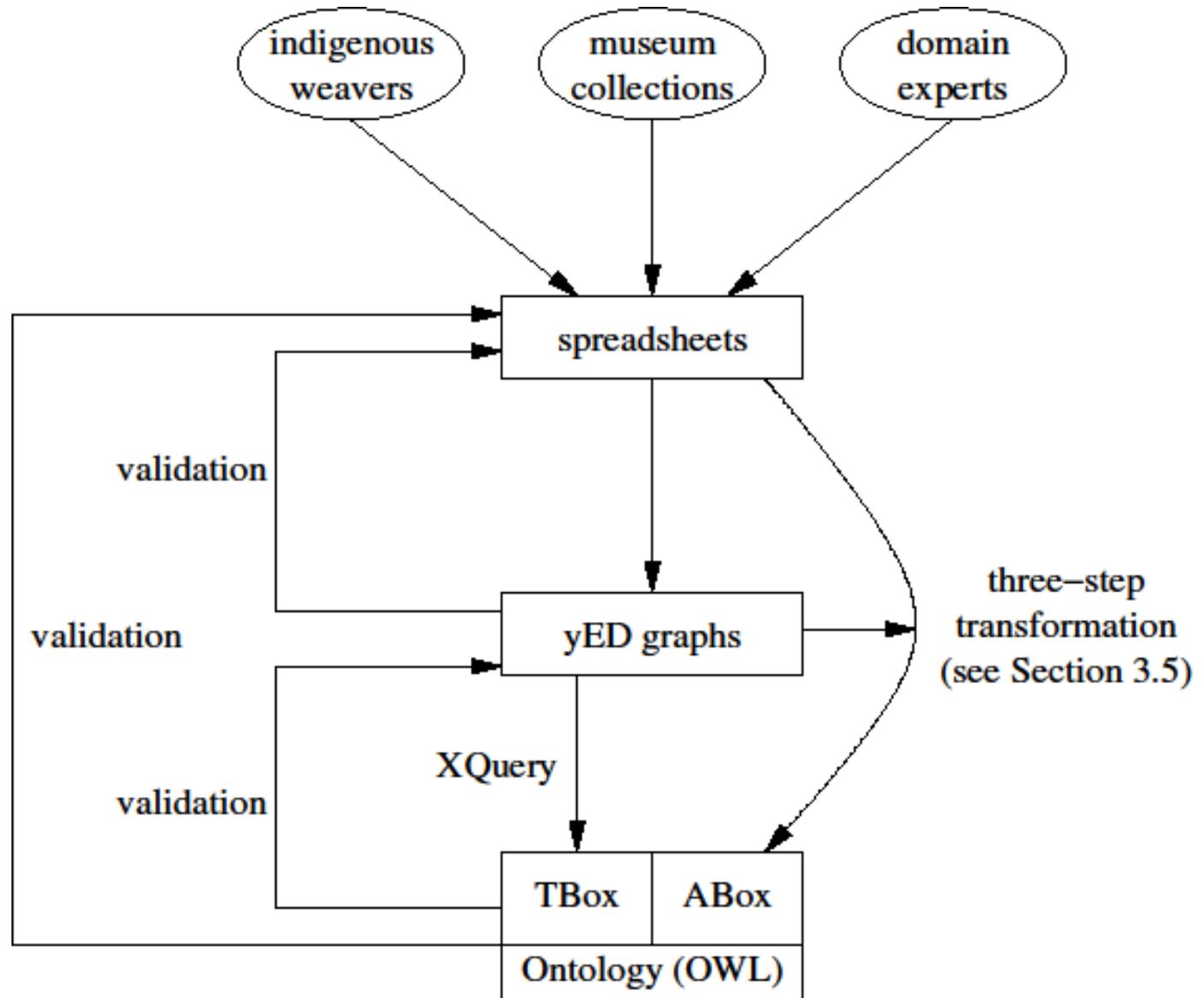
Methodology for Developing the Ontology

- In the first phase of the project (about 21 months) the domain experts gathered and analysed large amount of data, most of it recorded in spreadsheet form
- In the next phase, the lead domain expert modelled the domain using **yED graphs**. Using this intermediate visual form (rather than an ontology representation directly) provided greater ease, for the non-computer scientists on the project, of understanding and correcting the complex inter-relationships between concepts
- The yED graphs were then transformed into OWL Lite by writing XQuery-based scripts to generate the T-Box of the ontology (in the form of RDF/XML files)

Methodology for Developing the Ontology

- The A-Box of the ontology was created directly from the spreadsheet data, using a three-step approach:
 - Transforming the spreadsheet data into an equivalent XML format, using XQuery scripts
 - Transforming this initial XML format into an intermediate XML format, using a set of ‘interpretation templates’ that were manually derived from the yED diagrams
 - Transforming the XML intermediate format into RDF.
- XQuery scripts were written to validate the outputs of each phase with respect to those from the previous phases
- Formal reasoning was also applied to validate aspects of the ontology, using the HermitT reasoner, e.g. to verify that all the classes were non-empty

Overview of the Ontology Development Process



Methodology for Developing the Search Facilities

- Following the production of the final version of the ontology (at month 39 of the project), the last phase of the project involved the development of the Search Facilities
- Two major Use Cases were identified for the Search Facilities:
 - i. the need for the user to be able to Browse through the ontology by navigating through its classification hierarchies;
 - ii. the need for the system to support a set of Queries each targeting a specific Research Question that a domain expert may have.
- Powerpoint mock-ups drawn up by the lead domain expert were used as a starting point for designing the user interface

Methodology for Developing the Search Facilities

- The set of queries relating to Use Case (ii) were iteratively developed in collaboration with all the domain experts
- Although we first implemented individually each of the queries identified for Use Case (ii), it subsequently became apparent that a more general querying facility would be able to support all of these queries, and more
- The technical team therefore designed a new, generic, querying facility that encompasses this more general functionality



from 1 to 6 of 9 results

previous -10 + **1** 2 +10 next

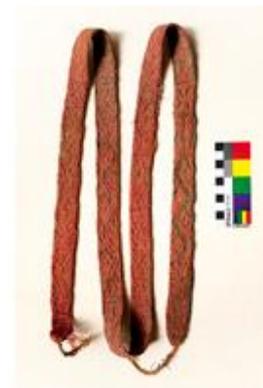


Textile browsing [?]

- ◇ Colour →
- ◇ Component →
- ◇ Composition →
- ◇ Contrast →
- ◇ Culture →
- ◇ Fabric →
- ◇ Find site →
- ◇ Finish →
- ◇ Material →
- ◇ Motif →
- ◇ Motif attribute →
- ◇ Period ↓

● Archaeological period ↓

- Early Formative (1800-300 BC)
- Early Horizon (900-200 BC)
- Late Formative (300 BC-400 AD)
- **Early Intermediate (200 BC-600 AD)**
- Middle Period (400-900 AD)



Sources of textile samples clockwise from top left: British Museum [Am1954,05.448]; British Museum [Am1907,0727.4]; Museo Nacional de Arqueologia, La Paz [661]; Victoria and Albert Museum [CIRC.415-1932]; Victoria and Albert Museum [T.60-1965]; Museo Nacional de Etnografia y Folklore, La Paz [19351]. Photographs copyright of the Instituto de Lengua y Cultura Aymara (ILCA), La Paz.

Details

General description

Repository map

Production site map

Find site map



Product: Headband fragment

Period: Early Intermediate (200 BC-600 AD)

Repository: Victoria and Albert Museum (website), museum ID: T.60-1965

Production site: Paracas, Peru, South coast

Find site: Paracas (Necrópolis), Peru, South coast

Style: Paracas (Necropolis)

Motif: Twisted threads

Technique: Transposed warp technique with multiple interlaced wefts selected by group

Structure: Transposed warp structure with multiple interlaced wefts, warped in 1 layer

Culture: Paracas

Composition: Band

Component: Structural component

Thread 1: Warp thread, **material:** Camelid fibre, **type of Torsion:** Regular monochrome S2Z, **colour of the thread strands:** Strands of the same colour, **thickness:** Very thin: less than 30, **direction of torsion:** S, **torsion of thread:** Strong (30°-45°)

Thread 2: Weft thread, **material:** Camelid fibre, **type of Torsion:** Regular monochrome S2Z, **colour of the thread strands:** Strands of the same colour, **thickness:** Very thin: less than 30, **direction of torsion:** S, **torsion of thread:** Strong (30°-45°)

Fabric: Transposed warp with multiple interlaced wefts

Colour: Blue  | Bluish violet  | Green  | Reddish brown   |
Reddish violet 

Number of colour layers: 1

Contrast: None

Finish:

Motif attribute:

Scene:

Sequence:

Symmetry:

Size: Unknown

Usage:

Direction of warp:



[open full size image in new tab](#)

↵ weaving communities



Textile browsing [?]

Textile retrieval [?]

Textile search [?]

Select one output type



Select one or more
input filters

◇ Colour ↓

• Black

• Blue

• Bluish violet

Output type: *Select the type of search result you are look for from the left-hand menu*

Input filter: **Period: Early Intermediate (200 BC-600 AD)** **Colour: Blue**

Reset search

Search

weaving communities



Textile browsing [?]

Textile retrieval [?]

Textile search [?]

Select one output type

Find site

Select one or more input filters

- ◇ Colour →
- ◇ Component →
- ◇ Composition →
- ◇ Contrast →
- ◇ Culture →
- ◇ Fabric →
- ◇ Find site →
- ◇ Finish →
- ◇ Material →
- ◇ Motif →
- ◇ Motif attribute →
- ◇ Period →
- ◇ Product →
- ◇ Production site →
- ◇ Repository →

Output type: **Find site**

Input filter: **Period: Early Intermediate (200 BC-600 AD)** **Colour: Blue**

Reset search

Search

7 results

- **Bolivia** *product details*
- **Central coast** *product details*
- **Nasca** *product details*



Methodology for Developing the Search Facilities – User Evaluation

- We recruited 25 volunteers via our networks of contacts with museums, researchers and textile practitioners to evaluate the usability and usefulness of the system (***formative evaluation***)
- None of these people had had any prior involvement with the project. We held several identically structured evaluation sessions each attended by a subset of the participants
- Several days before each session, participants were sent an information sheet describing the aims and format of the session, and a consent form to sign and return. They were also sent the URL of the project website, so as to be able to gain some background into the aims of the project if they so wished

Methodology for Developing the Search Facilities – User Evaluation

- A member of the research team started the session by giving an overview of the aims and objectives of the project, and illustrated the Browsing and Search facilities on a projector
- Participants were asked to undertake two Browsing tasks and three Search tasks, to record their answers to each task, and to answer a small set of questions regarding the ease-of-use of the Browsing and Search facilities. Participants were invited to add further comments if they wished. At the end of the five tasks, participants were also invited to answer a set of more general questions about the system's usability and usefulness
- Generally, the evaluation participants' responses to the system were positive; they led to several improvements being made to the user interface and the overall system for its final version

References

- R.Brownlow, S.Capuzzi, S.Helmer, L.Martins, I.Normann, A.Poulovassilis, An Ontological Approach to Creating an Andean Weaving Knowledge Base, ACM Journal on Computing and Cultural Heritage 8(2): 11:1-11:31, 2015
- See also full list of publications at <http://www.weavingcommunities.org/about/publications.html>

Example 2 – Mapping Museums: the history and geography of the UK independent sector 1960-2020 (AHRC, 2016-2020)

- This project is aiming to provide the first evidence-based history of the development of the UK's independent museums sector and the links to wider cultural, social, and political concerns (see <http://blogs.bbk.ac.uk/mapping-museums/>)
- As such, it aims to contribute to scholarly understanding of British culture, be useful for policy makers and arts funders, and also be of interest to the general public

Mapping Museums

- During the first 18 months of the project, the research team has gathered and codified data on some 4000 UK museums
- A major part of the project to date has been the modelling and representation of the knowledge of domain experts in the form of an **RDFS ontology**
- Combined with, in parallel, the design and development of a suite of **Browse, Search and Visualisation facilities** to be supported by the KB

Mapping Museums

- The project is the first to produce an authoritative database of museums opening and closing during a period of rapid expansion and change in the sector
- Ongoing research using the database is seeking to identify trends in the development of independent museums:
 - when museums opened
 - if there is a link between where/when they opened and their subject matter
 - if there are areas where few museums opened or survived
 - and if these patterns correlate to other broader cultural or social factors

Data Collection

- There were no directly usable digital datasets, and all of the data had to be entered manually into an evolving "master" spreadsheet, plus additional auxiliary s/sheets
- OCR techniques were also used to process photographs from the Association of Independent Museums archive (housed at the University of Leicester)
- The Digest of Museum Statistics (DOMUS), 1994-1999, was used as the starting point (around 1,800 museums)
- Additional contemporary and historical datasets from various organisations (e.g Arts Council England, Museums and Galleries Scotland, Association for Independent Museums) were then incorporated
- Use of online resources such as museums' websites and Wikipedia resulted in a wider spread of entities that are considered as being "museums" by the public

Data Collection

- To reduce missing, uncertain & inconsistent data, used online search engines, digital resources (BBC 1986 Domesday project, TripAdvisor), physical resources (Hudson and Nicholls 1985 Museum Directory), historic guidebooks, consulted subject specialists (Museums Development Network), made hundreds of telephone calls, conducted email and twitter correspondence
- The outcome of the data collection phase (at 15 Months) was a main excel s/sheet comprising over 50 items of data relating to around 4000 museums
 - also two additional s/sheets of historical data relating to changes in Governance Status and Visitor Numbers over time

Research Challenges

- Incomplete knowledge of the independent museums sector, hence evolution of knowledge as the project progresses
- Existing data gathered by the Museums Association and regional and national funding bodies is patchy and does not encompass smaller venues
- Incompleteness of the data that was being collected:
 - missing data
 - contradictory data
 - imprecision about the year of a museum opening/closing:
 - sometimes best-effort estimates were needed, in the form of a pair (earliest possible year, latest possible year)
 - this in turn led to the need to support of Modal logic operators for comparing dates (Definitely/Possibly)

Research Challenges

- What is a museum? This is clear-cut for established institutions, but not always so for small, local, independent institutions
 - could be instead be “a zoo, a library, a café”
 - in many instances case-by-case decisions needed to be made for ‘grey areas’ e.g. “visitor centres, historic windmills, church treasuries”
 - criteria for inclusion adopted were broader than existing “official” definitions to ensure grassroots museum ventures are fully captured

Research Challenges

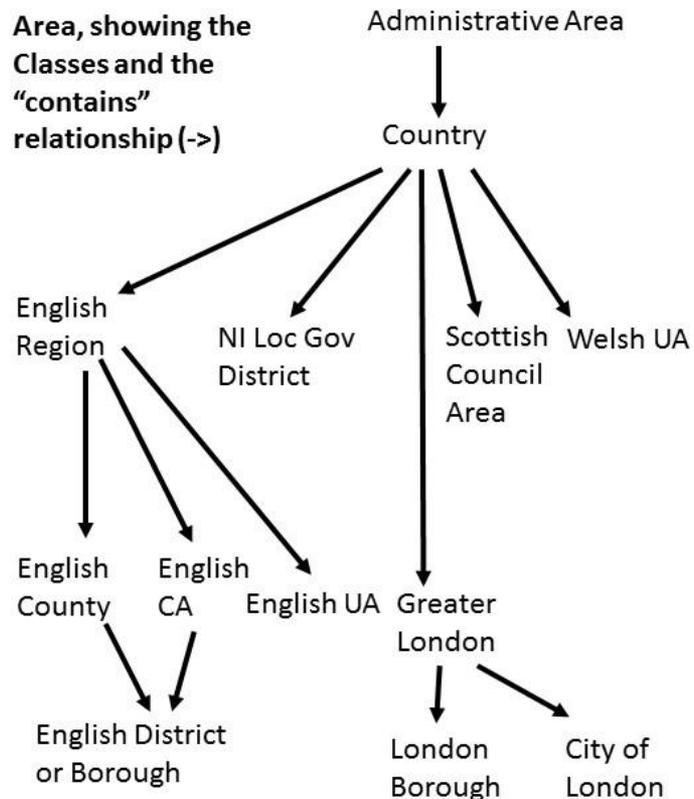
- Classification of museum Subject Matter:
 - the existing DOMUS subject classification (1998) focusses on academic disciplines, so not able to capture the full richness of independent museums
 - the project's domain experts have developed a new classification scheme that adheres more closely to the reality of independent museums
 - this has been validated by members of the Museums Development Network and finalised with their feedback

Research Approach

- Evident from the outset that the gradual collection of diverse data and gradual development of understanding about the required functionality of the KB would require an **iterative, agile** methodology to be adopted
- Also pointed to the need to adopt **semantic technologies** in order to develop the KB and search facilities:
 - the different relationships between entities can be described in fine detail
 - both the conceptual model and the data can be extended with new triples as new knowledge/data accrue
 - possible to integrate the evolving MM ontology with other existing taxonomies, e.g. as relating to geographical regions (ONS) and subject classification (DOMUS)

Example working document: Administrative Areas (version 5)

**Conceptual Model
for Administrative
Area, showing the
Classes and the
“contains”
relationship (->)**



Notes:

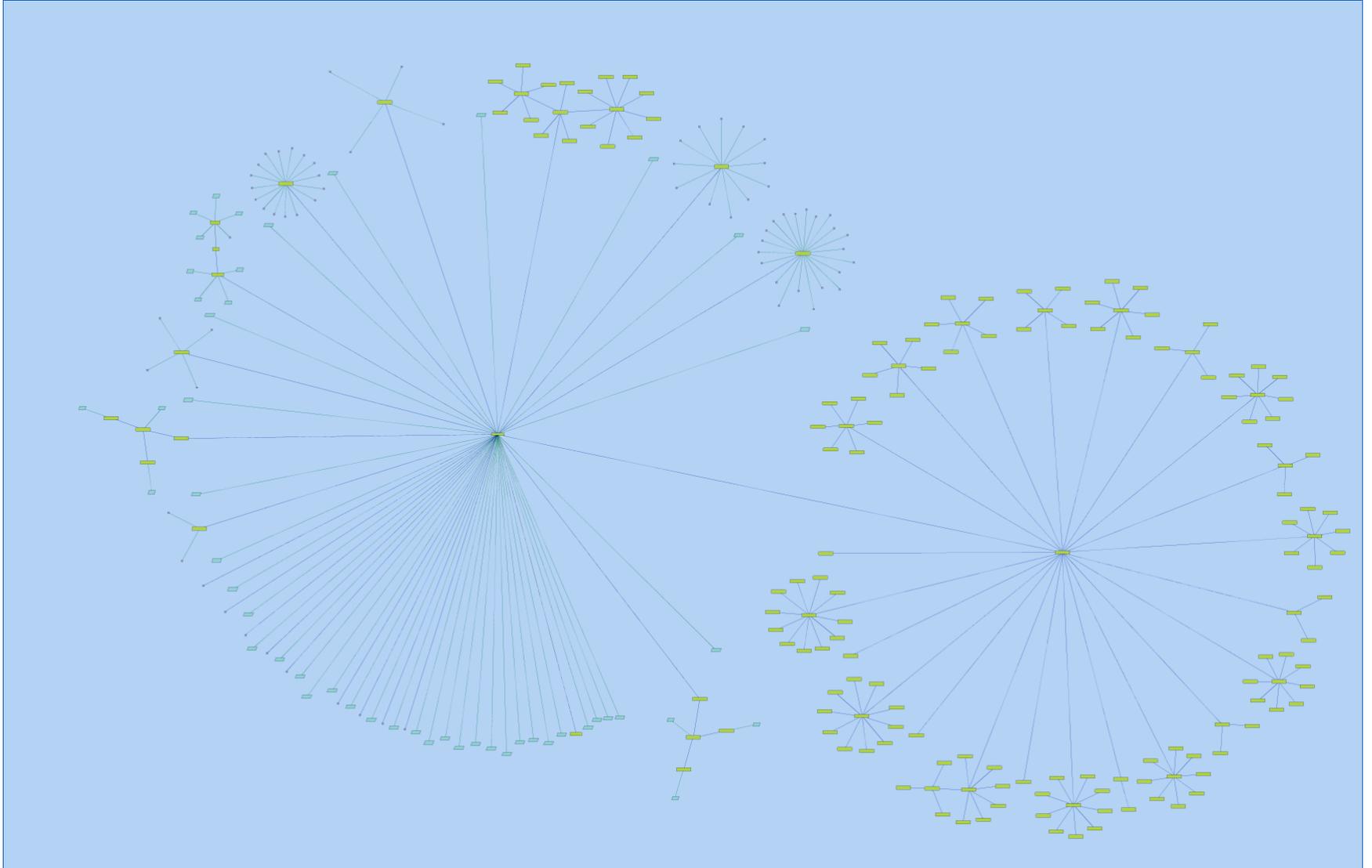
We will record in our database two names for each administrative area: (i) the ONS name, (ii) the “typed ONS name”, which in most instances (see below for the exceptions) adds the type of admin area to its ONS name within round brackets. It is the “typed ONS name” that will appear in the text auto-completion list within the Search Facility.

- There are no instances of the class Administrative Area – it is there as a “placeholder” in the conceptual model.
- There are four instances of the class Country, with ONS names “England”, “Scotland”, “Northern Island”, “Wales”. Their “typed ONS name” will be the same (i.e. without “(Country)” appended).
- Only England contains instances of English Region.
- Only Northern Island contains instances of NI Loc Gov District [11 such instances]
- Only Scotland contains instances of Scottish Council Area [32 such instances]
- Only Wales contains instances of Welsh UA [22 such instances]
- There is only one instance of Greater London. Its “typed ONS name” is “Greater London” (not “Greater London (Greater London)”).
- “Greater London” is connected to “England”.
- There is only one instance of City of London, contained in Greater London. Its “typed ONS name” is “City of London”.

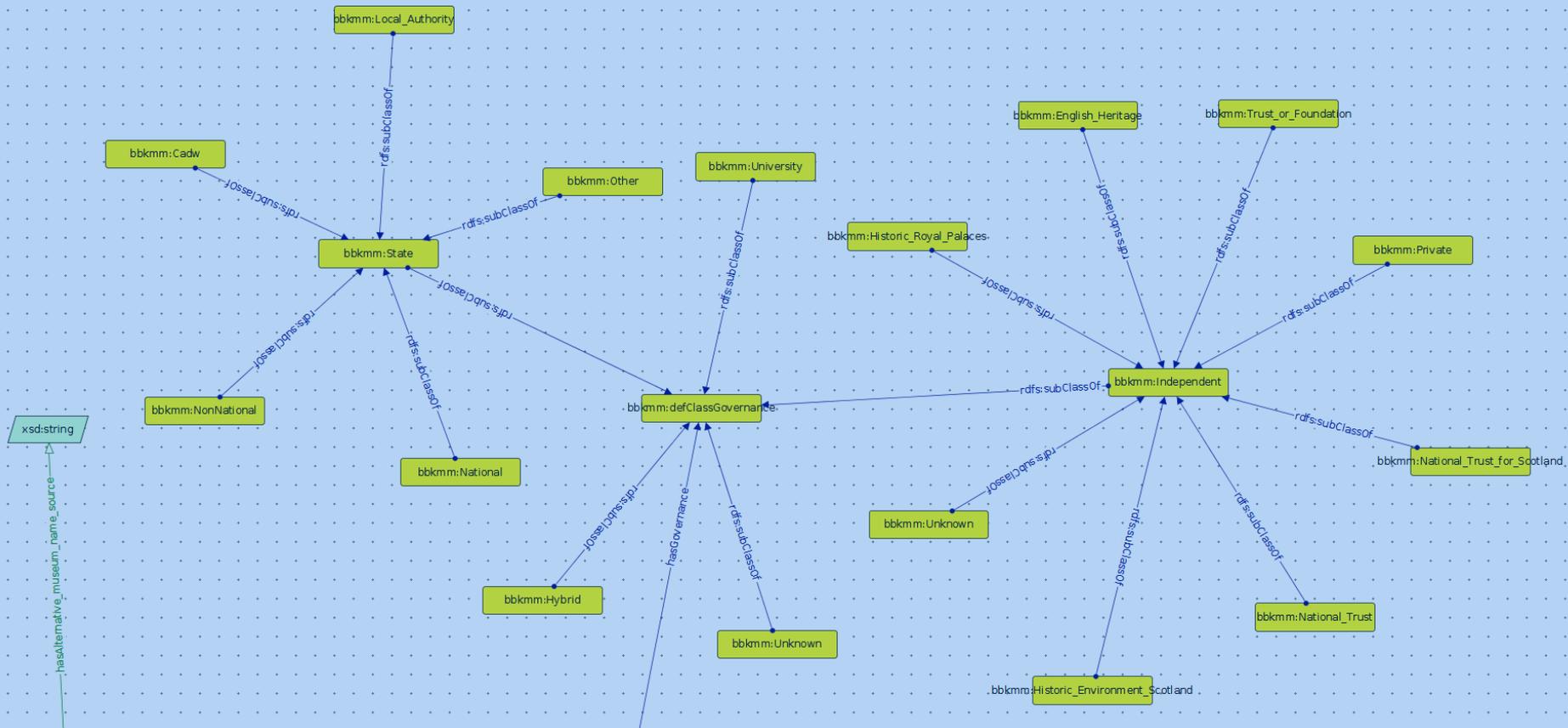
Research Approach

- Co-developing **graphical conceptual models** from the outset of the project has allowed us to gradually develop a common understanding across the whole team of the information that the KB will contain
- These were initially hand-drawn diagrams on paper, whiteboards, powerpoint
- And were subsequently modelled using the yED tool:
 - the format of the main Museums data spreadsheet was kept “in synch” with this evolving conceptual model
 - most of the graphical specification was automatically extracted from the metadata header of the Museums data spreadsheet (using Python)
 - additional modelling was added manually as required, e.g. for historical attributes (changes in Governance status, visitor numbers data) and the ONS administrative area hierarchy

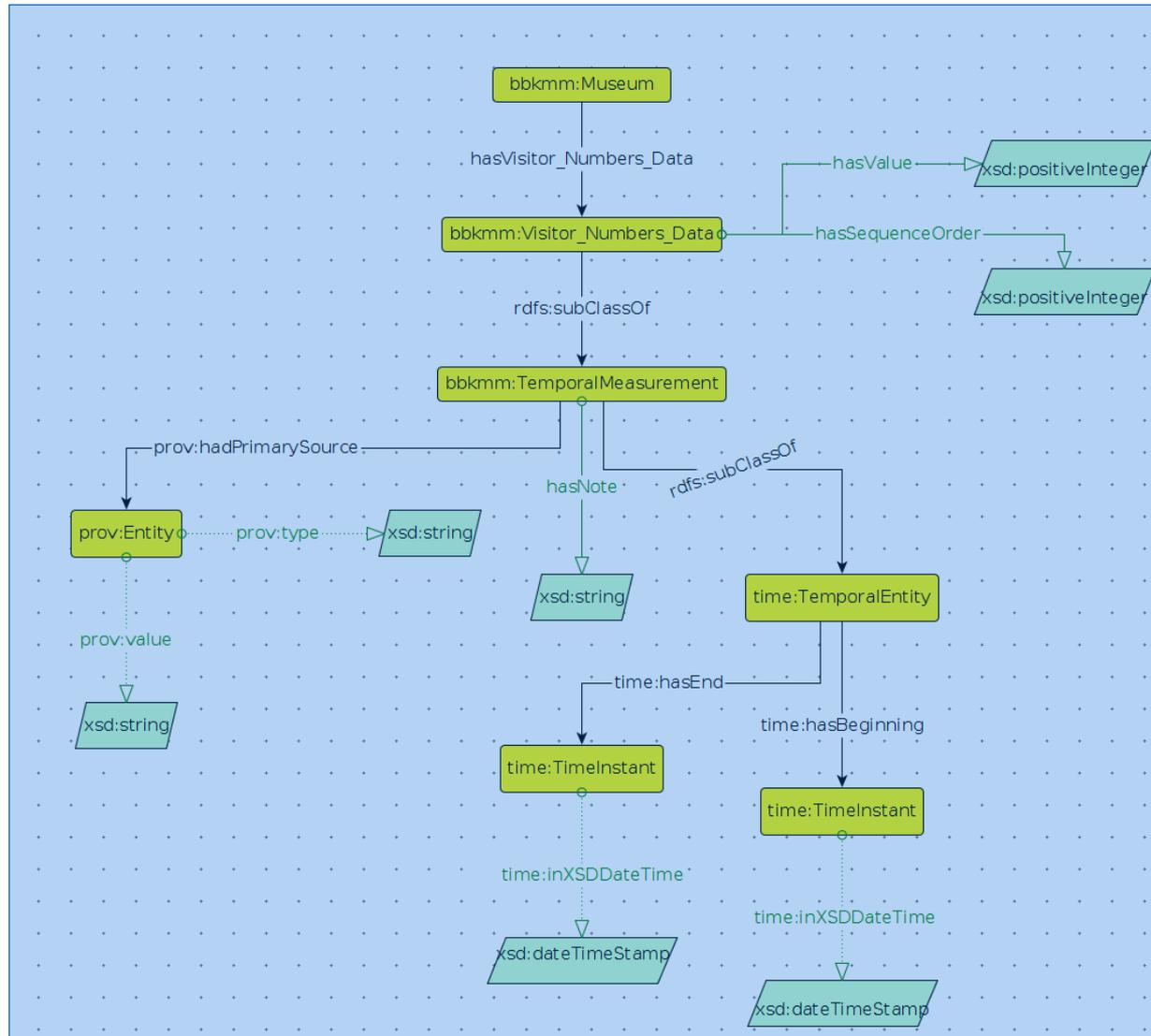
MM Ontology



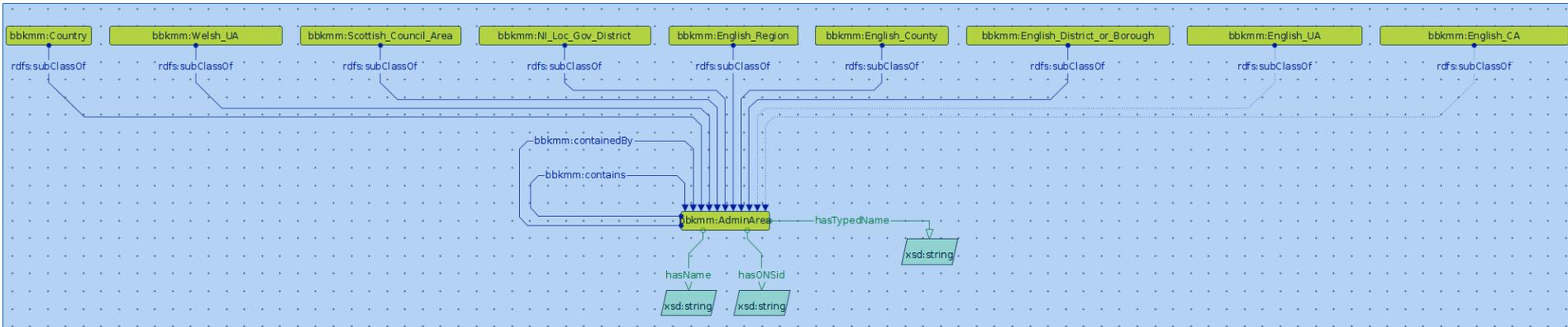
Zooming in on: Governance



Visitor Numbers Historical Data



ONS Administrative Areas



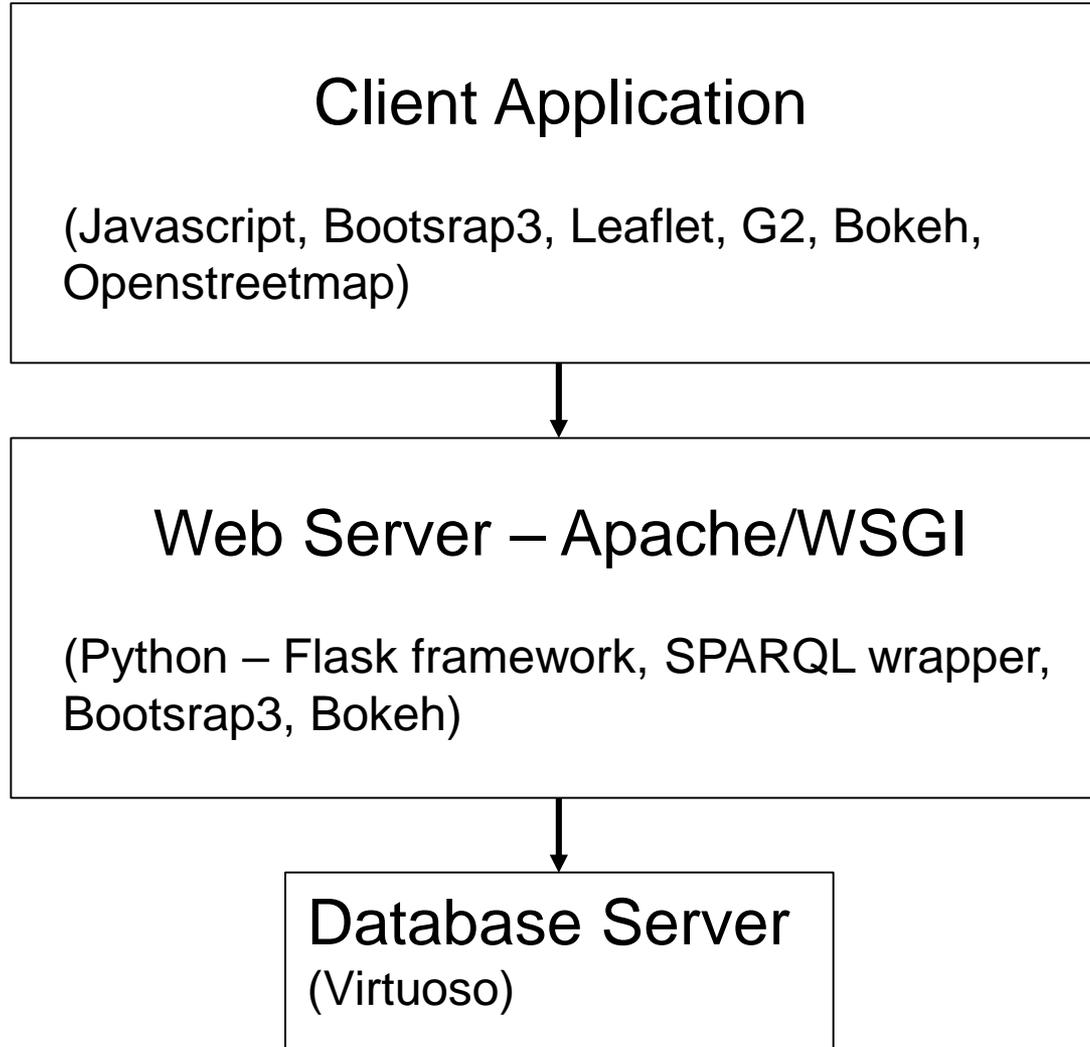
Methodology for Developing the KB

- Initial data collection and initial conceptual model development (6 months)
- Development of first version of the RDF/S store (9 months):
 - an RDFS template is created from the graphML file exported by yED (using Python)
 - the RDFS template is then combined with the s/sheet data (converted to CVS) to generate the triples in N3 (Python)
 - this is then converted to RDF/XML, allowing automatic checking of the syntactic correctness of the triples to be loaded to the triple store
- Iterative extension of the RDF/S store (20 months), including extension with temporal attributes, ONS Administrative Areas, and additional ONS datasets

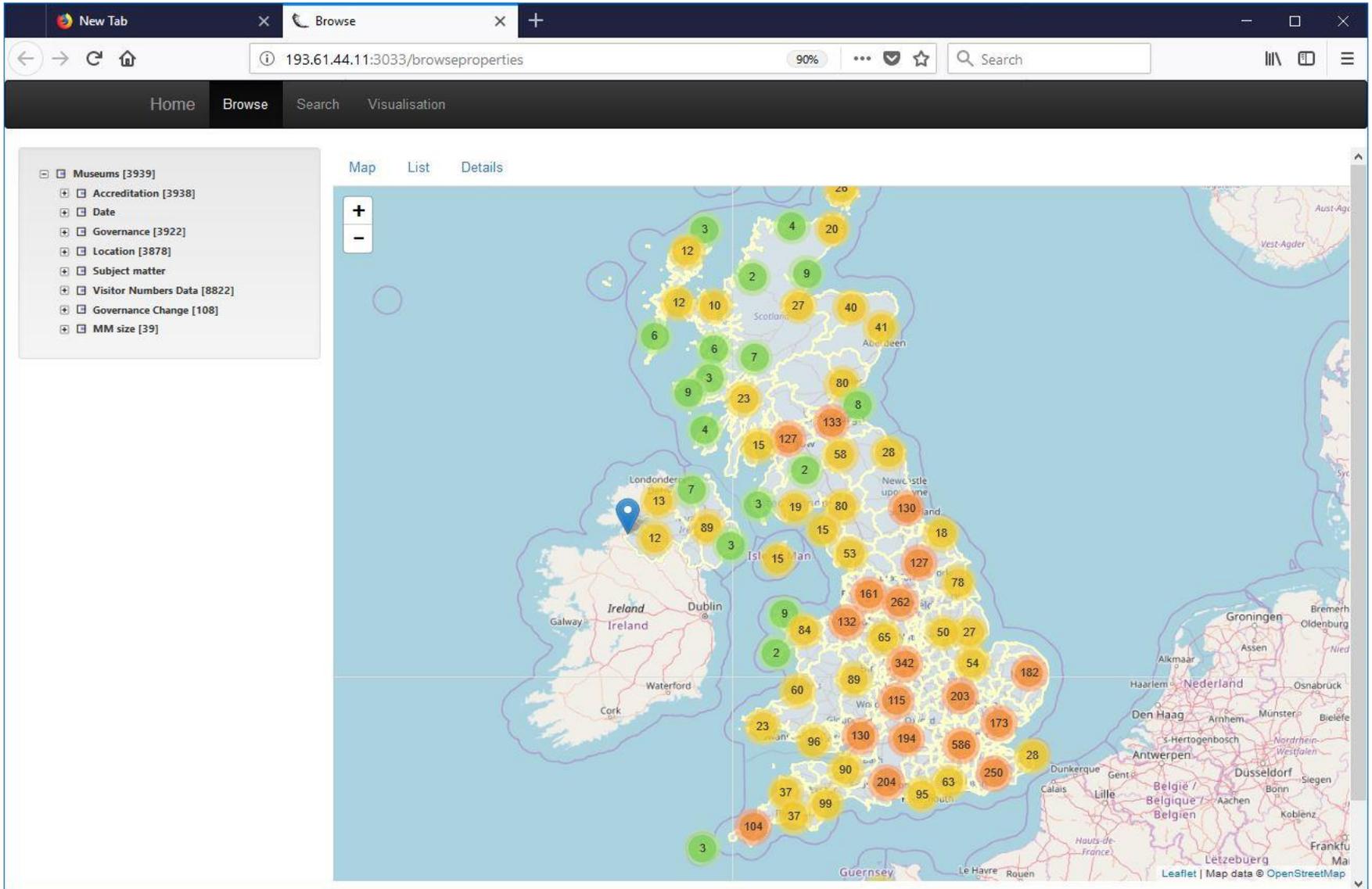
Methodology for Developing the Web Application over the KB

- First prototypes of Browse and Search at 12 months; and Visualisations at 15 months; iterative development still ongoing
 - the conceptual model and the data being gathered were rapidly evolving, so requirements for the search facilities that the KB would support could not be elicited until the KB had itself reached a reasonably stable state
- Project team members again began by producing hand-drawn sketches on paper and whiteboards
- Browse and Search have been inspired by Browse and Search from “Weaving Communities of Practice”
- Visualisations are more challenging, especially as relating to the spatio-temporal data – has led to expansion of the project team at month 15 with an expert in GIS

Web Application Architecture



Browse



Browse

The screenshot shows a web browser window with the following elements:

- Browser Tabs:** "New Tab" and "Browse".
- Address Bar:** "193.61.44.11:3033/browseproperties".
- Navigation:** Home, Browse, Search, Visualisation.
- Left Sidebar (Filters):**
 - Museums [3939]
 - Accreditation [3938]
 - Date
 - Year opened [3939]
 - pre-1960 [1046]
 - 1620 [1]
 - 1650 [1]
 - 1660 [1]
 - 1670 [1]
 - 1680 [1]
 - 1690 [1]
 - 1700 [1]
 - 1720 [1]
 - 1730 [1]
 - 1750 [2]
 - 1760 [2]
 - 1770 [1]
 - 1780 [1]
 - 1790 [1]
 - 1800 [3]
 - 1810 [9]
 - 1820 [8]
 - 1830 [18]
 - 1840 [17]
 - 1850 [22]
 - 1860 [20]
 - 1870 [32]
 - 1880 [46]
 - 1890 [61]
 - 1900 [76]
 - 1910 [49]
 - 1920 [119]
 - 1930 [142]
 - 1940 [221]
 - 1950 [187]
 - post-1960 [2893]
 - Year closed [3939]

- Main Content:**
- Map List Details
- Map view showing the United Kingdom and Ireland with museum locations marked by blue pins and green circles with numbers (1, 2, 3).
- Map controls: +, -
- Map data: Leaflet | Map data © OpenStreetMap

Browse

New Tab x Browse x +

193.61.44.11:3033/browseproperties 90% Search

Home Browse Search Visualisation

Map List Details

1870 [32]

- Aberystwyth Ceramics Gallery
Subject: *Arts-Ceramics*
- Atkinson Art Gallery
Subject: *Arts-Fine_and_decorative_arts*
- BACUP NATURAL HISTORY SOCIETY AND MUSEUM
Subject: *Mixed*
- Banff Museum
Subject: *Local_Histories*
- BLACKBURN MUSEUM AND ART GALLERY
Subject: *Mixed*
- Booth Museum Of Natural History
Subject: *Natural_world-Mixed*
- BOTANIC GARDENS MUSEUM
Subject: *Mixed*
- BRIGHTON MUSEUM AND ART GALLERY
Subject: *Mixed*
- BRISTOL MUSEUM AND ART GALLERY
Subject: *Mixed*
- Burns Monument Centre
Subject: *Personality-Literary*
- CHARTERHOUSE SCHOOL MUSEUM
Subject: *Mixed*
- CHELTENHAM COLLEGE MUSEUM
Subject: *Mixed*
- DERBY MUSEUM AND ART GALLERY
Subject: *Mixed*
- DR. GRIERSONS MUSEUM
Subject: *Mixed*

Museums [3939]

- Accreditation [3938]
- Date
 - Year opened [3939]
 - pre-1960 [1046]
 - 1620 [1]
 - 1650 [1]
 - 1660 [1]
 - 1670 [1]
 - 1680 [1]
 - 1690 [1]
 - 1700 [1]
 - 1720 [1]
 - 1730 [1]
 - 1750 [2]
 - 1760 [2]
 - 1770 [1]
 - 1780 [1]
 - 1790 [1]
 - 1800 [3]
 - 1810 [9]
 - 1820 [8]
 - 1830 [18]
 - 1840 [17]
 - 1850 [22]
 - 1860 [20]
 - 1870 [32]
 - 1880 [46]
 - 1890 [61]
 - 1900 [76]
 - 1910 [49]
 - 1920 [119]
 - 1930 [142]
 - 1940 [221]
 - 1950 [187]
 - post-1960 [2893]
 - Year closed [3939]

Browse

Home Browse Search Visualisation

Museums [3939]

- Accreditation [3938]
- Date
 - Year opened [3939]
 - pre-1960 [1046]
 - 1620 [1]
 - 1650 [1]
 - 1660 [1]
 - 1670 [1]
 - 1680 [1]
 - 1690 [1]
 - 1700 [1]
 - 1720 [1]
 - 1730 [1]
 - 1750 [2]
 - 1760 [2]
 - 1770 [1]
 - 1780 [1]
 - 1790 [1]
 - 1800 [3]
 - 1810 [9]
 - 1820 [8]
 - 1830 [18]
 - 1840 [17]
 - 1850 [22]
 - 1860 [20]
 - 1870 [32]
 - 1880 [46]
 - 1890 [61]
 - 1900 [76]
 - 1910 [49]
 - 1920 [119]
 - 1930 [142]
 - 1940 [221]
 - 1950 [187]
 - post-1960 [2893]
 - Year closed [3939]
- Governance [3922]
- Location [3878]
- Subject matter
- Visitor Numbers Data [8822]

Map List Details

1/32

Prev Next

Name of museum	ABERYSTWYTH CERAMICS GALLERY
Address line 1	Aberystwyth Arts Centre
Address line 2	Penglais
Town or City	Aberystwyth
County	Ceredigion
Postcode	SY23 3DE
Accreditation	Accredited
Governance	University
Visitor Numbers Data	400000 at 1996
Visitor Numbers Data	400000 at 1997
Visitor Numbers Data	0 at 1995
Visitor Numbers Data	0 at 1994
Classification 2018	Arts: Ceramics

Browse

The screenshot shows a web browser window with the following elements:

- Browser Tab:** "Browse" with a close button and a plus sign for new tabs.
- Address Bar:** "193.61.44.11:3033/browseproperties#tab4".
- Page Header:** "Home", "Browse", "Search", "Visualisation".
- Map Controls:** "Map", "List", "Details" tabs and a zoom-in (+) / zoom-out (-) button.
- Sidebar Menu:**
 - Museums [3939]
 - Accreditation [3938]
 - Date
 - Governance [3922]
 - Hybrid [95]
 - Independent
 - English Heritage [51]
 - Historic Environment Scotland [12]
 - Historic Royal Palaces [7]
 - National Trust [182]
 - National Trust for Scotland [23]
 - Private [660]
 - Trust or Foundation [1608]
 - Unknown [228]
 - State
 - Cadw [3]
 - Local Authority [778]
 - National [63]
 - NonNational [18]
 - University [109]
 - Unknown [85]
 - Location [3878]
 - Subject matter
 - Visitor Numbers Data [8822]
 - Governance Change [108]
 - MM size [39]
- Map:** A map of the British Isles with numbered markers (1-16) in various colors (blue, green, yellow, orange) indicating museum locations. Major cities like London, Edinburgh, Glasgow, and Dublin are labeled.

Browse

The screenshot shows a web browser window with two tabs: 'New Tab' and 'Browse'. The address bar displays the URL '193.61.44.11:3033/browseproperties#tab4'. The browser interface includes navigation buttons (back, forward, refresh, home), a search bar, and window controls. The page content is divided into a sidebar on the left and a main map area on the right.

Left Sidebar: Filters

- Museums [3939]
 - Accreditation [3938]
 - Date
 - Governance [3922]
 - Location [3878]
 - Subject matter
 - Classification 2018 [3938]
 - Classification 1998 [1398]
 - agriculture [34]
 - archaeology [99]
 - archives [15]
 - arms and armour [8]
 - biology and natural history [26]
 - costume and textiles [22]
 - decorative and applied arts [99]
 - ethnography [3]
 - fine art [130]
 - geology [12]
 - maritime [50]
 - medicine [7]
 - military [107]
 - mixed collection [79]
 - music [7]
 - oral history [1]
 - personalia [46]
 - photography [11]
 - science and industry [90]
 - social history [481]
 - transport [71]
 - Visitor Numbers Data [8822]
 - Governance Change [108]
 - MM size [39]

Right Panel: Map

The map displays the British Isles with various locations marked by blue pins and green circles. The map includes zoom controls (+, -) and tabs for 'Map', 'List', and 'Details'. The map shows the following data points:

- Scotland: 12 (yellow circle)
- Ireland: 2 (green circle)
- London: 13 (yellow circle)
- Other locations: 3, 4, 5, 6, 7 (green circles)

The map also shows geographical labels for Scotland, Ireland, and various cities like Aberdeen, London, and New Castle. The bottom right corner of the map area includes the text 'Leaflet | Map data © OpenStreetMap'.

Browse

Alexandra Poulouvassilis x Browse x Journey Planner - Trains Times x Gallery · d3/d3 Wiki · GitHub x +

193.61.44.11:3033/browseproperties#tab4 90% Search

Home Browse Search Visualisation

- Museums [3939]
 - Accreditation [3938]
 - Date
 - Governance [3922]
 - Location [3878]
 - Subject matter
 - Classification 2018 [3938]
 - Archaeology
 - Arts
 - Belief and identity
 - Buildings
 - Communications
 - Food and drink [23]
 - Industry and manufacture
 - Leisure and Sport
 - Leisure and sport
 - Local Histories [817]
 - Medicine and health
 - Mixed [227]
 - Natural world
 - Other [70]
 - Personality
 - Rural Industry
 - Science and technology
 - Sea and seafaring
 - Boats and ships [42]
 - Fishing [13]
 - Lighthouses [10]
 - Mixed [46]
 - Other [7]
 - Services
 - Transport
 - Utilities
 - War and conflict
 - Classification 1998 [1398]
 - Visitor Numbers Data [8822]
 - Governance Change [108]

Map List Details

The map displays museum locations across Europe. Blue pins indicate specific museum sites, while green circles with numbers represent the count of museums in various regions. The highest concentration is in the southeast of England, with 11 museums marked. Other notable counts include 9 in the Midlands, 8 in the southwest of England, and 5 in the south of Scotland. The map also shows major cities and geographical features across the continent.

Search

Knowledge Lab | dblp: Search for "mihaela coce" | EPSRC Calls Template - https:// | New Tab | MuseumMap

193.61.44.11:3033/search | 90% | Search

Museum project | Home | Browse | Search | Visualisations | Configuration | About | Resources

Add Filter

Filter 1

Select column for filtering

Select filter

Enter filter criteria

- Admin Area
- Country
- England Regions
- England Counties UAs and CAs
- England Boroughs and Districts
- Northern Ireland Districts
- Scotland Council Areas
- Wales Unitary Authorities
- Name of museum
- Town or City
- Admin Area
- Postcode
- Accreditation
- Governance
- Classification 2018
- Classification 1998
- Year opened
- Year closed
- AIM size designation
- ACE size designation
- MM size

Submit

Search

Knowledge Lab | dblp: Search for "mihaela coce" | EPSRC Calls Template - https:// | New Tab | MuseumMap

193.61.44.11:3033/search | 90% | Search

Museum project | Home | Browse | Search | Visualisations | Configuration | About | Resources

Add Filter

Results (15)

Table | Map | Details

Filter 1 | Filter 2x

Select column for condition: Accreditation

Select filter: Matches

Enter filter criteria: Accredited

Default output columns

- Filter 1 : Admin Area Matches Aberdeen City (Scottish Council Area)
- Filter 2 : Accreditation Matches Accredited

Submit

NameOfMuseum	County	Classification 2018	Year opened	Year closed	Governance	Admin Area	Accreditation	Classification 1998
ABERDEEN ART GALLERY		Arts:Fine and decorative arts	1884	Still open	State:Local Authority	Scottish_Council_Area	Accredited	mixed collection
ABERDEEN MARITIME MUSEUM		Sea and seafaring:Mixed	1984	Still open	State:Local Authority	Scottish_Council_Area	Accredited	maritime
ABERDEEN SCIENCE CENTRE	Aberdeen City	Science and technology:Other	1988	Still open	Independent:Trust or Foundation	Scottish_Council_Area	Unaccredited	science and industry
ANATOMY MUSEUM, UNIVERSITY OF ABERDEEN	City of Aberdeen	Medicine and health:Other	1860	Still open	University	Scottish_Council_Area	Accredited	
GORDON HIGHLANDERS MUSEUM		War and conflict:Regiment	1935	Still open	Independent:Trust or Foundation	Scottish_Council_Area	Accredited	military
HERBARIUM, UNIVERSITY OF ABERDEEN		Natural world:Herbaria and gardening	1860	Still open	University	Scottish_Council_Area	Accredited	
JAMES DUNS HOUSE	City of Aberdeen	Local Histories	1975	2001	State:Local Authority	Scottish_Council_Area	Unaccredited	
MARISCHAL MUSEUM, UNIVERSITY OF ABERDEEN	City of Aberdeen	Mixed	1907	2008	University	Scottish_Council_Area	Accredited	ethnography
PROVOST SKENES HOUSE		Buildings:House:Large	1953	Still open	State:Local Authority	Scottish_Council_Area	Accredited	decorative and applied arts
ROBERT GORDON UNIVERSITY		Mixed	[1960..2017]	Still open	University	Scottish_Council_Area	Accredited	
ST PETERS HERITAGE CENTRE		Local Histories	1999	Still open	Independent:Trust or Foundation	Scottish_Council_Area	Unaccredited	

Search

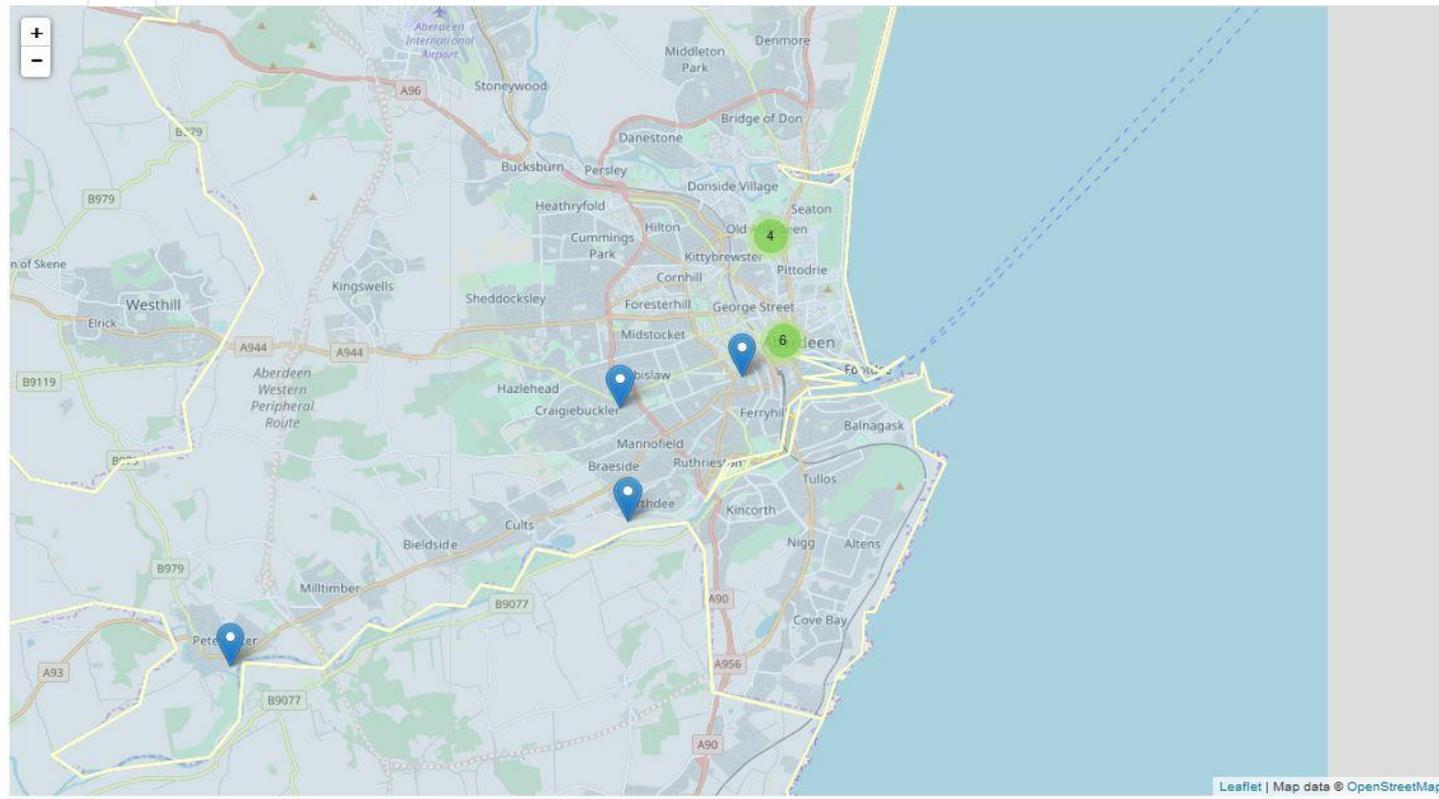
Knowledge Lab | dblp: Search for "mihaela coce" | EPSRC Calls Template - https:// | New Tab | MuseumMap

193.61.44.11:3033/search | 90% | Search

Museum project | Home | Browse | Search | Visualisations | Configuration | About | Resources

Results (15)

Table | Map | Details



Add Filter

Filter 1 | Filter 2x

Select column for condition: Accreditation

Select filter: Matches

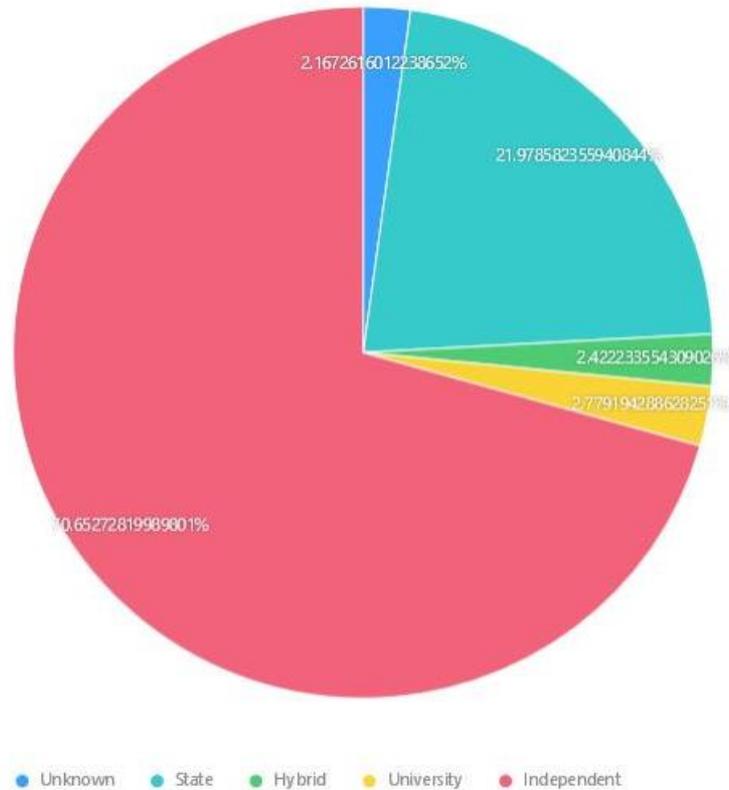
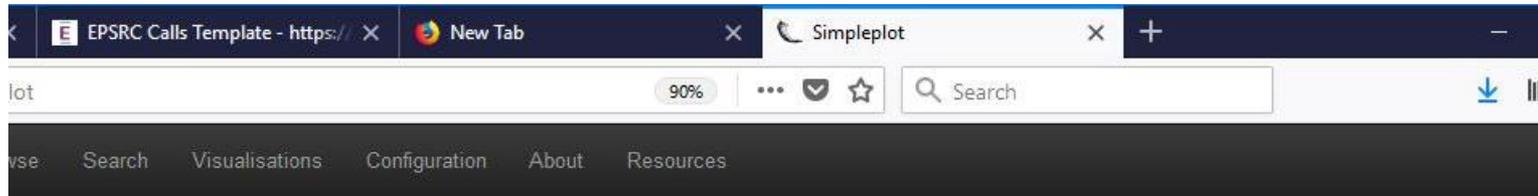
Enter filter criteria: Accredited

Default output columns

- Filter 1 : Admin Area Matches Aberdeen City (Scottish Council Area)
- Filter 2 : Accreditation Matches Accredited

Submit

Visualise



Visualise

Search for "mihaela coce" × EPSRC Calls Template - https:// × New Tab × Simpleplot × +

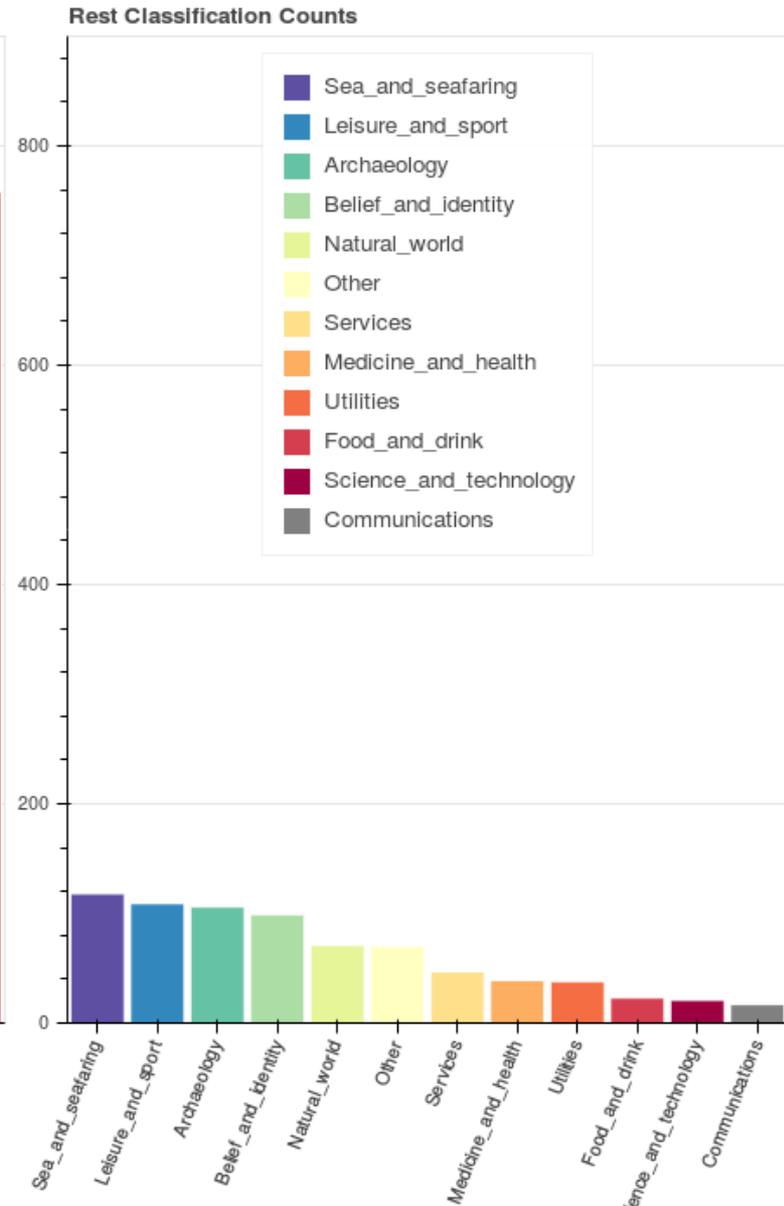
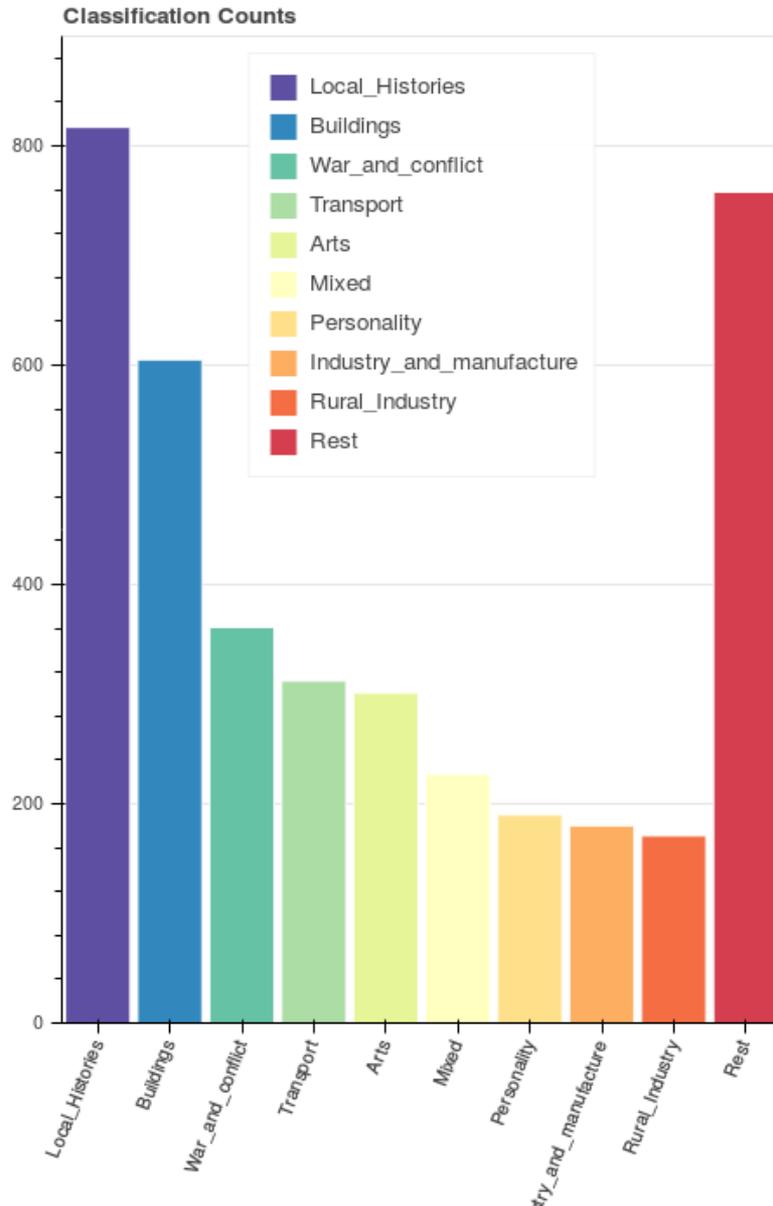
193.61.44.11:3033/simpleplot 90% Search

project Home Browse Search Visualisations Configuration About Resources

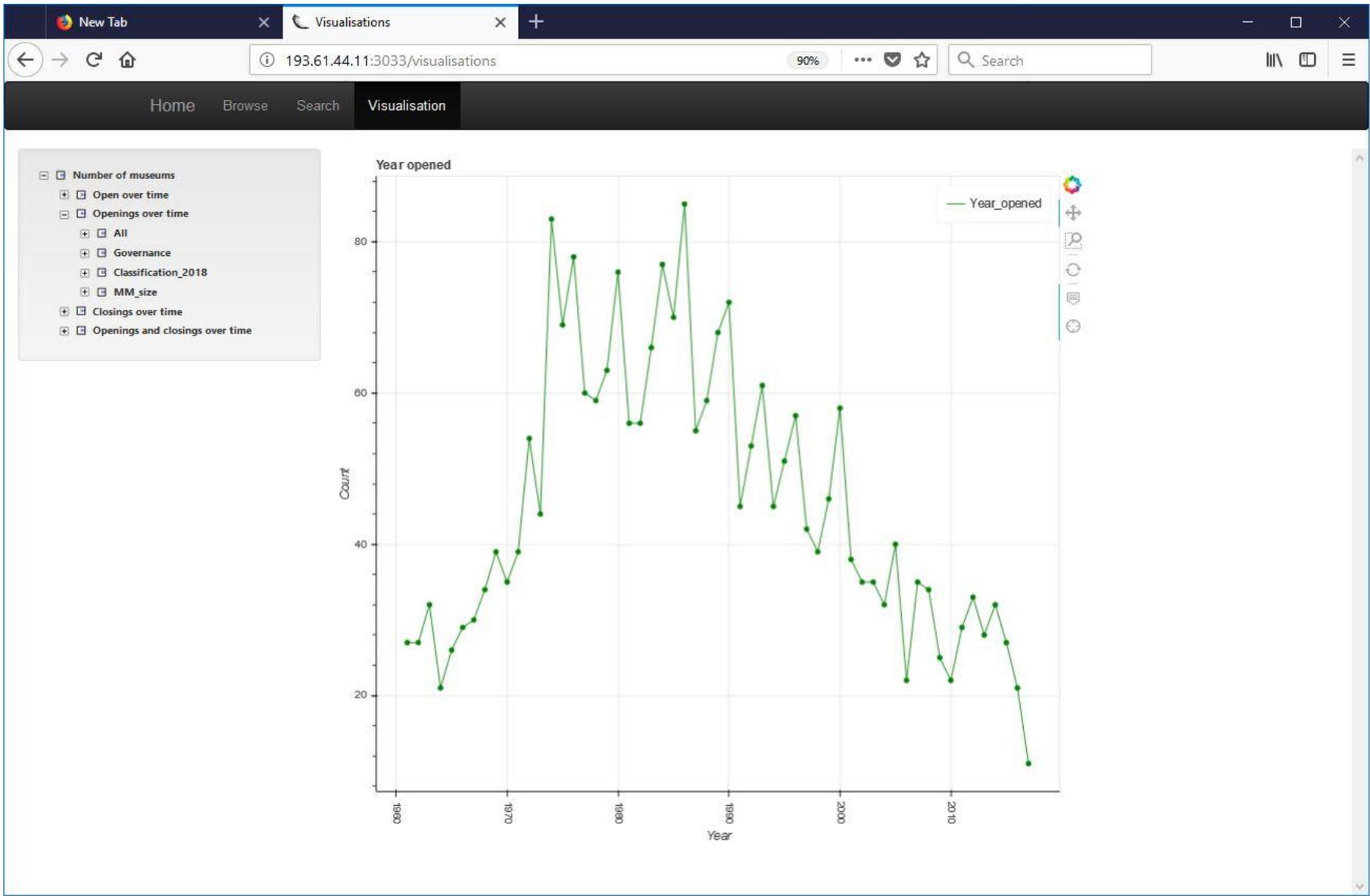
List



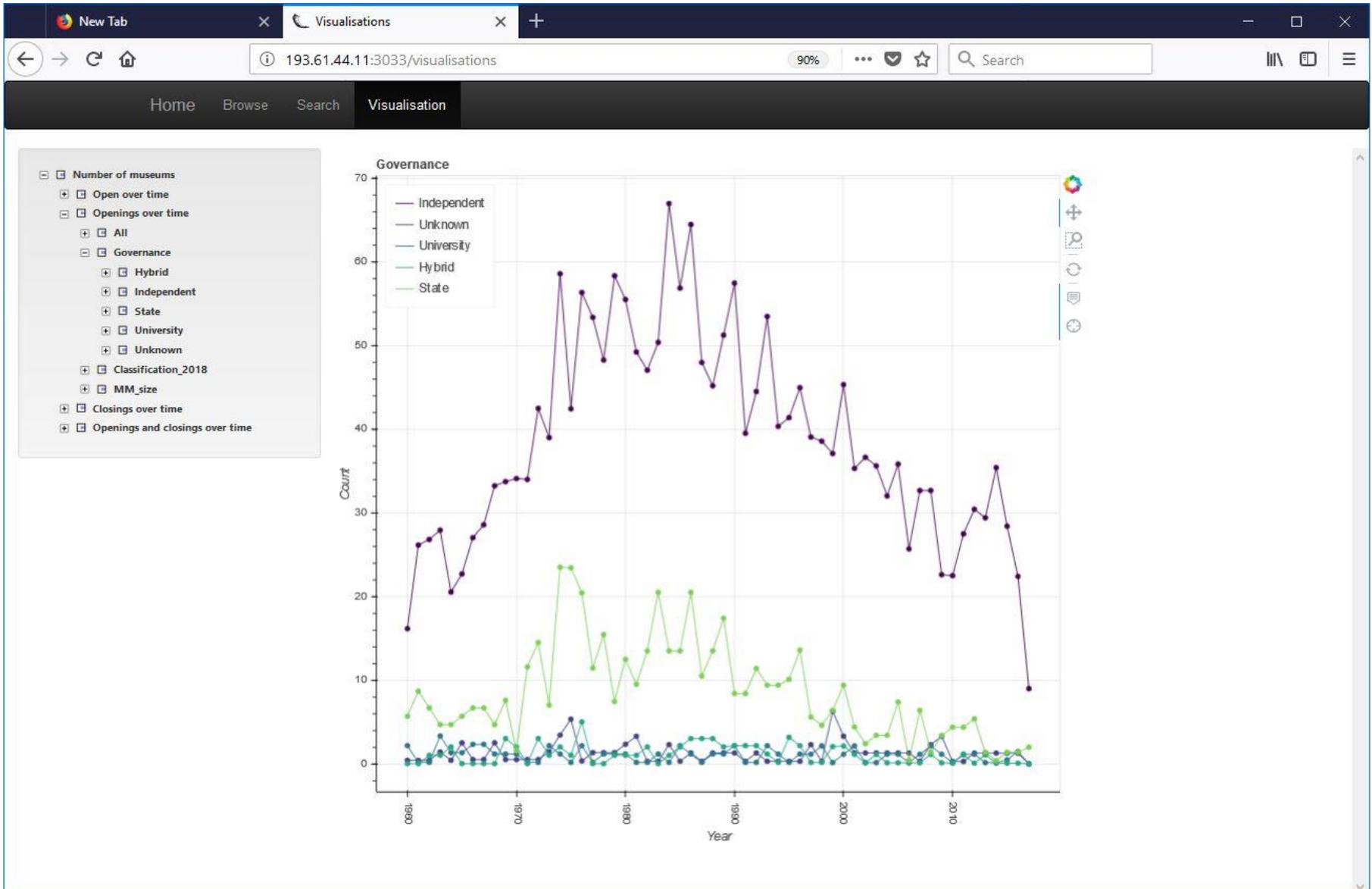
Visualise



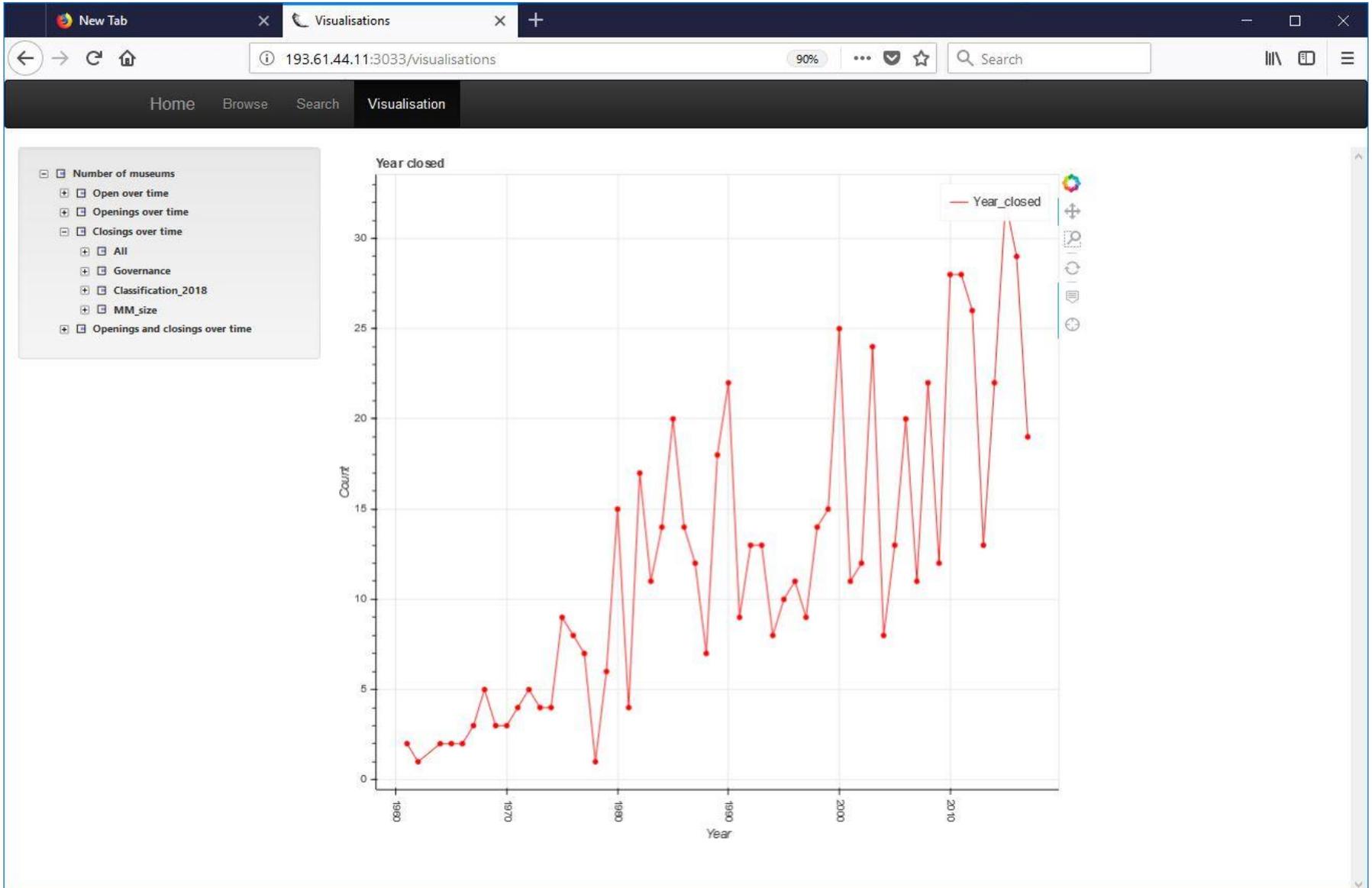
Visualise



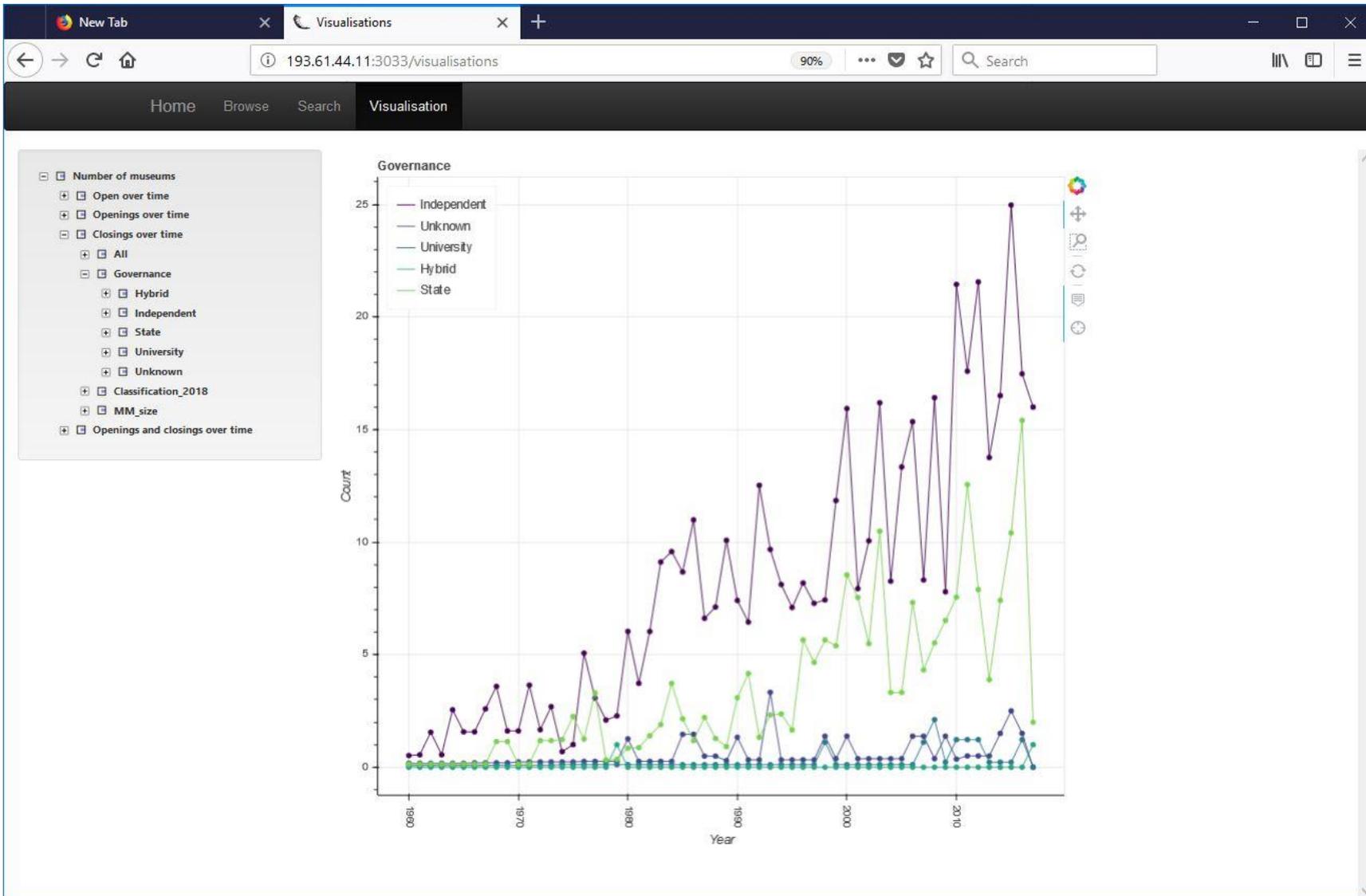
Visualise



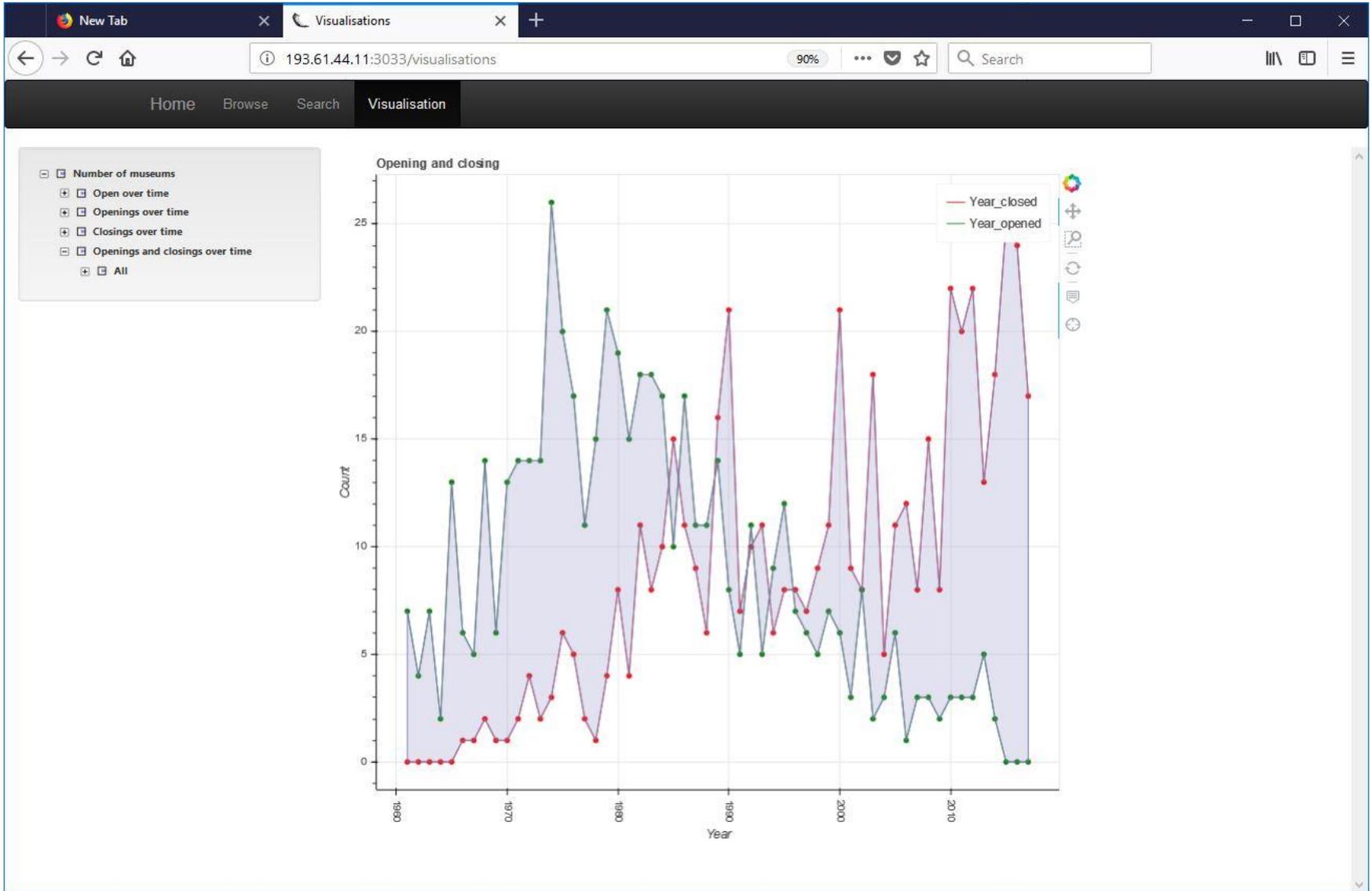
Visualise



Visualise



Visualise



Ongoing work

- Formative evaluation with user stakeholders, summer 2018
- Finalising the Web application, autumn 2018
- Development of full project website, 2019
- Support of humanities scholars' ongoing research, 2018-2020; e.g. for a first analysis of Museum Closures 1960-2017 see <http://blogs.bbk.ac.uk/mapping-museums/2018/02/23/museum-closure-pre-findings/>

Acknowledgements

- Many thanks to all the members of the Weaving Communities of Practice and Mapping Museums project teams (particularly the project PIs, Dr Luciana Martins and Professor Fiona Candlin) for our thought-provoking and inspirational interdisciplinary collaborations; to all the professionals, practitioners and domain experts working with us; and to the participants of the evaluation sessions
- Many thanks also to the Mapping Museums researchers – Dr Jamie Larkin and Nick Larsson – for their help with preparing this presentation