

Tangible Culture

Designing virtual exhibitions on multi-touch devices

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Cultural heritage institutions such as galleries, museums and libraries increasingly use digital media to present artifacts to their audience and enable them to immerse themselves in a cultural virtual world. With the application *eXhibition:editor3D*, museum curators and editors have a software tool at hand to interactively plan and visualize exhibitions. The software is running on standard PCs as well as multi-touch devices, which allow a user to utilize intuitive gestures for positioning exhibition objects. Furthermore, multi-touch technology offers the integration of collaborative work into a decision making process.

In cultural heritage institutions, digital content has gained increasing importance over recent years. The availability of scanned 3D objects, images or videos of historical artifacts offers many advantages. Exhibits, which would be secured in an archive, can now be presented to a wide audience. Furthermore, virtual artifacts cannot only be used to replace existing objects, but also to complete fragments or to show them in a state never seen before. In digital form the content of an exhibition can be visualized with highlights and enriched with information. These enriched digital artifacts reach an audience all over the world without replacing the real museum. As a consequence, it is a reasonable and sensible extension to a museum visit and to the whole museum scene.

To bring the digital content into a presentable form, an authoring tool is needed. *eXhibition:editor3D* allows the composition of content into a virtual museum. The *eXhibition:editor3D* application, developed by the Austrian Institute of Information and Communication Technologies of JOANNEUM RESEARCH, is tailored entirely to a curator's needs and requirements. Museums, galleries and other cultural heritage institutions can utilize it for multiple purposes such as:

- the enrichment of existing exhibitions,
- the design and preview of upcoming exhibitions,
- archiving of temporary exhibitions,
- the creation of interactive 3D-presentations for multi-media terminals,
- interactive catalogues or websites

and, last but not least,

- advertising.

The primary target for the development of the *eXhibition:editor3D* was user friendliness and usability. As technical details are hidden behind an intuitive interface, curators can fully concentrate on realizing their ideas. The software uses two-dimensional graphical user interfaces and planning concepts based on floor plans. Within these plans the author places exhibition objects virtually by drag'n'drop techniques. Having placed all 3D models, images and video

exhibits, the two-dimensional representation of the virtual exhibition can be exported any time to a three-dimensional world, which offers an immersive impression. The integrated preview comprises a realtime visualization of the virtual exhibition in 3D. Additionally placed sound elements – such as a narrator or ambient music – complete the virtual world.

The traditional way of interaction with virtual exhibits uses the mouse pointer as input device. This paradigm of user interaction has changed. Multi-touch technology is the interactive and intuitive means of providing a new user experience. In 2011, JOANNEUM RESEARCH and Fraunhofer Austria joined forces to extend the capabilities of *eXhibition:editor3D*. Fraunhofer Austria contributed its know-how on multi-touch devices. Now modern gesture-based user interfaces help to design exhibitions as easily as handling a mobile device or smart-phone: grabbing, rotating and scaling of objects can be done with a fingertip. Another benefit of the multi-touch technology is the possibility to collaboratively work on a single exhibition. Around a multi-touch table, as shown in Figure 1, authors can jointly discuss ideas and simultaneously position and adjust exhibition artifacts.

The project cooperation between JOANNEUM RESEARCH and Fraunhofer Austria got off to a good start with two major enhancements of *eXhibition:editor3D*, namely the possibility to design virtual exhibitions with a modern gesture input interface and instant visual feedback of the resulting 3D scene. The combination of these two features provides exhibition editors a fast and flexible workflow for efficiently designing virtual exhibitions appropriate for a wide range of cultural heritage themes.



Figure 1: Moving objects with a fingertip (left), collaborative work on a single exhibition (middle), floor based GUI interface of the application *eXhibition:editor3D* (right).

Links:

<http://www.exhibition3d.at>, <http://www.fraunhofer.at/vc>,
<http://www.joanneum.at/en/digital>

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