

# Aquae Calidae MusLib - to Connect 20 Centuries of History

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**Abstract.** The following article presents the first steps towards the digitalization of the museum collection with artefacts, found over a period of 65 years in the archaeological site Aquae Calidae in the district Burgas Mineral Baths. The text includes representation of the data model and platform structure, which will offer further look into the process of digitizing movable cultural heritage and the compatibility with Bulgarian legislation.

**Keywords:** Digitalization, Cultural heritage, Museum Collections.

## 1 Introduction

During 2018 Regional historical museum Burgas (RHM Burgas) made bigger steps in the process of digitalization of its collection. This became possible as a part of the project "TOGETHER: Common cultural and historical heritage beyond the borders" (Regional Historical Museum - Burgas) under the CBC Programme INTERREG - Bulgaria - Turkey IPA 2014-2020. The main project activities include investment in the conservation and restoration of the archaeological remains at Late Antiquity and Medieval Fortress Aquae Calidae Terma (Drazheva) near the city of Burgas, Bulgaria and the construction of a road to the Rock Monastery "St. Nicholas" in Kıyıköy, Turkey. Beside the envisioned restoration works and development of tourist infrastructure, the project aims to create new digital content by digitizing cultural valuables and making them accessible on remote location without additional threats for their best preservation. The digitalization process was divided in two rays – 1. Supply of professional digitalization equipment including a device for 3D scanning, server, photo studio and two All-in-One devices for the front end users; 2. Development of software for digitalization of the museum collection.

## 2 Problem and Solution

All museums in Bulgaria are responsible for the preservation of movable and immovable cultural heritage in the region. After every archaeological season in Aquae Calidae, finds are gathered for conservation and storage in the museum located in the center of

Burgas. Due to the present conditions and legal requirements, these artefacts can't be physically displayed for visitors on-site. In order to overcome this limitation, RHM Burgas will digitalize significant finds from Aquae Calidae in order to provide maximum access in user-friendly way and present them attractively through the introduction of modern information and communication technologies. The two remote locations will be bridged with the help of central agent system consisting of 1 server and 2 touchscreen output devices, placed in the Archaeological museum and in Aquae Calidae Tourist complex. The system and newest generation equipment will ensure the sustainability of the project results and multiplication effect by creating a base for the inclusion of new data in the platform, which can be used for popularization and further scientific research. The data for the objects will be correctly structured and used according the Bulgarian Cultural Heritage Act and Ordinance № H-6 from 11.12.2009 (Ministry of Culture) for the establishment and management of museum collections, and the European legislation for management of a system for access and use of digital objects by the target groups (CIDOC, Dublin Core, Europeana standards). (Stewart Radovesta, 2014)

The movable cultural heritage objects will be digitalized by specialists from the I.T. Department of RHM Burgas and entered in the database, part of which will be later virtually accessible in the two remote location. After seeing the object online or via one of the devices on place the tourists will have the opportunity to find out virtually where exactly the items were found or to which period of the site correspond.

### **3 Aquae Calidae MusLib**

Taking in consideration all of the above stated requirements for the software solution, it was suggested 3 level system, which to be as universal as possible and a good starting point for the digitalization of more museum collections. In the same time, the output concerns specifically the collection of artefacts from Aquae Calidae. To answer this challenge the system has classify the data in individual collection, which are managed by specialists – admins, who have certain level of access rights, defined according their position in the museum. (Stewart, 2015)

#### **3.1 Structure model**

The system will consist of 3 major elements – **API Server** (server on where local data is stored), **Panel** (on server, where admins can enter and view full data) and **Website** (front end on remote server, where part of the data is outputted for the use of visitors).

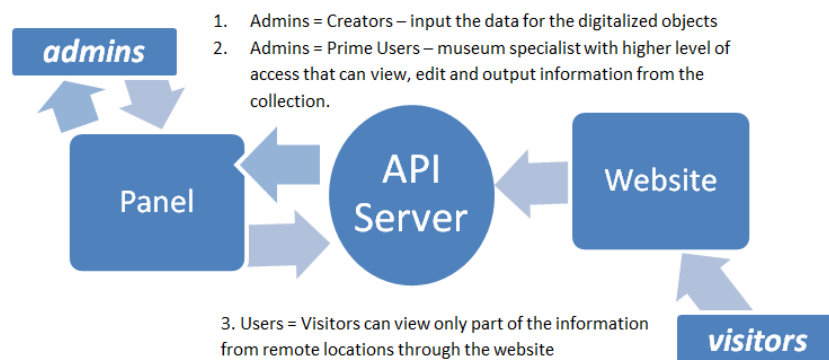


Fig. 1. Model of the platform structure and interaction.

The system is modelled this way to support modularity, offer multiply layers of security and meet the museum work specifics. The separated elements will allow easy maintenance and updates of each part separately and at different times without affecting the functioning of the other modules.

The platform modules will be using PHP (API Server and Panel) and HTML5 (Website / Front end) to take advantage of the latest features of web browsers.

### 3.2 Data model

The digitalization of at least 100 artefacts found in Aquae Calidae will be succeeded by the museum I.T. specialist upon a list provided by the researchers. Selected were the most attractive objects that are stored in the collection of RHM Burgas from the area of the ancient city with over 2000 year history. They represent all of the archaeological seasons in Aquae Calidae (discovered between 1950 to 2018) as well as the different periods of its existence – from Thracian times to Ottoman rule.

The objects will be entered into the database using the following model:

Element	Type	Element	Type
Inventory N	Plain text	Item Number	Incremented Number
Field book N	Plain text	Image	RAW; JPG
Description	Plain text	3D Object	OBJ, STL, PLY
Inscription(s)	Plain text	Document Number	Plain text
Quantity	Plain text	Entry date	Plain text
Storage Location	Plain text	Condition	Plain text
Dimensions	Plain text	Material	Plain text
Weight	Plain text	Category	Plain text

Value (BGN)	Plain text	Protocol Number	Plain text
Protocol Date	Plain text	Provider Name / Address	Plain text
Country	Plain text	City	Plain text
Ruler	Plain text	Dating	Plain text
Location found	Plain text	Additional information	Plain text

**Table 1.** List of fields in accordance with Ordinance № H-6 from 11.12.2009 for the establishment and management of museum collections and the museum inventory book standard.

The database will be organized after the structure of the inventory books and the Bulgarian legislation in the field (Ordinance № H-6 from 11.12.2009 for the establishment and management of museum collections of the Ministry of Culture). The elements can be extended according to the requirements of the museum specialists as well as to fit the Dublin Core (DCMI) metadata standard. It was selected as a most common standard used by the Bulgarian cultural institutes such as libraries and museums.

The Dublin Core Schema is a small set of vocabulary terms that can be used to describe digital resources (video, images, web pages, etc.), as well as physical resources such as books or CDs, and objects like artworks. In Bulgaria DCMI is standardized under BDS - ISO 15836:2010. (Zhelev, 2018)

Most of the fields will use plain text because it is the most effective way to store the data and allows for the most flexibility. The text will be encoded in UTF-8 to allow the storage of various character sets required by the museum specialists and used in the inscriptions.

The images will be archived in RAW format on the API server to retain the maximum detail, which could be used for further visual analysis and identification of artefacts in order to prevent illegal traffic of cultural valuables. The images accessible through the Website will be stored as JPG for data traffic efficiency and web compliance.

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