

VR-inTerra™

Terrain Ability for Your Simulation

Overview

VR-inTerra gives you the ability to quickly and easily supply your simulation application with the terrain information it needs, as well as the agility that allows it to support multiple types of terrain. Using VR-inTerra's terrain-independent C++ API, you can execute high-performance height-of-terrain (HOT) checks, line-of-sight (LOS) tests, and feature queries regardless of which type of terrain you use.

With an interface as simple as the one you use to access digital elevation models (like DTED), you can access rich 3D terrain formats, including 3D studio MAX, OpenFlight, and MetaFlight. If you use VR-TheWorld, your VR-inTerra interface will also allow your simulation access to a world-wide terrain elevation model.

Terrain-Independent API

VR-inTerra can load, page, or stream terrain from a wide variety of formats or sources into a single, consistent run-time representation consisting of a collision graph and vector network. The highly optimized collision graph, based on the popular Bullet physics engine, supports thousands of intersection tests per simulation frame. The vector network, based on the run-time representation used in MÄK's VR-Forces®, provides a common interface to the feature data needed for terrain analysis – including navigation and route planning.

Your application needn't be concerned with details of the terrain format or how the terrain was loaded. You can focus your development time improving your simulation qualities and leave the terrain to VR-inTerra.

Terrain Where It's Needed

Simulations understand the terrain differently than visualization systems. 3D visual scenes use perspective to show high detail in the foreground and lower levels of detail in the distance. Simulations, on the other hand, require "ground truth" everywhere. VR-inTerra reconciles this difference by letting your application load the ground truth where it is needed by the simulation: e.g. under each entity and between entities within sensor range. By managing the terrain requests, your simulation can take advantage of well-designed databases to manage the terrain paging throughput and memory consumption.

Future Proof Your Simulation

VR-inTerra enables simulation applications to natively take advantage of new terrain approaches, like dynamic composition, direct-from-source, and open streaming terrain. Because of

USE CASES

- DISTRIBUTED SIMULATION DEVELOPMENT
- DISTRIBUTED SIMULATION INTEROPERABILITY
- LIVE-VIRTUAL-CONSTRUCTIVE INTEGRATION
- CUSTOM APPLICATION DEVELOPMENT



TERRAIN APPROACHES

Hand Modeled

- 3D Studio Max
- OpenFlight
- Open Scene Graph

Tool-Generated

- CTDB
- OpenFlight
- Open Scene Graph
- MetaFlight

Direct-from-Source

- DTED
- GEOTIFF
- Shapefile

Open Streaming Terrain

- OSGEO and OGC Standards: TMS, WMS, WMS-C
- VR-TheWorld Server



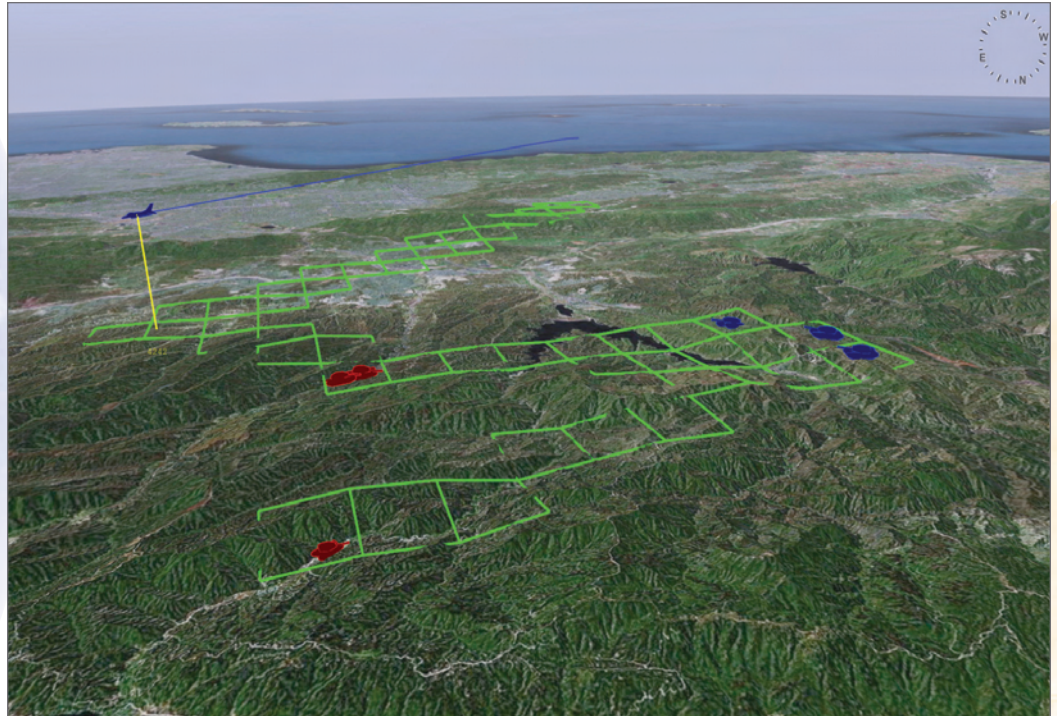
terrain agility, simulation applications are able to play in synthetic environments without requiring new loaders or terrain converters for each new terrain format.

Flexible, Portable, Supported

VR-inTerra's object-oriented design and C++ implementation provide you with the flexibility to override default functionality and extend the toolkit to work with modified or new types of terrain. A cross-platform toolkit, VR-inTerra includes source code examples and a comprehensive Developer's Guide, and is backed by MÄK's renowned technical support. Customers have direct access to VR-inTerra's core engineers.

FEATURES

- TERRAIN AGILITY TOOLKIT
- LINE OF SIGHT (LOS)
- HEIGHT OF TERRAIN (HOT)
- FEATURE QUERIES
- OPTIMIZED COLLISION GRAPH
- TERRAIN FORMAT INDEPENDENT
- USER EXTENSIBLE



The Interoperability Experts

MÄK is known for its expertise in helping customers solve modeling & simulation interoperability problems. Two decades ago networking interoperability was a technical obstacle. Today commercial-off-the-shelf (COTS) products like VR-Link and the MÄK RTI have provided industry accepted solutions; solutions that make network interoperability easy for application developers and predictable for program managers.

Terrain interoperability, on the other hand, is still a technical challenge. Terrain continues to be a significant cost driver and schedule risk to simulation projects. VR-inTerra represents a significant step forward in terrain interoperability between visual and simulation systems. Let MÄK help you with all your interoperability problems.

