PIXEL+

Universal Web Interface for Interactie Pixel-Based File Formats

DURATION
15/01/2017 - 15/04/2019

BUDGET
144 550 €

PROJECT DESCRIPTION

Various Belgian federal scientific institutions (KMKG, KIK, KBR, RBINS) Universities (KU Leuven, UGent, UCL) and scientific heritage institutions (Mariemont Louvain-la-Neuve Museum, Plantin-Moretus, ...) have been using Portable Light Domain (PLD) systems since 2003 for the digital registration and study of institutional collections and collections all over the world. These interactive computer files with multiple light sources (cun, .zun files) created with this technique have been the source of a large number of scientific publications on these collections. In Belgium alone, the number of digitized objects in cultural and natural heritage with this system is already + 6,000; a number that is increasing due to an increase in the number of recording units and application areas.
In the same period, a second type of multi-light imaging system was developed and widely used: Reflection Transformation Imaging (RTI, developed by Cultural Heritage Imaging, CHI, San Francisco). Heritage managers around the world have worked with this technology; again, many terabytes of interactive data (rti, ptm files) were produced with this.

The 2 systems described above form a shared corpus of one and the same cultural heritage. The collections complement each other. It would be no more than logical to develop a system capable of integrating both forms of recording technology.
The Pixel + project has 2 main objectives:
1) Combining the two technologies described above by developing a single viewer technology that is able to display the different file formats with their respective shaders and metadata.
    a) Offer the possibility to illuminate the virtual models and thereby accentuate the texture of the surface from different angles.
    b) To offer the possibility to apply shaders from one development to another and vice versa
    c) The results of this project lead to a new reprocessing pipeline for existing source images.
2) The development of a community that can further manage and develop the results achieved in the project, by making use of Open Source technology where possible and actively supporting it.

Because RTI and PLD are still new technologies, knowledge of their existence and potential benefits is still poor. A new dissemination website will be published that will explain both technologies, contain best practices and use cases and share community updates. Because it is in the interest of the entire community, the website will also discuss other techniques.

The following phases are distinguished in the project.
Phase 1 preparations and literature study
In this phase, the state of affairs is drawn up and starting points and solutions are defined.

Phase 2 Development solutions
The solutions (software) are developed and tested in practice. This is an iterative process, where both on the input and the output side and on OS level or web based new code is being produced.

Phase 3 Dissemination and publicity
Because this concerns international sources and applications that also need to be internationally accepted, applied and supported, there will be a strong focus on communication of the results and applications, with the website, social media and colloquia, presentations as the main tools.

PIXEL+

The project team includes computer scientists and collection managers, curators, antiquity researchers, archivists and photographers as end users. Although the origin of the project is formed by a technique related question, the project results offer new possibilities to visualize existing collections and to ask new research questions. This possibility consists in the fact that the recording techniques that were originally developed separately also each developed their own reproduction techniques that are complementary.

The results of Pixel + offer researchers worldwide the opportunity to re-examine collections, with improved technology, in different and greater coherence.
Pixel + and its information platform want to be a catalyst for the further development and application of these technologies. One should not only consider the original application of exclusively white light as source. Multi-spectral lighting also offers a catalog of research applications.

1) Software that is able to access the various file types and characteristics in an integrated way
2) A website that communicates the results of the project and can serve as a community platform for the open source community that will further develop and manage the software after completion of the project.
3) Scientific publications on the applications and results developed in the project.
4) Workshops and presentations and product demonstrations at events, conferences, colloquia

CONTACT INFORMATION

Coordinator

Chris Vastenhoud
Royal Museums for Art and History (KMKG-MRAH)
eCollections
c.vastenhoud@kmkg.be

Partners

Marc Proesmans
KU Leuven
Afdeling ESAT - PSI, Beeld- en Spraakverwerking
marc.proesmans@kuleuven.be

Lieve Watteeuw
KU Leuven
Faculteit Theologie en Religiewetenschappen
lieve.watteeuw@kuleuven.be

Frédéric Lemmers
Royal Library of Belgium (KBR)
frederic.lemmers@kbr.be

LINKS

http://www.heritage-visualisation.org/pixelplus.html