

# COOLTURA, an open data oriented platform to enable scalable services for cultural engagement through the cloud

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**Abstract.** Although Culture is a very important asset of population the engagement of citizens with their cultural heritage environment still remains low. Coupled with the efforts of Cultural Heritage institutions with access to digital content for actively encouraging learning, debate, action and interaction of culture consumption, the European project TAG CLOUD explores the use of cloud-based technologies that lead to adaptability and personalisation to promote lifelong engagement with Culture. Within the context of this project, user centered evaluations as well as scenarios and use cases have been developed to thrive the COOLTURA Platform and COOLTURA App. This paper presents the introduction to COOLTURA by TAG CLOUD, the creation of an intelligent layer based on harvesting tools as the key approaches allowing building personalized visualization and social interaction services and the proposed structure for the interactive discussion in the COOLTURA SHARE-PSI 2.0 Workshop Session (Lisbon).

**Keywords:** engagement, cultural heritage, UCD, Open Data, eGovData, data harvesting business models, TAG CLOUD

## 1. Introduction: Cooltura by TAG CLOUD

There is a need to involve people in Culture and make them to be in contact with their cultural heritage environment. Currently, about the 50% of the population does not visit any museum, and only 38% of the population participates in other cultural activities regularly<sup>1</sup>. As a response, Cultural Heritage organisations, monuments and cities are supporting physical cultural context and exhibitions with thousands of digital objects presented in several digital formats (images, videos, text, etc.), in order to actively encourage cultural learning, debate, action and interaction; furthermore, looking for new and better connections with visitors, and increase engagement of visitors with culture<sup>2</sup>. Under this context, the European Commission co-funded project TAG CLOUD<sup>3</sup> was launched to investigate on how to enable cultural engagement by using cloud-based technologies that leverage adaptability and personalisation of created Cultural Heritage content, aiming at supporting deeper engagement and learning over time.

Having the challenge of building engaging technological solutions for the visitors of cultural places, requires a very good understanding of the likes, needs, preferences and trends of the users. For this purposes, TAG CLOUD has focused during its first stage, in developing a framework of scenarios, supported by use cases, that captures the insights and expectations of visitors in three different sites through Europe: The Monumental Complex of Alhambra and Generalife (Spain), the Barber Institute of Fine Arts (United Kingdom) and the County of Sør Trøndelag (Norway). Following a User-Centered Design (UCD) methodology<sup>4</sup>, the TAG CLOUD project has placed the user at the centre of developments and follows an iterative design cycle which serves to feedback the design, development, improvement and optimisation of the COOLTURA Platform and App.

The COOLTURA Platform will be an open data oriented platform that will enable scalable services for cultural engagement; which will be tested, piloted and firstly exploited with the COOLTURA App. The COOLTURA platform supports curation process, harvesting process for reaching eGov standards and semantic treatment of digitized cultural material that is the cultural public sector and domain. Thus the COOLTURA platform will enable the COOLTURA App, as well as further apps developments or integration, to access, use and re-use the cultural content processed in the COOLTURA platform in a personalized and adaptive way; in order to allow the widest possible reuse of the material for non-commercial and commercial purposes.

This paper presents the COOLTURA approach of engaging TAG CLOUD platform and App project's results with cultural institutions and third parties (software vendors, developers, intermediaries, etc.) that

aims at building on new personalized services through the use and re-use of intelligently treated open data; also standardized to an eGov standards. TAG CLOUD partners from both, private and public sector aim at successfully using data of public sector for commercial or non-commercial (e.g. cultural engagement) purposes.

This paper is organised as follows: section 2 presents the TAG CLOUD open data and linked data approach for COOLTURA to set the bases of the PSI 2.0 workshop discussion; section 3 presents the guidelines to hold the COOLTURA interactive workshop; section 4 presents the conclusions.

## **2. The TAG CLOUD open and linked data approach for supporting cultural engagement through the cloud**

Cultural Heritage institutions have invested a lot of money in capturing, digitalizing and digitally storing high volume of cultural objects. To support the widest possible reuse of the material the European Commission has recommended to make cultural institutions' digitized material accessible through Europeana<sup>5</sup>, setting as an objective to provide direct access to 30 million digitized objects by 2015, including two million sound or audiovisual objects; while digitalization of content is still expected to highly increase as still only a fraction of Europe's collections digitized so far (around 12% in average)<sup>6</sup> on the top to the content that directly is created on digital format.

Coupled with this recommendation, TAG CLOUD is creating the cloud-based COOLTURA platform with an intelligent layer that allows to harvest and semantically treat not only the content provided by the cultural institutions engaged in COOLTURA but also the European content; either manually or automatically.

For this purpose COOLTURA has embedded harvesting tools to processes curated digital content coming from cultural institutions which maps, builds and increases the metadata structure of the cultural institutions and Europeana<sup>i</sup> to the OGD (open government data) meta-data scheme<sup>7</sup>, which constitutes the base for eGovData. This tool will allow cultural institutions and third parties (software vendors, developers, intermediaries, etc.) to benefit from the Open Data eco-systems that will support further use and re-use of the curated digital cultural content in contexts such as cultural engagement, tourism, creative industry or emerging ones such as smart cities.

In addition, COOLTURA is embedding semantic, intelligent content and analytic tools which will allow "seamless cultural experience" that emphasize on the visitors' experience. In this way both: cultural institutions and third parties can move towards commercially and non-commercially exploitation of the public sector cultural content and eGovData, by development of cloud-based tools or solutions for cultural content access and presentation (including innovative tools based on augmented reality or storytelling) that shall be developed over the COOLTURA intelligent layer; which in addition it also will enable further developments integrating personalization, social interactions and integration, and business intelligence features.

The COOLTURA intelligent layer has the ability to abstract complex data and cultural consumption process, into content and processes that aim to be more consumable and manageable by the cultural visitors. Thus, through COOLTURA App visitors interact, or provide information as curiosity arise or play and get content that couples with each visitor's preferences. As part of that social interaction, visitors may use real-time geographical mapping to increase their user experience, while cultural institutions allow their curators and managers to get analysed information from massive amounts of visitors' data and thus create/detect "hot spots" as well as create/improve more demand oriented content.

## **3. COOLTURA SHARE-PSI 2.0 Workshop Session (Lisbon)**

*The aim of the COOLTURA workshop session* is to facilitate discussion and interaction to share experience and knowledge for increasing the usability of eGov standardized cultural content (especially digital cultural content from public sector or domain) for non-commercial and commercial purposes. The COOLTURA platform aims at fostering the creation of innovative services and software developments for supporting not only cultural engagement but also a set of business models that extend over the cultural heritage environment.

*Target Audience:* COOLTURA workshop targets software and app developers, entrepreneurs, representative of public sector organizations or representatives of organizations/institutions/SMEs that

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<sup>i</sup> Europeana standards have been created in collaboration with the cultural institutions has defined standards in order to achieve interoperability of the digital material at European level, as well as the systematic use of permanent identifiers.

aim at cross-sharing sector experiences on business models for using public sector data/content, open data or eGovData as well as models created over the benefits of standardization.

*Workshop session interactive discussion:* the interactive discussion will start with the COOLTURA approach of creating cloud-based open data oriented platform to create scalable services for cultural engagement, thus section 1 and 2 information is recommended to be read. The following scheme is proposed to be followed:

- TAG CLOUD Project presentation ( 7 mins)
- Importance of harvesting and standardizing cultural content for enabling intelligent content ( 7 mins)
- From Tag Cloud to COOLTURA: using an open data and cloud based platform for scalable services for cultural engagement (6 mins)
- Interactive discussion (30 mins), which will be moderated taking in account the following main issues:
  - Business models from cultural OPEN DATA, eGovData. Could third parties exploit e-Gov standardized data from cultural sites?
  - Need and opportunities on enablement of personalized experiences, tight coupling of social interactions and data visualizations
  - Exchange of successful/not successful cases and business models implemented by companies/institution/organizations (public or private) that are known by the audience which are currently working using online accessibility of public sector open data and content.
  - Related, similar or different approaches. Cases creating “empathy” and sound user models that enable compelling approaches and diffusion of cultural digital content produced by cultural sites.
  - Barriers for third parties to use public sector (open) data and content for making business.
- Wrapping up discussion & Conclusions (10 mins)

#### 4. Conclusions

COOLTURA by TAG CLOUD project not only recognizes that cultural visitors expectations and preferences are continuously changing, but that feedback from the user experience is the key to long-term engagement, where COOLTURA personalization and social interaction approach based on persistent visitors feedback, aims at increasingly close the engagement gap of visitors (end users) and culture. The COOLTURA strong cloud-based platform allows integrating tools and solutions not only for innovative provision and access of cultural content based on personalized preferences with a tight coupling of social interactions and data visualizations; but also for monitoring and responding to the cultural visitors (end user) interactions and preferences.

Following a user centered design, COOLTURA aims at exchanging and integrating knowledge and experiences from participation and generation of interactive workshops and focus groups, integrating models, knowledge and experiences that support moving from passive observance of culture, towards getting a “cool” experience with culture.

#### References

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<sup>2</sup> TAG CLOUD project, CN. 600924, 7th Framework Programme, ICT for access to cultural resources, February, 2013; in-depth interviews for exploitation.

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<sup>5</sup> [Commission Recommendations of 27 October 2011 on the digitisation and online accessibility of cultural material and digital preservation](#). Official Journal of the European Union 29-10-2011. (2011/711/EU)

<sup>6</sup> Cultural heritage Digitisation, online accessibility and digital preservation. [Report on the Implementation of Commission Recommendation 2011/711/EU 2011-2013](#). Progress report 2011-2013 Working document. September 2014.

<sup>7</sup> Open Knowledge Foundation: <https://okfn.org/>