

**Category:** Social Affairs

**Project:** ARCHES – Accessible Resources for Cultural Heritage EcoSystems

**What was the challenge?**

To find new and exciting ways to include people with special needs into cultural life.

We intended to make art accessible for all, by designing and developing technology using a participatory research approach. The interdisciplinary consortium consisted of six outstanding European museums, four tech companies and two universities, coordinated by VRVis. But more importantly, the team included over 200 people with various disabilities, who worked as equal designers and researchers, to shape the results the way they need them. Our common effort had to be centered upon the tools people can use, such as audio-description, sign-language, simplified information and tangible interfaces, and make real-world implementations for museums all over Europe.



**What was the solution?**

Over the period of three years, we all worked together in participative research groups in Vienna, London, Madrid and Oviedo. In bi-weekly sessions, accessibility issues in museums were analyzed and, together with the tech partners, solutions designed and tested. Specific rules were developed so that people with different disabilities can work together, in an enabling and productive environment, while respecting each other's needs (e.g. the use of an iconographic language for

people with learning difficulties). Together, we developed a museum handbook in three languages, as well as cutting-edge technological solutions.



The highlights are:

1. An avatar-based sign language translation including mimic and gestures to give additional meaning.
2. A fully accessible museum guide and a collage game, which is a fun way to explore selected artworks and encourages the users to remix and create their own versions. The game uses high contrast, large buttons, sounds and voice-over technology to make it equally accessible for visually impaired and blind users.
3. An interactive tactile multimedia guide developed as an on-site installation for each museum. Using custom-built relief design software, tactile interpretations of selected paintings were designed, and realized as CNC-machined bas reliefs, in different materials, in the format 40x30x3.5cm. Combined with special computer stations, these can be experienced by touch, sound,



projection, animation, text, sign-language, easy language and many other accessibility features. A computer-vision system detects hand gestures that trigger audio descriptions, animations and story elements. In addition, a 3D-spatial soundscape was composed to give all parts of the painting a distinctive sound.

All accessibility features can be highly customized and stored individually using QR-code cards, to be quickly retrieved at the next visit.



**What was the effect?**

Our research results enhance the quality of life for people with disabilities to better experience our common cultural heritage and allow them being an active part of it.

Using a Design for All approach, we have made sure that the results can be used by everybody, in a fully inclusive environment. In other words, our solutions help museum visitors, young or old, local or new to the country, visually impaired, hard of hearing, with intellectual or motor disabilities, or just to enjoy artworks and learn about them.

The participative research approach and the close collaboration between all team members stands for a new way of empowering people, and of how museums see their role in contemporary society.



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Berühren Sie das taktile Relief.



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