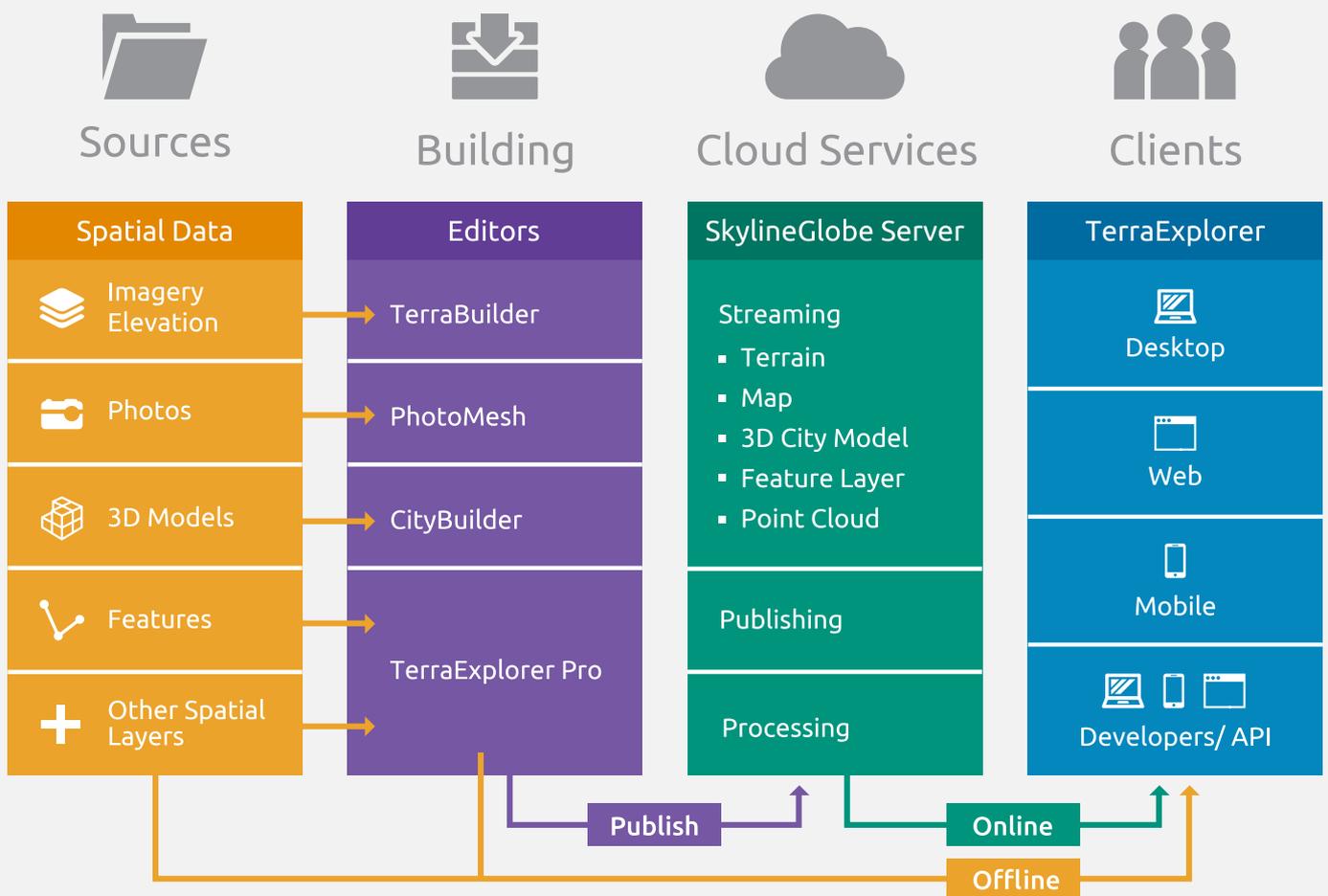# Skyline® it's your world™

# SkylineGlobe - Products Overview

Skyline Software Systems, Inc. is a leading provider of 3D earth visualization software and services. The company offers a comprehensive platform of applications, tools and services that enable the creation and dissemination of interactive, photo-realistic 3D environments. The SkylineGlobe software suite sets the standard for 3D desktop and web-based applications, enabling an enterprise to build, edit, navigate, query, and analyze realistic 3D environments, and rapidly and efficiently distribute them to users.

Sources | Building | Cloud Services | Clients

Spatial Data
- Imagery Elevation
- Photos
- 3D Models
- Features
- Other Spatial Layers

Editors
- TerraBuilder
- PhotoMesh
- CityBuilder
- TerraExplorer Pro

SkylineGlobe Server
Streaming
- Terrain
- Map
- 3D City Model
- Feature Layer
- Point Cloud

Publishing

Processing

TerraExplorer
- Desktop
- Web
- Mobile
- Developers/ API

Publish

Online

Offline

PhotoMesh

Fully automates the generation of high-resolution, textured, 3D mesh models, as well as true orthophoto, DSM, and DTM/ DEM raster layers from standard 2D photographs.
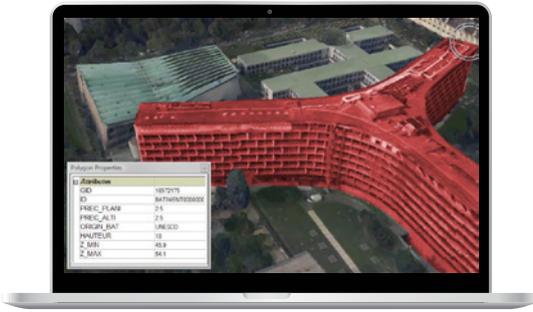
CityBuilder

Merges 3D mesh models together with classification layers, and other model layers into a multi-resolution and stream-optimized 3D Mesh Layer database (3DML).

TerraBuilder

Merges aerial photos, satellite images, and digital elevation models of different sizes and resolutions into a photo-realistic, geographically accurate terrain database.

Streaming - Skyline Globe Server

Terrain

Powerful terrain service technology for streaming 3D terrain geographic data from terrain databases (MPT) or directly from the original sources to thousands of concurrent remote users.

3D Mesh

Powerful network data server technology for streaming multi-resolution, stream-optimized 3D mesh layers to remote TerraExplorer clients.

Feature Layer

Powerful network data server technology for streaming feature layers from databases or pre-cached layers to TerraExplorer or WFS clients, that also provides remote clients with read-write access to edit and save changes to the data source.

3D Clients – TerraExplorer
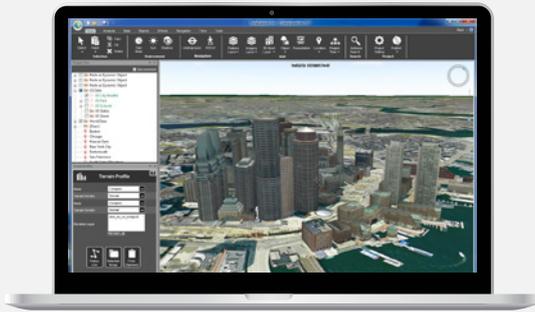
TerraExplorer for Desktop

Cutting-edge 3D GIS desktop viewer and creator for viewing, querying, analyzing, and presenting geospatial data in a high resolution 3D environment, as well as creating and publishing realistic 3D views.

TerraExplorer for Web

Powerful web-based 3D GIS viewer and editor with advanced capabilities for viewing, analyzing, and creating 3D views in a high resolution 3D environment.
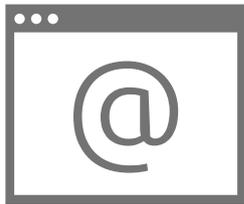

TerraExplorer for Mobile

Advanced 3D GIS viewer and editor for Android and iOS mobile devices with professional-grade tools for viewing, querying, analyzing and editing massive online or offline datasets in a high resolution 3D environment.

Developer

Desktop

TerraExplorer's rich API provides a complete, straightforward way to develop powerful, customized 3D desktop applications.

Web

TerraExplorer's powerful 3D GIS viewer and editor can be embedded in a website, and its robust capabilities supplemented by custom functionalities created using TerraExplorer's comprehensive API.

Mobile

TerraExplorer's mobile app provides a full API for custom feature development, along with easy-to-implement localization, branding and UI customization options.

SkylineGlobe Supported Formats

Feature Layers

- ESRI Shapefile
- File Geodatabase (*.gdb)
- MapInfo file (Tab, Mif, Mid)
- GeoPackage
- Microstation DGN
- DXF File
- SQLite (*.sqlite, *.db)
- TerraGate SFS server
- OGC WFS server
- ESRI ArcSDE server
- Geospatial PDF
- ESRI REST Server
- SkylineGlobe Server
- PostgreSQL database

Complex Layers

- TerraExplorer project (.fly)
- OGC KML (.kml , .kmz)
- BIM (.fbx)
- Point Cloud (.las, .cpt)

Imagery and Elevation Layers

- Jpeg (.jpg, .jp2, .j2k, .jpc)
- Tiff (.tif, .itiff)
- Gif (.gif)
- BMP (.bmp)
- MrSid (.sid)
- GeoPackage (.gpkg)
- Erdas Imagine (.img)
- ER-Mapper (.ecw, .ecwp)
- Web Map Service (WMS)
- Web Map Tile Service (WMTS)
- Oracle Spatial Database
- ECW Image Web Server
- WCS
- GoogleEarth Enterprise
- SkylineGlobe Server
- ArcSDE Raster Server

3D Models

- .3dml
- .b3dm (3D Tiles)
- .dae
- .ply
- .obj
- .x
- .3ds
- .flt

PhotoMesh

PhotoMesh fully automates the generation of high-resolution, textured, 3D mesh models, point clouds, and true orthophoto, DSM, and DTM/DEM raster layers from standard 2D photographs. This breakthrough application combines unlimited scalability with superior precision to produce consistent and accurate 3D models that enhance the realism of any 3D visualization.

Interoperability

Compatible with vast number of CAD and 3D solutions

>> Produce georeferenced 3D models in any coordinate system
>> Create 3D mesh models in a range of formats: 3DML (for loading directly into CityBuilder or TerraExplorer and streaming with SkylineGlobe Server), Cesium, DAE, OBJ, OSGB, or I3S/SPK
>> Generate true-orthophotos, DSM, and DTM/DEM compatible with all standard GIS tools
>> Produce dense point clouds with detailed color information that can be used in most point cloud analysis software
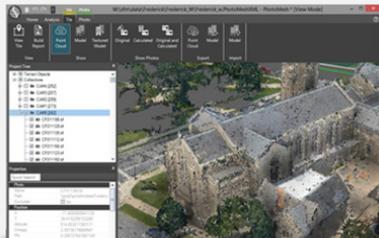
Superior Precision

**Accurate representation of intricate features, details, geometry, and color**

>> Full-3D mesh model
>> Advanced color balancing produces seamless, realistic models
>> High-quality texturing
>> Seamless fusion of multi-resolution source data
>> Powerful compression algorithms avoid any unwanted loss of geometric accuracy
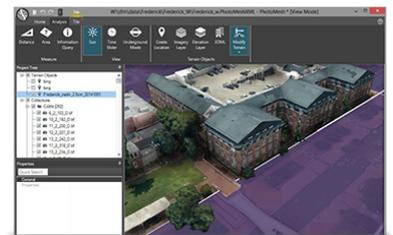

High Performance

Powerful and fast

>> Exploits the power of graphics processing units for general purpose computation
>> Multi-core and multi-computer processing allow for unlimited source data and dramatically reduce processing time
>> Powerful engines can handle enormous quantities of input and output data
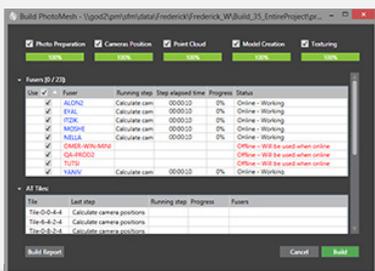
Unlimited Scalability

Grid computing and tiling mechanism support ever-increasing dataset sizes

>> Elaborate tiling mechanism enables efficient handling of massive quantities of input imagery
>> Use of network fusers dramatically accelerates processing time by enabling multiple computers to share the processing load
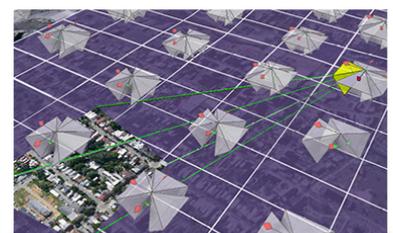
Exceptional Usability

Straightforward photo acquisition and automatic processing

›› Directly output a geometrically precise, photo-textured 3D model, without mapping texture to 3D geometry

›› Photograph subject from any mobile phone, compact digital, DSLR, photogrammetric, or multi-camera system

›› Reconstruct subjects, ranging in size from centimeters to kilometers

Geospatially Enabled

Transform mesh models into powerful geospatial data with TerraBuilder CityBuilder

›› Fully enable spatial and attribute queries by merging your mesh model with classification information

›› Combine mesh models with other model data sets

›› Optimize models for desktop, web, and mobile use

CityBuilder

CityBuilder merges 3D PhotoMesh city models together with classification layers, individually modeled layers, and BIM datasets, into a stream-optimized, fully textured, and geospatially-enabled mesh layer (3DML). Generated 3DMLs can be made available to local TerraExplorer clients or published to remote clients (using the SkylineGlobe Server 3D Mesh Service) for a seamless integration into TerraExplorer's terrain that supports powerful visualization and advanced geospatial analysis.


Merge and Optimize City Model
Unified and efficient 3D mesh layer
>> Merges any number of mesh models with BIM and other model data sets
>> Reprojects layers that use different coordinate systems
>> Generates fully textured model
>> Optimizes models for desktop, web, & mobile

Geospatially Enabled Mesh Models
Transform PhotoMesh mesh models into powerful geospatial data
>> Fully enable spatial operations and attribute queries by merging PhotoMesh-generated mesh models with classification information such as building footprints
>> Generated 3DML layers are integrated seamlessly in TerraExplorer's terrain, and can be measured, analyzed, and queried using TerraExplorer's advanced capabilities
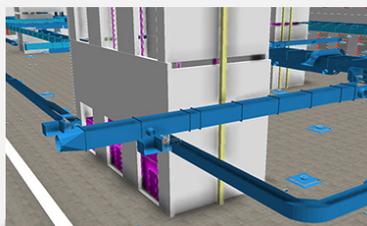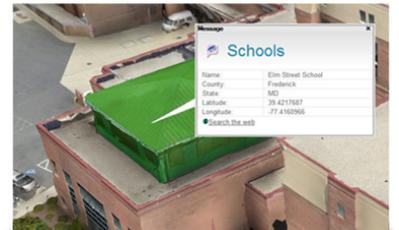

Individually Referenced Models
CityBuilder stream-optimizes entire city layers, modeled either manually or semi-automatically
>> Integrates point feature layers that reference individual models of complete cities
>> Optimizes model layers for viewing and streaming on desktop and mobile applications

Building Information Modeling (BIM)

BIM layers provide crucial support for the entire building life cycle

›› Reads FBX format, the industry standard for BIM data

›› Converts BIM from FBX to 3DML format that can be viewed and
analyzed in its geographical context using TerraExplorer, while
preserving all geometry and attribute data

›› Stream-optimizes BIM data

›› Supports spatial and attribute queries
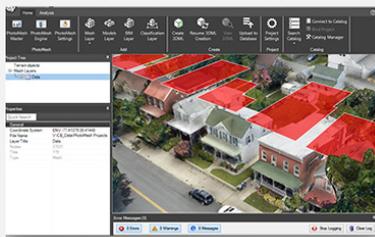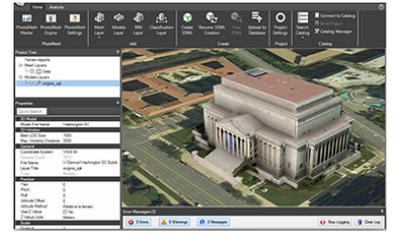
Rich Editing Environment

Efficient model creation process

›› Support for multi-threading allows full utilization of computer
resources

›› Easily search SkylineGlobe Server for required data

›› Immediate preview of created 3DMLs from CityBuilder's 3D View

Efficient Data Management

**Manage and share enterprise information across your
organization**

›› Find up to date model data by querying SkylineGlobe Server

›› Upload 3DMLs to the SkylineGlobe 3D Mesh service directly from
CityBuilder

TerraBuilder

TerraBuilder is a 3D terrain database creator with professional-grade tools for manipulating and merging aerial photos, satellite images, and digital elevation models of different sizes and resolutions. The resulting photo-realistic, geographically accurate terrain database can be made available to local TerraExplorer clients or published to remote clients (using the SkylineGlobe Terrain service).

Robust Compatibility

Supports wide range of layer types

>> Load local and remote files

>> Support for extensive range of formats

>> Dynamic plug-in mechanism for easy installation of updated plug-ins from Skyline

>> Automatic reprojection of layers that use different coordinate systems
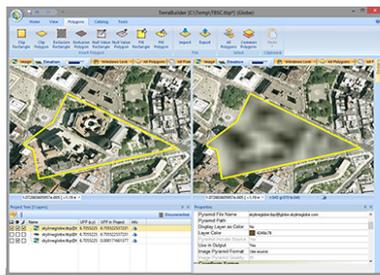
Flexible Layer Manipulation

Range of editing tools for maximum precision

>> Easily crop, resize, and move layers

>> Adjust geographic coordinates using tie points

>> Adjust color and elevation parameters

>> Easily edit using Clip, Exclusion, & Fill polygons

>> Edit multiple layers simultaneously

>> Polygon feathering

High Performance

Efficient terrain creation process

>> Preview mode - lets you preview and correct potentially problematic areas before MPT creation

>> Use of network fusers dramatically reduces processing time

>> Automatic creation of source resolution pyramids

>> Multi-core/ multi-computer processing supported to accelerate massive data set publishing
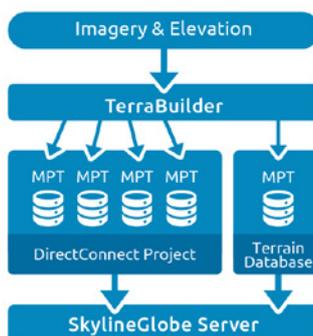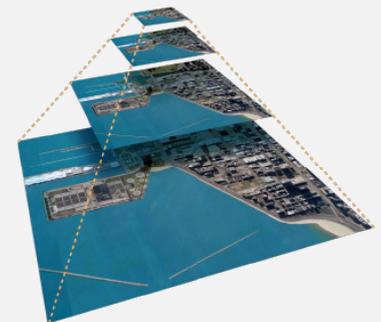
Near Real-Time Updates

Avoid time-consuming re-creation of complete MPT files using DirectConnect

>> DirectConnect projects are automatically optimized by referencing pre-processed optimized versions of sources in their native formats

>> Multi-core and multi-computer processing supported to accelerate massive data set publishing

SkylineGlobe Server

SkylineGlobe Server (SGS) is a private cloud solution that provides a comprehensive set of web services for publishing, storing, managing and streaming 3D spatial data. The server's built-in complete user access control system allows easy management of users, groups, and administrative roles controlling the server-side storage and client-side read/write permissions.

Streaming

Supports streaming services for all your data types
>> Terrain (MPT/TBP)
>> Map (WMS/WMTS)
>> Feature (WFS/WFS-T)
>> 3D Mesh (3DML, 3D Cesium tiles)
>> Point Cloud (CPT, 3D Cesium tiles)

Publishing and Cataloging Services

Client-side and server side publishing
>> Upload and publish geospatial data to the cloud server directly from TE or other Skyline client application
>> Publish server-side geospatial layers stored in files & databases on the server
>> Automatic and manual extraction of metadata and geospatial information
>> Advanced client-side search options for data layers and projects
>> Auto-scanning of server-side folders for layer changes

OGC Compliance

Stream raster, and feature data to any application that reads the standard OGC WFS, WFS-T, WMS, and WMTS protocols
>> Make your data available online in an open, internationally recognized format
>> Remote clients can edit (create, delete, and update features) the feature layer and save changes to the data source
>> Outputs WMS/WMTS tiles in JPEG and PNG formats

Multiple Security Layers

Keep your data safe with robust user authentication mechanism and restriction of user groups to predefined data folders
>> Only registered users can upload data
>> User uploads data to predefined data folder
>> Each data layer has a view/edit access level: None, Only Me, My Group, Everyone, or Selected List
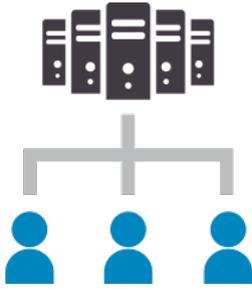
Server Clusters

Serve data to clients with higher availability

>> All cluster computers are managed from a single web-based management interface

>> Maximum number of concurrent active users defined per server cluster for increased flexibility

>> Distributed SGS Terrain Service network

>> Multiple sites

>> Stateless transactions (allows switching of server)

Direct Uploading

Streamline your workflow and eliminate the need for any server-side login after initial installation

>> Upload and publish individual geospatial layers and complete projects to the cloud server from TerraExplorer

>> Publish TerraBuilder output and project

>> Through single publishing operation, data is made ready for consumption by all TerraExplorer clients: Desktop, Mobile, and TE for Web, as well as other OGC clients
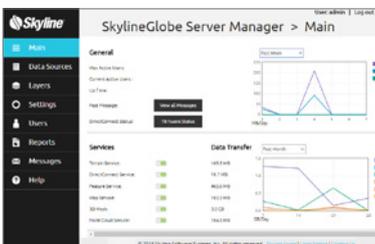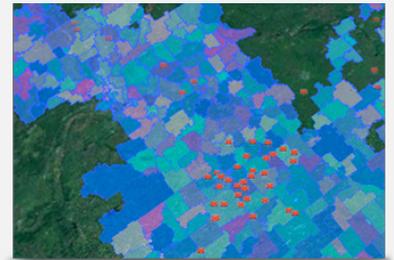
SGS Manager

Centralized web management and configuration

>> Control and monitor all services provided by SGS: Terrain, Feature, Map, 3D Mesh, Point Cloud, and DirectConnect

>> Control and monitor your SkylineGlobe servers

>> Manage your users and user groups

>> Configure data sources for each of the different sources of data being published to SkylineGlobe Server

>> Fully manage multiple TE4W configurations

TerraExplorer for Desktop

A cutting-edge 3D GIS desktop viewer and creator that provides powerful tools and a high resolution 3D environment in which to view, query, analyze and present geospatial data.
With TerraExplorer's robust and extensive capabilities and ever-increasing interoperability, stunningly realistic 3D visualizations can be created by overlaying the terrain with unlimited data layers, 3D models, virtual objects and more.

TerraExplorer Viewer

Users can navigate through high resolution 3D world environments created by fusing aerial and satellite photography, terrain elevation data and other 2D and 3D information layers.

TerraExplorer Plus

Adds loading of all 2D and 3D offline formats, feature layer editing and querying, advanced objects and drawing tools, a set of tools for professional usage, and the advanced Pro API interfaces.

TerraExplorer Pro

Adds publishing capabilities, optimization of model files for improved display performance, and uploading of data to SkylineGlobe cloud.
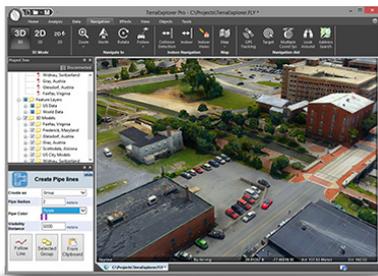

Navigate

Wide range of navigation options
›› Free flight
›› Presentations with predefined flight paths
›› Locations and favorites
›› GPS tracking
›› Online address geocoding and reverse geocoding
›› Underground navigation

Analyze the Terrain

Increase understanding and improve decision making with a wide range of powerful terrain analysis tools
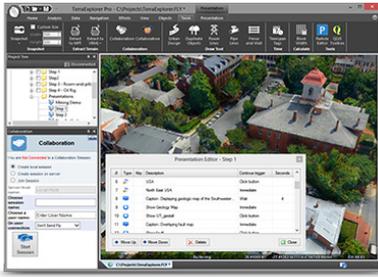
›› Distance
›› Area
›› Contour
›› Slope

›› Flood
›› Volume
›› Terrain Profile
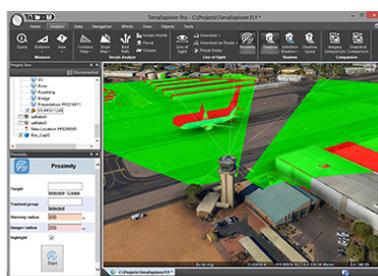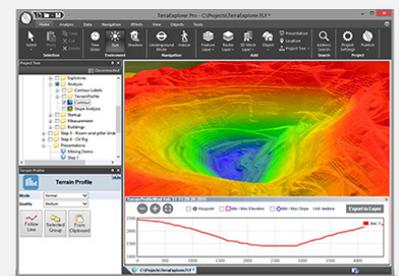
Calculate Visual Exposure

Versatile and configurable tools provide precise, actionable data

›› 2D Viewshed
›› 3D Viewshed
›› Viewshed on Route

›› Viewshed Query
›› Line of Sight
›› Threat Dome

Share

Easily share your 3D visualizations

›› Create presentations with customized flight routes
›› Use Collaboration tool for remote guided tours
›› Publish and extract projects to web, desktop, and mobile devices

Create

Fuse object, feature, raster and other local and remote sources

›› Terrain
›› GIS feature layers
›› Open Street Map
›› Lidar point clouds

›› 3D mesh layers
›› Imagery and elevation raster layers
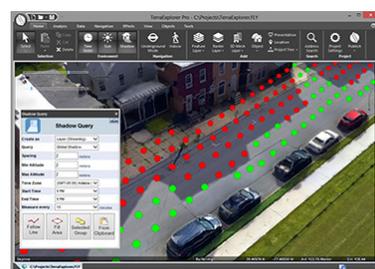›› 2D, 3D, and dynamic objects

Interoperability

Supports wide range of formats

›› WFS/WFS-T
›› WMS/WMTS
›› Tiff, JPEG, MrSID, ECW, IMG…
›› WCS
›› More…

›› Shapefile, KML/KMZ, SQLite…
›› DAE, 3DS, X, FLT…
›› FBX
›› 3D Tiles (B3DM)

Edit

Robust feature editing supported

›› Spatial queries
›› Edit geometry
›› Modify attribute information
›› Save layer changes to data source or new file
›› Add and delete features

Visual Effects

**Full range of animated effects
(fog, rain, snow, fire, explosion, water movement)**

›› Sun as light source
›› Shadow effect
›› Dynamic objects
›› Video on terrain

TerraExplorer for Mobile

A cutting-edge 3D GIS desktop viewer and creator that provides powerful tools and a high resolution 3D environment in which to view, query, analyze and present geospatial data. With TerraExplorer's robust and extensive capabilities and ever-increasing interoperability, stunningly realistic 3D visualizations can be created by overlaying the terrain with unlimited data layers, 3D models, virtual objects and more. The app can load local TerraExplorer projects as well as access online data from SkylineGlobe Server and other OGC compliant servers.
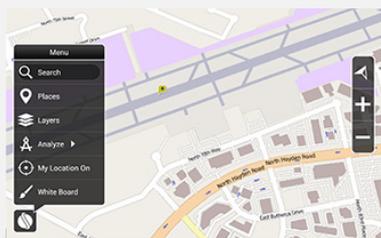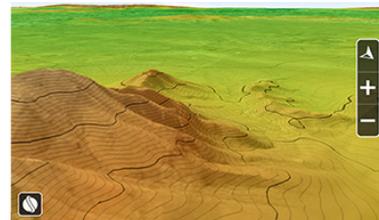

Explore

Geospatial layers seamlessly fused for photo-realistic visualization
>> Terrain
>> GIS feature layers
>> Urban model layers
>> Image and elevation raster layers

Analyze the Terrain

Increase understanding and improve decision making with a comprehensive set of powerful analysis tools
>> Distance and area measurement
>> 3D viewshed
>> Shadow analysis
>> Terrain profile

On the Go

Extends the reach of 3D GIS from the office to the field
>> Online viewing and editing (WFS-T)
>> Load offline kits published by TerraExplorer Pro
>> Mobile optimized UI

Edit

Robust feature and white board editing supported
>> Local and remote geospatial layers
>> Geometry and attributes
>> White board for local sketching

Customize

Localization, branding & functionality

>> Your language

>> Your logo and app name

>> Add and remove menu entries and forms

>> Full API for custom feature development

Navigate

Wide range of navigation options

>> Presentations with predefined flight paths

>> Locations and favorites

>> My device location tracking

>> Online address search

>> Underground navigation
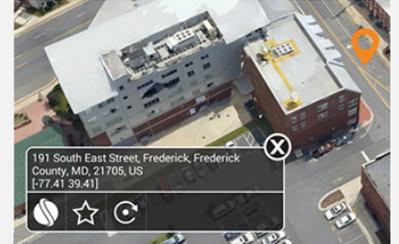
TerraExplorer for Web

TerraExplorer for Web (TE4W) is a lightweight 3D GIS viewer that enables you to view and analyze high-resolution, stunningly realistic 3D content in a web browser, without any plug-ins. The employment of HTML5/WebGL standards allows TerraExplorer for Web to provide support for multiple platforms and browsers. Built on the powerful Cesium open source library, TerraExplorer for Web further extends the core functionality with additional capabilities and enhanced performance.

Lightweight 3D GIS Application

Online viewing solution
>> No plugins
>> No downloads
>> No installation

Multi-Platform, Multi-Browser

HTML5/WebGL standards
>> Windows, Mac, Linux
>> Chrome, Firefox, Safari, Opera, Edge, IE11
>> iOS, Android

Measure and Analyze

Highly accurate analysis tools
>> Distance and area measurement
>> Graphic terrain profile
>> Viewshed tool
>> Contour map
>> Slope map

Optimized Performance
Enhanced user experience
>> Fast loading times
>> Smooth navigation

Access Data
Integrates with other SkylineGlobe products
>> TerraBuilder terrain databases
>> PhotoMesh's 3D mesh models
>> Online data from Skyline's SkylineGlobe server
   and other OGC-compliant servers

Requirements

TerraExplorer for Desktop

Operating System: Windows® 7 / 8 / 10 – 64-bit required
Processor: 4 cores (8 cores recommended)
Video Card: 512 MB of video memory (1 GB or more recommended). Pixel and vertex shader v3.0
Browser: Microsoft Internet Explorer 9 or higher

TerraExplorer for Web

Operating System: Windows / Linux / Mac OS / Android / iOS
Browser: Chrome, Firefox, Edge, IE11 or higher

TerraExplorer for Mobile

Operating System: Android 4.0 and above / iOS 7.0 and above
Processor: Dual-Core and higher
System Memory: 1 GB of RAM (2 GB or more recommended)

TerraBuilder

Operating System: Windows® 7 / 8 / 10 – 64-bit required
System Memory: 4 GB RAM (8 GB or more recommended)
Processor: 4 cores (8 cores recommended)
Video Card: 256 MB of video memory (1 GB or more recommended)

PhotoMesh

Operating System: Windows® 7 / 8 / 8.1 / 10, Windows® Server 2012 R2 – 64-bit required
Processor: 4 cores (8 cores recommended)
System Memory: 16 GB RAM (32 GB recommended)
Video Card: 1 GB of video memory (2 GB or more recommended). Pixel and vertext shader v3.0

CityBuilder

Operating System: Windows® 7 / 8 / 10 – 64-bit required
System Memory: 8 GB RAM (16 GB recommended)
Processor: 4 cores (8 cores recommended
Video Card: 1 GB of video memory (2 GB or more recommended)

SkylineGlobe Server

Operating System: Windows® Server 2008 R2 / 2012 R2 - 64 bit
System Memory: 4 GB RAM (8 GB or more recommended)
Processor: Dual-Core (4 or 8 cores recommended)
Browser: Chrome, Firefox, Edge, IE8 or higher
Additional Software: Microsoft Internet Information Services IIS7.5, IIS8.5, IIS10 with .Net 4.0