

TITLE

A REVIEW OF THE CULTURAL HERITAGE LINKED OPEN DATA ONTOLOGIES AND MODELS

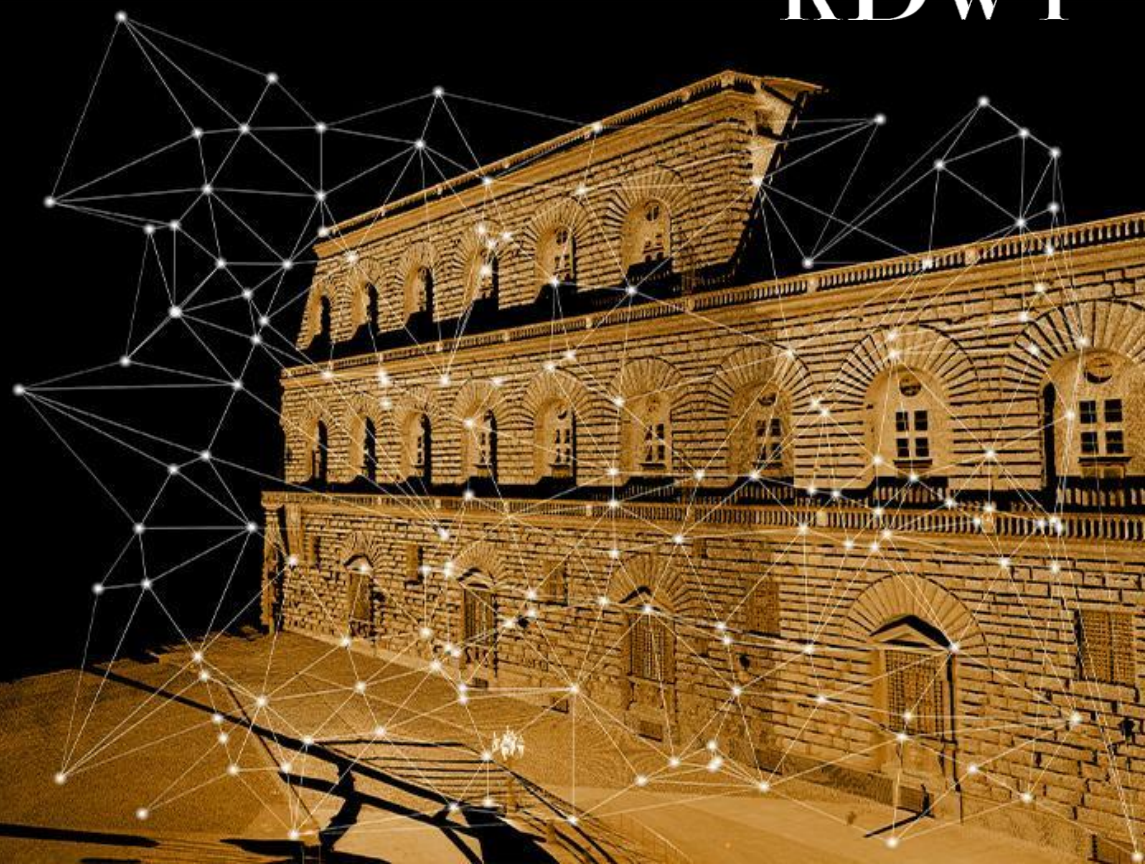
AUTHORS

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AFFILIATIONS

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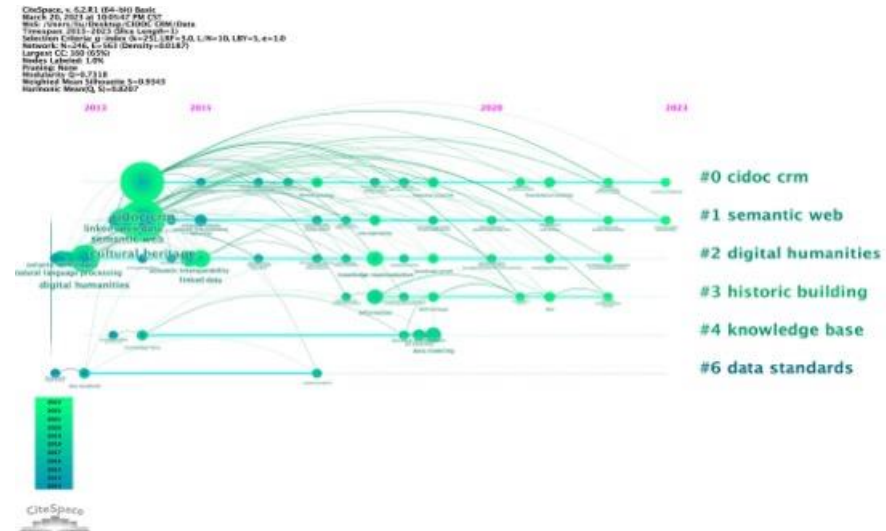
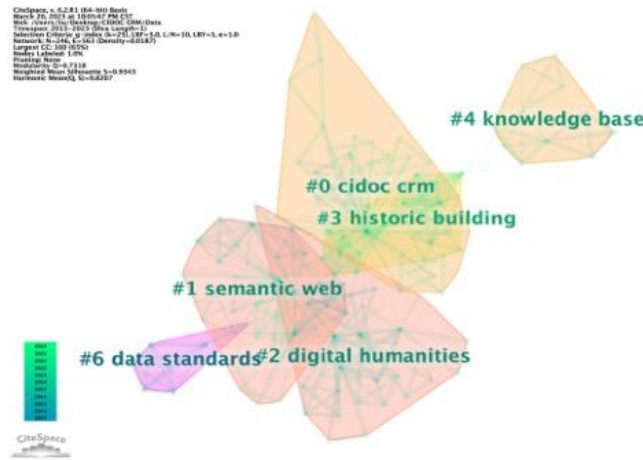
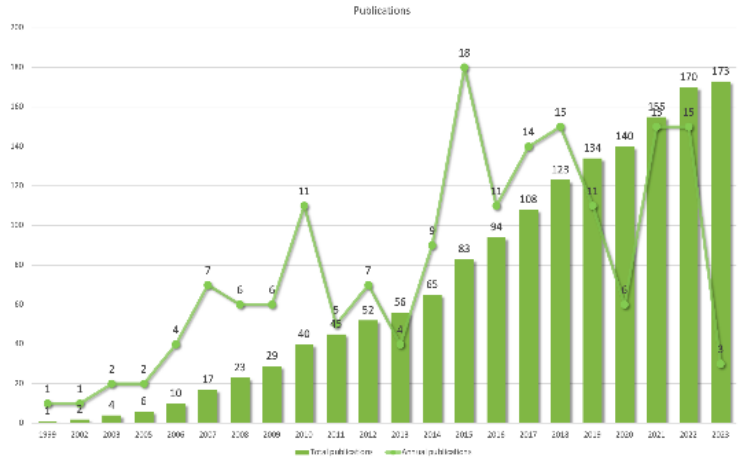
MOTIVATION, SCOPE, METHOD

- **PhD topic:** Paper given on behalf of Fangchao Liu, PhD in „Research on Soft Power in Digital Technologies in Heritage Conservation based on Knowledge Management“ (working title)
- **Motivation:** examine tools of digital humanities in collaboration with GLAM institutions as means of knowledge production, interdisciplinary knowledge integration methods, knowledge graphs and ontologies are used to construct a multi-layered and systematic knowledge system
- **Scope:** review focused on three cultural heritage models and reflects on three aspects of the current models: technical framework construction, digital resources, and service systems.
- **Method:** : To quantify the academic publishing rate -> **CiteSpace** to visualise the **knowledge graph of publications** The database used is the Web of Science Core Collection, and the search topic TS=(CIDOC CRM). The **Keywords Cluster analysis and keyword timeline** from Citespace.

CIDOC CRM

The CIDOC CRM was developed by the International Committee for Documentation (CIDOC) under the International Council of Museums (ICOM).

- First article in 1999
- Total article: 173
- First peak in 2010 (11)
- Top in 2015 (18)
- Total Clusters 6
- Longest-lasting cluster: digital humanities
- Stopped Cluster: knowledge base(2019) data standards(2017)



The database from Web of Science Core Collection and up to 30.03.2023

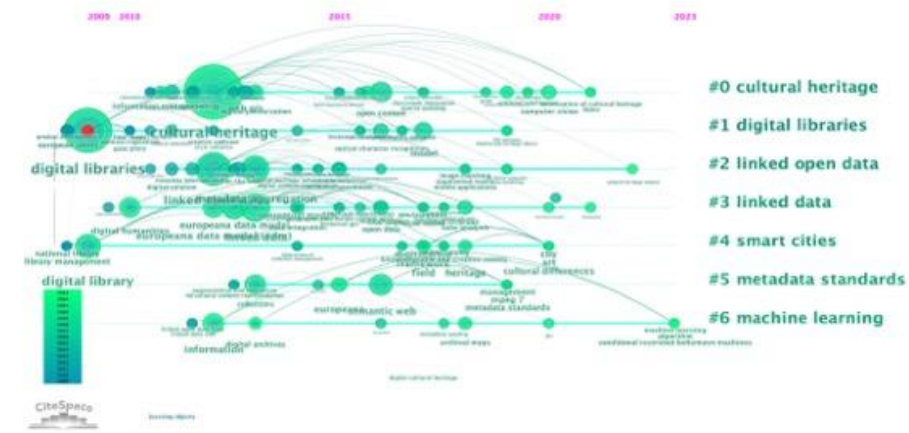
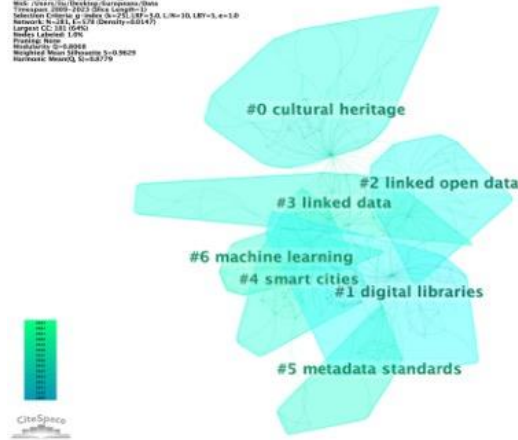
EUROPEANA

Europeana is a digital platform that aggregates and makes accessible cultural heritage content from across Europe.

- First article in 2009
- Total article: 189
- First peak in 2011 (15)
- Top in 2014 (25)
- Decline after 2014
- Total Clusters 7
- On-going cluster: machine learning
- Shortest Cluster: metadata standards (2013-2019)



CiteSpace v. 5.2.R1 (64-bit) Java
 March 20, 2023 at 6:06:49 PM CST
 File: C:\Users\K... Desktop\K... Europeana (Data)
 TimeSpan: 2009-2023 (Step Length=1)
 Selection Criteria: q=0.95, m=10, L=10, Z=0.1
 Network Weight: 1.0 (Density=0.8147)
 Largest CC: 183 (94.8%)
 Nodes Labeled: 1.0%
 Modularity Q=0.9968
 Weighted Mean Silhouette S=0.9629
 Modularity-Silhouette Q-S=0.8779



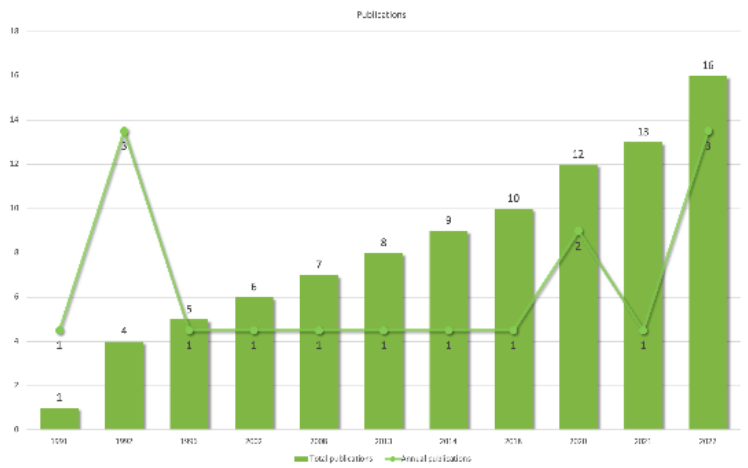
The database from Web of Science Core Collection and up to 30.03.2023



SAMPO MODEL

The Sampo Model is a concept developed by the Semantic Computing Research Group (SeCo) from Finland. "Sampo" refers to a magical artifact in Finnish mythology that brings wealth and good fortune.

- First article in 1991
- Total article: 16
- Country Analysis Map: Finland (6), USA (4), France (2), others (1)
- Non cooperation: Germany, Netherland, Lithuania



CiteSpace v. 5.2.R1 (64-bit Basic) March 20, 2023 at 10:29:12 PM CEST
 Modularity Q=0.774
 Weighted Mean Silhouette S=1
 Markov Weighting, N=10000

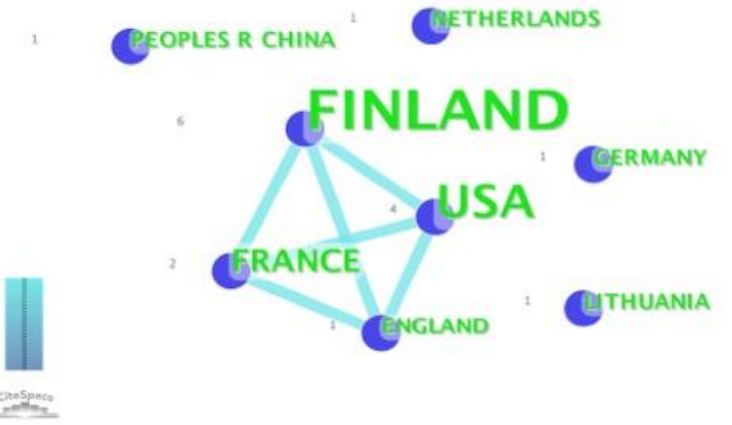


CiteSpace v. 5.2.R1 (64-bit Basic) March 20, 2023 at 10:29:12 PM CEST
 Modularity Q=0.774
 Weighted Mean Silhouette S=1
 Markov Weighting, N=10000



Semantic Computing Research Group (SeCo)
 Making computers and the web more intelligent and interoperable!

CiteSpace v. 5.2.R1 (64-bit Basic) March 20, 2023 at 10:29:17 PM CEST
 Modularity Q=0.774
 Weighted Mean Silhouette S=1
 Markov Weighting, N=10000



The database from Web of Science Core Collection and up to 30.03.2023



CONCLUSIONS / FUTURE WORK

The analysis of publications, shows that, although **Europeana** appeared more recently than **CIDOC CRM**, it has been studied more frequently, though research on both peaked around the same time in the early 2010s. In contrast, the Sampo model is more localised, with the majority of its 16 publications.

The **CIDOC CRM** is an ISO standard ontology (ISO 21127:2014) used to enable the exchange of information and meaningful interoperability between GLAM and other cultural institutions.

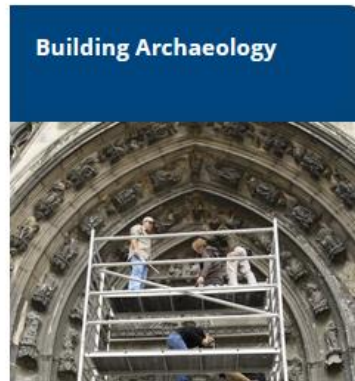
Europeana is a digital platform that provides access to millions of digitised cultural heritage resources from European GLAM and cultural institutions, aggregating content to, giving users a single access point to explore and discover Europe's cultural heritage.

The **Sampo Model** is a digital infrastructure for managing and presenting cultural heritage data in Finland. It consists of modular tools and services that can be customised and combined to create tailored digital heritage applications.

Future Work: World Digital Library, HathiTrust, Linked Art Model, CrossCult project etc., applications and systems such as the LOD-based vocabulary at Bamberg University

CENTRE FOR HERITAGE CONSERVATION STUDIES AND TECHNOLOGIES

The combination of empirical, theoretical, conceptual, and technological knowledge and methods practiced at the KDWT is based on the common goal of interdisciplinary research into the multifaceted subject areas of cultural heritage and monuments preservation, and on the shared aim of communicating their social relevance. In this way, we make a significant contribution to the university's overall research focus on the [*Analysis and Preservation of Cultural Heritage*](#). Our core tasks include deepening the transfer of knowledge and technology to non-university institutions, expanding technical competence and expanding the range of courses offered. Four independent divisions reflect the different aspects and specific concerns and approaches that comprise the larger field of heritage conservation.





Thank you for your attention. Invitation to see our other contributions to #CIPA2023

Tuesday 27/06/2023 9:00AM, Photogrammetry for Cultural Heritage digitization 1 - oral (15 min) Location: UNIFI Campus - room 013 : **A FLEXIBLE WORKFLOW FOR MULTIMODAL 3D IMAGING OF VAULTED PAINTED CEILINGS IN HIGH DETAIL** - *J.Hindmarch, M. Burioni, M. Hess

Wednesday 28/06/2023: 4:40 PM, Photogrammetry for Cultural Heritage digitization 2 - short oral (6 min) Location: UNIFI Campus - room 014: **A SEMI-AUTOMATED METHODOLOGY FOR 3D IMAGING OF LARGE VAULTED CEILING PAINTINGS** - *J.Hindmarch, M. Hess, M.Groh, M. Burioni

Thursday 29/06/2023: 9:00 AM, Strategies for the documentation of complex sites and artefacts - oral (15 min) Location: UNIFI Campus - room 013, **CRITICAL EVALUATION OF CULTURAL HERITAGE ARCHITECTURAL STANDARD DOCUMENTATION METHODS ACROSS SELECTED COUNTRIES**, *A. Bocheńska, P. Kot, M. Muradov, J. Markiewicz, D. Zawieska, M. Hess, A. Antoniou

Thursday 20/06/2023: 11:10 AM, Virtual, Augmented and Extended Reality and cultural heritage 3D reproduction 3 - oral (15 min) Location: UNIFI Campus - room 014, **COPY AND PASTE? A CASE STUDY ON A PAIR OF JAMB FIGURES OF THE FÜRSTENPORTAL BAMBERG AND THEIR CASTS**, *L.Pallas, R. Tenschert, P. Bellendorf

Thursday 20/06/2023: 2:30 PM, Photogrammetry for Cultural Heritage digitization 3 - oral (15 min) Location: UNIFI Campus - room 013, **STONEWALLS, CHARACTERS, MOSS AND TREES – MULTILEVEL DOCUMENTATION OF INSCRIPTIONS AND GRAFFITI FROM DIFFERENT CENTURIES IN A FORMER SANDSTONE QUARRY**, *R.Tenschert, L. Pallas, P. Bellendorf

Thursday 20/06/2023: 4:40 P; Digital Twins, data management, standards 3 - short oral (6 min) Location: UNIFI Campus - room 014, **REVIEW OF THE CULTURAL HERITAGE LINKED OPEN DATA ONTOLOGIES AND MODELS**, F. Liu, J. Hindmarch, *M. Hess