Informatics
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Tactile Multi-Media Guide
Interaction design on tactile reliefs

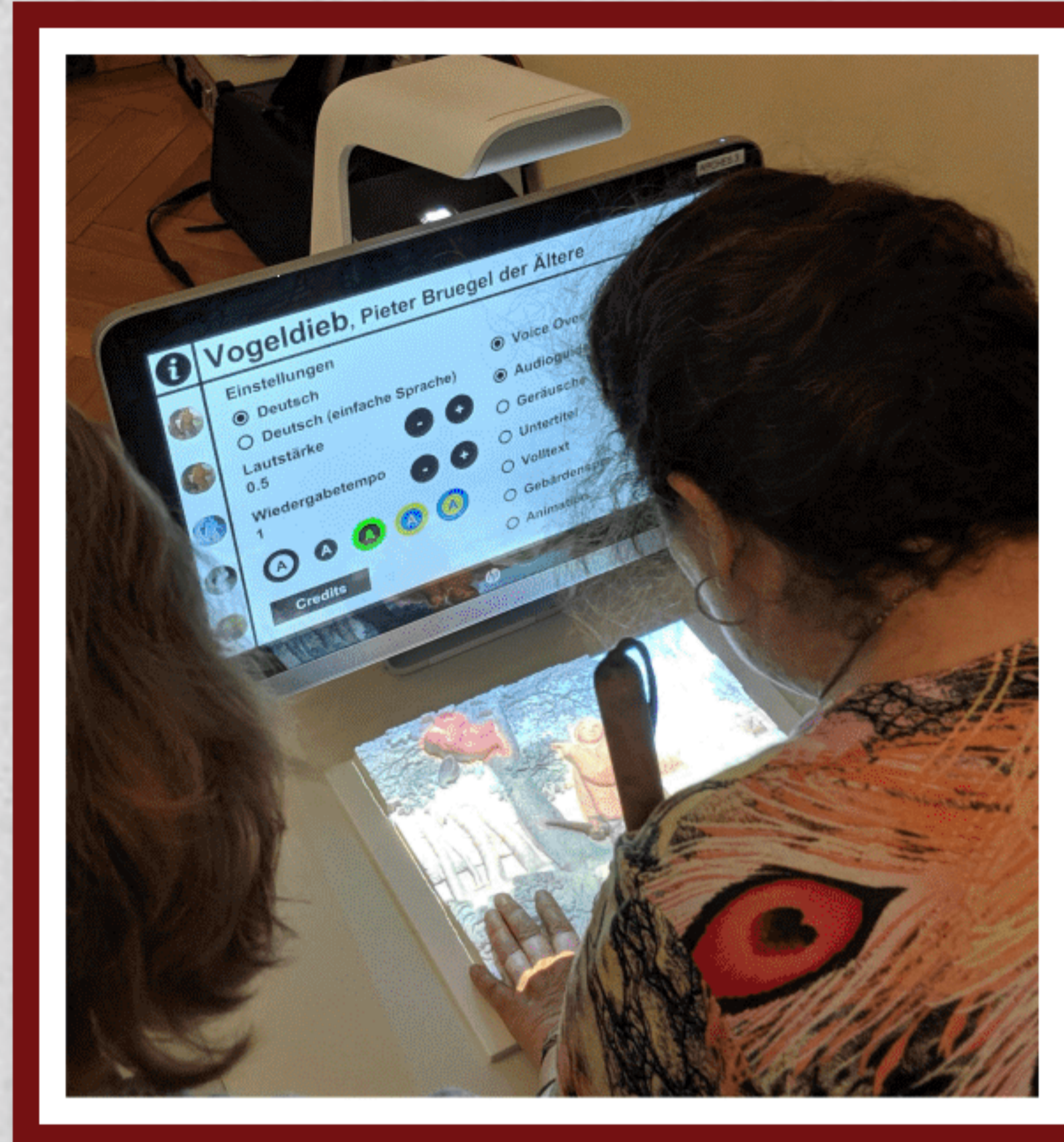Daniela Stoll
Media Informatics

TU Wien Informatics
Institute of Visual Computing and Human-Centered Technology
Research Unit of Computer Graphics
Supervisor: Univ.Prof. Dr.techn. Dipl.-Ing. Werner Purgathofer

This thesis was part of the *Accessible Resources for Cultural Heritage EcoSystems* (ARCHES) project, which was focused on creating more inclusive cultural environments, especially for visitors with various visual, hearing and cognitive access preferences. The ARCHES team consisted of six museums, four technology companies and two universities. The project was designed around the participatory approach. This thesis introduced, developed and evaluated a new technology that showed how to make art accessible for all visitors.

From artwork to relief and multi-media data
The original artwork [1] was transformed to a 2.5 D tactile relief. Audio guide text was prepared and the artwork was split into differently coloured sections. These sections can be activated on the tactile relief via gestures.

Screen Interaction
By touching the user interface, the visitor can adjust how and what information is played.

Off-Relief Gesture
Holding fist above the tactile relief stops the played audio.

On-Relief Gesture
Pointing finger is touching the tactile relief, triggers information for this section of the artwork.

Blind and visually impaired user → User with various access preferences — User group

2017 2018 2019

IAG TAG TMG — User Interface Design

Relief for one Painting — Authoring Tool — JSON Painting Metadata Model — Excel Spreadsheets — Reliefs for six Painting — Data Management

The **Overview of the Design Process** shows changes in user group, user interface design and data management.
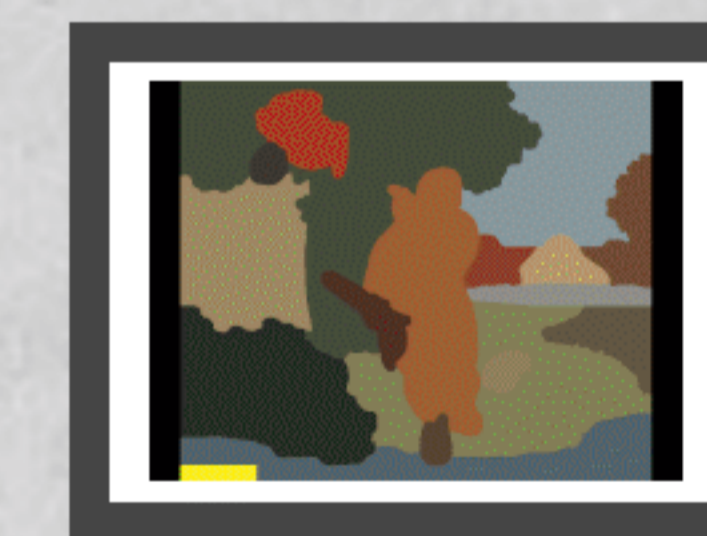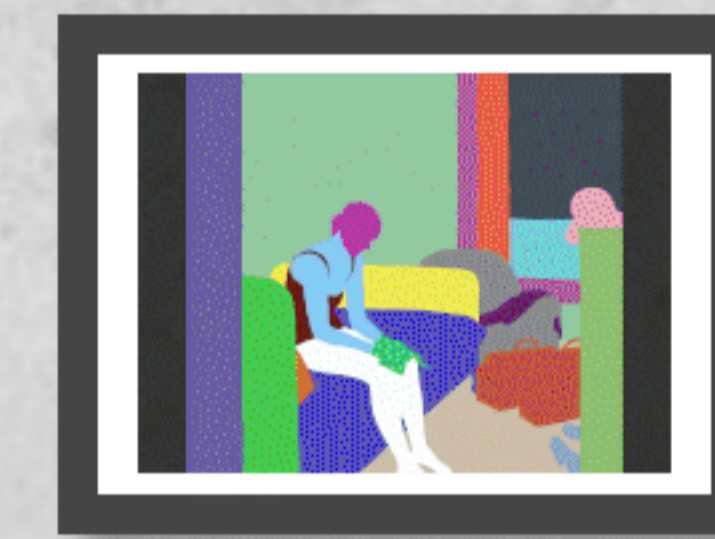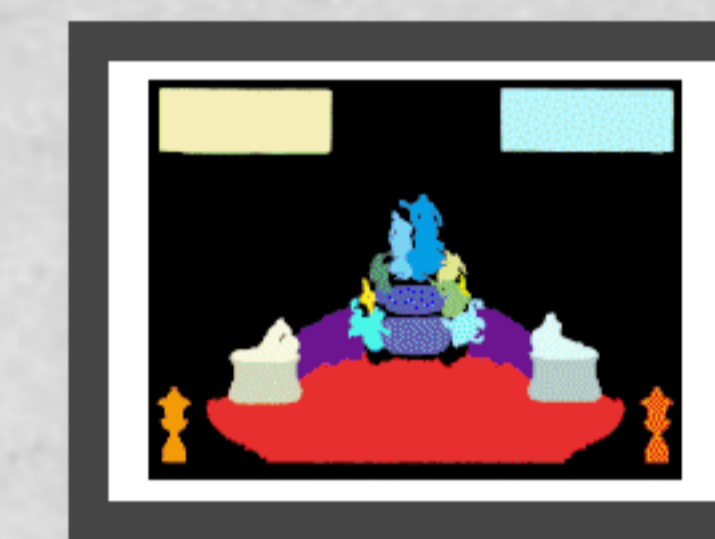
Participatory research approach
Over two hundred people with different disabilities met regularly in the museums in England, Spain and Austria. They developed ideas, tested prototypes and helped shape the outcome of the TMG.
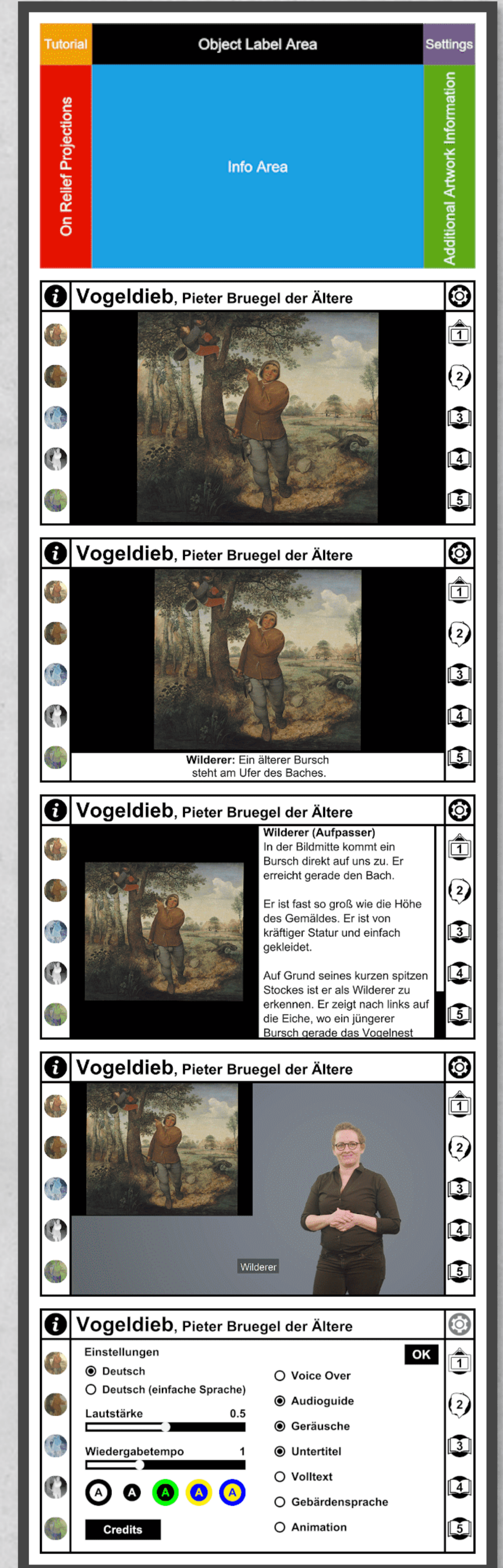

Tactile Multi-Media Guide (TMG)
Interaction design on tactile reliefs

ARCHES
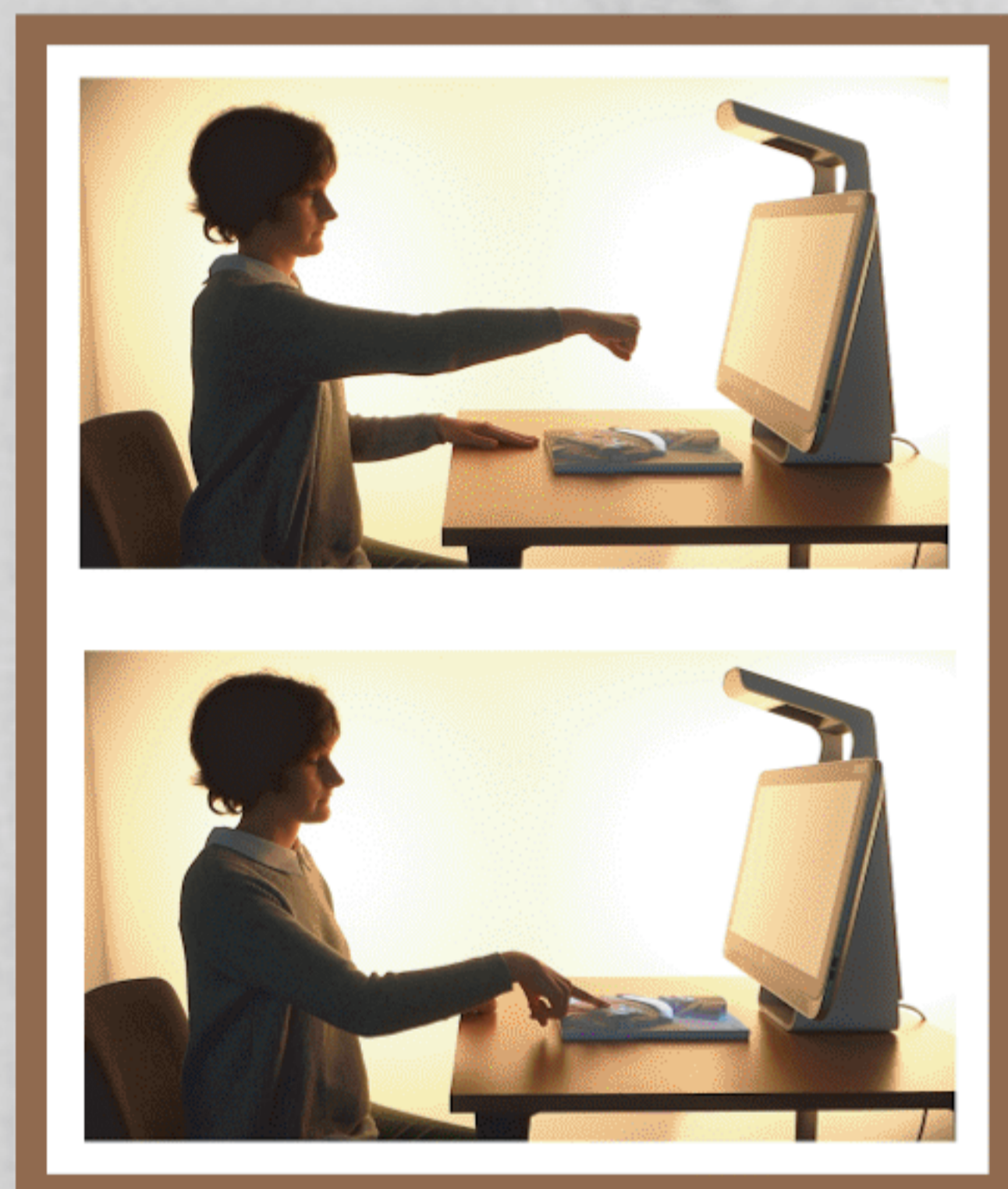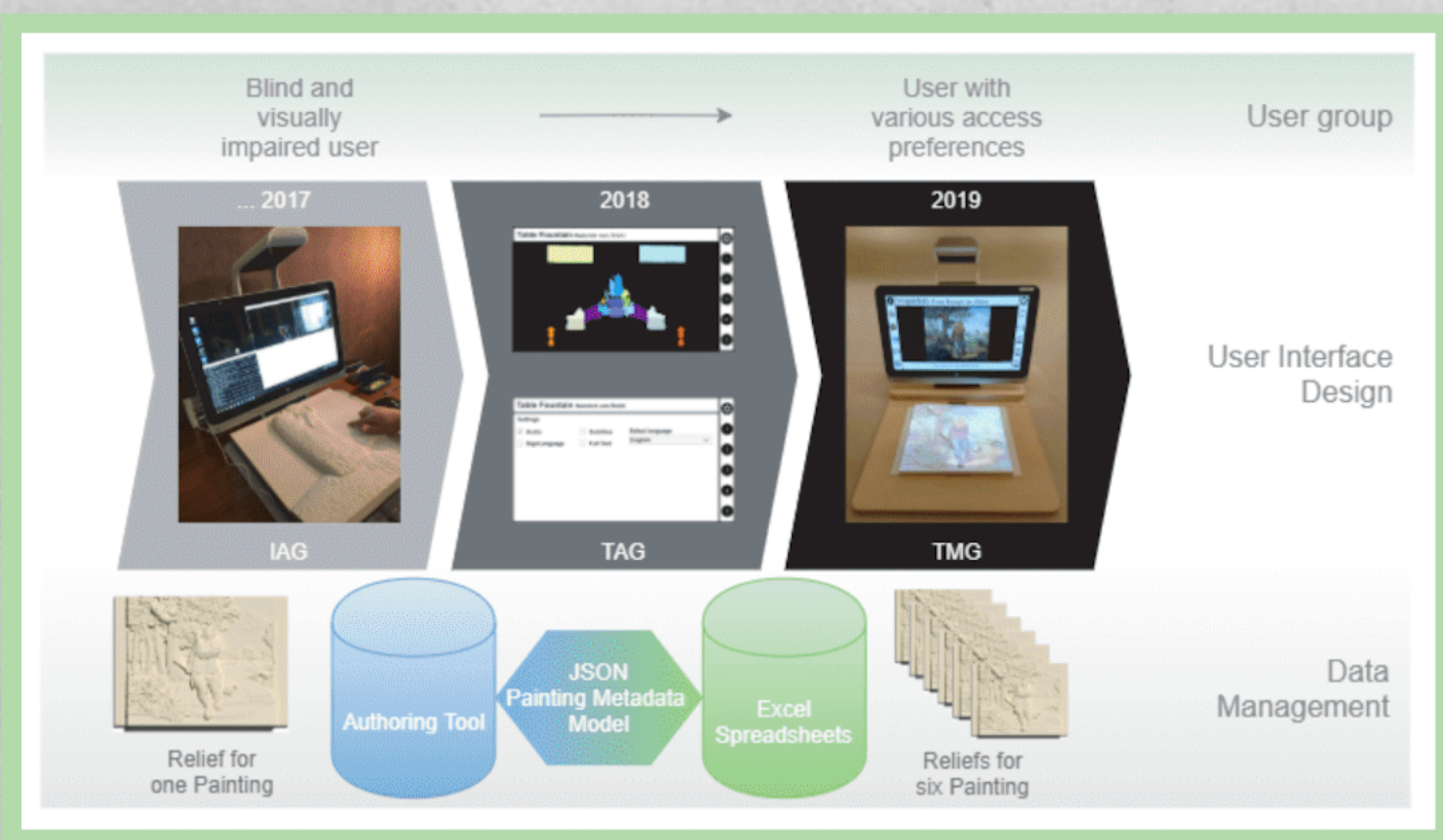www.arches-project.eu

vrvis
www.vrvis.at

The user interface (UI) layout shows the areas of the TMG.

The *Info Area* displays the original artwork, as well as the audio guide text as subtitle, full text or sign language video with subtitles.

The visitor can adjust the TMG to the various access preferences in the settings.

[1] Artwork: The Peasant and the Nest Robber, Peter Preugel the Elder ©KHM-Museumsverband

Conclusion and Future Work
With the TMG we have created a solid basis for further developments for accessible for all designs. Among others, we would like to suggest the following improvements and ideas:

Tactile stickers for the touch screen. Tactile stickers on the touch screen serve as guidelines for navigating the interface elements.
User settings with QR Codes. QR Code is held under the projector and the UI switches to the desired access preferences. The desired settings could be set in an app.
Reducing user interface input on screen. Buttons could be embedded in the future in the wooden frame, which encloses the tactile relief.
From the museum to the educational institutions. Due to the compact setup of HP Sprout (hardware), a wooden frame and the reliefs, it can be used e.g. in schools.