

Interactive Exhibition from Wall Panels in a Museum

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Interactive Panel

- An interactive exhibition concept built on physical wall panels in a museum
- Generally applicable to a wide variety of topics by reinterpreting the exhibited wall panels as a new content.
- Not only visual elements but also two-way communication and multi-modal feedback is considered.
- Existing content comes alive to provide visitors with an immersive and engaging experience.

In order to show a feasibility of the proposed concept, we collaborated with the **Gyeryongsan Natural History Museum**, located in Gongju, Korea.

Theme: Korean Mummy

- We selected the “Korean Mummy” exhibit as a pilot project for the interactive panel.
- Gyeryongsan Natural History Museum exhibits attractive stories such as the cause of death and parasites in the body, found through medical analysis.
- It is the only permanent exhibition of mummies in Korea.

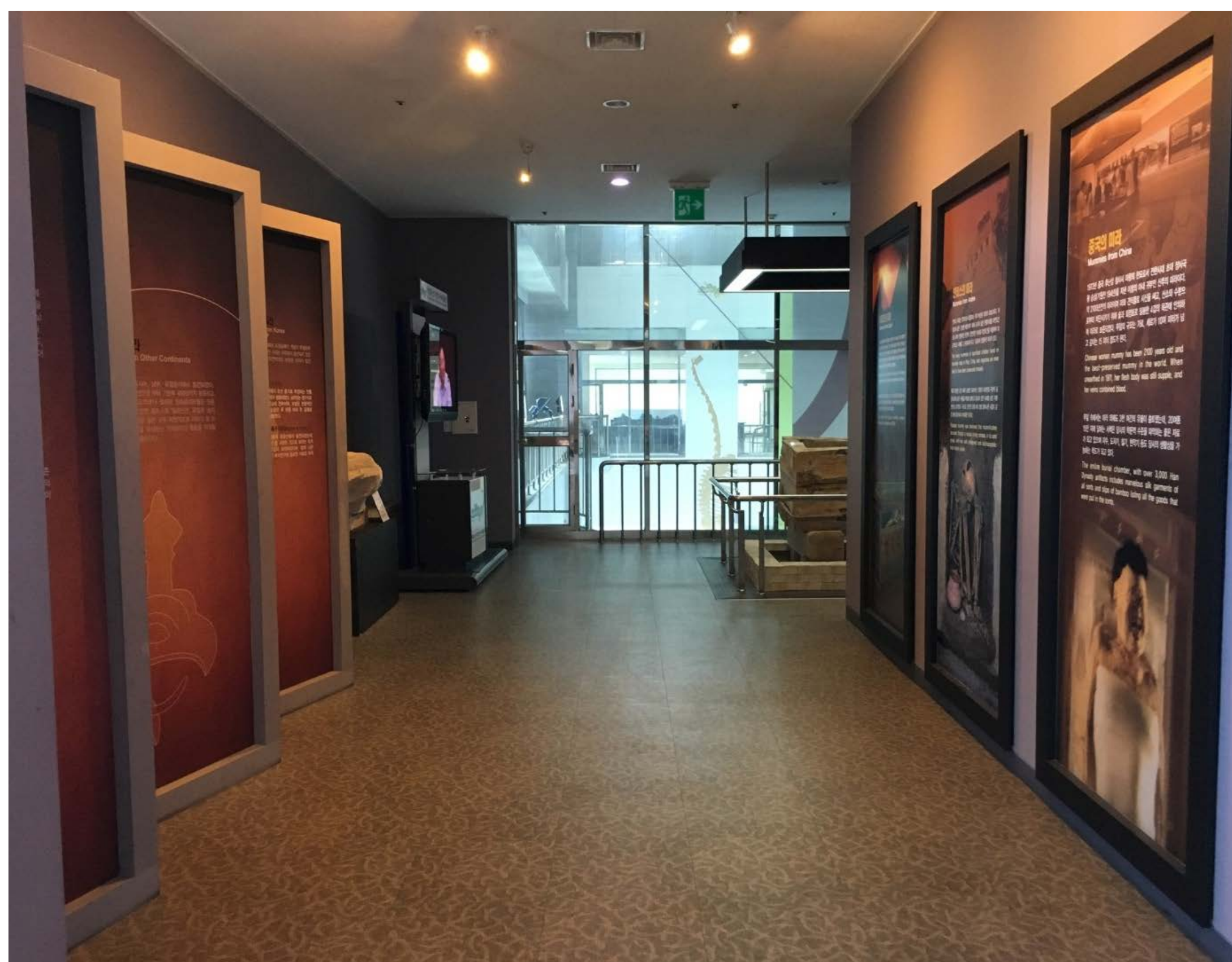


Figure 1: Permanent exhibition space for “Korean Mummy” at Gyeryongsan Natural History Museum.

Content Design

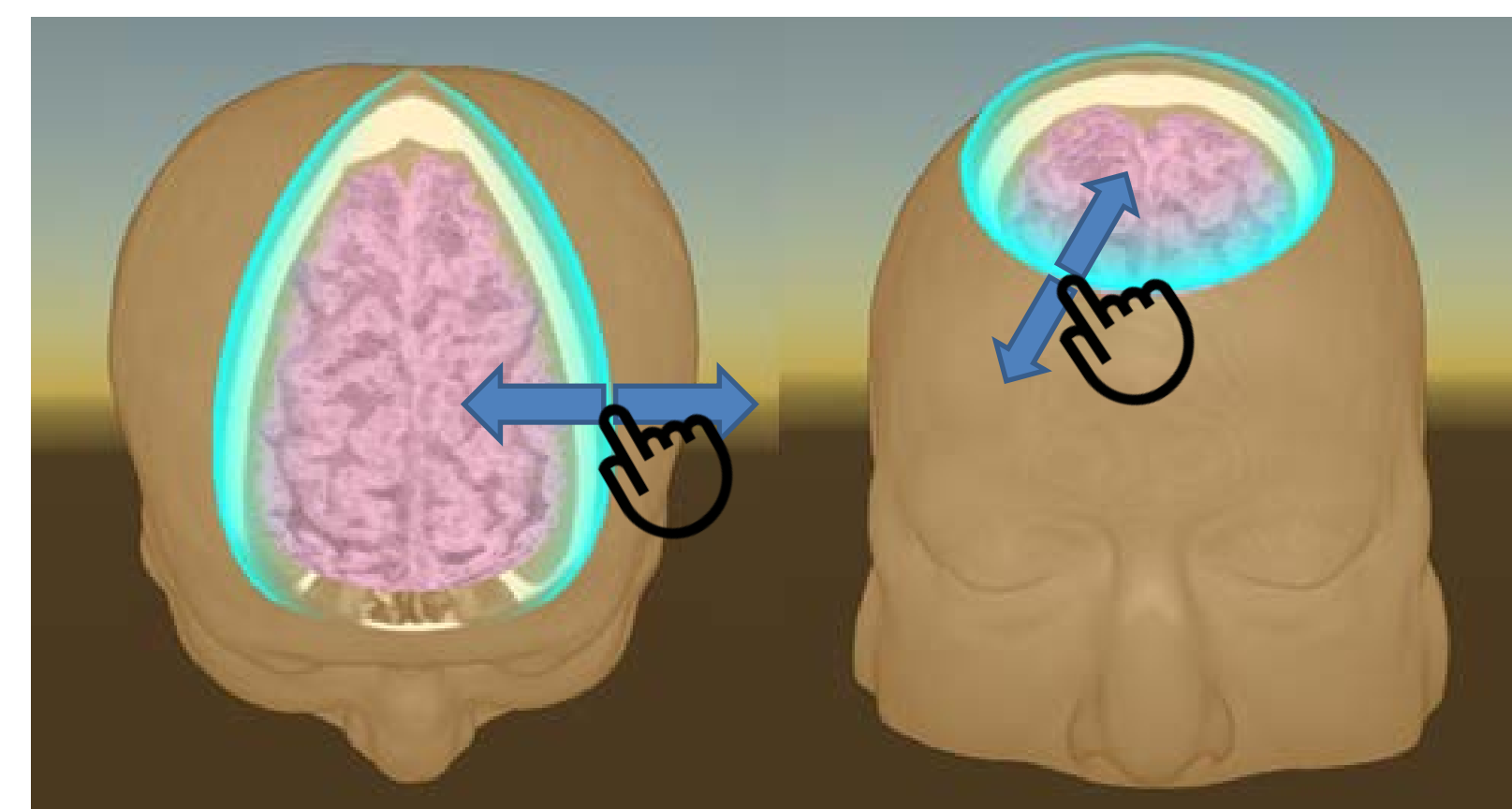
- Analyzed the wall panels displayed in the exhibition space, and set the scope of prototype development.
- Selected each topic with consideration of the data currently available, and applied different techniques to each subject.
- Considered the age group of the main visitor. For the young age group, the dinosaur character of the museum was designed as an online guide.



Figure 2: Panoramic view of the Korean Mummy exhibition room.

Interface Design

- Mutual exploration interface
Arrange the visualization results from ordinary image and extraordinary image side-by-side with unified camera control.
- Sketch-based widget creation interface
Direct manipulation of volumetric data with locally-fitting widgets using simple sketches such as lines or circles on a touchscreen.
- Force-feedback haptic interface
Provide interactive scene that can touch all of the objects in the virtual environment with appropriate haptic feedback.



It is based on “smart surrogate widget” by Stoppel and Bruckner.

Figure 3: Touch interaction method of smart surrogate widgets. Wedge type (left) and iris type widget (right).

Implementation

- *Mummies in Korea*
Brings the contents of wall panels into a 3D virtual space, and leads to various topics.
- *Exploration of a Mummy's Body*
Deals with how human organs change when they are mummified using mutual exploration interface.
- *Exploration of a Mummy's Head*
Focuses on the interactive visualization so that user can manipulate the volume image freely by sketch-based widget creation interface.
- *Excavation of a Mummy*
Utilizes the haptic device that provides various forms of force feedback to make the experience more engaging.

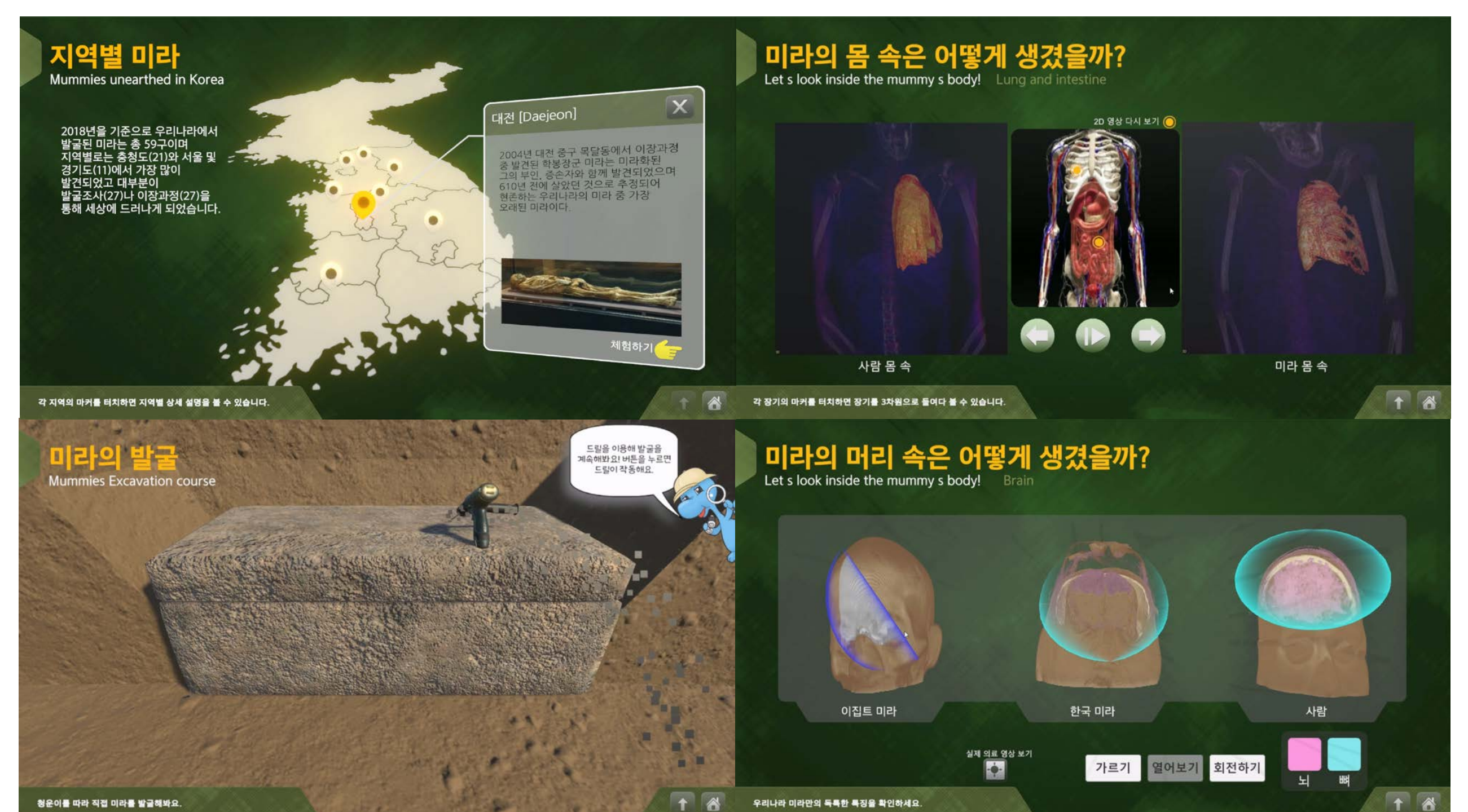


Figure 4: Implementation results, clockwise from top left: *Mummies in Korea*, *Exploration of a Mummy's Body*, *Exploration of a Mummy's Head*, and *Excavation of a Mummy*.

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