



## ContextCapture®

Software to Automatically Generate Detailed 3D Models from Photographs

### Create 3D Models from Simple Photographs

With ContextCapture, you can quickly produce the most challenging 3D models of existing conditions for infrastructure projects of all types, derived from simple photographs. Without the need for expensive, specialized equipment, you can quickly create and use these highly detailed 3D reality meshes to provide precise real-world context for design, construction, and operations decisions for use throughout the lifecycle of projects.

You can reliably and quickly produce 3D models of any scale, from objects of a few centimeters to entire cities using ContextCapture. There is no limit in the precision of the resulting 3D model, other than the resolution of the input photographs.

### Affordable, Precise 3D Models

You can affordably develop precise reality meshes with less investment of time and resources in specialized acquisition devices and associated training because you can easily produce 3D models using photos taken with an ordinary camera, resulting in fine details, sharp edges, and geometric accuracy.

### Confidence to Model any Scale Project

You can confidently and reliably deliver highly detailed models in less time without the risk of software limitations because you can automate the production of models of virtually any size and/or precision, much faster than previously possible. Thanks to general-purpose computation on graphics



*Courtesy of Gerpho Photo Aéreinne*

*Reality meshes are phototextured 3D models that provide precise real-world context.*

processing units (GPGPU) and multi-core computing, ContextCapture can process about 15 gigapixels per day and per computer.

### Integrate Models into any Workflow

You can access and share these rich models of existing conditions for use in any CAD or GIS workflow by easily and consistently sharing information, consumable and accessible on desktop and mobile devices, in many formats, including for native use within MicroStation®.

ContextCapture has two main modules, the Master and Engine. The Master provides a graphical user interface to define input data, processing settings, submit processing tasks and monitor progress as well as visualize results. The Engine runs on a computer in the background, without user interaction and performs the computationally intensive algorithms. Thanks to this master-worker pattern, ContextCapture supports grid computing and dramatically reduces processing time simply by running multiple ContextCapture engines on several computers and working on a shared job queue.

### Capabilities

#### Integrate Georeferenced Data

ContextCapture also natively supports several types of positioning data including GPS tags and control points. It can also import any other positioning data through position/rotation import or complete block import. This enables you to precisely measure coordinates, distances, areas, and volumes.

#### Perform Automatic Aerotriangulation/Reconstruction

Fully calibrate all images by automatically identifying the relative position and orientation of each photo. Employ automatic 3D reconstruction, texture mapping, and highly accurate models thanks to ContextCapture's unique 3D mesh retexturing of ties and reconstruction constraints to ensure optimization algorithm. Because it

*"With ContextCapture, we're able to automatically construct highly detailed 3D models of virtually any size for our clients, faster and at much less cost than with traditional methods. We think ContextCapture is going to revolutionize the geospatial industry."*

— David Byrne  
Technical Director at AEROMetrex

## System Requirements

### Minimum Hardware

At least 8 GB of RAM and NVIDIA or AMD graphics card, or Intel integrated graphics processor compatible with OpenGL 3.2 with at least 1 GB of dedicated memory.

### Recommended Hardware

Microsoft Windows 7/8/10  
Professional 64-bit running on a PC with at least 16 GB of RAM, an 8-core CPU and an NVIDIA GeForce GTX 780 Ti graphics card and data should preferably be stored on fast storage devices (fast HDD, SSD, or SAN).

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ensures optimal placement of 3D mesh vertices, it recovers finer details and sharper edges with fewer artifacts, significantly improving geometric accuracy.

### Generate 2D and 3D GIS Models

Produce accurate georeferenced 3D models in a full range of GIS formats including true orthophotos and the new I3S format from Esri, with tiling, and aerotriangulation export to KML and XML. Includes an a coordinate system database interface to ensure interoperability with your GIS solution of choice. You can select from more than 4,000 spatial reference systems and add user-defined ones. And ContextCapture automatically adapts the resolution and precision of the model to the resolution and spatial distribution of input photographs. This means it can handle scenes with non-uniform resolution without requiring trade-offs in the overall efficiency in order to preserve a few higher resolution scene regions.

### Generate 3D CAD Models

Produce 3D models using a full range of CAD formats, including multi-resolution meshes, 3D-neutral formats, digital surface models, and dense 3D point clouds to ensure your models are accessible in your modeling environment. You can even use these models natively within MicroStation.

### Publish and View Web-ready Models

Produce models of any size that are optimized for Web publishing, and that can be viewed using a free Windows or Mac viewer or using a free Web viewer. This enables instant sharing and visualization of 3D models with any stakeholder.

## ContextCapture Center

If you are creating extremely large models and want to take advantage of greater computational power, ContextCapture Center adds the capability to leverage grid computing to speed processing time dramatically. It does so by running multiple engines on several computers, and associating them to a single job queue. If you have projects larger than 100 gigapixels of imagery, use ContextCapture Center to seamlessly handle terabytes of input imagery.

You can speed production with the ability to use the latest computing systems for desktop and cluster processing units with the ability to leverage GPU computing, multi-core computing, advanced bundle block adjustment, tiling mechanisms, task queuing and monitoring, grid computing, and ultra-large project management.

### Why ContextCapture?

ContextCapture is ideal for any scale of infrastructure project throughout design, construction, and operations. Its power, flexibility, and scalability turn simple photographs into true-to-life highly detailed 3D cities quickly and with precision. ContextCapture is used by leading design, construction, mapping, and surveying professionals including Nokia, Blom, Asia Air Survey, Airbus Group, AEROMETREX, and many more in Europe, America, and Asia to generate high resolution photorealistic 3D models.

### CAPABILITIES

Imagery dataset size per project  
Mesh export formats (3MX/I3S/OBJ/FBX/STL/DAE/OSGB)  
Colored point cloud export (POD/LAS)  
True orthophoto / 2.5D Digital Surface Model (TIFF/GEOTIFF/KML)  
Georeferencing  
Parallel (cluster) processing for unlimited scalability  
Software development kit

### CONTEXTCAPTURE

Up to 100 Gigapixels

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Unlimited

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### CONTEXTCAPTURE CENTER



*Perform automatic aerotriangulation of photos.*

*Models as large as city-scale can be reliably produced and shared.*