BE-GRID WEBSITE

OVER ONE MILLION IMAGES IN DETAIL

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Abstract:

The Royal Institute for Cultural Heritage (IRPA-KIK) is one of ten scientific institutions falling within the competence of the Federal Ministry of Science Policy. Established in 1948, IRPA-KIK is committed to the inventory, the scientific study, the conservation and the promotion of the country's tangible cultural property. One of the main tasks of IRPA-KIK is to create a photographic inventory of Belgian cultural heritage. Since the creation of IRPA-KIK's predecessor, the photo library of the Cinquantenaire Museum, in 1905, the institute has acquired a large number of photographic documents of varying types. Nowadays, scans of old analogue photos and digital born images represent a unique instrument for the study of Belgium's heritage, both movable and immovable. In order to preserve these digital files and to render them accessible for the public, a digital archive and access system was designed in the beginning of 2012. 'BE-grid' was used to convert the so-called preservation masters (master files) that form the base of this archival repository into the Deep Zoom format, enabling online high resolution zooming.

Body text:

The Royal Institute for Cultural Heritage (IRPA-KIK) is responsible for the inventory, scientific study, conservation and promotion of Belgium's tangible cultural heritage. The Institute groups laboratories, conservation-restoration workshops, photographic studios, a library and a photo library containing over one million photos, 644 000 of which are accessible online.[1] From the beginning of the 20th century the main task of the documentation department has been to create a photographic inventory of Belgium's cultural heritage. Since the late 1990s this inventory has been growing further in the digital format: scans of old analogue photos and negatives and digital born images now represent some of the most important tools that IRPA-KIK has to offer.

However, the gradual introduction of the digital medium at IRPA-KIK led to the fact that over the years few procedures were established for a persistent management guaranteeing sustainably and accessibility of these files. In order to ensure the preservation of IRPA-KIK's digital image collection and to render these files accessible to the public, a digital archive and access system was developed in the beginning of 2012.[2]

The implementation of a digital preservation framework

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1 For more info consult www.kikirpa.be.

2 More info on this project can be found in the following article: Hilke Arijs, KIK: Archiverings-, reproductie- en raadplegingsbestanden voor gedigitaliseerde foto's, Project-CEST, 2012 (online: http://www.projectcest.be/index.php/KIK:_Archiverings-,_reproductie-_en_raadplegingsbestanden_voor_gedigitaliseerde_foto%27s)

The central idea was the implementation of a digital repository system based on the OAIS-framework. Following the creation of a centralised and easily accessible network-attached storage system for all digital images, several procedures and guidelines (such as for file format, bit depth, etc.) were established. These enabled us to create a so-called 'preservation master' (PM) for every digital born or scanned image. These image files are considered to be the master files of the internal workflow, and represent the highest quality and largest file size available in an archival file format. They form the backbone of the archive and are used to generate several access copies for printing and online consultation.

In addition, the use of embedded meta-data was implemented to mitigate the risk of dissociation. This way the files are no longer purely anonymous images, but illustrations of an identified subject and photos taken by an author. To ensure the sustainability of the archive, an automatic procedure for backup and audit was created. That way the backup process is carried out at regular intervals and chances of human error are reduced.

Access

A third aim of the project was to enhance the accessibility and management of the image files. One of the objectives was to simplify the replacement of images by better quality scans. That way the stored preservation master of a scanned photograph or negative is replaced when a better scan is produced, thus privileging the best quality file for archiving and future access.

One of the generated access copies is in Deep Zoom format, enabling high resolution zooming in the online photo library. *BE-grid* was used to convert the preservation masters into the Deep Zoom format.

Deep Zoom

Deep Zoom is a file format used to display high-resolution images on the Web by creating a multi-scale pyramidal representation of the entire image. This format created some buzz on the Web after it was presented at the TED '07 conference by Blaise Agüera y Arcas. To quote this software architect and imagery expert: "This is taking [photos] from everybody — the entire collective memory of what the Earth looks like — and linking all of that together."

The main advantage of the Deep Zoom format is that the performance demanded of the system never exceeds the number of pixels on your screen. With traditional file formats, if your 24" screen has a maximum resolution of 1920x1200 and your digital camera shoots a 12 megapixels photo, typically 3872x2592, you'll never be able to see the entire photo at 100% magnification – and the problem becomes even worse when viewing on a mobile device like the iPhone.

But, when converted to a multi-scale representation like Deep Zoom, an image becomes independent of the display resolution and independent of the device used for visualisation; Deep Zoom is thus ideally suited for dissemination of high-resolution images on the Internet.

A major problem however, was the duration it would take to convert over one million images in our database. With 20 seconds to convert one image of 35 megabytes, it would take over 5500 hours - almost one year -, not even including the annual growth of our photo collection.

To tackle this problem, grid computing was used to spread the work over many CPU's so that the calculations are carried out simultaneously and with the *BE-grid* infrastructure at our disposal, the total conversion time reduced considerably.

This way the online photo library of IRPA-KIK considerably expands its capabilities by offering the public a new in-depth view that makes every paint craquelure or other detail of an art object visible to the naked eye.