



TerraExplorer®

Version 6.1 Release Notes

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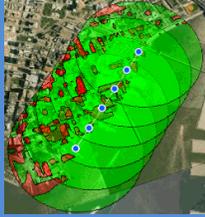
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Analysis Tools

- Measurement
- Route
- Viewshed
- Shadow casting for urban model



Performance

- Multi-resolution urban model
- Polygon drawing
- Memory cleanup
- Virtual memory

Publishing

- Publish Offline Project in Area



Feature Layers

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- Improved KML import
- Export streaming feature layer to local Shape file
- Move features in the 3D Window

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- Support Bing Maps

3D Models

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- Convert .FLT to XPL2 using MakeXPL

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- Launch different presentation from current one
- New presentation Key Steps

Drawing Tools

- Create fences and walls along a user defined path



Usability Improvements

- Multiple 3D windows
- Enhanced Ribbon customization
- API enhancements



Object Improvements

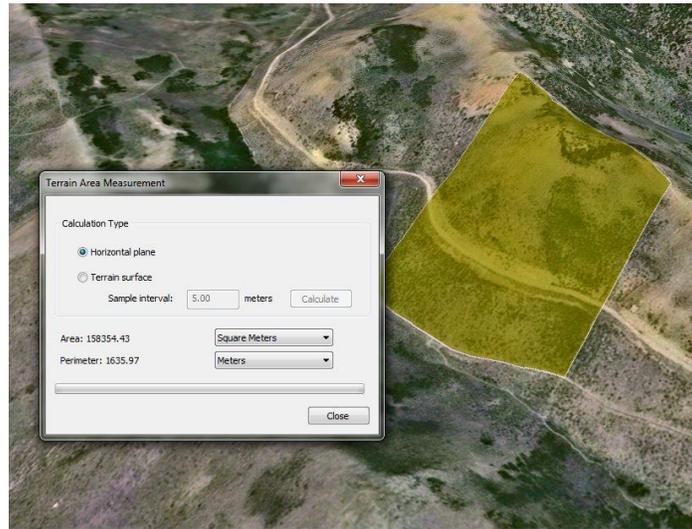
- Extend 2D polylines/polygons to ground
- Point Cloud (CPT) – supports LAS 1.3 format
- Set object default viewing distance
- API to highlight object
- 3D shape texture mapping
- 3D shape lighting effect
- Video improvements
- Show label text on hover



Analysis Tools

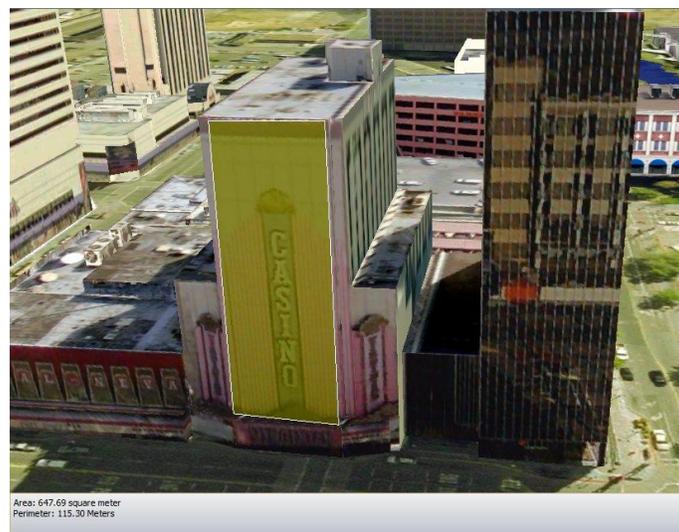
Area Measurement

- **Terrain Area** - Measure the true surface area of a selected region by taking into account terrain contours.



Terrain Area Measurement

- **3D Plane Area** - Measure the area of a polygon on an arbitrary plane, such as a building window, using the 3D Plane Area tool.

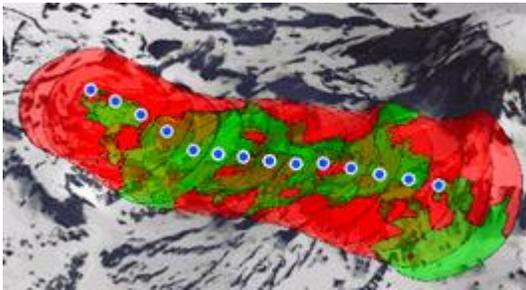


3D Plane Area Measurement

Viewshed analysis along a route

Expanded Viewshed capabilities enable you to determine what areas are visible from any selected point along a route. The user can define viewer height and radius of viewshed analysis. The calculated route viewshed can be displayed as:

- Individual viewshed results for each selected point along the route
- A single composite viewshed showing visible area from any of the route's waypoints
- A series of individual viewshed results that display according to a set timespan



Point-by-Point Viewshed on Route



Cumulative Viewshed on Route

Shadow casting for urban model

Shadow casting enables you to create more realistic scenes by automatically casting shadows from all 3D models in a layer. The shadow dynamically updates when the system date and time is changed.



Shadow Casting

Performance Improvements

Multi-resolution urban model

- Load highly-detailed urban model with hundreds of thousands of buildings
- XPL2 models created with the modified MakeXPL tool or TerraExplorer publishing tools use multi-resolution geometries in addition to multi-resolution textures to accelerate loading speed and consume less memory
- XPL2 algorithm provides seamless transition between Levels of Detail (LOD) as the viewer position is changed
- XPL2 data structure uses unified textures and geometry files to reduce computer and graphic resources
- Accelerated rendering of models with many small textures by replacing them with a single color when viewed from a distance



Geometry Level 1



Geometry Level 2



Geometry Level 3

Accelerated drawing of polygons and polylines

- Faster drawing of polygons and polylines with a large number of points

Memory cleanup optimization

Memory cleanup of unused objects is performed in a separate thread to maintain high frame rate.

Extended virtual memory for 64bit machine

- Provides additional virtual memory to support large scale projects
- Up to ~2.5GB of net virtual memory per process (compared to ~1.3GB in v6)

Publishing

Publish Offline Project in Area

Create a subset of an online project for offline use in disconnected environments, or for sharing with external users. All project terrain, data, and objects are included in your mini-project so that you can view and display your “area of interest” comprehensively and accurately in a fraction of the time required to create an entire project.

- Terrain in selection area is extracted and saved as local terrain database (MPT)
- Each section of an imagery layer that intersects with the selected area is extracted and converted to a local file (MPT)
- A subset of the feature data containing only the features within with the selected area is retrieved from the data source and saved as a local feature layer (.shp)
- All objects within the selected area and any of their local or remote resources are downloaded and saved locally
- Accelerate the updating of existing offline kits by skipping terrain and layer extraction for existing files



Publish Offline Project in Area

Render Quality Improvements

Screen Space Ambient Occlusion (SSAO)

The Screen Space Ambient Occlusion (SSAO) effect adds realism to 3D elements by approximating the way light radiates in real life, especially off what are normally considered non-reflective surfaces. The SSAO technique eliminates the need for baked texturing pre-processing and reduces overall texture size. It operates on all models, shapes, and the terrain and requires DirectX 10+ compatible video cards.



Original Render



SSAO Enhanced Rendering

Enhanced Color Saturation

The enhance color saturation option adds visual effect to make colors more vibrant in a 3D scene. The color saturation enhancement affects the terrain and all 2D and 3D objects.



Original Render



Enhanced Color Saturation

Feature Layers

Improved KML export

- Export 3D shapes as DAE models
- Export complex geometry objects (multi polygons and multi polylines)
- Textured polygons and imagery layers exported as KML ground overlay

Improved KML import

Export streaming feature layer to local Shape file

Use TerraExplorer 6.1's ability to save even streaming feature layers to local files to speed up access to a layer located on a slow remote server. The entire layer can be saved to a local file or only selected features. Layer features can now be filtered by attribute value (using the Attribute Table), as well as by spatial query.

Move features in the 3D Window

Move multiple features in the 3D Window by clicking and dragging or by selecting them by spatial query.

Imagery & Elevation Layers

Create resolution pyramids for raster layers in MPT v3 format

The new Resolution Pyramid tool creates MPT v3 directly in TerraExplorer, replacing MPU as the pyramid format.

- Reduced pyramid file size
- Fuser architecture enables users to utilize multi-core resources to generate MPT resolution pyramids
- Pyramid is automatically created based on the project ruler and coordinate system, eliminating the need for reprojection on the fly
- Optimize MPT format based on data type:
 - **JPEG** - For standard imagery and elevation data
 - **PNG 24** - For high quality images
 - **PNG 16.8** - For high resolution elevation data

New Imagery Format - Support Microsoft Bing Maps

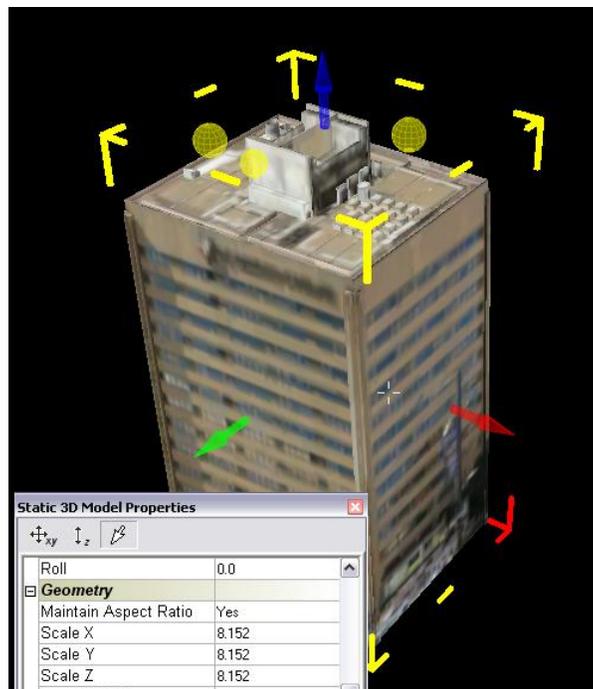
New imagery plug-in provides viewing access to Microsoft Bing Map server. Data is available by annual subscription.

3D Models

Scale models in different dimensions

Enhanced scaling allows adjustment of each model dimension independently of the others so you can resize a 3D model to your precise size requirements.

- Scaling can be performed from the 3D window using the X, Y and Z axes arrow resizers.
- Option to lock axes using Maintain Aspect Ratio property
- Scaling can also be performed from the property sheet and API
- Supports multi-editing



Independent Scaling in Three Dimensions

Load 3D Studio (.3ds) model files

Industry standard, 3D Studio (.3ds) model files can be loaded directly into TerraExplorer or converted to XPL2 using TerraExplorer's publishing tools or the MakeXPL tool.

Convert .FLT to XPL2 using MakeXPL tool

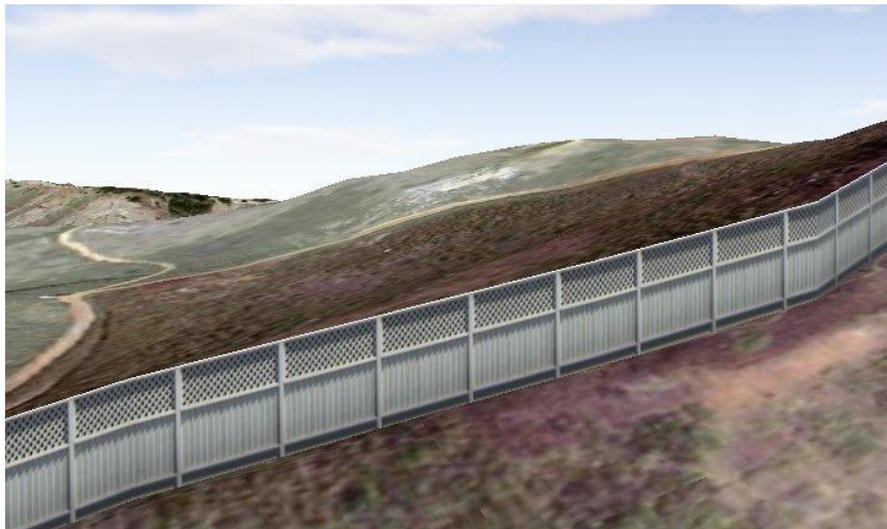
In addition to loading .flt natively, TerraExplorer can now convert .flt files to XPL2 using TerraExplorer's publishing tools or the MakeXPL tool.

Object Improvements

Extend 2D polylines/polygons to ground

Easily create walls and fences of a precise size and shape by stretching the edges of a polyline or polygon to the ground, and then applying any desired texture or fill color.

- Polylines/polygons can be extended to ground from above or below ground
- New Fence and Wall tool offers fullest implementation of this new capability
- Supports complex polygons and lines



Line Extended to Ground

Point Cloud (CPT) – supports LAS 1.3 format

TerraExplorer reads LAS files containing projection information and automatically repositions the model.

Set default viewing distance according to object size

TerraExplorer automatically calculates an optimal default viewing distance (in which the entire object can be seen) for each object based on its size. This distance is used for any “Fly-to” or “View object” operation.

API to highlight object

Using TerraExplorer API, developers can enhance an application's visualization effects by creating a custom object tint that displays upon a particular user action (e.g. upon mouse hover or fly to) and in any color that is required.

3D shapes – optimize texture mapping on side faces

New mapping technique improves texture appearance on all sides of a 3D shape by customizing the texture mapping method to the particular shape. The texture mapping displays correctly even when the shape's orientation is changed.

Show label text on hover

Minimize cluttering of 3D scene by hiding label text until mouse hover.



Label

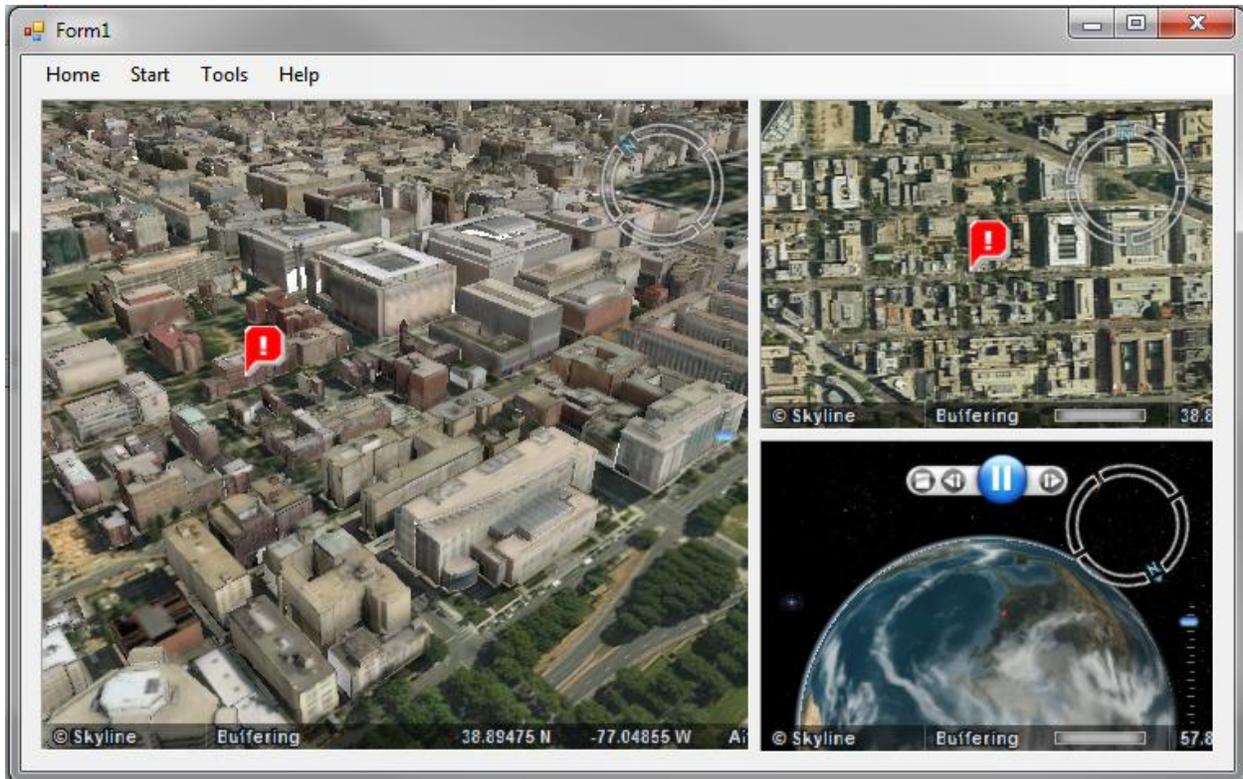


Label upon Hover

Usability Improvements

Multiple 3D windows

Using TerraExplorer API, developers can easily create applications that have multiple 3D windows, with each window displaying different content. Camera position can be synchronized between windows to show different aspects or zoom levels of the same geographical area. Additional 3D windows run as external processes to your application with independent memory and resource consumption.



Designing a Customized User Interface with Multiple 3D Windows

Enhanced customization of the TerraExplorer ribbon

TerraExplorer 6.1 adds ribbon drop down menus to its customization capabilities, providing you with even greater flexibility in designing your user interface.**

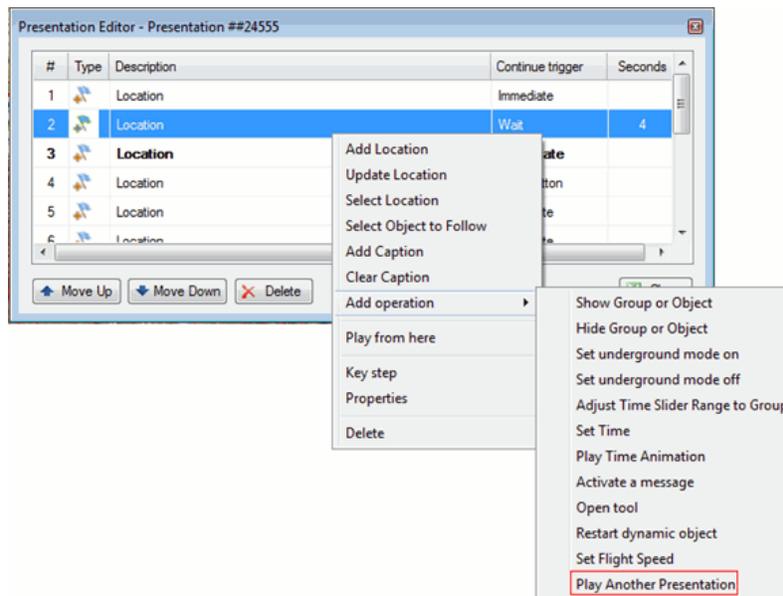
API enhancements

- Upgrade all API interfaces to v6.1
- Additional API interfaces to support new capabilities

Presentation Tool

Launch a different presentation from the current presentation

Combine several smaller sub-presentations into a single master presentation by adding one presentation as a step in a different presentation. This enables you to better manage your project and easily reuse previously created presentations.

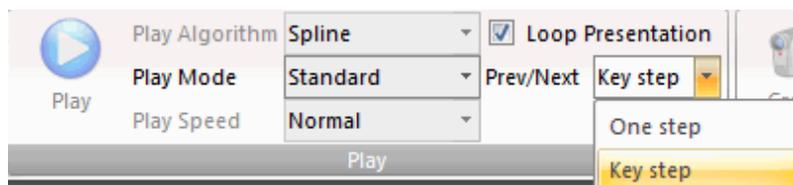


Play Another Presentation from Current Presentation

New presentation Key Steps

Presentation key steps provide increased flexibility for displaying a presentation by enabling you to quickly jump in a presentation from one chapter of the presentation to another. This allows you to easily navigate through the presentation, customizing the presentation to your current viewers.

- Steps are marked as key steps in the Presentation Editor
- The Previous and Next buttons on the Playback panel can be used to jump from one key step to another



Key Step

Drawing Tools

Create fences and walls along a user defined path

The Fence and Wall tool enables you to easily create fences and walls in the precise dimensions, shape and texture you require.

- Save output as TerraExplorer group of objects or as feature layer (.shp file)
- Create fences/walls along all polylines or polygons in an existing group or layer, or along a polyline or polygon you draw



Create Wall along a Polygon