

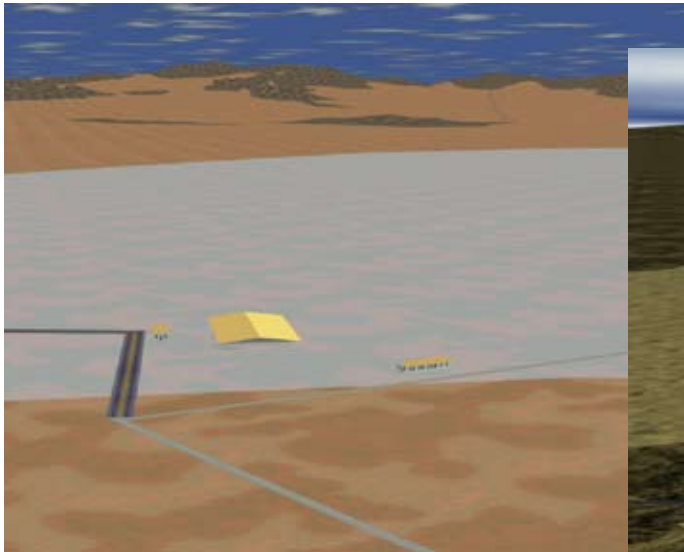


METAVR

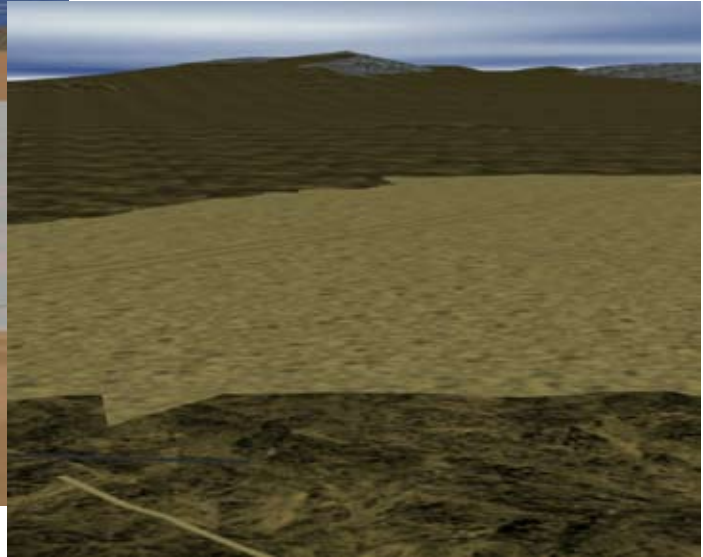
NTC Terrain Database



<http://www.metavr.com>
sales@metavr.com
US 617-739-2667



View of Bicycle Lake from the original NTC database created from SIMNET data, which is an ACRT asset.



View of Bicycle Lake from the Primary 2 CCTT terrain database.

MetaVR has developed an enhanced version of the industry standard virtual National Training Center (NTC) terrain for use on PC-based visual systems. The terrain database is used for maneuver training and, with the recent addition of the Tiefert City Mobile Military Operations in Urban Terrain (MOUT) buildings, to train infantry for urban operations.

This brochure provides a brief summary about MetaVR's NTC Ft. Irwin database for use on PC-based visual systems. All images are unedited realtime screen captures taken with MetaVR's 3D visualization product, Virtual Reality Scene Generator™ (VRSG™), of the terrain database created by MetaVR's terrain database generation application, except where noted. Note that other vendors' representations of the same NTC data may vary in quality from what is depicted in this brochure.

Overview

The National Training Center (NTC) at Ft. Irwin, CA, is one of the most frequently modeled terrain databases for simulation. The facility traditionally has been used heavily by the U.S. Army ground forces for live fire and maneuver training; approximately 42,000 soldiers are trained at NTC each year. More recently, training includes combined arms operations in mock urban areas.

Virtual-world representations of NTC are used in simulators that enable soldiers to train in the virtual NTC when they are not engaged in live training. After receiving training in the virtual NTC, soldiers go on rotation to train at the actual NTC facility.

The images on this page show the evolution of the virtual world fidelity of NTC by focusing on its Bicycle Lake landmark.

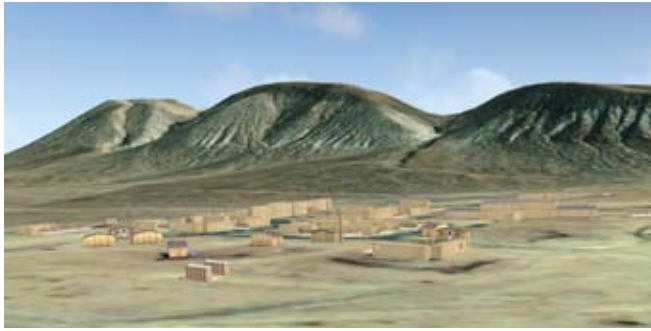
Image on the cover: Real-time scene of the Bicycle Lake area from MetaVR's NTC database, rendered in VRSG. This view includes 3D cultural features, vehicles, and animated characters from MetaVR's 3D model libraries.



View of Bicycle Lake from MetaVR's NTC database, rendered at 60 Hz by VRSG, MetaVR's image generator.

MetaVR's NTC database was constructed from .5 meter resolution natural color aerial imagery, and 25-meter elevation posts. Cultural features that match the imagery were manually and automatically added to the terrain with MetaVR's terrain-generation product.

Approximately 11,000-road linears were extracted from the legacy NTC-tin.C7L terrain database and inserted into MetaVR's new NTC database. The linear road segments were manually rectified to match the imagery. During the construction of this database, the legacy SimNet data was found to be well correlated with the imagery. MetaVR's databases in flat-earth UTM-based MDX and SAF CTDB formats derived from this legacy source are fully correlated.



MetaVR's virtual Tiefert City urban village at NTC.

Tiefert City MOUT site

An area of detail on MetaVR's NTC database is the virtual Tiefert City. This MOUT site is one of nine mock urban training villages at NTC. Located near Tiefert Mountain in the Mojave Desert, the village is the largest urban training ground at NTC for preparing troops for combat in a desert setting.

The Tiefert City site is made up of a large cluster of low-rise prefabricated plywood structures. These structures, which look like shipping containers with windows, are reconfigurable mobile MOUT training shelters and containers. Modular, transportable and stackable, they can be used for various types of building site configurations; for example the structures can be stacked and attached to create multi-story buildings. At the site soldiers undergo training scenarios such as setting up ambushes, house-to-house searches for insurgents, responding to snipers, and identifying car bombs and improvised explosive devices. Tiefert City provides a realistic urban training ground; it is the last stop for many U.S. soldiers before deployment to Iraq. MetaVR's virtual-world representation of Tiefert City can be used in simulators so that soldiers can continue with training scenario activities when they are not engaged in live training.



MetaVR model of a mobile MOUT structure.



Interior of a MetaVR mobile MOUT model.

MetaVR's virtual Tiefert City MOUT site contains several high-resolution site-specific models. The mobile MOUT structure models were custom created for this virtual MOUT site; these models were based on perspectiveless digital photographs of actual mobile MOUT structures at Tiefert City. The virtual mobile MOUT structures have articulated doors that can be set in various states. The virtual site also has models of other cultural elements such as barriers, gas tanks, power generators, portable toilets, surveillance cameras; these models too were modeled from on-location photographs. All models are in MetaVR's model format.



MetaVR's virtual Tiefert City at NTC, featuring site-specific mobile MOUT models (such as the City Hall shown above), and vehicle models from MetaVR's 3D content libraries.

Specifications

The following are specifications for the NTC terrain database, in MetaVR's flat-earth, UTM-based MDX format:

Image/view statistics for the MetaVR virtual Tiefert City scene on the front cover

Far horizon: 50 km
 FoV: 60 degrees horizontal
 Polygon count: 40,490 triangles
 Display: 1920 x 1440 pixel res. with 4 subpixel AA
 Color depth: 32-bit
 Frame rate: 60 frames per second
 Graphics card: NVIDIA GeForce 7800 GT 256 MB DDR

Terrain database statistics

Imagery build time: 8 hours 38 minutes
 Geometry build time: 41 minutes
 Extents:
 N35 38'
 W116 57' W116 18'
 N35 6'

Database size: 60 x 60 km
 Size on disk: 13 GB
 Terrain LoDs: 4 maximum
 Texture LoDs: 7 maximum
 Terrain post spacing: 16 mpp at highest LOD
 Source imagery: 58 GB

Elevation coverage: 25 meter per post

Imagery coverage:

0.25 mpp color Bicycle Lake (3.5 x 3.5 km)
 0.35 mpp color satellite Tiefert City (375 x 375 m)
 0.5 mpp color aerial (60 x 60 km)
 1 mpp color (30 x 30 km)
 15.0 mpp color-fused satellite whole database (60 x 60 km)

Cultural features:

772 geotypical buildings
 89 photospecific/photorealistic buildings (Tiefert City)
 865 geotypical volumetric trees and bushes
 11,075 road segments
 110 fence segments
 200 telephone poles and wires
 133 cones and generators
 115 barriers, portable toilets, surveillance cameras, and gas tanks (Tiefert City)
 Light points and runway lights



Scene on the Bicycle Lake area of MetaVR's NTC database, rendered in VRSG. This view includes 3D content from MetaVR's 3D model libraries.

The MetaVR NTC terrain database is available free of charge to all US Government agencies and contractors (for official use only) and requires version 5 of VRSG.

For more product information, pricing, and ordering, see MetaVR's web site at www.metavr.com or send email to sales@metavr.com.

MetaVR, Virtual Reality Scene Generator, VRSG, Metadesic, First Person Simulator, WorldPerfect, the phrase "geospecific simulation with game quality graphics", and the MetaVR logo are trademarks of MetaVR, Inc. Metadesic is protected by US Patent 7,425,952. All other brand or product names are trademarks of their respective companies.