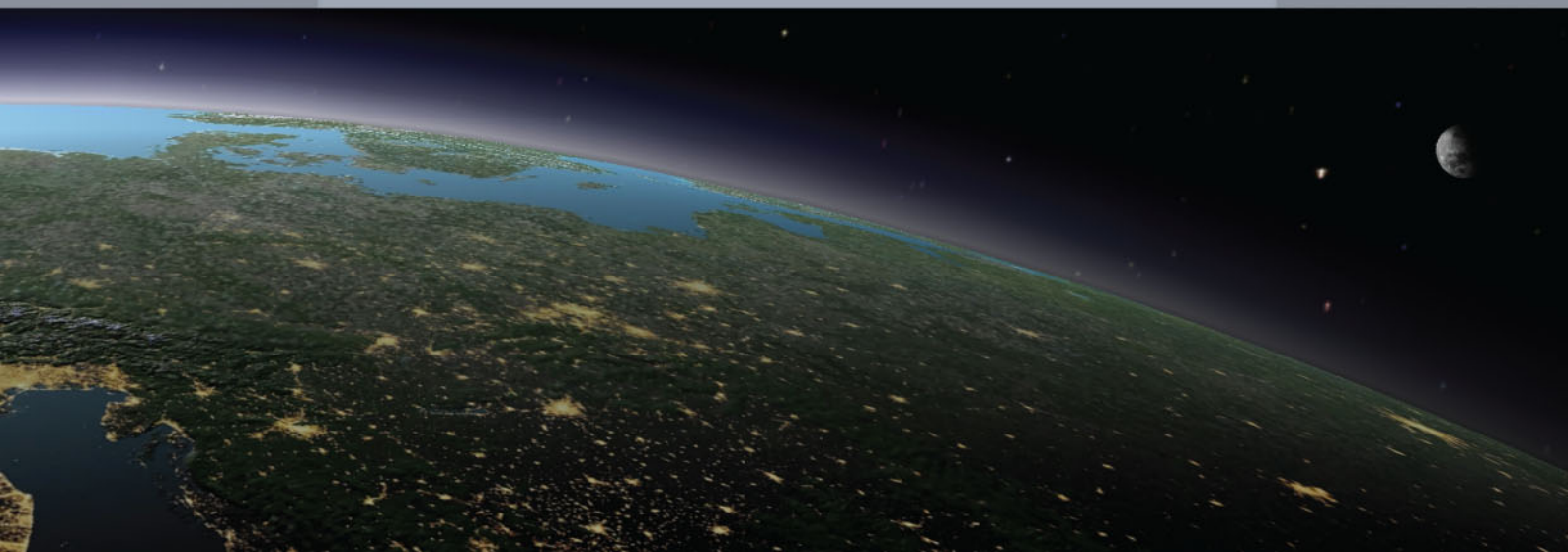
# vieWTerra
## Evolution

*The entire surface of the Earth for your 3D applications*



**vieWTerra Evolution** "GIS & Simulation" **4D Earth Viewer, data & assets integration and development platform** allows its users to integrate their own satellite or aerial data and assets on a strikingly realistic 4D Earth model in order to create their own custom georeferenced 3D scenes and scenarios and custom GIS applications at any location on Earth, and also build applications across all Land-Air-Sea-Space domains within the same software, in a fast and convenient manner from their own PCs.

Utilizing the unique capabilities of proprietary **VWorldTerrain©** 3D real-time procedural rendering technology, **vieWTerra Evolution** provides its users with both state-of-the-art visualization and unique creative capabilities directly into its 3D Viewer. Set in a solar system including a simulation of the celestial mechanics of the Sun, Moon, Mars and the stars, it also takes into account the Time dimension, allowing for continuous time of day and seasonal changes, dynamic rendering of all types of weather conditions and dynamic scenario creation. It can be purchased independently or bundled with the vieWTerra Evolution SDK, offering an additional library of 700+ functions for advanced users to program their own applications in C/C++ language, under OpenGL.

**vieWTerra Evolution** can be used either perfectly standalone, off-line, or on-line, ported on the client's own server infrastructure, with the **vieWTerra Access** server access module, set-up and back office service, while also permitting cache over areas of interest for out in the field use. It therefore allows integration of massive data and information from a great variety of sources, sharing of assets, newly-created scenes and scenarios between multiple users (on-line upload and distribution on a common shared storage server system), and direct interaction in multi-user on-line sessions (on a distributed simulation system).

**vieWTerra Mobile** plug-in free Web-browser-based application, offered as an extension to vieWTerra Evolution On-Line, allows users to consult their projects and data anytime anywhere, as the application is sharing the same "One World" terrain data & assets database.

# vieWTerra Evolution Data Integration Pipeline

Integration of Digital Elevation Models (up to 45 cm resolution)

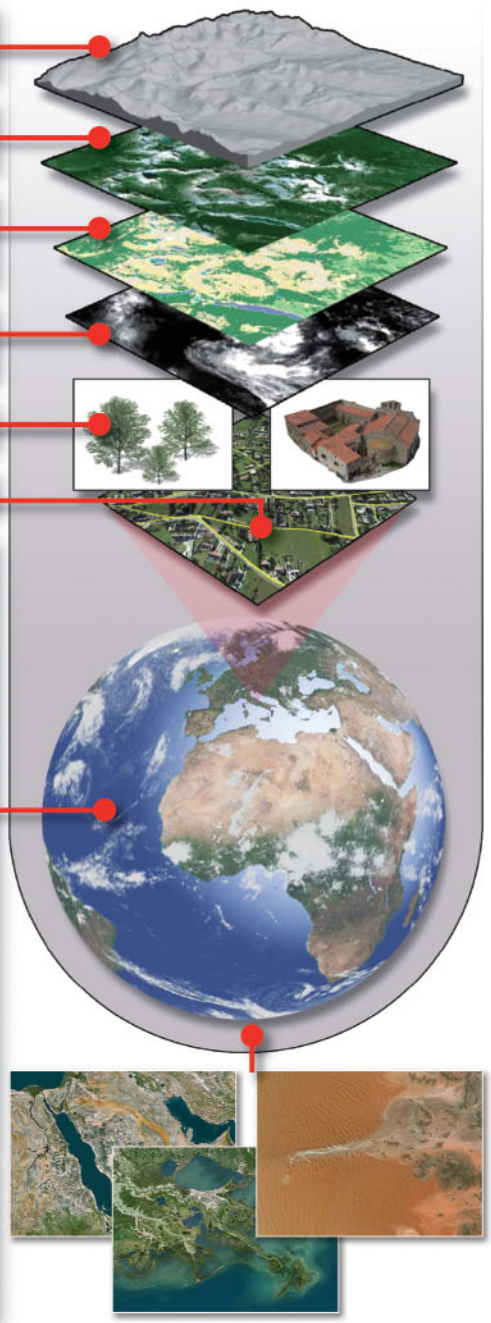
Integration of satellite and aerial data (up to 45 cm resolution)

Integration of Land Cover and Ecoregions
(deserts, mountains, forests, grasslands, rivers and lakes...)

Integration of meteorological data
(cloud cover, temperatures, wind speed and direction, precipitations...)

Integration of vegetation and complex 3D objects models (photogrammetry/LiDAR)

Integration of vector format files (shapefiles)



**vieWTerra Evolution Viewer** includes an ellipsoidal Earth terrain model consisting of a set of global georeferenced data (Geographic Lat/Long WGS84) as a provided base for more accurate, additional data integration (DEM, Imagery, Land Cover, photogrammetry, or LiDAR-acquired terrain models/datasets):

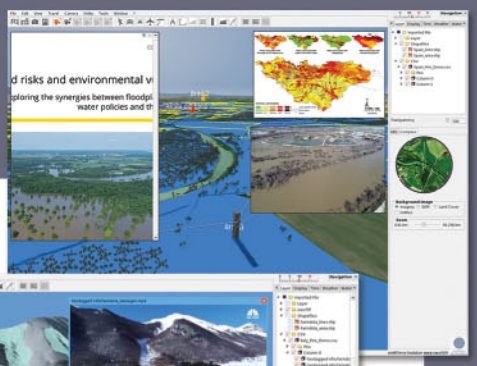
- **vieWTerra Base** set of global mosaics:
  - Digital Elevation Models (NASA/NGA SRTM): 90m
  - Satellite textures (Landsat 7 Imagery) for 1 or more continents: 29m (resampled from 15m) in true colours and cloud-free
  - Land Cover (29m) - undersea topography 1km to 90m (resampled to 90m)
- Weekly weather databases (over 52 weeks, year 2005 as a template)
- 20 million km² already covered in higher resolution (10m up to 45cm)

**Key features:**

- Seamless navigation in all 3 axes, from the seadbed to the outer Space
- Procedural algorithms: high level of detail, massive databases integration
- Real-time management of natural and artificial lights: 24h day/night cycle, dynamic shadows on terrain and objects, dynamic lighting, illumination effects
- Dynamic management of weather: volumetric clouds, rain, mist, storms and lightning, sand and snowstorms, variable snow cover...
- 3D sea: simulation of tides, global sea level rise, dynamic waves, shaders
- Automatic distribution and display of 3D flora and fauna worldwide
- 500+ Bank of Objects & ground types; 5 million + placenames database
- User-controllable entities: humans, vehicles, boat, aircrafts, UAV, rocket...
- Integration of dynamic/static 3D models; FXs: trails, smoke, flames...
- Multi-screen, 3D stereo view

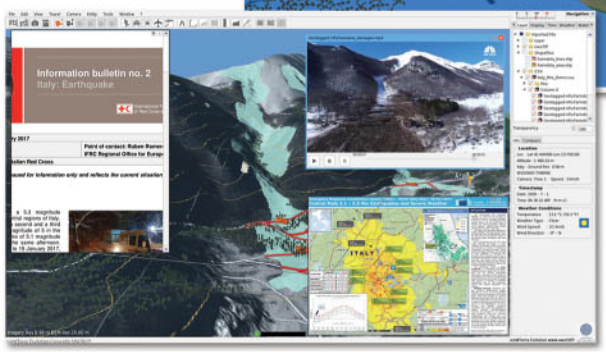
**vieWTerra Evolution Viewer** comprises a comprehensive set of terrain building and scenario creation tools enabling its users to create highly detailed and realistic geotypical to geospecific real-time 3D scenes in a very interactive and flexible manner, via simple drag and drop of files & objects or painting/drawing functions.

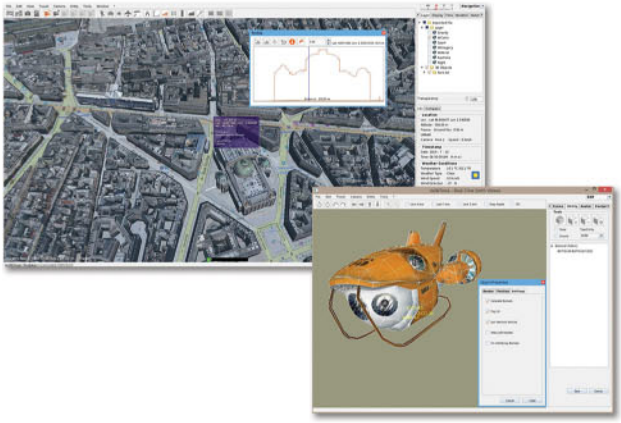
In order to achieve augmented situational awareness, it supports access to Open Geospatial Consortium data streams, display and sharing of additional 2D or 3D data or information, such as place names, shapefiles or CSV files information, GPS coordinates, custom labels, metadata, as well as supports introduction and sharing of multiple geotagged assets (PDF documents, charts, graphs, photos, videos, audio recordings...).



# Import Menu

- Multi-resolution import, powerful compression algorithms: DEM, Imagery, Land Cover (GeoTiFF-DTED)
- Import of vector format (shapefiles):lines, polylines
- Access to WMS-WMTS data streams
- Data management in various layers; hillshade rendering
- Rapid auto-extrusion of entire cities from footprints
- Import of standard 3D objects formats: 3DS, DAE, OBJ, DXF, LWO, KML, KMZ...
- Automatic LOD calculations and collision detection
- Import of user-supplied geotagged assets
- Display and mix 2D photographs into the 3D



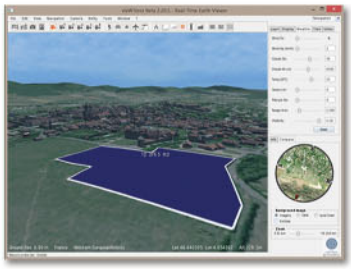



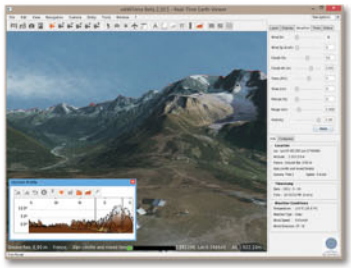
# Editor Tool

- Easy positioning of objects and real-time editing of terrains directly into the 3D Viewer
- Complex scenes creation with dynamic shadows and weather automatically impacting terrain/objects
- Real-time terraforming of terrain, excavations & holes
- Expandable Bank of Objects/ground types
- 2D/3D shapes/objects drawing & editing
- Automatic snapping to objects, adaptation of objects to uneven ground, painting of vegetation or river courses
- Rapid scenario creation through various controls and introduction of user-controllable entities/FXs
- Generation of digital videos and screenshots

# GIS Tools

- 2D/3D terrain analysis tools: distance, profile, surface and height measuring
- 360° Horizon: line-of-sight/ ridgeline calculations
- 3D Lines: drawing on terrain and objects

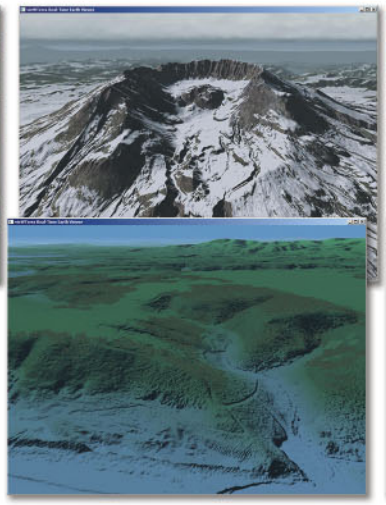


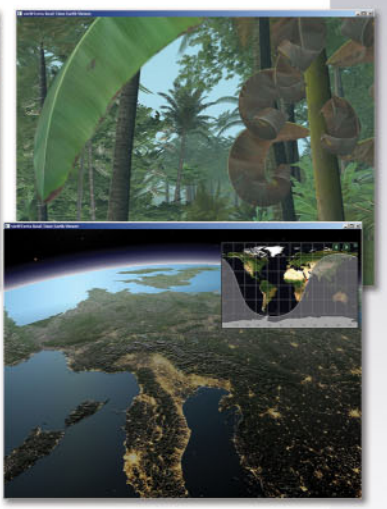


# SDK / Library

- Change and introduction of parameters in real-time (time, date, 3D objects, user-controllable entities, weather conditions, lighting, rendering, sounds...).
- High-level/low-level functions: modify features, create import/export plug-ins, allow real-time tracking of live assets (customize FXs, UI, entities physics, trajectories, interface with communication protocols...)

Available on PC - Windows 7+ / Linux
Minimum configuration:
Processor: 2 GHz
RAM memory: 4 GB
3D graphics card: 1024 MB VRAM
Compatibility with OpenGL 1.5 required
Fast and reliable Internet connection, when used in on-line mode.





VWORLD is a software development company specialized in real-time 3D terrain visualization, which has bridged the gap between the Geospatial and Simulation worlds in providing a unique suite of 3D/4D Earth Viewer middleware platforms, available off-line or on-line on PC, tablets and smartphones, as well as a global true colour, cloud-free and artifacts corrected set of satellite mosaics.

It commercializes its own vieWTerra Suite line of software and database products and co-produces products under the vieWTerra label, and also sells associated software development services (Windows/Linux, tablets & smartphones) or custom database treatment:

- vieWTerra Evolution "GIS and Simulation" 4D Earth Viewer, data & assets integration & development platform for terrain, scenario, and custom GIS building
- vieWTerra Mobile 3D Earth Viewer Web-browser based application
- vieWTerra Base 15m true-colour Imagery, 90m Elevations, 29m Land Cover
- vieWTerra Sensors 4D Earth Viewer dedicated to multi-sensor simulation

VWORLD was formed on the basis of years of research on how to render large outdoor scenes in real-time 3D and has built itself around the licensing of the VWorldTerrain© proprietary procedural rendering technology. Today its products are used for simulation, situational awareness, navigation aid, command and control, crisis preparedness & management, landscape planning, data publishing, operations management and assets presentations or educational needs and it counts corporate and academia clients in the Defence & Civil Security, Aeronautics & Space, Town & Country Planning, Energy, Geosciences & Education fields.

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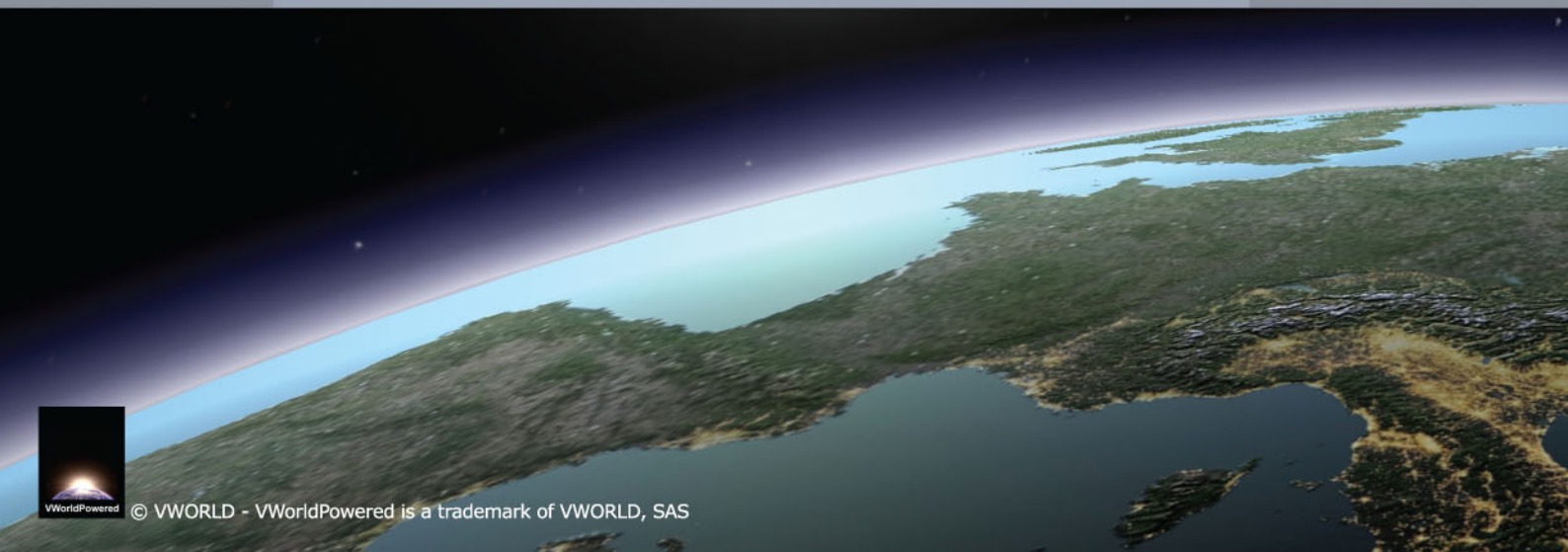

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