

## HONOR AWARD

### Eldheimar Volcano Museum Interactive Exhibits

Eldheimar Volcano  
Museum

Vestmannaeyjar,  
Iceland

**Project Area**  
-400m<sup>2</sup>

**Open Date**  
May 2014

**Budget**  
30 million Icelandic Kronars  
(-\$220,000)

**Design**  
Gagarin

**Design Team**  
Hringur Hafsteinsson  
(creative director); Kristín  
Eva Ólafsdóttir (art director);  
Kristín Eva Ólafsdóttir,  
Michael Tran, Magnús  
Elvar Jónsson, Jónmundur  
Gíslason (designers);  
Magnús Elvar Jónsson,

Michael Tran, Jónmundur  
Gíslason (illustrators);  
Heimir Hlökkversonn (content  
development); Samúel  
Jónnasson, Pétur Valgarð  
Guðbergsson, Halldór  
Axelsson, Jonas Braier  
(developers); Nils Wiberg  
(interaction design); Ásta  
Olga Magnúsdóttir (project  
manager)

**Collaborators**  
Axel Hallkell Jóhannesson  
(exhibition design), Zedrus  
Ehf (fabrication of exhibit  
stands)

**Photos**  
Magnús Elvar Jónsson



# Exploring Eldheimar

**At a museum dedicated to the wrath of a volcano, interactive experiences help visitors explore the site and make peace with the worst natural disaster in Iceland's history.**

By Leslie Wolke

▲ When visitors pick up shovels and dig into a sandbox filled with black, cinder-like ash, images begin to emerge on the sand's surface, changing and sharpening as they shovel deeper.

In the early morning of January 23, 1973, the Eldfell volcano on the tiny Icelandic island of Heimaey erupted without warning, slashing a mile-long fissure above the fishing village and spewing lava nearly a mile high in explosive, fiery gusts. Only one person died that night but within six hours, nearly all of the island's 5,300 inhabitants evacuated by boat to the mainland. Eruptions and lava flows raged on from the nascent Eldfell volcano ("Fire Mountain" in Icelandic) for five months, burying more than 400 homes and businesses in as much as 16 feet of rubble and ash.

For all Icelanders, it was a devastating shock to lose the community on the idyllic island of Heimaey (meaning "home"). Over the next 30 years, many residents returned and rebuilt while others chose not to. It wasn't until 2006 that archeologists began to unearth buildings near the eruption site and, like a modern-day Pompeii, discovered entombed relics of everyday life: a table set for breakfast, folded clothes waiting to be put away.

In May 2014, the Eldheimar ("Worlds of Fire") Volcano Museum opened its doors on the slopes of that same volcanic fissure. A series of interactive experiences created by interactive media design firm Gagarin invite visitors to explore the remains of the village and help bring a sense of closure to the painful event.

### "Home" again

The centerpiece of the museum is the home of Mrs. Gerður Sigurðardóttir and her family, a small cottage nearly consumed by fire and lava but preserved by the ash that engulfed it.

Archaeologists carefully removed the ash and debris, gingerly repositioning household items where they were found, and a gallery was built around the house. Because the unstable structure was too dangerous to enter, exhibit designer Axel Hallkell Jóhannesson sought a partner to design

a way to virtually visit the rooms from outside the cottage.

Gagarin, a 12-person interactive media design firm based in Reykjavík, joined the project near the end of the exhibit design process, with only 12 months until opening. Their mission was to create the "interface" for the cottage, and to design several other hands-on exhibits.

### Her home or our museum?

The Eldheimar museum is built upon precarious and overlapping definitions of the personal and the historical. Nils Wiberg, an interaction designer at Gagarin, recalls that transforming Mrs. Sigurðardóttir's home into a museum was controversial.

"This was not like Pompeii in the sense that everyone was related to the people who lived there—and yet people's houses and people's memories were excavated as if they were ancient history." Mrs. Sigurðardóttir herself spoke at the opening ceremony and brought more of her belongings to the museum. Gagarin project manager Ásta Olga Magnúsdóttir asks, "Are these things hers or the museum's? It's a gray area because she still felt it was her house. How or when does that change?"

The Gagarin team envisioned museum visitors as "protagonist explorers" rather than passive viewers, and designed each activity to promote investigation and participation. In front of the cottage, three podiums, each topped with an inclined video screen and a joystick, invite visitors to inspect the interior of the home by piloting remote video cameras. The rooms and their contents are ash-gray and motionless, yet the common objects they contain—hair curlers, plates, cups—convey the vitality of their former inhabitants, and our contemporary kinship with them.



▲ A Microsoft Kinect system above the sandbox measures the changing distance between the sand and the Kinect and projects different layers of HD video according to the depth of the sand.

**“A sophisticated overall design language that allows the traumatic subject matter to speak for itself. At the same time, interactive media are used in a playful manner that engages the audience to explore the historic events and relate to them on a personal level. Excavation is an impressive example for merging digital content with a surprising physical interface.”—Jury comment**

### Shared experiences

To provide context for the eruption and its aftermath, the Gagarin team developed a large interactive table called “The Wheel of Time,” encircled by a hip-high metal steering wheel. A map of Heimaey is projected on the tabletop from above. Turns of the wheel transport visitors through a kind of time-lapsed version of the volcanic eruption: the date on the timeline border ticks forward day by day as the map transforms to show the growing fissures, shifting landmasses, and tides of lava, along with illustrative photos.

Wiberg explained that moving a wheel or a dial is a common gesture, “but the tangibility of the wheel transforms the movement into a performance, a full-body interaction. The weight of a physical artifact and the communal shape of a table create the potential for a shared interactive experience.” Since the museum opened, Wiberg and the design team have observed visitors at the table “collaborating with people they don’t know, taking turns driving the linear story, and moving at a pace that suits everybody. It inspires us to design future installations as multi-user, but with one input mechanism—like the wheel—to create a group experience.”

### Excavation and the hat

It is difficult to grasp how dramatically the eruption transfigured the island. The volcano grew to 700 feet high, lava swelled the size of the island by 20%, and 200 million tons of ash enshrouded one-fifth of the island. The Gagarin team wanted to find a palpable way to express the arduous hours, days, and years spent excavating the town.

One sunny afternoon on a balcony at the Gagarin studio, Wiberg gathered six members of the Eldheim project team to participate in a brainstorming technique known as “the hat.” Each attendee is given a different colored hat and, Wiberg explains, “each hat represents a point of view, and the rule is that you can only voice ideas from that

perspective. It forces us to restrict our thinking to a certain direction, to remove us from our own experience.” Ásta Magnúsdóttir, donning the hat of a Heimaey resident who lost her home, was overcome by empathy: “Icelandic people are very romantic about their history and we all know people who were there or who experienced it.” So the team knew it must help create a journey that would evolve from the catastrophe of loss to the relentless work of reestablishing the community.

To evince the mountains of ash and the herculean task of excavation, the team leveraged a familiar play environment: the sandbox. When a visitor picks up a shovel and starts digging in a pool table-sized container of black sand, images begin to emerge on the sand’s surface, changing and sharpening as the visitor shovels deeper. A map of a neighborhood dissolves into a diagram of an individual house, ultimately revealing a photo of that house. Above, a Microsoft Kinect set-up measures the changing distance between the sand and the Kinect and projects different layers of HD video according to the depth of the sand.

The sandbox reenacts the unearthing of the town in an accessible, even playful manner, but realizing the design was difficult. “Finding the right sand stumped the band,” Wiberg recalls. “We wanted to use volcano ash but it dusted up the entire studio in its fine-grained terribleness.” And it lost its charcoal color, turning grayish-brown in natural light.

After much experimentation with sands, along with trial and error in setting the scale and detail of the projections, Wiberg is quite happy with the result. The sandbox, he says, is a great way to visualize geographical information. “We were concerned how efficient these fun elements would be in telling stories. Were these tangible and physical interactions a bit too childish? Well, it turns out that digging in a sandbox is fun for everybody.” ■

Leslie Wolke (lesliewolke.com) is a wayfinding technology consultant and writer based in Austin and New York City.



▼ In front of the cottage consumed by the volcano (but preserved in the ash that covered it), visitors can explore the interior by piloting remote video cameras.

▲ When visitors turn the “Wheel of Time,” they can scroll backward and forward through time to see the events leading up to the eruption.

▲ Turning the wheel is a simple gesture, but when multiple visitors gather around the table, impromptu collaborations result in shared experiences.

