MAKE THE CONNECTION · THE PEOPLE · THE IDEAS · THE TOOLS

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From Several Datasets to One Graph

designing a prototype for a graph visualization of archival metadata from different institutions

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Description Section – SAA Annual Conference, August 4, 2016, Atlanta

The Project in a few words

The participants (Who?)

- Three institutional partners:
  - Archives nationales, France (project lead)
  - Bibliothèque nationale de France
  - Service interministériel des Archvies de France (SIAF)

- Emmanuel Château-Dutier – researcher
  from the University of Montreal
  A historian specializing in administration of public architecture projects in France and a digital humanist

What is it about?

The partners are joining their efforts to demonstrate the interest for interconnecting the archival resources under their care by using the semantic web technologies in the following way:

- **represent** in a rigorous way **in RDF** archival metadata (authority records, documents' description) from several institutions;

- **interconnect** and enrich the resulting datasets, especially by expressing relationships that exist among the described objects;

- **visualize** the datasets in a useful way, graphically by enabling the user to navigate in the graph and access the source metadata

A proof of concept and of utility

Supported by the French Ministry of Culture and Communication as promoting the implementation of Semantic Web technologies in cultural institutions

How/Who?

- Project management:
  - project team – a limited number of persons, though others are involved
- Metadata preparation and RDF conversion - By the project team
- Prototype – By a contractor from the public or private sector (tender)
- Project co-funded by the three participating institutions
  - Global budget: €45,000 (for outside contractor)
  - Project team time contributed by the participating institutions
- The libraries realized over the project will be under **open license**

Timeline

- A three-year project 2015-2017
- Publication of the prototype – mid 2017

What's at stake?
Institutional Context

Common objectives - Different stakes

National Archives

- 1998-2013
  - Significant effort to normalize and computerize archival descriptions and related creators: pilot implementations; IS development and production (encompassing all tasks of "archival chain"); "Virtual Finding Aids Room" – online
- Today
  - >22,000 FA (XML/EAD), 14,000 authority records on creators (XML/EAC-CPF); new FA each and every day; systematic description of creators

A complex **network** of relationships,

involving many types of objects, plus a temporal dimension

Problems:

1. The look-up and navigation tools for these data do not reveal the true dimensions of the network of relations
2. The AN are part of a large administrative and research data ecosystem in France

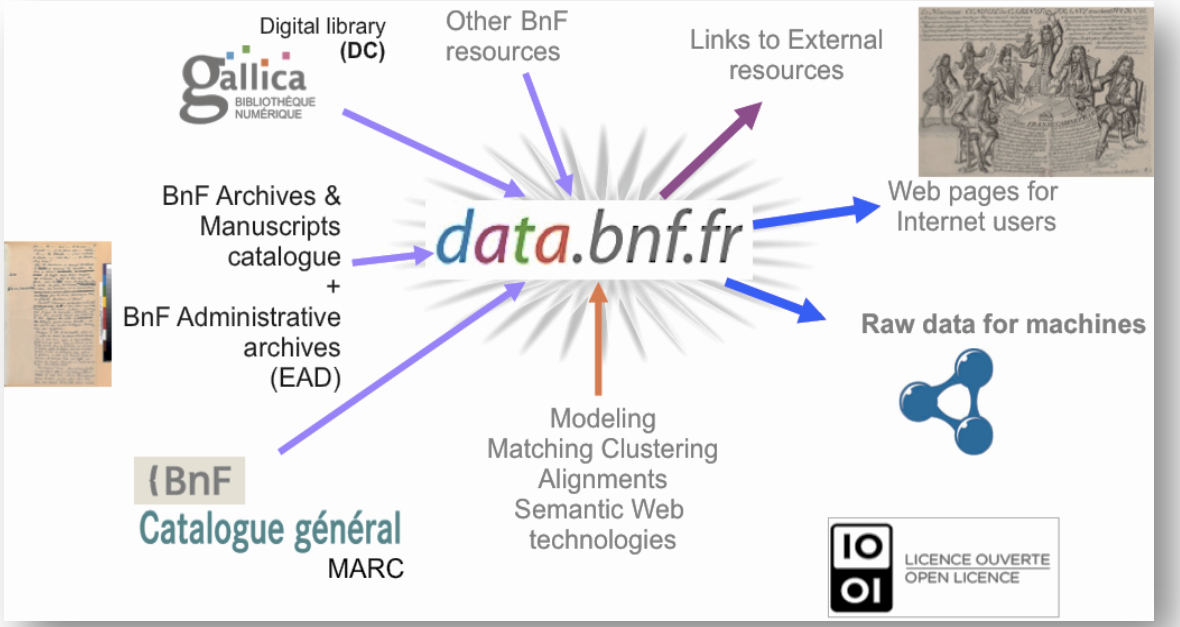
   But the **metadata are not technically connected to those of other cultural heritage institutions**

- First steps - Use of ISNI identifiers; alignment tests with BnF authority records…

Common objectives - Different stakes

Bibliothèque nationale de France

- A variety of repositories
  - General Catalogue
  - Archives & Manuscripts
  - …
- LOD exposure with Semantic web technologies http://data.bnf.fr interconnecting resources from different repositories by using as connecting nodes the authority records



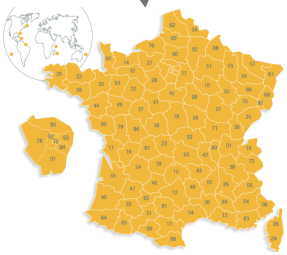
All metadata are under the French State Open Licence – EtaLab (similar to CC-By)

- On the side of the Administrative archives of the institution
  - Authority records in EAC-CPF – **outside the Archives & Manuscripts catalogue; no publication and visualisation tool**
  - Desire to **interconnect with other archival repositories**, starting with the National Archives (using ISNI identifier, among other means)

Common objectives - Different stakes

Service interministériel des Archives de France (SIAF)

supervises the network of public archives in France



- Manages a national, reference repository of patterns for the description of archives' creators (in collaboration with the Association des Archivistes Français) – in EAC-CPF
  http://www.archivistes.org/Notices-d-autorite-producteurs-1781

  A "meta-repository" for interconnecting all institutions performing the same or similar function all over the territory (e.g.: Law Court of Justice)

- Desire to represent these authority descriptions in RDF and visualise the graph of record creators

- Desire to demonstrate the feasibility **of interconnecting these descriptions with those of the Archives nationales** (describing the archive's creators of French central administration archives)

The perspective of a historian

- Evaluate the relevance and the efficiency of archival, documentary models
  - for the description of functions and corporate bodies

- Realize diachronic visualizations
  - to display and explore historical administrative, organizational charts

In summary

- Different situations
- A strategic project for the three institutional partners
- A real ambition
- A small but highly motivated team
- Strong interest in the methods and learnings of the project
- Results that might interest other entities

  (a lot of interest already expressed)

Qualitative objectives

- The prototype will be developed outside the Information System of each of the partners

- Selection of the dataset – relatively small volume
  - Reason: the purpose is not to process all the available data from each of the institutions., as this would need to take into account a great heterogeneity and envisage very robust tools

The project aims principally:

- **Quality of results**
  - Expressiveness of data
  - Relevance and accuracy in the expression of Relationships
  - Possibility of reasoning (inference)
  - Clarity
  - Ergonomic and reactive user interface
- **Rigorous methodological approach**

Technological context
the right moment!

- Reference ontology
- Data visualization technologies

An OWL ontology for archives

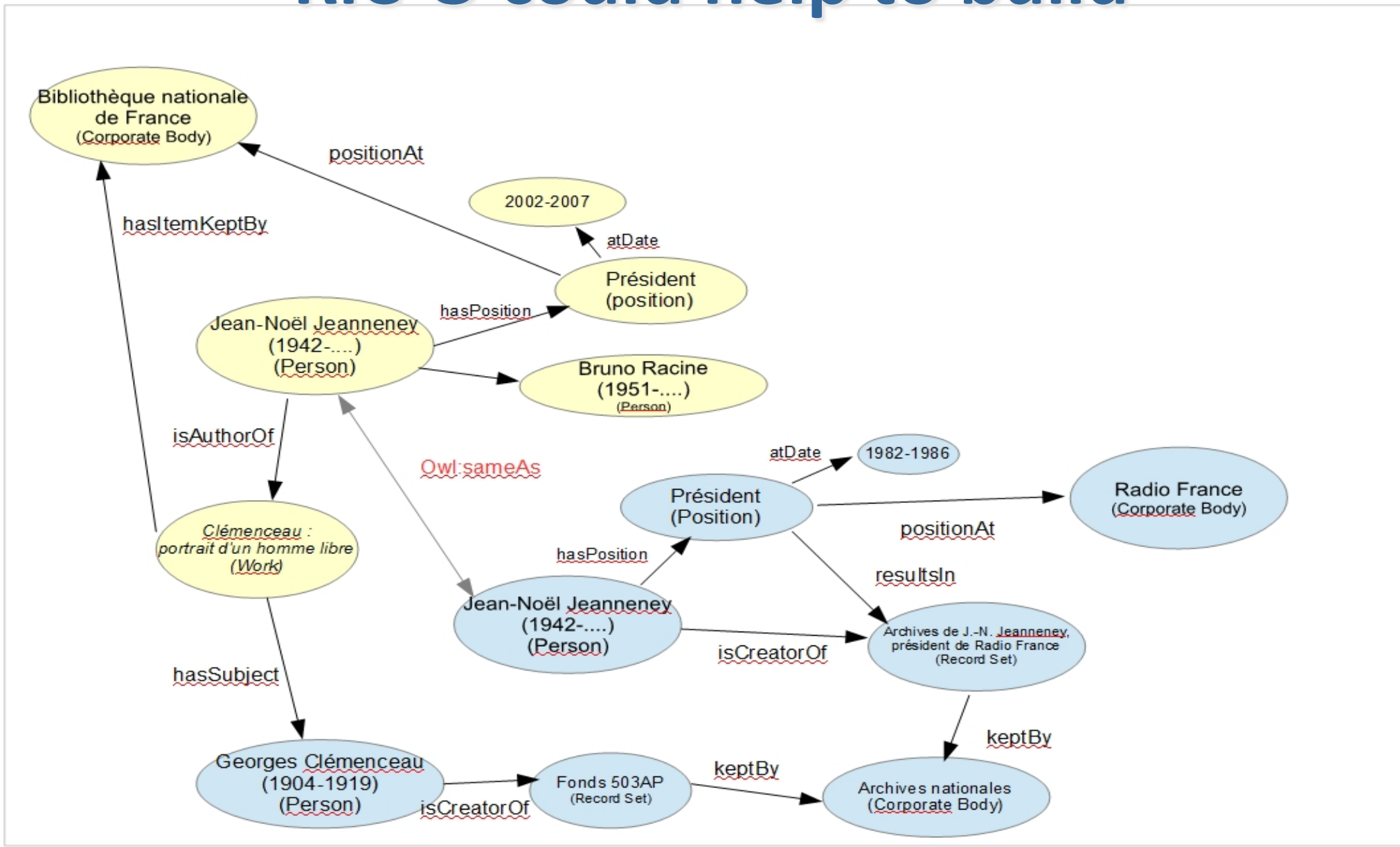
- Currently no standard ontology for archival description exists
  - Only four ICA standards

- In 2012 the ICA Experts Group on Archival Description (EGAD) began devlopment of
  - a **conceptual model** (Records in Contexts: RiC-CM)
  - a **formal ontology** (RiC-O)

  - First draft of RiC-CM to be presented at the ICA Conference, in September 2016, in Seoul

  - First draft of RiC-O will be released in late 2016

A very simple example of a graph that RiC-O could help to build



Use RiC-O for the prototype

- Florence Clavaud at the ANF and leader of this project is coordinating the development of RiC-O within EGAD

- Metadata selected for the project describe objects that represent a subset of the entities defined by RiC-O

    - Instances of the classes
        - *Corporate Body*
        - *Person*
        - *Record Set*
        - *Activity*
        - …

- **Relation between our project and RiC-O**
    - The project (if all goes well) might serve as a use case for RiC-O
    - Provide feedback to RiC-O

Data visualization on the web

- Technologies and libraries exist
  - Base languages: JavaScript, AJAX, JSON, HTML5
  - data visualization (as D3)
  - generation of timelines (e.g.: Timeline of SIMILE project)
  - Other developments are underway in digital humanities based on existing libraries
- But nothing is directly reusable

- Our problem is complex because the system to be represented is complex
  - Different types of "objects" (CPF, Functions/Activities, Records and Records Sets other types of documents, Dates, etc.)
  - Different types of relations
  - Density of relations
  - Different institutional perspectives to be combined
  - …

Selection and preparation of source metadata

Definition of metadata sets

- The contributed dataset from each of the partners should be:
  - relevant
  - controllable (amount, characteristics…)
  - possible to interconnect with the data provided by the others

- Selection of two functional domains
  - **Management of historical monuments and "civil buildings"**
  - **Public reading**

  These include:
    - Entities that are part of the governmental (central) administration
    - National operators
    - Territorial services

  Temporal coverage:
    - Contemporary period

  Described objects:
    - Actors of the domain, the records created, the functions, etc.

Method

- Point of departure: authority records on archives' creators (including both Corporate Bodies and Persons)
  - A consistent body of records, carefully curated

- Each of the partners preserves its own perspective (no specific common rules in building the records)

However, agreement on:

- Encoding format - XML / EAC-CPF
- Form of the heading – respect of the French cataloguing rules
- Expression of *legal statuses*, *functions* and their indexing
- Establishment of relationships and their types (RiC-O)

Where are we today?
(preparation of the metadata set)

- National Archives
  - Domain of Historical monuments - descriptions of around 40 entities
  - Domain of public libraries – descriptions of around 60 entities (services of the central administration, related operators, some persons) from the 70'
- BnF
  - Domain of public libraries – descriptions of around 55 entities (mainly describing the services of the BnF from the Ancient Regime period)
  - Domain of Historical monuments – descriptions of around 15 entities related to the architectural projects of the BnF buildings)
- SIAF
  - Descriptions of around 100 entities (territorial services on both functional domains)
- The Researcher (historian)
  - Descriptions of around 15 entities (domain of Historical monuments and their architectural history)

First findings
Overlaps and Complementarity

- Significant overlap between the entities described by the BnF and by the Archives nationales

Include

  - Personalities (secretaries, presidents of the BnF, directors of the Archives Nationales, architects, etc.)
  - Administrative ecosystem of the BnF (Ministry of Culture, other partners) partially overlaps with the graph of archives' creators described by the Archives Nationales.

- Complementarity
  - The network of the administrative entities of the BnF is an extension of the central administration entities, as viewed by the Archives Nationales
  - The network of the State administration entities for the cultural domain, as viewed an described by the Archives Nationales, specifies the ecosystem of the BnF partners
  - The ecosystem of decentralized territorial corporate bodies described by SIAF is compliant with that of the Archives Nationales

- Historical dimension
  - Strong, both in the BnF and in the Archives Nationales datasets (of course they reflect the historical dimension of archival holdings themselves)

Provisional conclusion

Interconnecting the datasets is a relevant objective

Confirmed by the analysis of the metadata sets
and despite the different perspective of each of the partners

A requirement: keep track of the provenance of the source information

Further: Focus on relations

Modeling relations

- Expressing relations with high precision is essential
  - to meaningfully navigate the graph
  - to understand how documents created by the represented entities are complementary

- Relations defined by ISAAR(CPF), EAC-CPF and ISDF are not sufficient

- Currently the project
  - relies on the Archives Nationales' guidelines for the creation of authority records (under development)
  - follows and is inspired by the work being done for the development of RiC-CM and RiC-O

Relationships between corporate bodies and persons

- Useful relationships for the project:
  - is Member Of
  - is Affiliated To
  - is Employee Of
  - is Director Of
  - works for (?)
  - influences / is Influenced By (?)

Relationships between corporate bodies

- Hierarchical relationships:
  - Whole/Part relationship

  - to meaningfully navigate in the graph
  - to understand how documents created by the represented entities are complementary

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Scope statement and specifications

Some core requirements

- Web application in compliance with standards and best practices
- Input data analysis
- Open source
- Architecture based on an RDF triplestore
- Functionalities
  - Alignments
  - SPARQL queries
  - Construction of new triples
  - Analytical cartographies
  - Graph navigation
  - …

Final (provisional) thoughts

Beyond simply building a prototype, the project should be instructive in terms of methodology

- How to build an inter-institutional project where each of the institutions is equally represented and participates actively?

- How to work together on the quality of our data, both:
  - In a coherent and unified way for the needs of the project,
  - And make each of the institutions benefit more broadly from this qualitative work?

Thank you!

(more next year!)

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