Getty

3D & Fraunhofer

Collaboration with IU
Getty advances and shares the world’s visual art and cultural heritage for the benefit of all.

Getty is a cultural and philanthropic institution dedicated to the presentation, conservation, and interpretation of the world’s artistic legacy.
Getty's Programs

Getty Museum
Getty Research Institute
Getty Conversation Institute
Getty Foundation
The Getty Digital Imaging Department collaborates with Getty programs to provide high-quality digital surrogates of the Getty’s holdings in support of the programs’ needs, the Getty’s strategic goals, scholarly research, publication, online discovery, and preservation.
Getty Digital Imaging Labs

Museum

Research Institute

Villa
Building and Supporting Getty’s Technical Imaging Capability
3D & 3D
Stereoscopic 3D
3D XYZ/RGB

P (x, y, z)
Fraunhofer CultArm3D-P

Automation
Repeatability
Calibration
Precision
Mobility
Collaboration with the Getty Programs
Collaboration with the Getty Programs

<table>
<thead>
<tr>
<th>Effort / time estimation</th>
<th>A: easy to scan</th>
<th>B: requires some additional work for an operator</th>
<th>C: requires additional pre-/post-processing for an operator</th>
<th>D: not possible to scan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Mette &amp; textured surface, solid object, without hidden parts</td>
<td>Shiny surface (specular reflections), complex geometry</td>
<td>Very shiny surface (specular reflections), transparent surface</td>
<td>&quot;Gly&quot; surface, very shiny/reflective surface, transparent, unstable object</td>
</tr>
<tr>
<td>Example</td>
<td><img src="image1.png" alt="Example Image 1" /></td>
<td><img src="image2.png" alt="Example Image 2" /></td>
<td><img src="image3.png" alt="Example Image 3" /></td>
<td><img src="image4.png" alt="Example Image 4" /></td>
</tr>
<tr>
<td>Comments</td>
<td>Typically, the GlyMm was loaded and scanned automatically from the top and bottom sides in one pass (through the glass turntable)</td>
<td>Requires repositioning (flipping) on the turntable to capture all the details (scanning process takes longer)</td>
<td>Repositioning the object multiple times would improve the final results</td>
<td>Requires positioning / repositioning not possible for complete capture (details inside)</td>
</tr>
<tr>
<td>Calibration (operator)</td>
<td>camera-calibration, color calibration, hand-eye calibration</td>
<td>60-100 min</td>
<td>Semi-automatic procedure</td>
<td>Calibration is performed only once before scanning, after setting up the 3D scanner</td>
</tr>
<tr>
<td>Preparation (operator)</td>
<td>Mounting, fixing, moving, flipping the object, powdering, optimal</td>
<td>2-10</td>
<td>5-15</td>
<td>10-30</td>
</tr>
<tr>
<td>Scanning (automatic)</td>
<td>Image acquisition depends on the size &amp; complexity of the object (no. of acquired images)</td>
<td>5-10</td>
<td>15-30</td>
<td>30-45</td>
</tr>
<tr>
<td>Image processing (automatic)</td>
<td>Color correction, image 3D reconstruction</td>
<td>180 - 300</td>
<td>200-400</td>
<td>200 - 1200</td>
</tr>
<tr>
<td>Post-processing (operator)</td>
<td>Cleaning, 3D modelling of the 3D model</td>
<td>0</td>
<td>6-30</td>
<td>10-40</td>
</tr>
<tr>
<td>Expected results – 3D model</td>
<td>Scanned surface coverage: 100% Resolution: 30 - 300</td>
<td>Scanned surface coverage: 100% Resolution: 100 - 100</td>
<td>Scanned surface coverage: 50-90% Resolution: 200 - 200</td>
<td>Coverage: 50 – 80 % Resolution: 200 - 500</td>
</tr>
<tr>
<td>Image credit:</td>
<td>Wikimedia Commons/Wikimedia Commons</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Testing Locations

Villa Museum
Research Institute (Annex)
Images as Source Data
PhaseOne iXG | IQ3 100MP Trichromatic
Large Datasets

Rented VFX machines to process data.
The Getty Joins CENIC’s Broadband Network to Speed Transmission of Scientific Data and Digitized Artwork

MARCH 18, 2019 - CULTURAL & SCIENTIFIC

La Mirade, CA & Los Angeles, CA: March 18, 2019 — The Getty has joined CENIC’s California Research and Education Network (CalREN), a high-capacity computer network serving the vast majority of academic institutions across California. The move will provide the Getty with 10 times the capacity of its previous connection.

The Getty is the world’s largest arts institution, conducting research and conservation all over the world. Joining CENIC, at 10 gigabits per second, will greatly improve speed and capacity, enabling the Getty and its partners to better share the tremendous amount of scientific data, digitized artworks, and vast research databases that scholars, scientists, curators, and researchers all over the world use every day.

“Getty scholars and scientists are delighted to join their academic colleagues on CENIC,” said Rich Fagen, vice president and chief digital officer of the J. Paul Getty Trust. “We receive more than 4 million queries a year from scholars all over the world, and CENIC will make a measurable difference in the Getty’s work and the work of its partners.”

CENIC connectivity will improve access to more than 150,000 digitized artworks that the Getty makes available online, more than 3 million records in the Getty Vocabularies, and another 2 million records in the Getty Provenance Index. The new 10-Gbps connection will also enhance the Getty’s ability to share the large multi-spectral and 3D datasets produced by its advanced digitization efforts.

“Bandwidth should never constrain the work of California’s scientific, arts, and cultural organizations,” said Louis Fox, CENIC president and CEO. “The Getty is now part of a network that links 12,000 research and education organizations within California to tens of thousands of research and education institutions around the globe — a fiber network and, equally important, a human network.”
Tassie Gniady

Manager, Cyberinfrastructure for Digital Humanities and Creative Activities Research Technologies, UITS, Indiana University
3D Models
A Story of Collaboration