

The First Information Day: Innovation Ecosystems of Digital Cultural Assets

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Abstract. The first information day on innovation ecosystems of digital cultural assets will present current results of the research project *Concepts and Models for Innovation Ecosystems of Digital Cultural Assets*. The project aims at the search for and creation of new scientific knowledge and the achievement of fundamental results in the areas of big data, massive data mining, data management, data processing, data analytics, data visualization, etc. in the digital cultural heritage domain.

Keywords: Digital Culture Ecosystem, Analysis, Improved Usage, Digital Cultural Assets, Non-formal Learning.

1 Introduction

The paradigm of ecosystems for digital cultural assets (also called digital cultural ecosystems, DCEs) appears to respond to the growing willingness to share the wealth of cultural resources and continuous research and study of cultural treasures. These systems virtually assemble various digital collections, archives, virtual museums, digital libraries and cultural heritage sites in order to facilitate the access to their resources, bringing cultural content to new audiences in novel ways (REFLECTIVE-6-2015, 2015). Activities under these projects aim to:

- “stimulate new research perspectives for the humanities and social science communities, promote further the use of digital cultural heritage allowing its reinterpretation towards the development of a new shared culture in Europe;
- provide innovative and creative methods for approaching cultural assets and generate applications and services to access and exploit the rich and diverse European digital cultural heritage in a sustainable way;
- foster collaboration between those with primary expertise in the interpretation of cultural data and researchers with complementary expertise in digital and interactive frameworks” (REFLECTIVE-6-2015, 2015).

In nature, an ecosystem is an area where organisms interact with one another as well as with the non-living parts of the environment. In the digital cultural ecosystem, various

“digital organisms” (*viz.* collections, archives, virtual museums, digital libraries, cultural heritage sites, *etc.*) also interact with one another as well as with the living part of the environment (*viz.* users). Formally, a digital cultural ecosystem can be huge, covering joint content management systems of one country or a region (similarly to a large forest or lake in nature), but it can also be small, such as a virtual museum or a private collection of artefacts (natural analogues: a puddle of water or a single tree). “Digital organisms” “work” through services and tools to satisfy their users. DCEs aggregate heterogeneous resources relying on interoperability support of its building blocks.

The first information day on innovation ecosystems of digital cultural assets will present some results of the research project *Concepts and Models for Innovation Ecosystems of Digital Cultural Assets* in the targeted field, *incl.:*

- multimedia digital library as a constructive block in ecosystems for digital cultural assets (Paneva-Marinova, Goynov, & Luchev, 2017);
- approaches for analysis and improved use of digital cultural assets for learning purposes (Paneva-Marinova, Pavlov, & Kotuzov, 2017);
- smart multifunctional digital content ecosystem solution using emotion analysis of voice (Iliev & Stanchev, 2017);
- solutions for supporting personalized learning experiences on top of multimedia digital libraries (Arapi, 2017), and
- some solutions for mobile exploring of Bulgarian cultural and scientific assets (Márkus, et al., 2017), *etc.*

2 Concepts and Models for Innovation Ecosystems of Digital Cultural Assets Research Project

The fundamental research in the project *Concepts and Models for Innovation Ecosystems of Digital Cultural Assets* (CultEcoSys-Project, 2017) is concentrated on data management, data analytics, data visualisation, data access and use in digital cultural ecosystems. It has the following goals:

- creating new models, methods and tools for improved use, research and delivery of digital knowledge and collections related to the cultural heritage for, *inter alia:*
 - analysis, understanding and interpretation of the content of a digital culture ecosystem;
 - context-dependent use of digital resources in a digital culture ecosystem (for training purposes);
- a methodology and concepts for increase and generalisation of visitor experience in the digital culture ecosystem; contextual techniques for personalising visitor experience in a digital culture ecosystem;
- building a conceptual model of a multifunctional digital culture ecosystem based on the latest concepts, approaches and solutions in the area;
- modeling tools for interoperability and information management between different digital ecosystem in the field of cultural and historical heritage, including a common model and methods for data exchange, a structural model of the data store;

- creating a pro-innovative model for efficient use and continuing development of the digital culture ecosystem.

It is a key assumption that improved use, research and delivery of knowledge and collections related to cultural and historical heritage and the overall structuring of a digital culture ecosystem software environment by a referential model will help addressing some of the problems with handling large volumes of digital cultural data and objects, as well as their dynamic interaction in the system. Current problems will be overcome, such as data loss due to lack of uniform structures; lack of uniform interpretation; insufficient attractiveness of presentation; lack of unified access to many different digital repositories of cultural and historical heritage; poorly adaptive and customisable presentation of objects; difficulties in context-based use; etc. Furthermore, technology transfer to the technical and social sciences and the humanities, as well as the innovations in these areas, will be greatly encouraged.

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