

Cascade

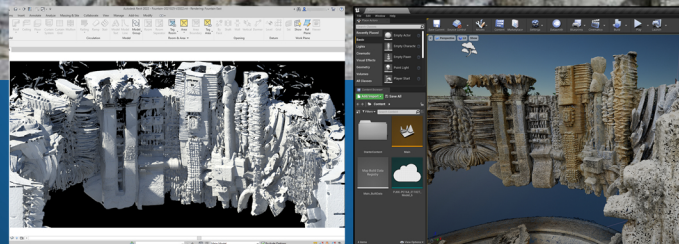
DOCUMENTING HAWAII'S ART IN ARCHITECTURE PROGRAM

The monumental fountain sculpture at the Prince Jonah Kuhio Kalaniana'ole Federal Building and US Courthouse is an important example of the General Services Administration's public arts program. The GSA hired Sam O. Hirota, Inc. to assess the deteriorating fountain's condition with hopes it can be revitalized. Digital capture of such a large, detailed object like *Cascade* had previously never been attempted.



A MODEL OF PUBLIC ART

The image above of the monumental fountain sculpture, *Cascade* looks like one photographic image, but the above is actually a 3D full color photogrammetry model made up of over 1400 images and billions of 3D points. The incredibly detailed 3D representation is useful for condition assessment, interactive display, and, with further game engine processing, virtual waterfalls.



CASCADE IN A VIRTUAL WORLD

(Above right) Unreal Engine by Epic is used by gaming programmers to produce virtual worlds of unprecedented realism. SOH is continuing its testing to see if *Cascade* can be made into a virtual working fountain not just as an interactive experience, but to diagnose structural problems that may have arisen by water's flow through the concrete and coral aggregate forms. (Above left) The completed Revit model of *Cascade*. The challenge in creating this model was keeping enough detail to enable future recasting using CNC machines or 3D printing while reducing the incredible number of polygons to Revit limitations. (Left) An undated photo of *Cascade* in its working state. Water pours over the concrete and coral aggregate forms to the pool below. This water action led to the sculpture's slow deterioration. Sam O. Hirota's digital condition assessment is a first step in keeping the fountain intact for years to come.

MONUMENTAL

(Above) At approximately 25 feet wide and 17 feet tall at its highest point, *Cascade* is the largest single object ever captured successfully by the Artec Leo, and the most detailed and complicated shape ever scanned by SOH's terrestrial and mobile scanners.



PROJECT

PJKK *Cascade* 3D Scan and Documentation
Prince Jonah Kuhio Kalaniana'ole
Federal Building & US Courthouse

CLIENT

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FIRM

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