



# Terrain Tools for ArcGIS Pro

MVRsimulation® Terrain Tools for ArcGIS® Pro version 3.0 enables Virtual Reality Scene Generator® (VRSG®) users to turn their geospatial data into real-time 3D VRSG terrain from within their GIS software. Building on the industry standard ArcGIS Pro platform, the Terrain Tools extension combines powerful 3D terrain creation with an accessible interface that can be easily understood by anyone with a comprehension of geospatial data concepts and some experience with ArcGIS Pro.

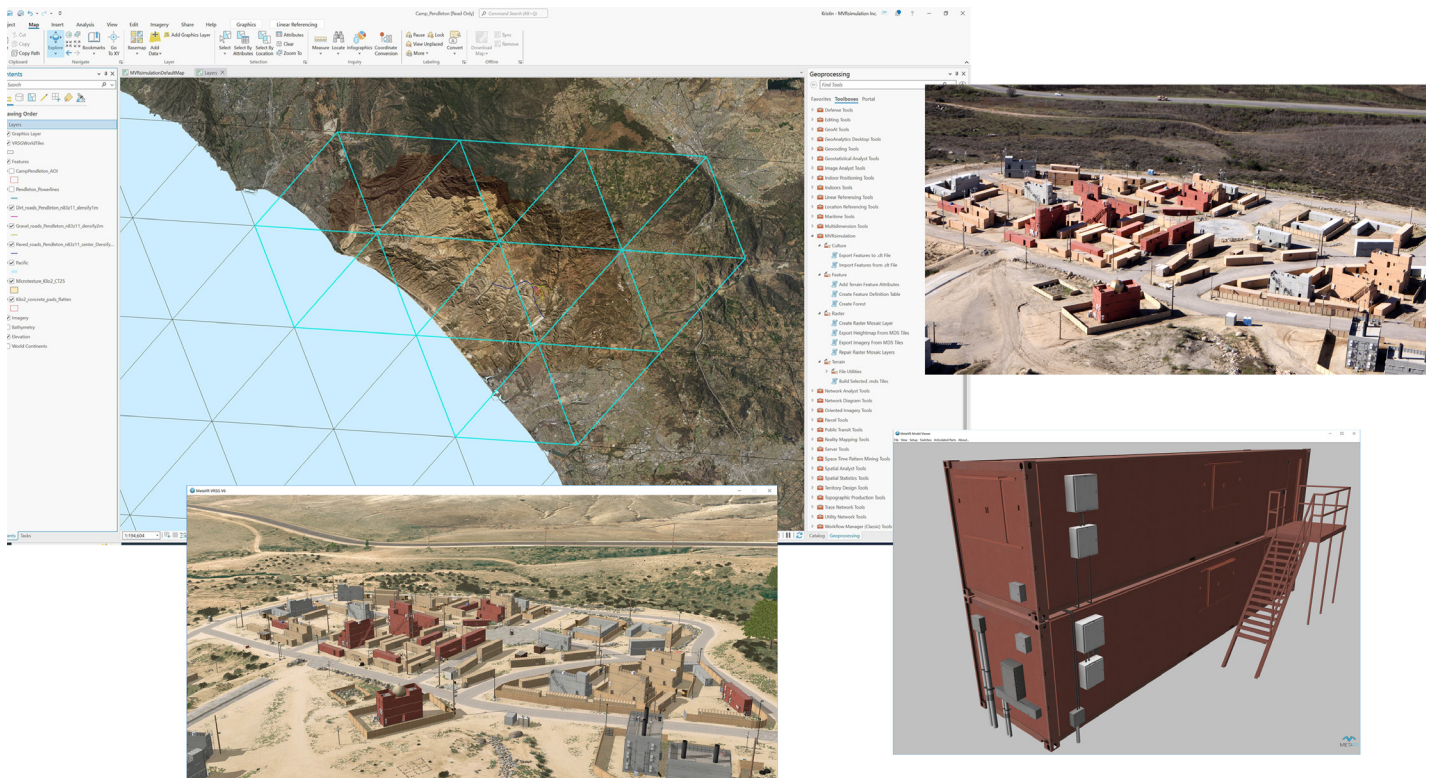
## Core features

Create real-time terrain in round-earth VRSG terrain architecture for rendering in VRSG with these key features that integrate seamlessly with ArcGIS Pro, the industry's leading GIS platform:

- Live compositing display of raster imagery and elevation data in a WYSIWYG interface.
- Support for any format of source data supported by ArcGIS Pro.
- Ability to supply vector data to define linear and areal features. Generate road networks, fine tune elevation with polygon or point data, create extruded buildings, walls and fences, create large coverage areas of cultural lights, or specify cut-in areas with blended geotypical ground textures.

- Raster display capabilities: pansharpener, custom band order, multiple resampling techniques, histogram stretching, contrast and brightness control, masking, and edge blending.
- Support for building underwater geometry (bathymetry) to increase the terrain fidelity of the ocean floor for use in littoral scenarios with VRSG's 3D ocean sea states.
- Ability to compile buildings and fences from 2D polygon footprint features using an ArcGIS Pro® CityEngine® rule package (.rpk): optimized with geometry LODs, instancing, and spatial clustering.
- Ability to compile 3D and 2D external terrain geometry (such as inset models and runways) directly into the terrain for a seamless integration between the terrain and cut-in model geometry.
- Distributed build system with a browser user interface.

Within the ArcGIS Pro interface, coastlines and road networks can be digitized and cut out from geospecific imagery using Terrain Tools. At runtime, VRSG generates simulated 3D oceans in the regions identified as water, and blends road textures with underlying imagery. The terrain tiles seamlessly match complete water tiles generated by VRSG.



Terrain Tools map view in ArcGIS of MVRsimulation's virtual replica of the Kilo 2 MOUT site at Camp Pendleton, a bird's-eye view photo of the MOUT site, a real-time bird's-eye view of the 3D terrain tiles rendered in VRSG, and a MOUT model displayed in Model Viewer. Photo (upper right): USMC.

## New features

Terrain Tools for ArcGIS Pro version 3.0 includes:

- Support for all features from Terrain Tools for ArcGIS Desktop version 2.1 on the new ArcGIS Pro platform.
- Automate transitioning legacy databases from Terrain Tools 2.1 and Esri ArcGIS Desktop software.
- Performance improvements including parallelized display rendering during compilation.
- Adds support for cutting CityEngine features into the terrain and adding 3D fences. Also, support for randomizing damage states from the CityEngine rule files.
- Compile imagery from Web Tile layers into terrain.
- Fine tune output from areal forest features. Add model weight attribute to specify the frequency of different models. Adds per-model colorization and LOD settings specified via JSON.



*Virtual terrain of the densely populated city of Tampa, Florida created as a rapid terrain generation project to support SOF Week 2024. Terrain Tools supports rapid terrain creation using current imagery and procedural buildings based on a CityEngine rule package.*

## MVRsimulation VRSG terrain

Terrain Tools is used to build geospecific VRSG terrain for the entire battle space with no limitation to small range, local approximations. MVRsimulation's round-earth VRSG terrain architecture is ideal for aerial flight applications, which require vast areas of terrain, as well as ground-level simulation, which require extremely high-fidelity detailed 3D modeling. Joint training exercises such as Close Air Support (CAS) missions can take advantage of VRSG's expansive round-earth terrain format to supply geospecific, correlated views to all role players: high altitude UAVs, where distance and the earth curvature is a factor in line-of-sight calculations; high-speed fixed-wing flight, where visual anomaly-free real-time flight at low altitudes is critical for terminal attacks; and ground force JTACs, where visually accurate terrain is required to complete a realistic exercise.

Another critical advantage of the VRSG terrain format is its segmented database representation. Terrain built in VRSG format is comprised of relatively small, self-contained terrain tiles that fit together seamlessly but can be built separately. This property enables a high degree of parallel processing of terrain since many different machines licensed for ArcGIS Pro can build tiles for a given area at the same time supporting high-fidelity, rapid terrain development for point-of-need training.

MVRsimulation, the MVRsimulation logo, and VRSG (Virtual Reality Scene Generator) are registered trademarks, and the phrase "geospecific simulation with game quality graphics" is a trademark of MVRsimulation Inc. MVRsimulation's round-earth VRSG terrain architecture is protected by U.S. Patent 7,425,952. Esri Products or Services referenced in this work are trademarks, service marks, or registered marks of Esri in the United States, the European Community, or certain other jurisdictions. All other brands or product names are trademarks of their respective companies. Copyright © 2025, MVRsimulation Inc. All rights reserved. Printed in the United States of America. November 2024.



*Virtual terrain of Ishigaki, Japan with geospecific bridge model and buildings along with procedural CityEngine buildings. The terrain database also includes geotypical culture and vegetation.*

## Prerequisites

MVRsimulation Terrain Tools requires a minimum of a Standard level of license of ArcGIS Pro 3.1.3 for preparing raster data. Additional terrain-building machines can use any license level (Basic, Standard, or Advanced) of ArcGIS Pro version 3.1.3 and above.

An MVRsimulation VRSG7 license is not required to use Terrain Tools version 3.0, but is recommended so users can review compiled terrain in Model Viewer or VRSG on the same machine.

Current Terrain Tools customers on active maintenance can obtain the latest release of Terrain Tools version 3.0 by downloading the software from their account on MVRsimulation's Download Server. Terrain Tools version 3.0 is also delivered on a USB hard drive. Contact MVRsimulation for further information about obtaining a USB installation drive.

Note: Terrain built with Terrain Tools version 3.0 can be compiled to work with any version of VRSG, however some features may be disabled to ensure compatibility. Customers with a VRSG license and active software maintenance can obtain the latest release of VRSG7 on MVRsimulation's Download Server.

For more information, visit [www.mvrsimulation.com](http://www.mvrsimulation.com), contact [sales@mvrsimulation.com](mailto:sales@mvrsimulation.com), or scan the QR code.

