

## The new permanent exhibition of the prehistory department of the Museum of Natural History in Vienna



The permanent exhibition of the prehistory department of the Museum of natural history in Vienna has been completely renewed constituting a wide range of new approaches of didactics by making use of new technologies and concepts. 7 Reasons has been contracted to challenge the integration of new media solutions resulting in 26 different setups for hardware, models and contents.

The museum is home to world-famous and unique objects, such as the 29,500-year-old Venus of Willendorf, the Steller's sea cow that became extinct over 200 years ago, and enormous dinosaur skeletons. Further highlights in the 39 exhibit halls include the world's largest and oldest public collection of meteorites, including the spectacular "Tissint" meteorite from Mars, as well as the permanent anthropological exhibition on the origins and development of humans, and the new prehistoric exhibition with the Venus Cabinet and the Gold Cabinet. The museum's departments are home to around 60 scientists carrying out fundamental research in a wide range of fields related to earth sciences, life sciences and human sciences. This makes the museum an important public institution and one of the largest non-university research centers in Austria.

*"The Department of Prehistory has one of the largest and most diverse archaeological collections in Europe with outstanding individual finds of international importance such as the Venus of Willendorf, the bull from Byčí skála, the dagger of Maierdorf, the vessels of Sopron and the unique finds from the Hallstatt mine and burial ground. Our scientists investigate exclusive archaeological sites, including Hallstatt, the Kranawetberg, Brunn am Gebirge and Roseldorf and by doing so, they make important contributions to the development of our profession."* (Dr. Anton Kern, Director of the Department)



Figure 1, View into the Hall No. 11, Paleo and Meso and Neolithic Exhibition with integrated Media solutions

One of the biggest challenges was the sensible integration of displays, touchscreens, augmented reality stations and large-scale projections, into the historical ambience of the exhibition halls. The variety of different hardware solutions had to be constructed to sustain a secure use over the coming years, bearing in mind that there are approximately 1 million visitors every year. These solutions will be introduced in depth in this report.

### Media Stations included:

- Integrated touch displays for the vitrines
- Augmented reality viewers (Highlight Finders)
- Large scale Landscape projection
- Gesture recognition display
- Virtual Diorama
- Dress -fitting station
- Small- and large-scale touch solutions
- Various Displays (showcasing Films)

The department of prehistory hosts 3 large exhibition Halls which are under cultural heritage protection. This fact made it clear that the integration of new medias to the exhibit had to be planned and executed in a sensitive way in terms of visual adaptiveness thus delivering the full functionality within the didactic storytelling of the different contents.

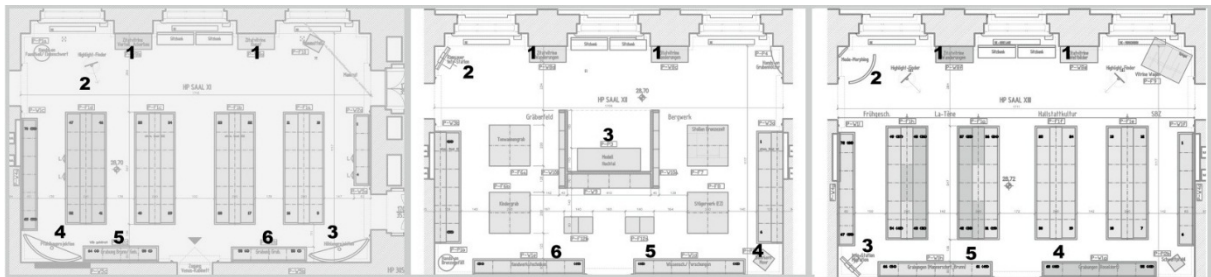


Figure 2, Plan of the exhibition halls

One challenging task was the setup of augmented reality viewers which should highlight the exceptional exhibited objects and serve as a guidance system for the visitor. We invented a pivot-based display system which can be hovered over the hall displaying the vitrines and exponent's in the background while highlighting the positions of selected, valuable objects in certain areas. When the user hovers over such a hotspot, he receives an informational pop-up together with images and animations explaining the value of the finds. The technical solution included a robust rig to carry the relatively large display which resides on a torque sensor, measuring the rotation of the hovered display.



Figure 3, Augmented view of the exhibition highlighting the most important pieces

Another task was to integrate small touchscreens into the vitrines to deliver information about the displayed items. This had to be designed to withstand intensive use and was therefore placed under a 1cm thick un-breakable glass layer while still receiving the sensory touchpoints of the user.



Figure 4, Integrated touch functionality in the vitrines

In the area showcasing the sensational finds of Hallstatt, a 3-meter large part of the upper valley of Hallstatt was produced as a scale model to be projected with three different contents. The contents consist of a projection on the scale model of the landscape showcasing the 7000 years of history of these places while the backwall projection showed the referenced information of these periods.



Figure 5, Landscape model of Hallstatt with the backwall projection

One of the stations presented the famous cave drawings of Altamira, Chauvet and Lascaux. The solution here consisted of three large 64 inch displays which were setup vertically to create one large image over the complete display area. Here the user can choose the cave sites and can pick up a virtual torch to see the drawings in the way our ancestors would have seen them. The technical solution of the virtual torch was solved through a tracking system, recognizing the gesture of the user and transferring this information to the functionality of the application.



*Figure 6, Interactive station with gesture recognition (functionality being explained to the minister of culture and science through Dr. Anton Kern)*

A separate room was built to showcase one of the most precious finds hosted by the museum, the so called "Venus of Willendorf", one of mankind's earliest traces of artwork, carried out some 30.000 years ago. Here the challenge demanded a sensitive solution, hiding most of the content for the exhibition area. We proposed to setup a virtual Diorama, where the spectator could follow up the morphology of the landscape where the Statue was found. The visitor can watch this through horizontal slots in the wall where a 64-inch display is positioned. This solution allowed the exhibition space to remain its focus on the main vitrine while porting the information in a discreet way.



*Figure 7, Diorama of the prehisric landscape with the Venus of Willendorf in front of the image*

The so-called Dress -Fitting Station allows the visitor to call up different figures of prehistoric periods and place his face into the scene displayed. After wards he can make a screenshot and send the picture to his mobile device or e-mail address. The solution here was to build a photo studio environment in order to match the position and light conditions to the premade virtual scenes. On the side of the user the interface had to be simplified to a extend where even children can operate the machine.



Figure 8, Dress -fitting room

In addition to the mentioned media stations a large variety of large and small displays and touch stations were integrated to the exhibition areas, showing case sensitive information and films in reference to the exhibited items and objects.



Figure 9, further touch solutions with different interfaces



Concluding, we can now look back not only on the solutions we had implemented but also on the usability and the robustness of the installed hardware, where a lot of adjustments were made during the operational part of the exhibition. In some cases we had to reinstall or repair certain parts but the overall maintenance of all media stations was a straightforward task. Nevertheless, it has to be said that media techniques are changing rapidly and we will maybe have a chance to update some of these solutions with new, state of the art technologies.

