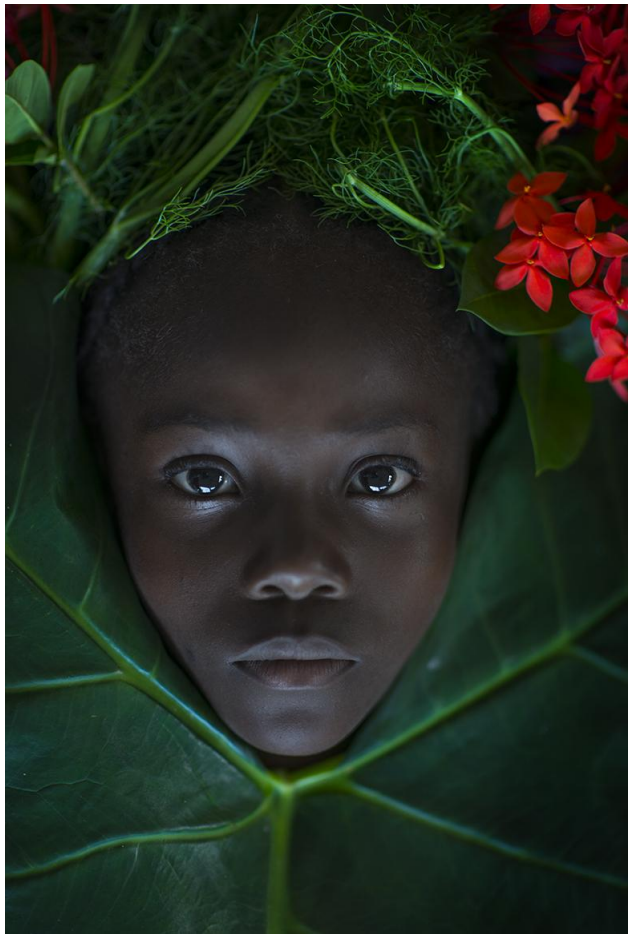
Universal Design and Accessibility Workshop:

Touch-responsive interactive exhibits And multisensory displays



"No. 025" by Stephon Senegal

dcarts

October 30, 2017

presented by Steve Landau

Touch Graphics Inc

In 2017, DC Commission on the Arts and Humanities commissioned a new interactive exhibit based on Stephon Senegal's photograph entitled, "No. 025". This talk will demonstrate the exhibit, as an illustration of the idea of Universal Design.

Universal Design calls for making products that can be used by anyone, through the application of these seven guidelines:

GUIDELINE ONE: Equitable Use.
GUIDELINE TWO: Flexibile Use.
GUIDELINE THREE: Simple and Intuitive Use.
GUIDELINE FOUR: Perceptible Information.
GUIDELINE FIVE: Tolerance for Error.
GUIDELINE SIX: Low Physical Effort.
GUIDELINE SEVEN: Size and Space for Approach and Use.

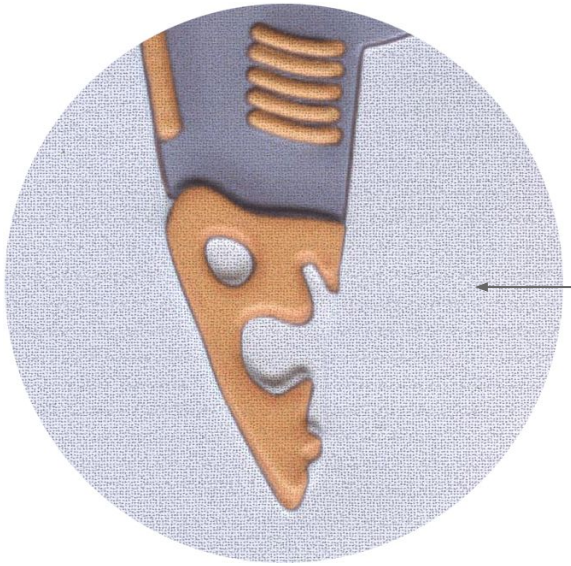
Perkins School for the Blind Museum, circa 1892.

A boy pointing to a large tactile map of Gratz, Odilien Institut, Graz, Austria, circa 1930.

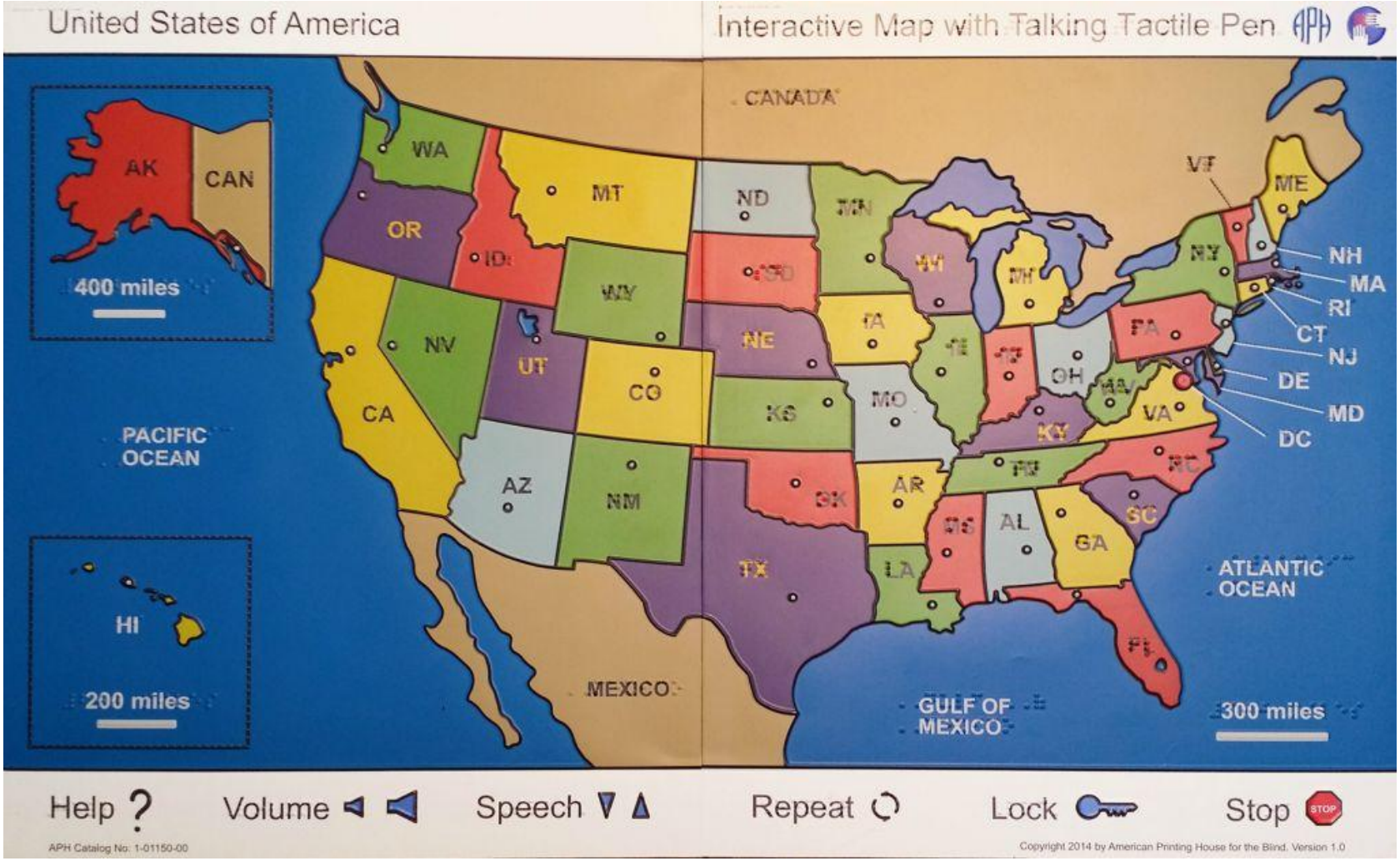
The 6-foot relief globe in the Perkins History Museum was made for the school's students in 1837, and may be the oldest such globe in the United States. Perkins School for the Blind Museum, circa 1892.

Talking Tactile Tablet with UK plate from National Geographic Talking Tactile Atlas of the World. Touch Graphics, Inc., 2004.

The Talking Tactile Pen is a modified version of the Echo smartpen from Livescribe. The pen includes a video camera in the tip that it uses to determine its location on the page, whenever the stylus is pressed against special dot-printed paper.

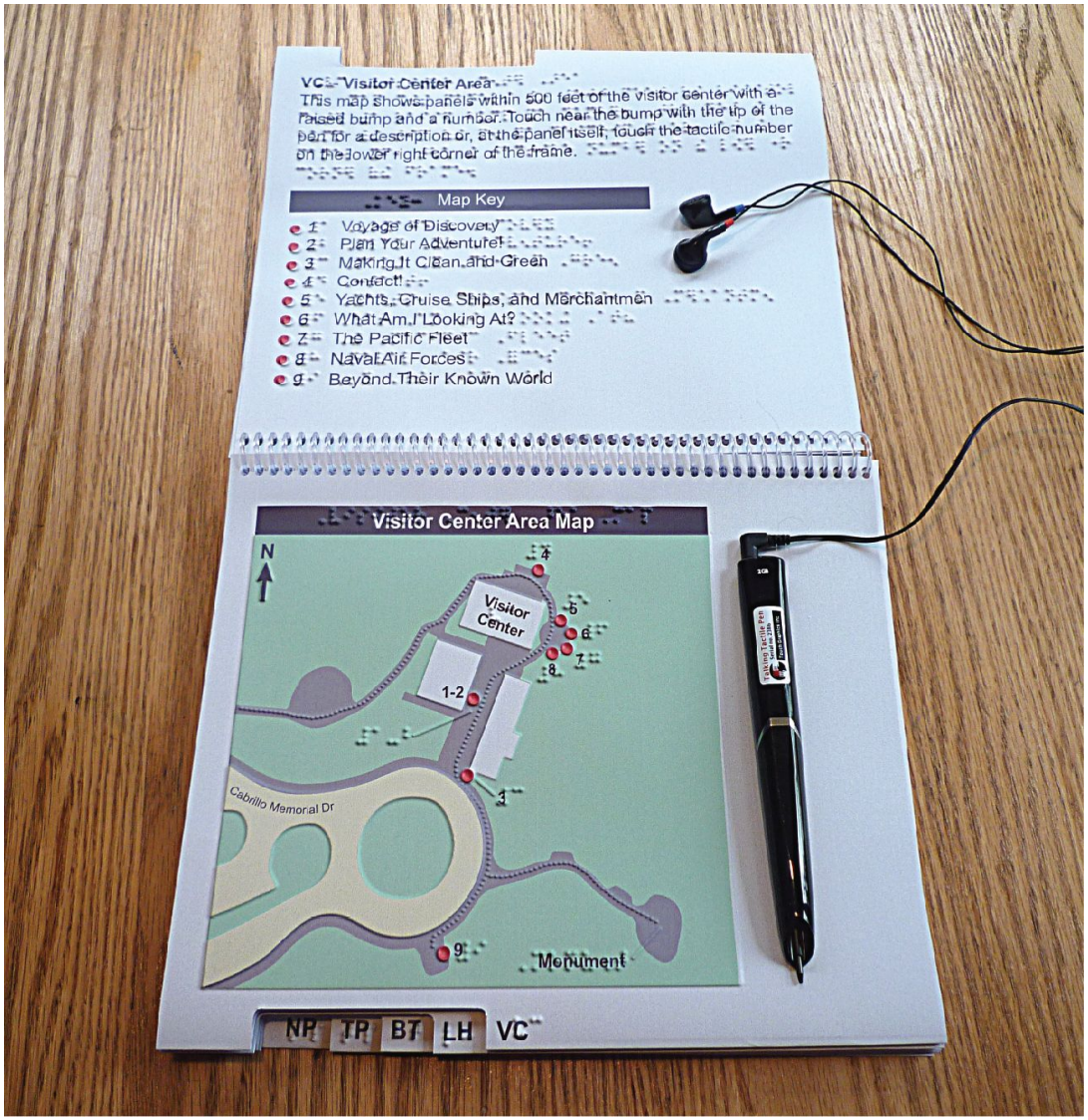


A detail from the Shark Skeleton diagram from our *STEM Binder* of classic science images in audio-tactile format (left). The pattern of tiny dots printed on every sheet allows the smart pen (right) to determine the location of every tap.



United States map for Talking Tactile Pen. American Printing House for the Blind and Touch Graphics, Inc. 2014.

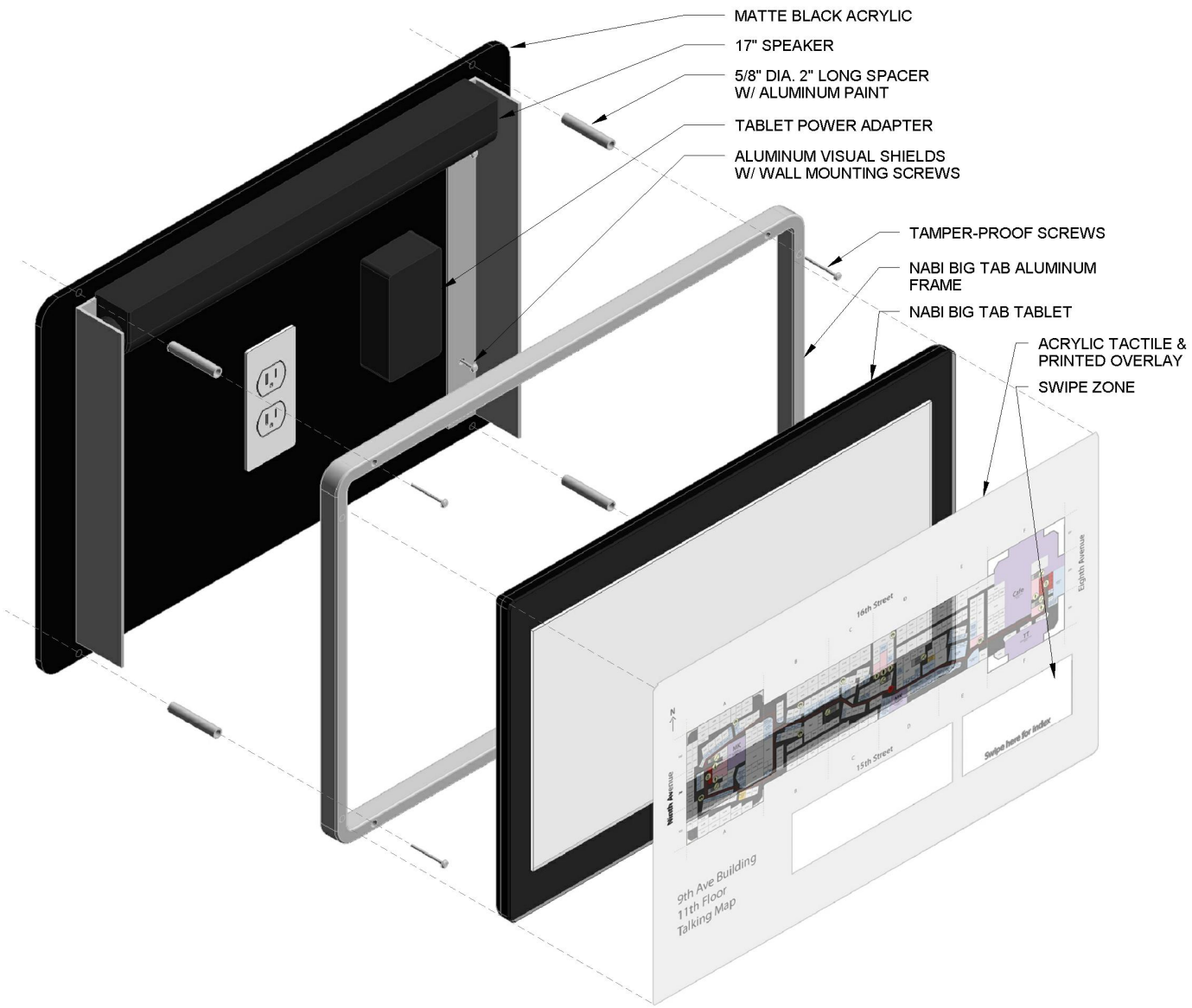
Touch Graphics collaborator Lindsay Yazzolino demonstrates APH'S US Map for Talking Tactile Pen.



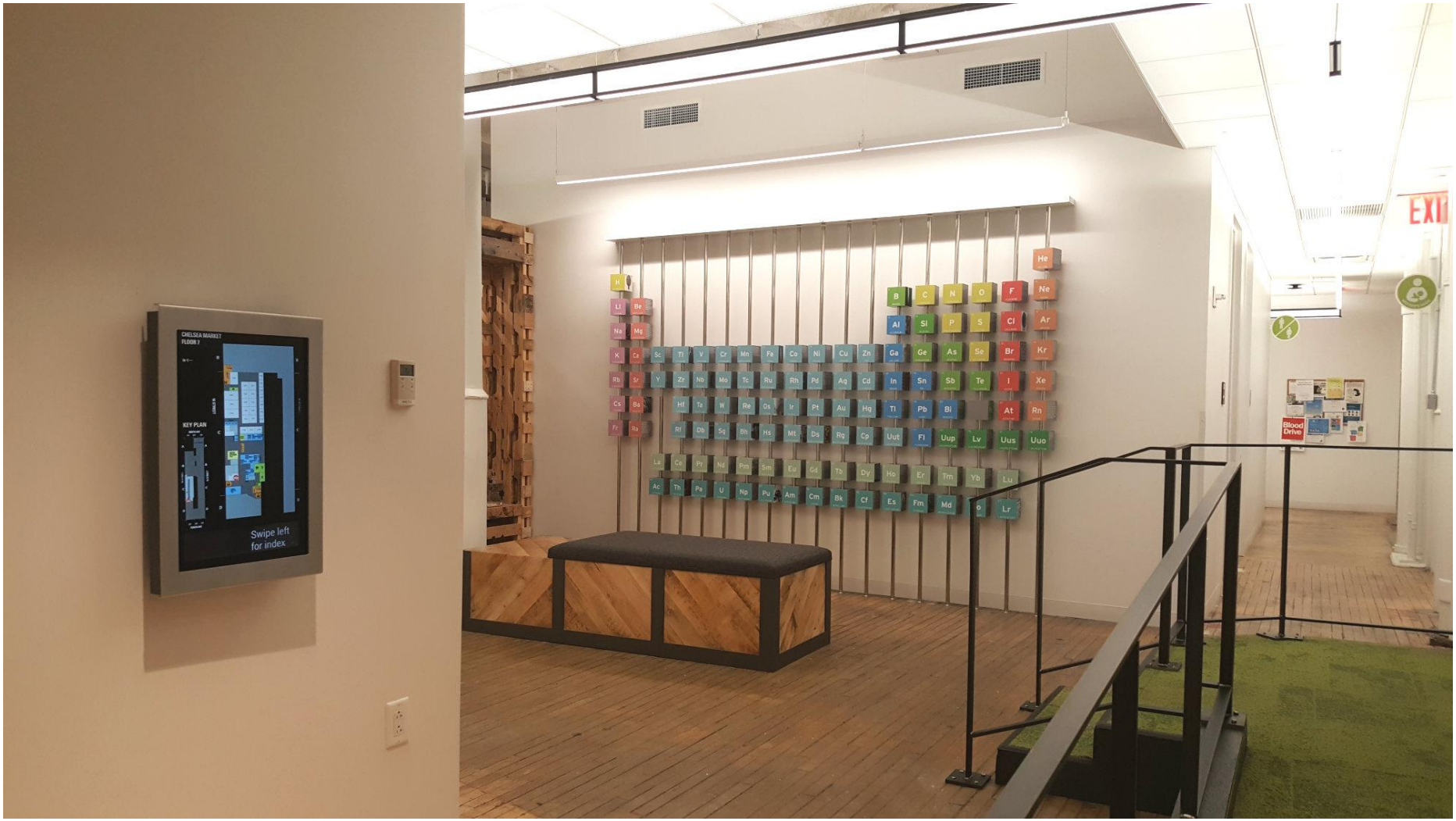
Cabrillo National Monument Map with Talking Tactile Pen. National Park Service, 2016.

Dr. Josh Miele advised the company on the design of a network of 45 universal maps at Google NYC.

Detail of the tactile skin on one of the interactive floorplans.

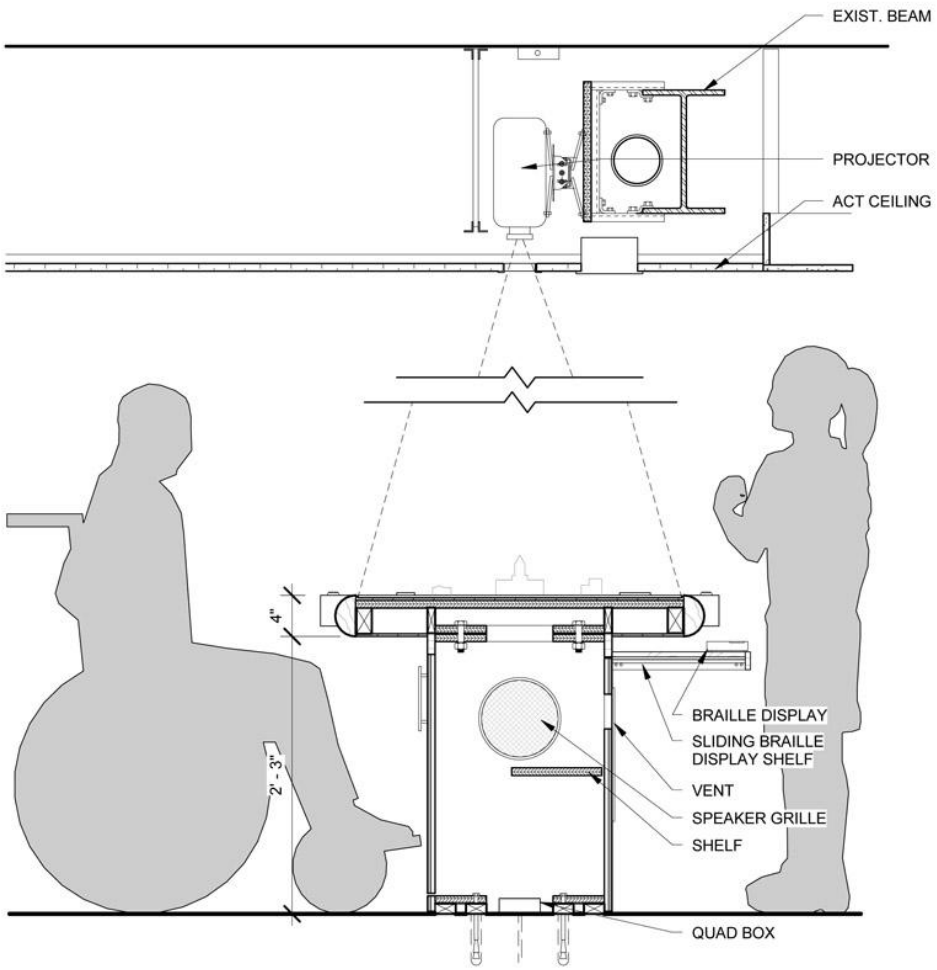


Exploded view of an early version showing system components.

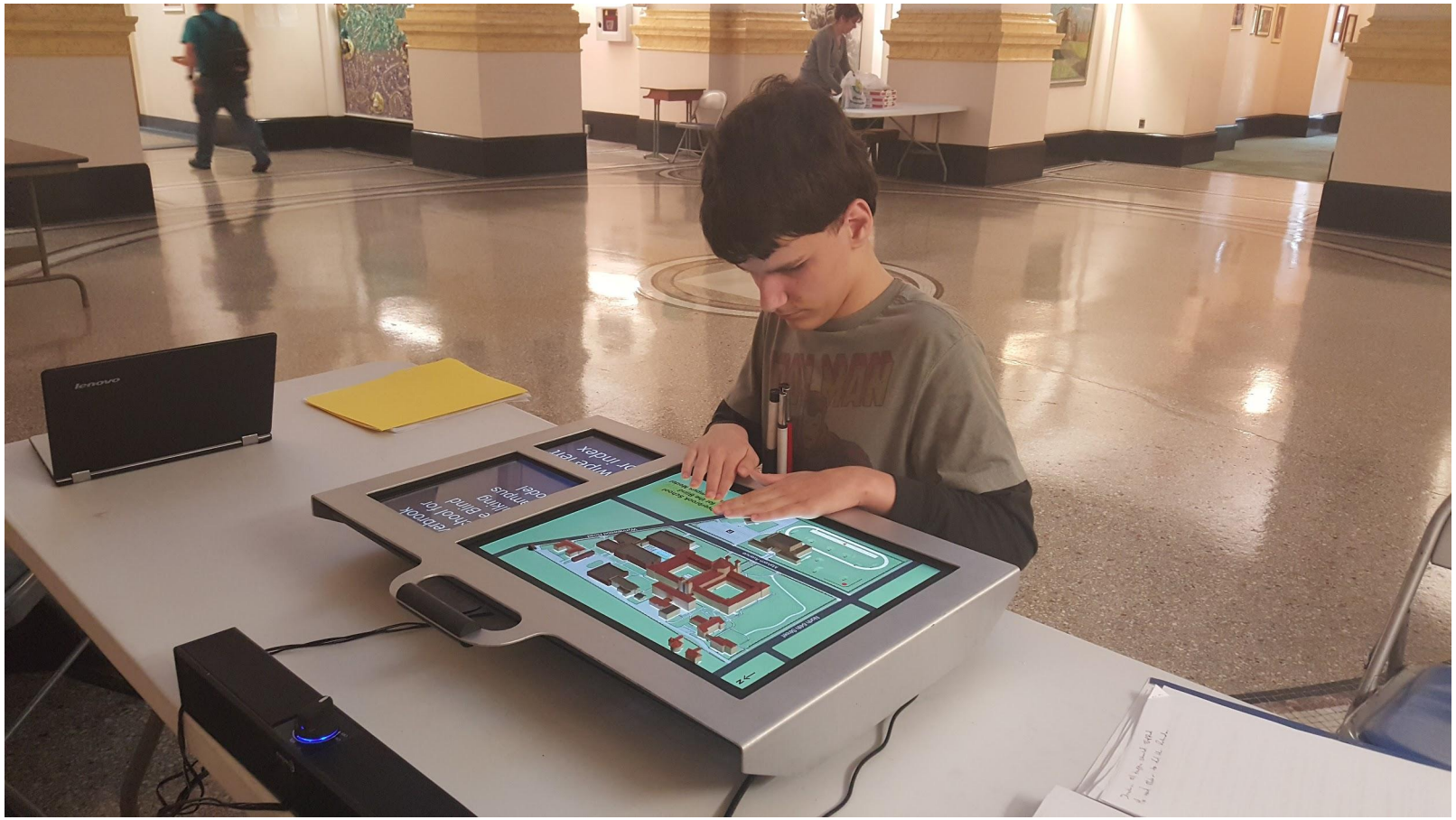


One of 45 interactive audio-tactile floorplans for a large tech company in NYC.

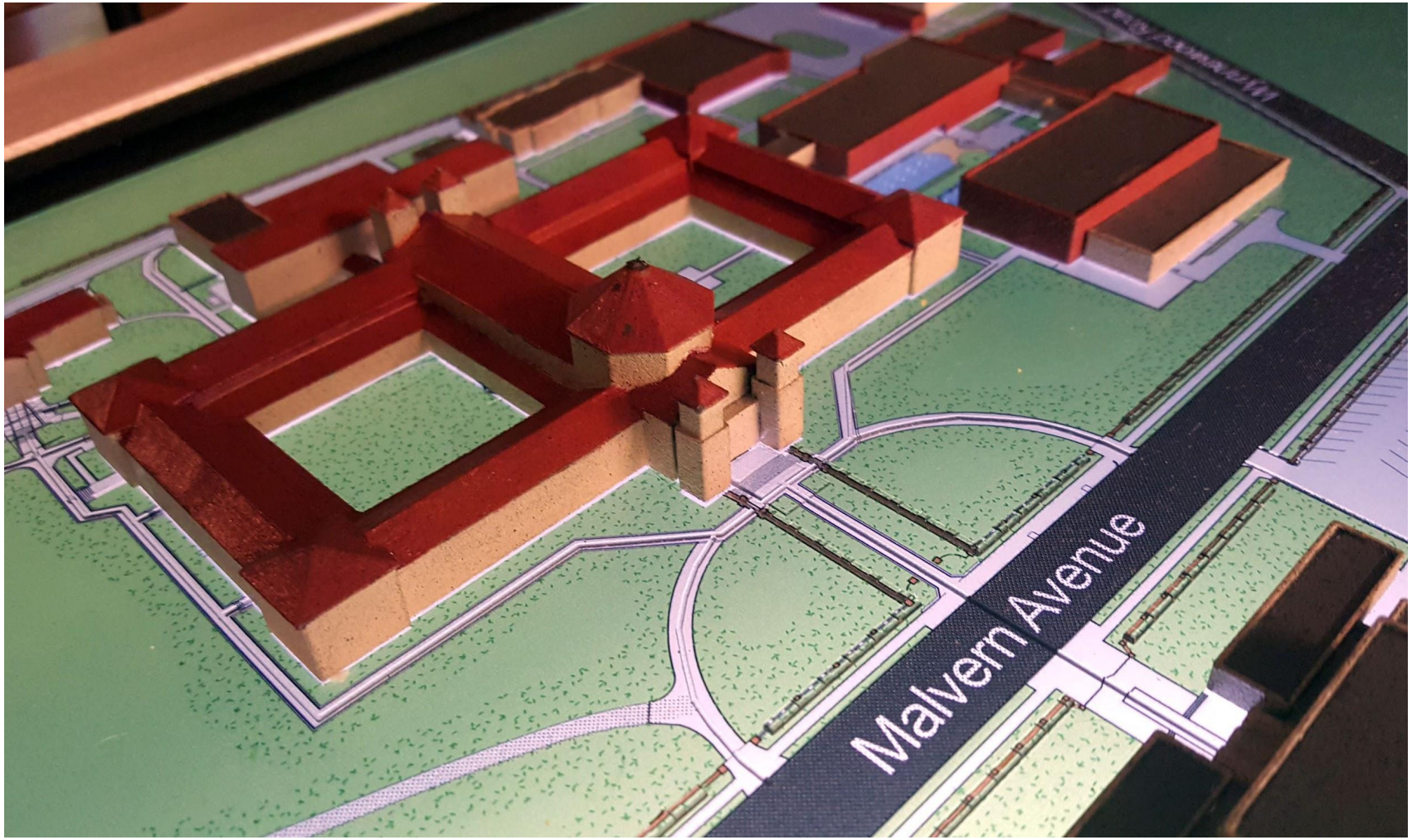
Perkins School for the Blind Talking Campus Model, 2012.



Vertical section through Perkins School for the Blind Talking Campus Model.

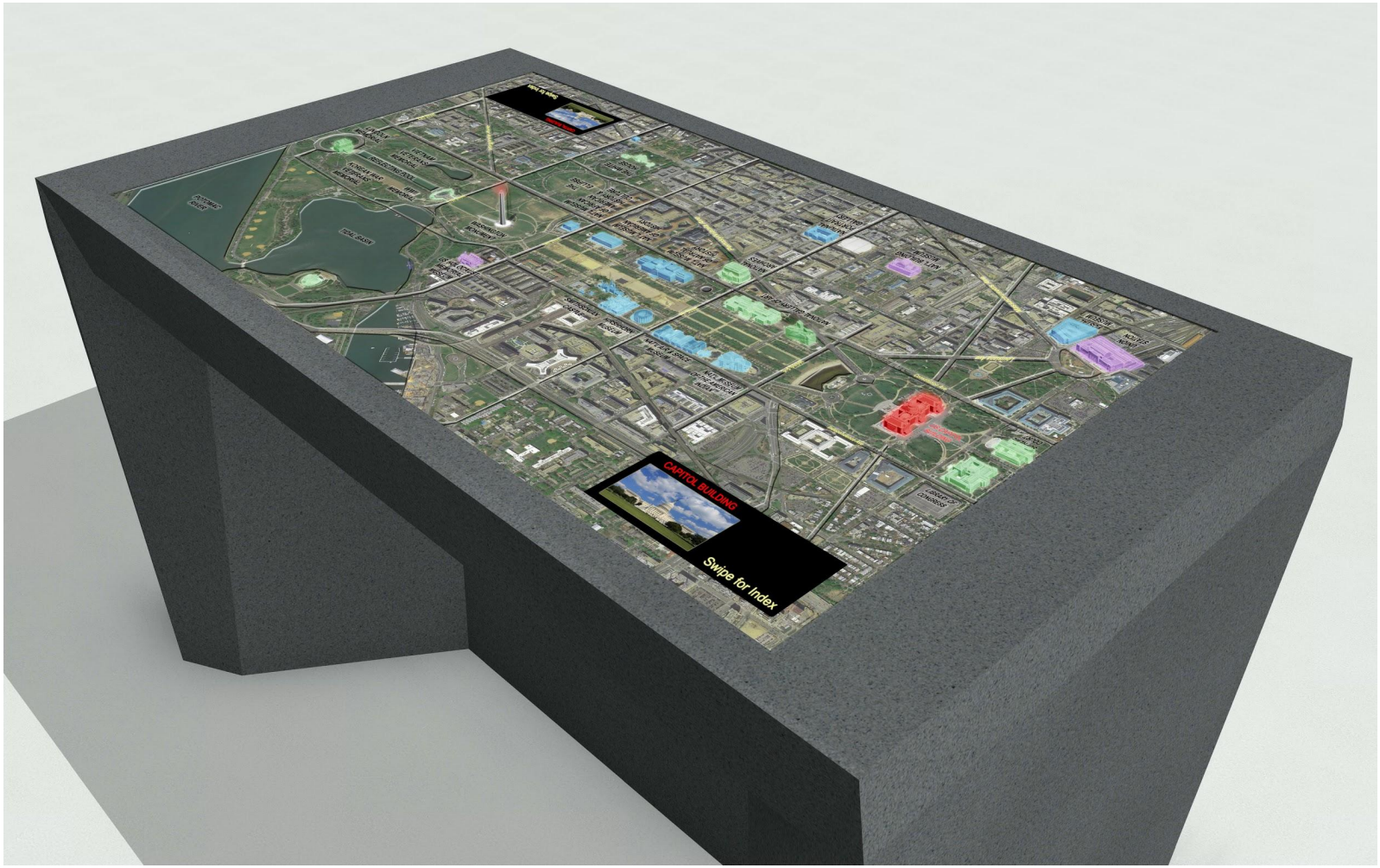


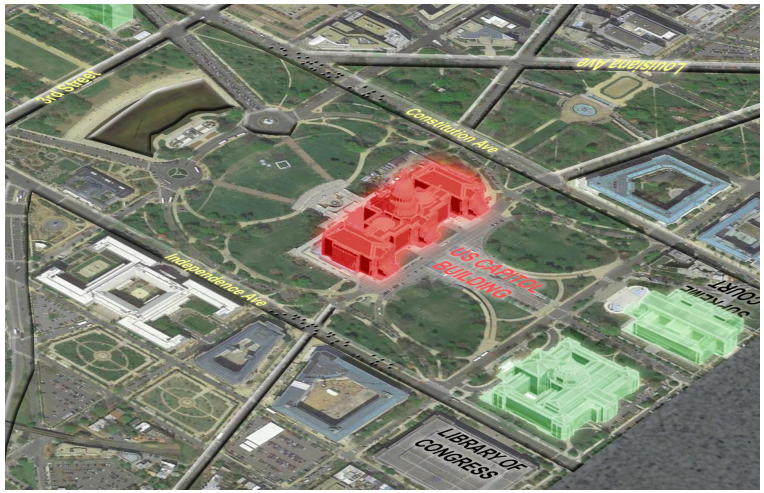
Talking Tactile Campus Model for Overbrook School for the Blind, Philadelphia. This project combines 3D printed building forms with a translucent tactile skin.



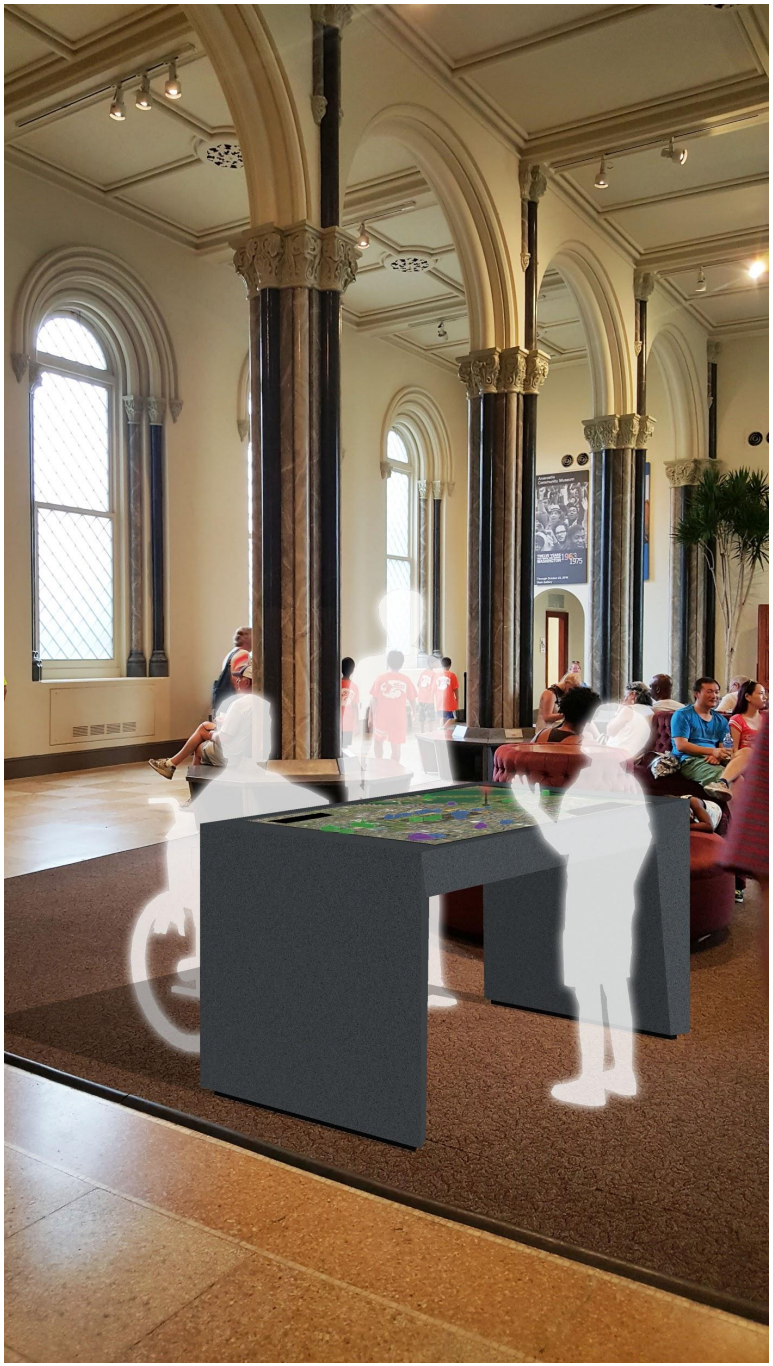
Close up view of the Overbrook Campus Model.

New project: in collaboration with School of Architecture, University at Buffalo, we hope to begin work soon on a large interactive exhibit for the Smithsonian's Castle Visitor Center.

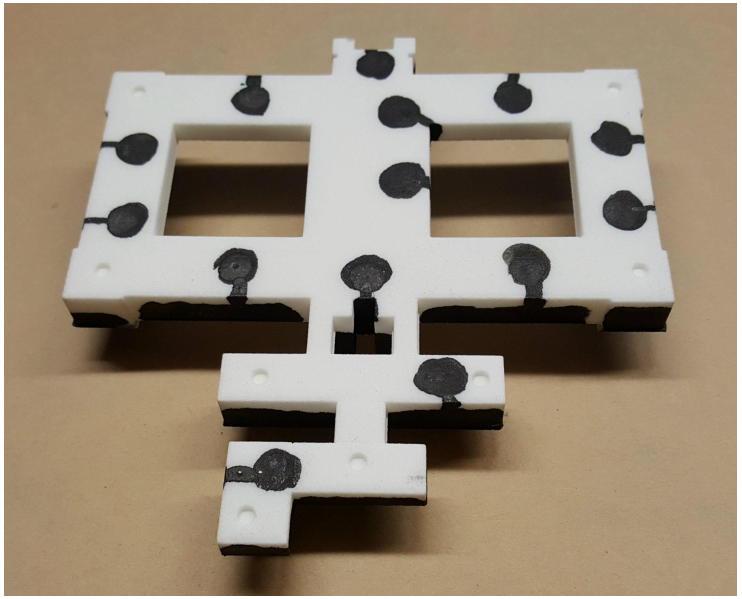


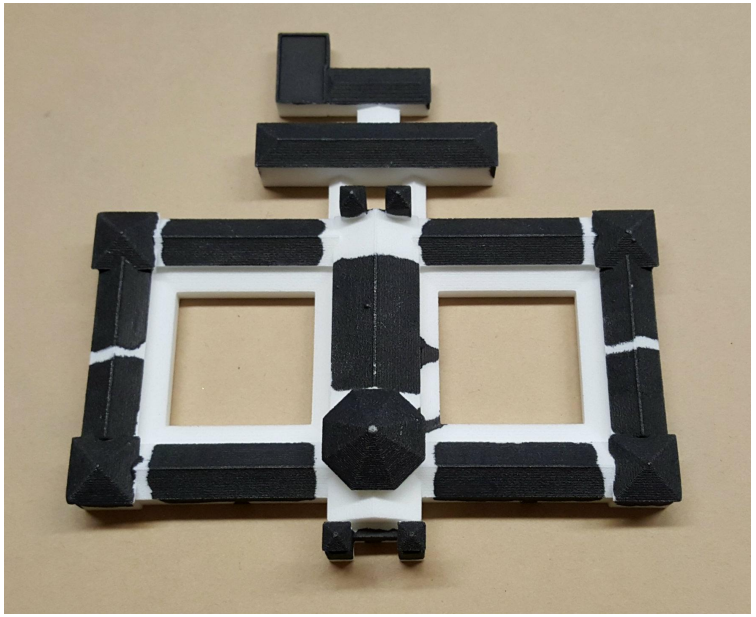


A detail of the model showing the result of touching the US Capitol.

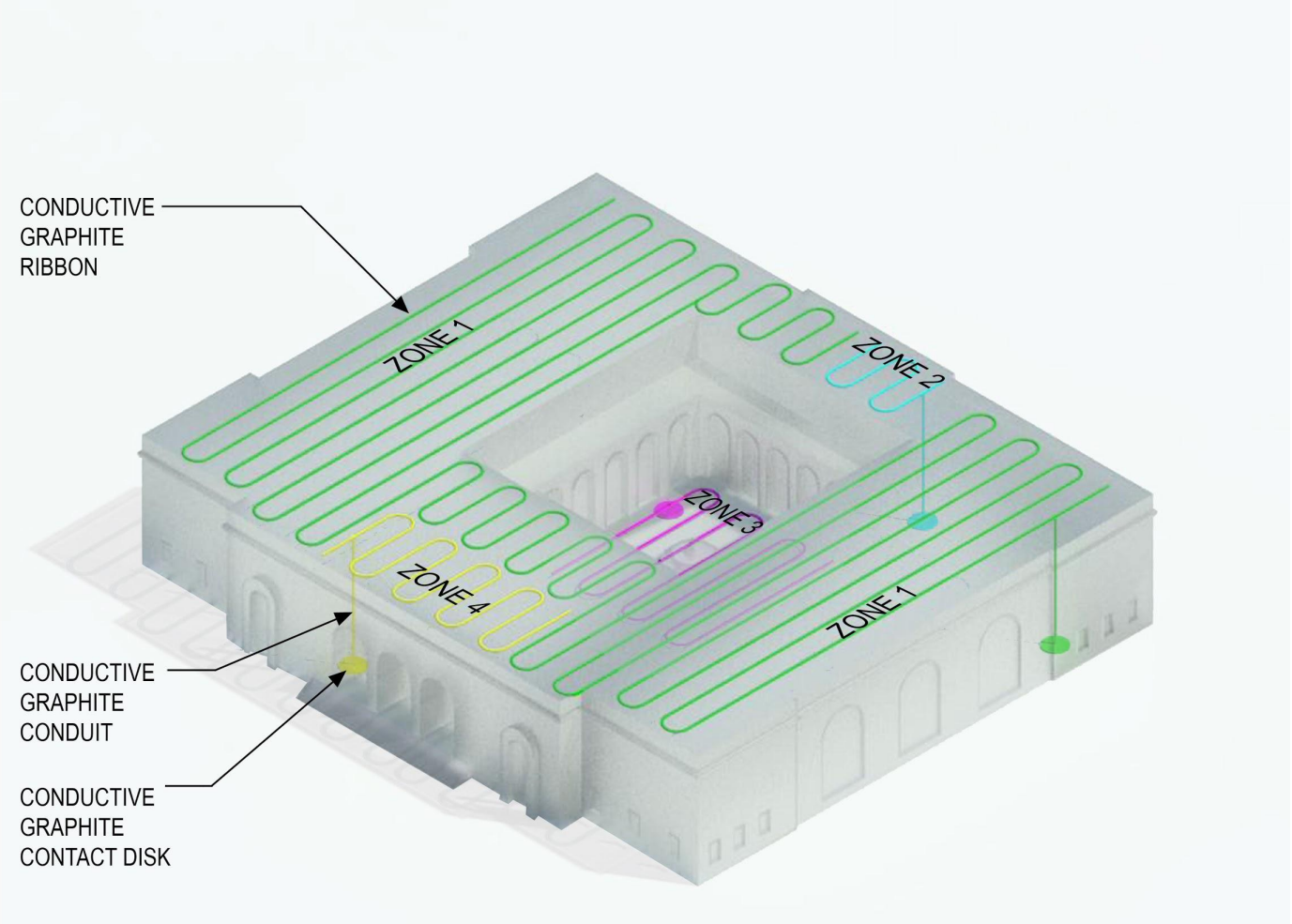


Visualization of the National Mall Universal Touch Model in the Castle, the Smithsonian's headquarters in Washington, DC.

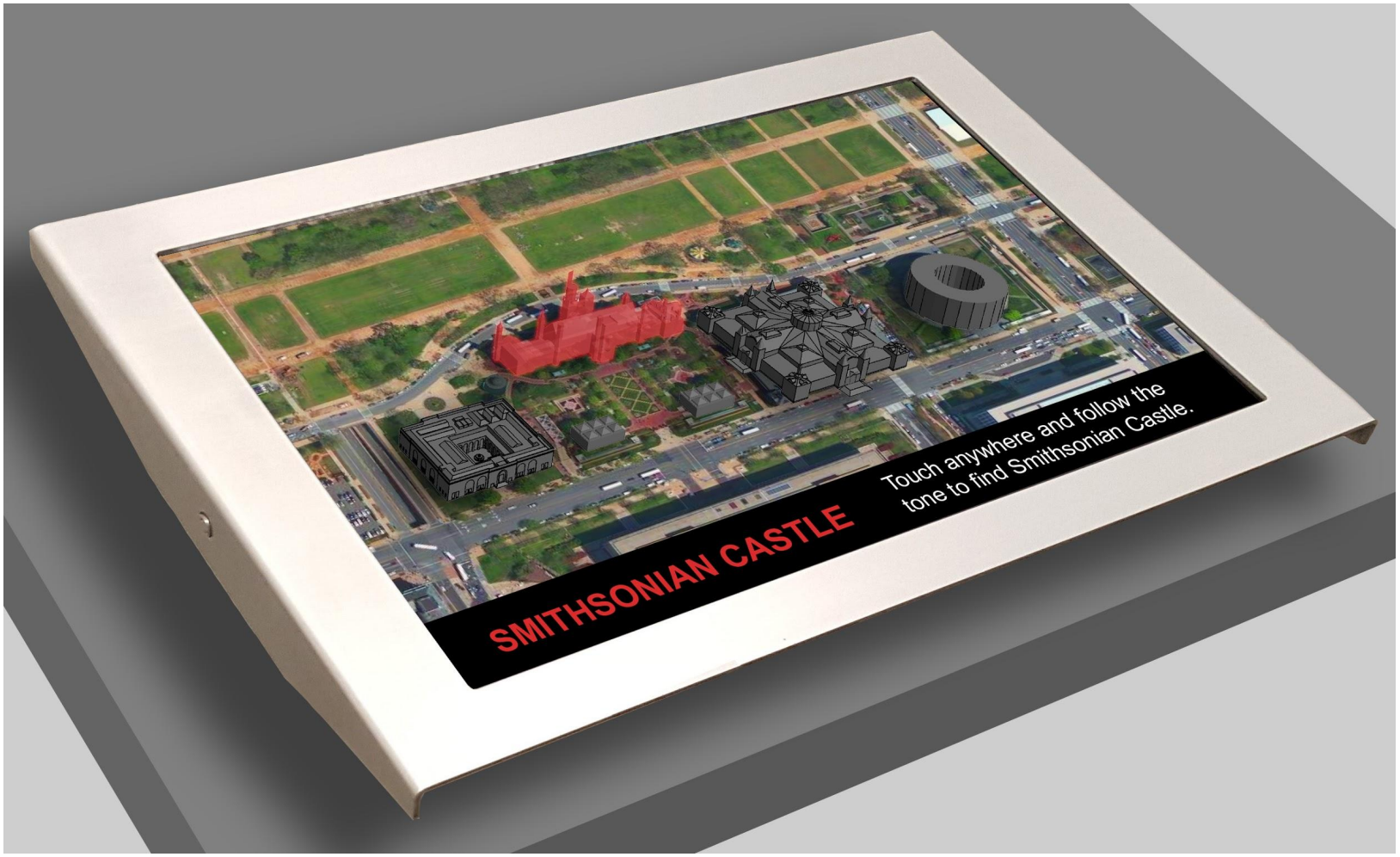




Current method for creating touch-responsive 3D prints involves applying conductive paint to 3D printed models.



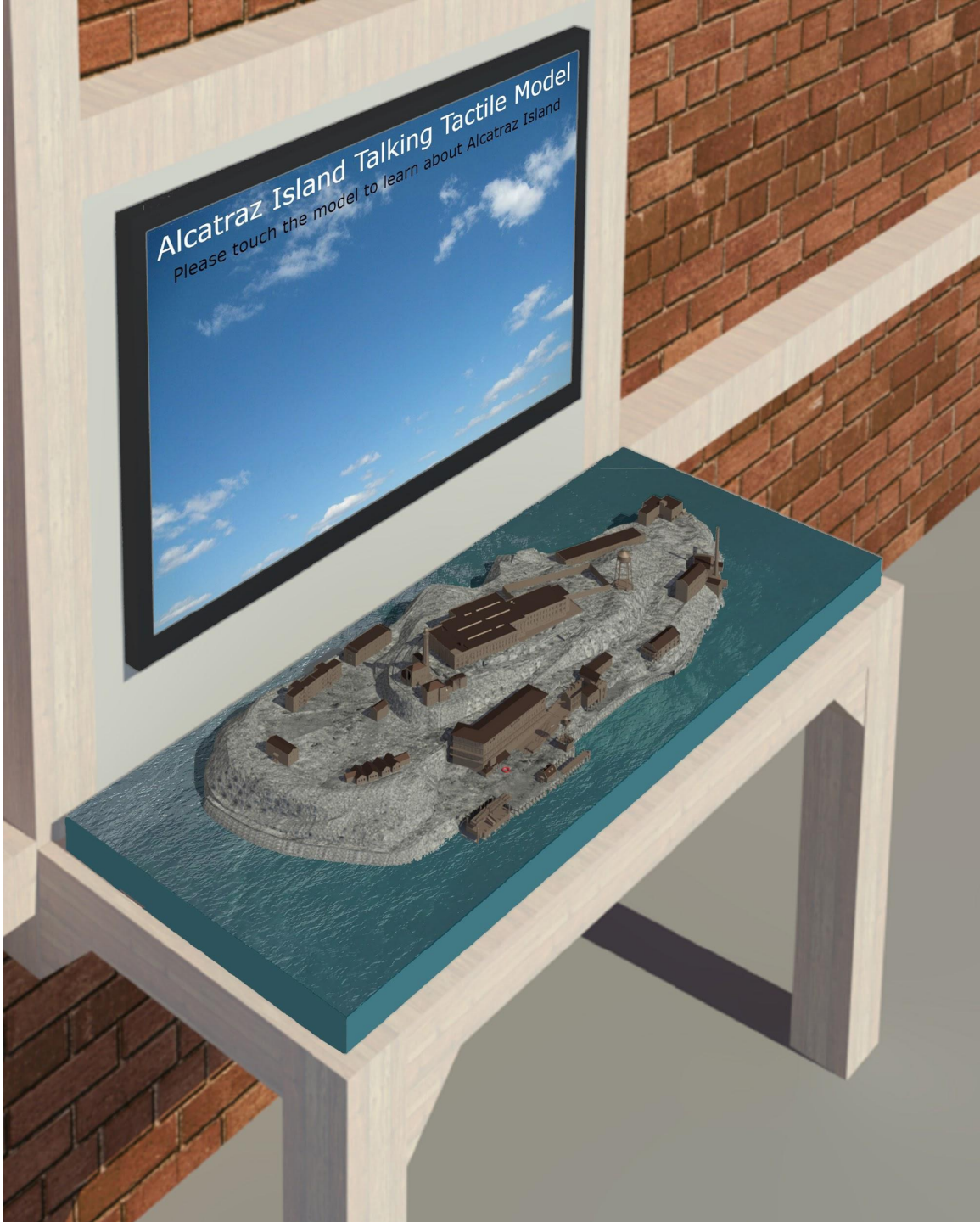
Next, 3D printing in two materials, one clear (insultating) and one opaque (conductive) allows fabricating touch responsive models in one step, without hand painting.



Smithsonian Castle and environs interactive touch model

Alcatraz Island interactive Touch Model

Alcatraz interactive Touch Model birds eys view. Landscape and water are carved from a block of solid granite. Buildings are 3D printed in stainless steel.



Detail of Alcatraz Interactive Touch Model showiing You Are Here as red donut.

Perkins School for the Blind Talking Campus Model, 2012.

Tactile graphic crosswalk diagrams are now being studied to increase knowledge about traffic conditions for blind pedestrians.

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