
Introducing Narratives in Europeana: Preliminary Steps

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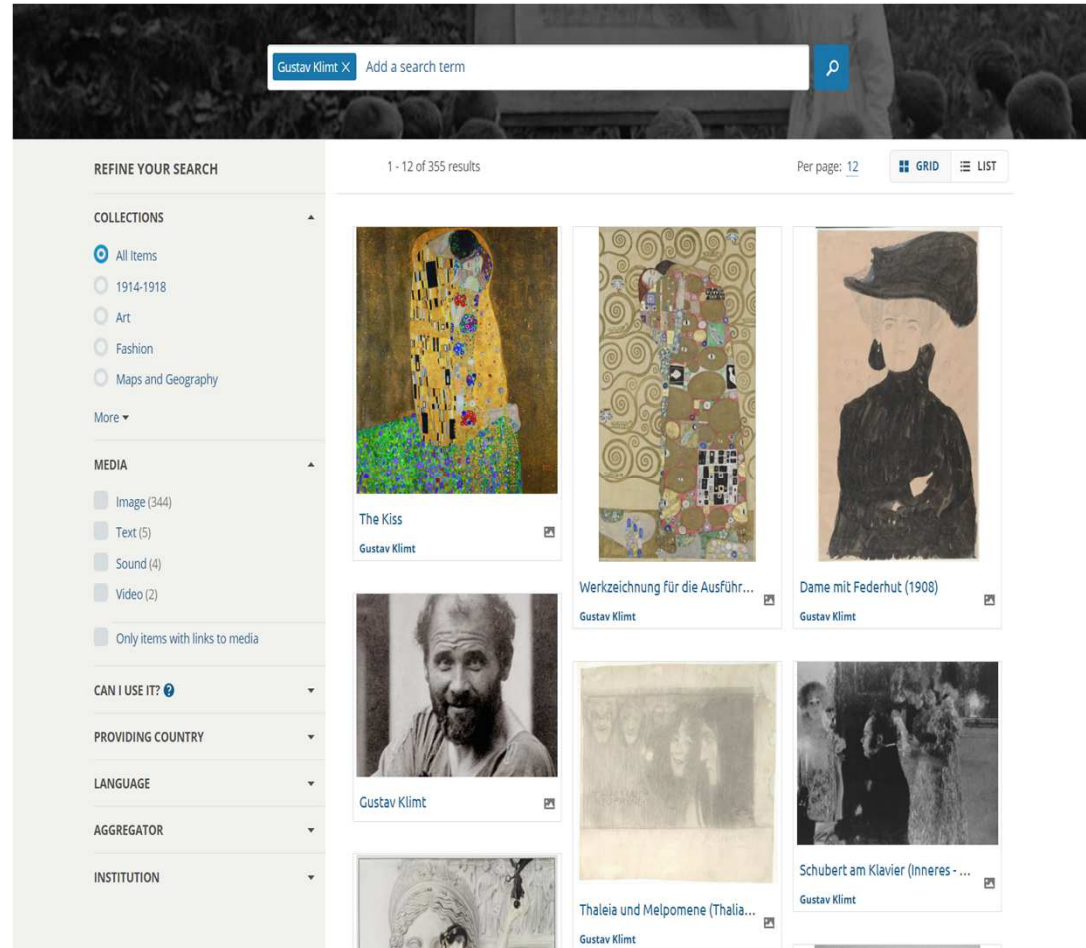


The Problem We Started From

- **Limitation of the informative services** offered to the user by the current Digital Libraries



- **List of the information objects without semantic relations among them**



The Proposal

- ...the introduction of a **new search functionality** for DLs that does not return just a list of objects but a **narrative**

A **narrative** composed of **events**, with a possibly associated **text**, that are linked to the objects of the existing **libraries** and are endowed with a set of **semantic relations** connecting these events into a **meaningful semantic network**

Europeana

- Europeana is the largest European digital library, containing descriptions of about **54 millions of cultural heritage objects** provided by more than **3500 of the most important cultural institutions across Europe**.
 - Europeana is a digital library for **scholars, researchers, professionals and general users**, providing a **single access point** to European cultural heritage.
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Use Cases 1/2

- **Scholar**

Scholars can create and access narratives about the **life** and the **works** of the **authors they study**. They may provide their own texts from which the plot was extracted, and they may also be interested in expressing the primary sources supporting the plot.

- **High School Professor**

Narratives could be used by a professor as a **learning tool**. The professor may create a narrative on a topic of study and show it to the students through a timeline visualisation. She/he could also insert **fragments** from a text book, **primary sources** and also enrich the narratives with **Wikimedia Commons images or links** to related **digital objects** included in digital libraries.

Use Cases 2/2

- **High School Student**

Narratives could be used to **verify students' comprehension** of history or literature taught by a professor, who could ask them to create a narrative on a particular topic.

- **Exhibition or Museum Curator**

A narration timeline could be used during a **monographic exhibition** in order to associate the works of an artist to her/his biography.

Timeline could also be used in a museum context in order to show to the visitors the **history of the museum** and the acquisition of the main artworks.

- **Digital Curator**

A digital curator would be able to create narratives for the **objects she/he would like to promote**.

Europeana Data Model

- The Europeana Data Model (EDM) is an **ontology** that allows data to be presented in different ways according to the practices of the various organisations that contribute cultural object descriptions to Europeana.
 - The EDM provides two different approaches for descriptive metadata: **object-centric** and **event-centric**.
 - While the EDM provides the concept of event (edm:Event), it **does not define any property between events**. Furthermore, the EDM **does not provide a classification of events by type**, nor defines **roles** for the participants in an event.
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Searching for Events in Europeana

- We performed a SPARQL query through the Europeana SPARQL endpoint in order to extract all the instances of the **edm:Event class** in the current Europeana database



- The query returned **zero results**



- This suggests that the data collected by Europeana **is not organised according to the event-centric approach**, nor is this information introduced by the data aggregators that work in the Europeana network
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Our Ontology for Narratives

- To maximise its interoperability, our ontology was developed as an extension of the **CIDOC CRM standard ontology**. Since the CIDOC CRM underlies the EDM, our ontology **automatically extends the EDM**.

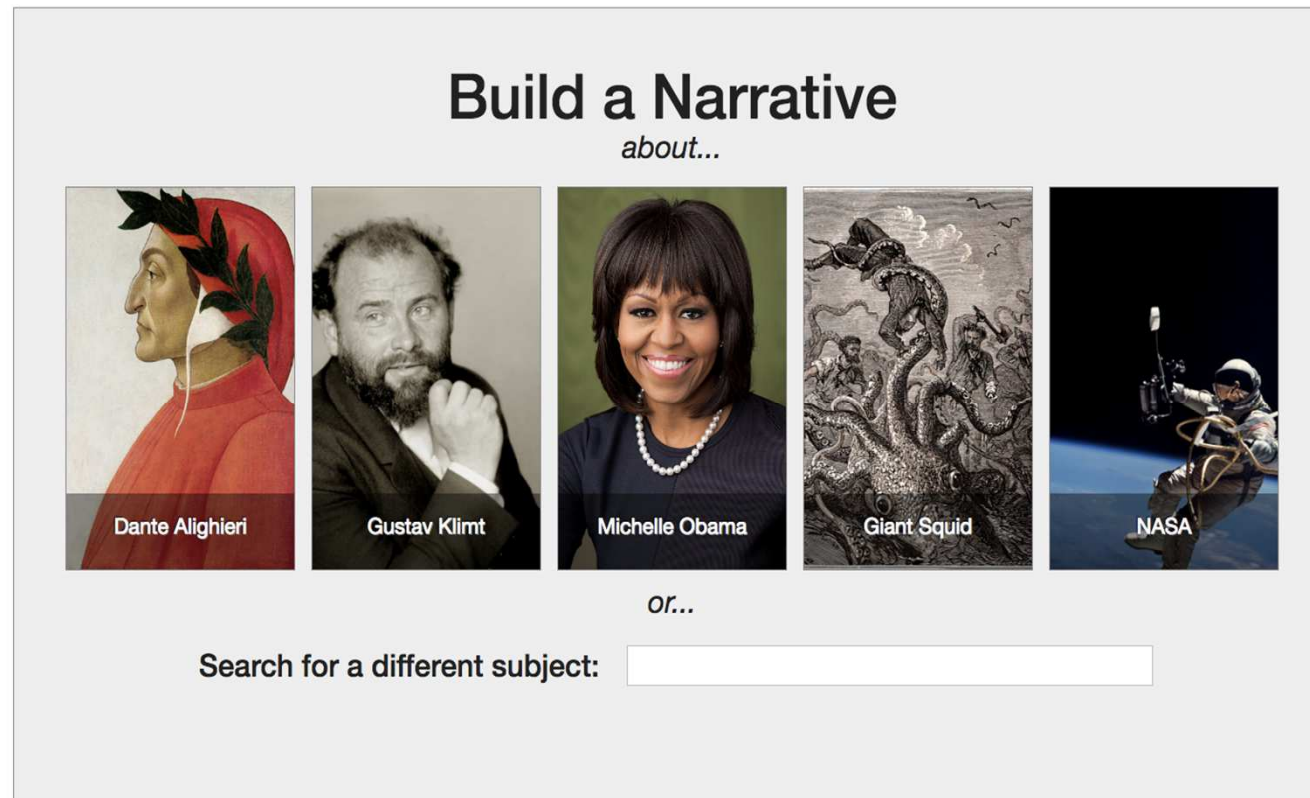
The ontology allows:

- Representing the **events** of the biography, linked to each other using **three types of properties** introduced by us:
 - **Temporal** property
 - **Causal** property
 - **Part-Whole** property
- Linking an event with the related **digital objects**
- Representing the inferential process of a biographer who reconstructs a narrative starting from the primary sources: **data provenance**

<https://dlnarratives.eu/ontology>

Narrative Building and Visualising Tool 1/3

On top of the ontology, we created a **semi-automatic tool** for building narratives, since we found no suitable tool to the needs of our research



<https://dlnarratives.eu/tool.html>

Narrative Building and Visualising Tool 2/3

- **Semi-automatic tool** (HTML 5, CSS 3, Javascript) to populate the ontology
- The tool **retrieves** and **assigns URIs** to the instances of the classes using **Wikidata** as resource
- The user can introduce **new entities** not present in Wikidata
- The instances are **automatically organized** in the classes of our ontology (e.g. place, people, organization etc.)

The screenshot displays the 'Gustav Klimt' interface. On the left, a navigation menu includes 'HOME', 'ALL', 'SEARCH', 'PEOPLE', 'ORGS', 'OBJECTS', 'CONCEPTS', 'PLACES', 'WORKS', and 'NEW'. The main area shows a grid of entities: Gustav Klimt, Adele Bloch-Bauer II, Alsergrund, Amalie Zuckerkandl, Ancient Greek mythology, Anna Klimt (née Finster), Architectural painting, Athena, Attersee, Austria, Austria-Hungary, Austrian Empire, Austrian Mint, Austrian Theatre Museum, Baumgarten, Beech Forest, Beethoven Frieze, Biblioteca Nacional de, Bibliothèque nationale, Bohemia, Bride of the Wind, Brussels-Capital Region, Bucharest, Buck-Tick, and Burgtheater. On the right, a form for creating an event is visible, with fields for 'Event Title', 'START DATE', 'END DATE', 'EVENT TYPE', 'ENTITIES' (with a 'Drop entities here!' prompt), 'DESCRIPTION', 'NOTES', and 'DIGITAL OBJECTS'. Action buttons include 'SAVE', 'CLEAR', 'EXPORT', 'RELATIONS', and 'VISUALIZE'. At the bottom, six event cards are shown: 'Birth of Gustav Klimt' (14-07-1862), 'Primary School' (1867-1875), 'Kunstgewerbeschule' (1876-1883), 'Ernst Klimt enrolls in...' (1877), 'Murals in the Kunsth...' (1879), and 'Creation of the "Com...' (1880). Each card lists associated entities like Gustav Klimt, Ernst Klimt, Franz von Matsch, and the Company of Artists.

Narrative Building and Visualising Tool 3/3

The tool allows visualizing:

- ✓ A timeline of the narrative
 - ✓ A graphical representation of the events and the related entities
 - ✓ A graphical representation of the entities and the related events
 - ✓ A table showing the events occurred in a certain range of time
 - ✓ A table showing the primary sources of the events
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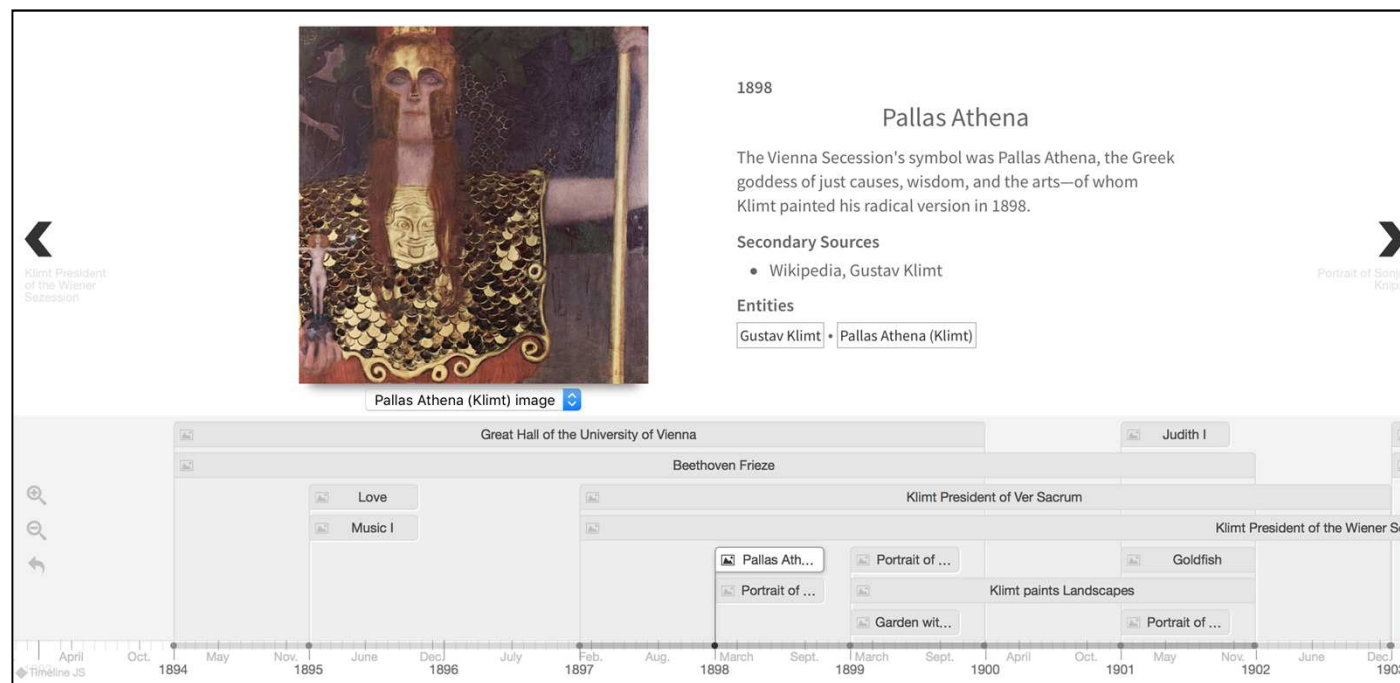
The Narrative of Klimt's Life

- We performed an experiment creating the narrative of the **life of the Austrian painter Gustav Klimt**. This artist is well-represented in the Europeana, where a search for the string “Gustav Klimt” currently returns **370 objects**.
- We decided to build the narrative based on the English **Wikipedia** page about the painter
- For each event, we defined the related **entities** (e.g. persons, physical objects, location, time). We also reported the **Wikipedia fragments** of text that describe the event and an **image from Wikimedia Commons** and related to the entities that compose the event. Furthermore, we reported the **primary sources** cited by Wikipedia, on the basis of which an event is placed in the narration.

<https://dlnarratives.eu/timeline/klimt.html>

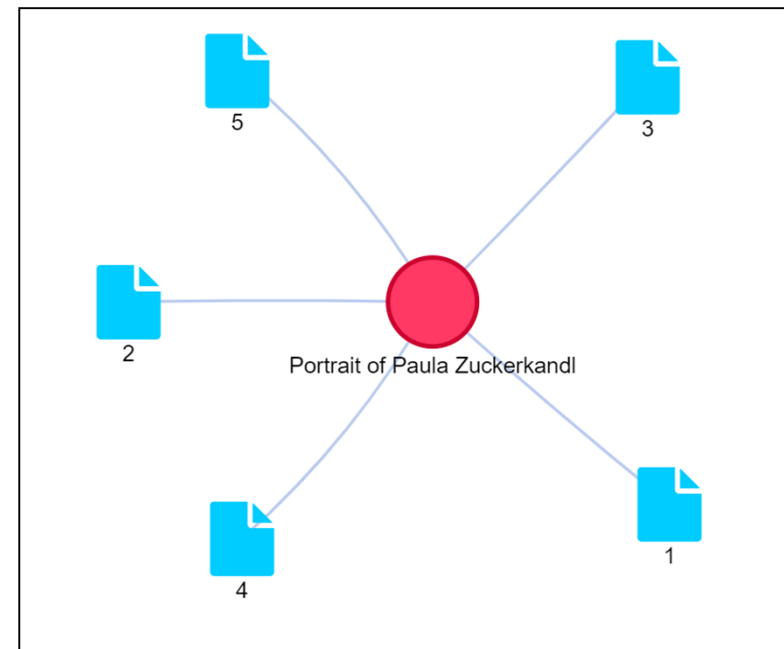
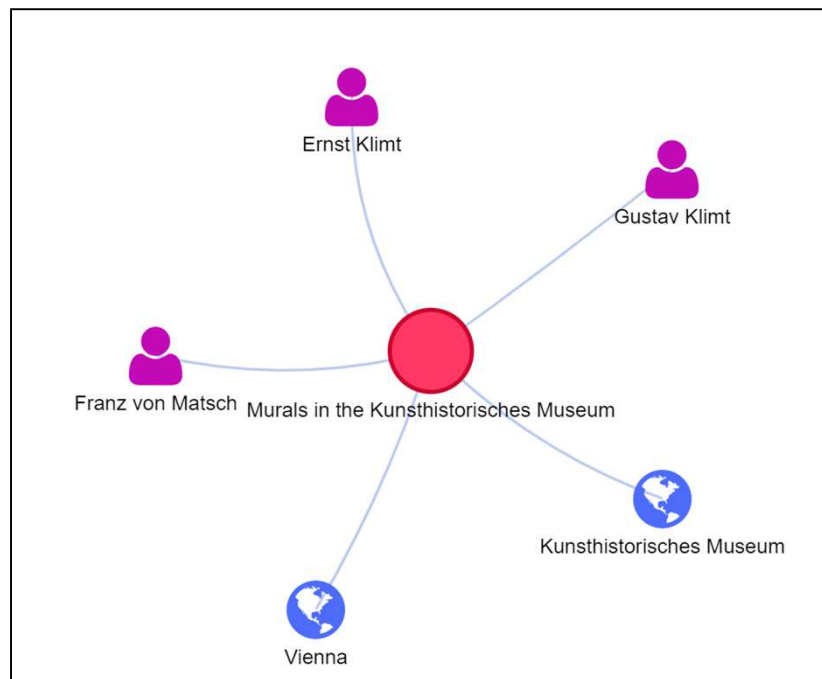
The Narrative of Klimt's Life

- The Klimt narrative is composed of a total of **54 events**.
- **31** events are connected with Europeana digital objects, and 18 are linked to more than one digital object.
- The total number of digital objects in the narrative is **127**, that is 34% of all Klimt-related objects in Europeana.



The Narrative of Klimt's Life

- It should be noted that searching for Klimt, **several objects returned by Europeana are not related to Klimt's biography**, e.g. posters, modern objects inspired by Klimt.
- We estimated that, using NBVT, the manual work for creating the narrative was about **3 person-days** (7 hours per day).



Integrating Narratives in Europeana

- In order to integrate our narratives into Europeana, NBVT enriches them with **metadata** that describe the narrated **topic**. These metadata could be matched with those contained in Europeana to enhance its search functionality.
 - When a user queries Europeana, she/he could obtain as **response one or more narratives related to the topic of the search**, along with the classical ranked list of digital objects
 - Europeana also has an “**Explore**” section in its upper menu, providing a list of particular views on the Europeana data, e.g. views for people, for time periods, for sources. A new entry could be added to this section, showing **all narratives collected in Europeana**.
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Conclusions

- In our study, we aim at overcoming the limitations of the search functionality of current digital libraries by **introducing narrative as a first-class concept in the data model** of such digital libraries.
- A narrative is a **semantic network linking such objects in a story** that would work as a contextualisation of the objects themselves, and as such would provide the user with a larger and more significant amount of information.
- The vision is that a user wishing to know what **Europeana** has about the Austrian painter Gustav Klimt would obtain in response not only the ranked list of objects (more or less) concerning Klimt that the digital library knows about, but also a **narrative about Klimt**.
- We created an **ontology to formally represent narratives** and a **tool** that allows to construct and visualize narratives as well.

<https://dlnarratives.eu/>

Future Work

- We plan to extend the experiment to **other artists**, thereby further enriching the Europeana database.
 - We are also working on extending our narrative ontology in various ways:
 1. representing and reasoning about the **temporal relations** between events;
 2. representing in a richer way the **text of narratives**, called narrations, and the relation between narration fragments and their semantic counterparts, events and objects;
 3. introducing **narrative templates** capturing recurring plots.
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Thank you

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<https://dlnarratives.eu/>
