

# GDB Export for VR-Forces® and MÄK Stealth

TerraTools® 3.0 now supports the rapid generation of high-fidelity geospatial databases for MÄK GDB format terrain databases. Users of MÄK Stealth and VR-Forces® can create highly realistic environments to support computer generated forces (CGF) simulations ranging from theater-level exercises to "Three Block War" missions in urban terrain.

The TerraTools GDB export plug-in is engineered to seamlessly support the production of VR-Forces terrain databases using the full range of GIS source data processed by TerraTools.

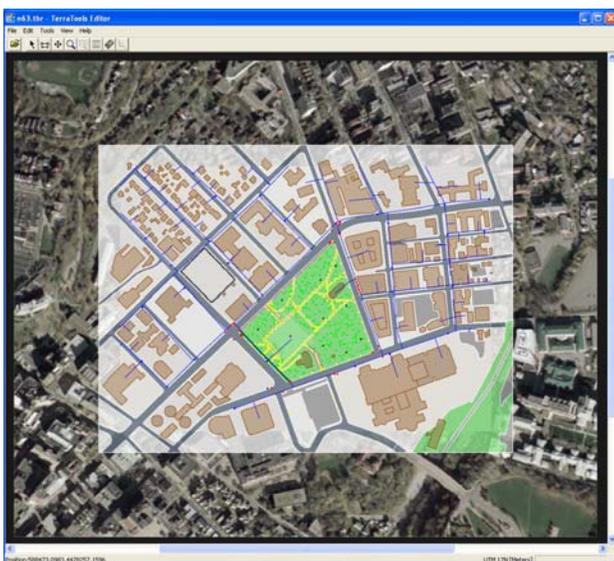
## REAL WORLD, REAL DATA, FULLY CORRELATED, RAPID CONSTRUCTION

VR-Forces users can now build real-world databases using a wide range of GIS vector data, CAD building models, digital elevation models (DEM), and LIDAR collections, as well as NGA vector data sources (DFAD, VMAP, DNC, DTOP, EUVMAP) and imagery sources (CADRG, CIB). TerraTools will produce a fully correlated set of export products to support 2D MÄK Plan View Display and 3D MÄK Stealth and StealthXR from a single TerraTools project flow graph.

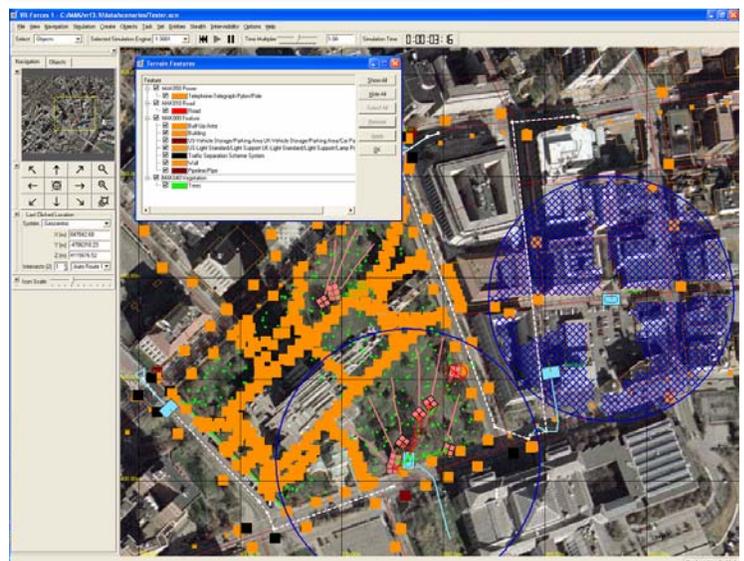
TerraTools preserves all feature attribution on the source geospatial data and automatically generates an integrated triangulated irregular network (ITIN) terrain representation that supports efficient paging of large area databases. Additionally, it automatically assigns object attribution required for CGF reasoning, as an integral part of the database construction process.

The TerraTools exporter generates all three components of the MÄK GDB: terrain, models, and vector data. The terrain and model geometry are translated with surface attribution, while the GDB "vector network" is created from the topologically-correct TerraTools representation. The TerraTools GDB exporter automatically fills in required GDB specification data, using actual or derived information, reducing the user requirements to set all vector data specifications. When required attribution is still missing, the GDB exporter produces a list of source data features that require further attribution, supporting rapid validation and verification of the CGF GDB runtime. Finally, TerraTools planarizes the vector network data, saving significant time for the user.

## FULLY CORRELATED URBAN TRAINING SCENARIOS

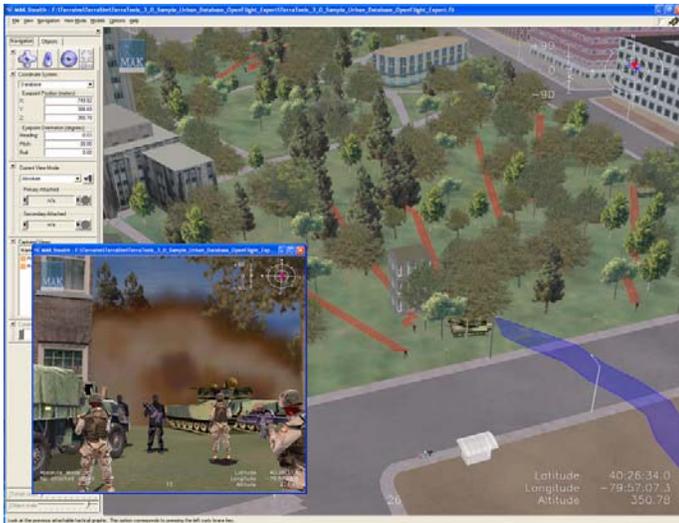


Urban Source Data in TerraTools

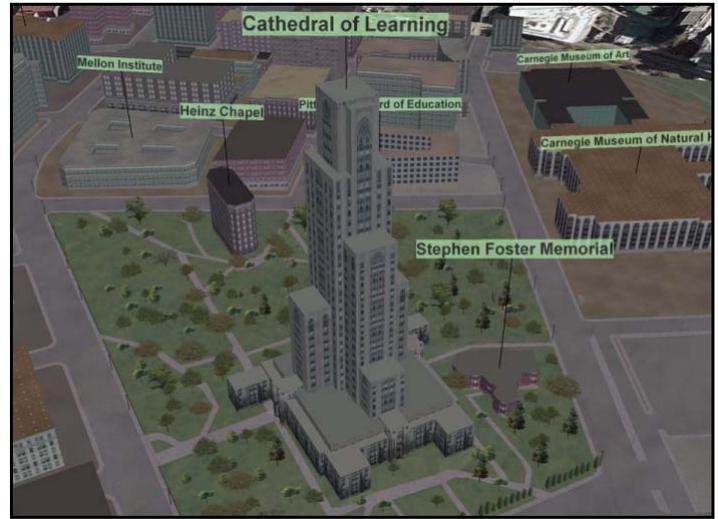


VR-Forces View of Urban Database

TerraTools seamlessly processes common urban content including built-up areas, building footprints, unique building models, roads, vegetated areas, rivers, lakes, and bridges. With the additional ability to create linear placements of telephone poles, walls, fences, and pipelines, areal placement of scattered tree point models, and point placements of lights, traffic signs and other urban object models, TerraTools compiles databases unrivaled in urban content.



**MÄK Stealth View**



**TSGFly Urban Database Overview**

Database content can be reviewed in the Tiled Scene Graph viewer (TSGFly), and modifications are easily accomplished using TerraTools' integrated vector data and attribution editors. Once exercise content requirements are validated, export to GDB involves the selection of various VR-Forces database optimizations, including spatial index creation and terrain balancing to improve runtime performance. A fully correlated OpenFlight file, organized for efficient paging within MÄK Stealth, is also generated. Users can specify additional models to be included in the OpenFlight export that are not included in the GDB, such as power lines or underground structures; this modification is accomplished with minimal changes to the TerraTools project graph.

The TerraTools multi-threaded architecture provides parallel database construction using dual processor or multi-core architectures with a single seat TerraTools license. High-resolution insets within broad area coverages are supported using TerraTools Batch Mode, an advanced scripting language for iterating over collections of source data spanning multiple one-degree geo-tiles. While many database construction products require significant investments in manual editing and specialized database processing architectures, TerraTools compiled the raw source data and exported the fully correlated GDB and OpenFlight shown in this brochure in less than an hour using a dual processor Windows XP workstation.

## **ADVANCED TERRAIN SUPPORT FOR MÄK STEALTH AND VR-FORCES**

The TerraTools GDB export allows VR-Forces users to construct terrain environments that exercise the full range of flexibility and functionality of the VR-Forces runtime architecture. The terrain environment can be easily tailored to support testing of components such as vehicle dynamics, behaviors and tactics, damage models, sensors, countermeasures, and weapons. With TerraTools' rapid, repeatable database construction process, it is possible to generate a family of terrain environments with varied terrain ruggedness, urban density, and ranges of urban detail while maintaining common properties for true testing and evaluation.

At the same time, TerraTools generates the highest fidelity 3D content of the MÄK Stealth and StealthXR, always fully correlated with the VR-Forces CGF representation. In addition to the typical entity display, MÄK Stealth draws trailing effects, trajectory histories, entity labels, billboard icons for unit identification, translucent bounding volumes to represent aggregates, and dynamic sensor volumes, as well as providing a 2D overlay with an entity locator and position indicator. Picture-in-picture inset views allow you to see what any vehicle is seeing, even as you watch it travel across the terrain.

For more information regarding TerraSim's MÄK GDB export, contact [sales@terrasim.com](mailto:sales@terrasim.com).



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