Terramodel Visualizer™

Version 2.05 Release notes
October, 2003

Before you continue, please take a moment to review this document for basic instructions.

New Features in TV 2.05

Version 2.05 is a minor update to complement Terramodel 10.30.

The ability to visualize tunnels as established within Terramodel has been added. The tunnel DTM must be created in Terramodel and the surface unwrapped. Terramodel Visualizer will wrap the data and present the DTM. In the File\Preferences dialogue you may wish to enable the *Render Back Surfaces* option. In some situations you may need to add a light inside tunnel areas for better visualization.

New Features in TV 2.04

Terramodel Visualizer 2.04 is a minor upgrade to complement Terramodel 10.1.

1. Transparency for ortho textures: The basic principle of this feature is to make black regions transparent. Only pure black pixels are converted (RGB value of 0,0,0). The Terramodel image manager command converts marked pixels to pure black and uses the same mechanism to prevent them from being rendered. Since the only criteria for making a region transparent is color, it is possible to use this feature to perform other tricks. One possibility is to use an image program (e.g. Photoshop) to color certain areas of a photograph using a black brush to make them transparent in TV. Another option is to use the image manager's clipping tool to achieve the same result.

    Since this feature requires 32 bits per pixel instead of 24, it is only used when the user activates it. To activate or deactivate this feature go to *preferences* in the *File* menu, click on the *textures* tab and check the *transparent black* check box.

2. You may optionally render the back of the DTM. This creates the illusion of transparency when the DTM is viewed from a subsurface location.

3. The *move to point* elevation value enables you to add or subtract an elevation to the position selected on the DTM.

4. The height and width values used to define Xtextures and Billboards in the

GTT file can now be specified in a "range" format to achieve a non-uniform look. This feature can be very useful to create dense woods. The following line uses a constant height: `XTexture oak2.tif POINTS TREE 15 12 2`

The following line uses a range for the height and width values: `XTexture oak2.tif POINT`

`S TREE 15-7 12-6 2`

Background

Terramodel Visualizer (TV) is an interactive project-visualization tool that displays your Terramodel project as a three-dimensional model. You can interactively move to any vantage point in your project and view it under any lighting conditions you specify.

The basic TV module includes the tools to:

- position and fly through a project
- illuminate the project
- control shaded surface display modes
- add three-dimensional representations of landscaping features (e.g. trees)
- record flight paths through the project
- capture and print images
- make AVI movies

With optional modules you may:

- Edit Terramodel project points without leaving TV
- Drape orthographic images over the three-dimensional surfaces
- View your project in stereo with specialized glasses, graphics card and emitter using a single monitor

Program Installation

To Install TV on Windows NT and Windows 2000:
For Windows NT and Windows 2000, you **must** be a member of the **Administrators group**.

Note on the Example Projects
The TV installer places in separate folders four different example projects to view and explore: a golf course, a landfill, an urban road project, and a mountain highway. Each project environment is complete with lighting, camera views, and a pre-recorded flight path for you to follow and make movies.

Note about Terramodel and the Example Projects
When operating in demo mode, TV is enabled to open only these example project files. If you open and save the example projects in Terramodel, **the saved version will not open** again in TV in demo mode. To use the example projects in TV again, reinstall TV from the CD to reinstall the original demo files.

Hardware Lock

As with Terramodel, TV requires a hardware lock. TV will run in demo mode if the lock is not found. In demo mode only the unaltered example projects can be used. For hardware lock access information, call Trimble at **1-800-235-4972** or **770-396-0700.**

Documentation

All documentation for *TV 2.05* is included electronically as online Help. To gain access to Help information, from the *TV* Help menu, select **Contents**.

Terramodel Compatibility

TV is designed to work with Terramodel version 9.30 and later project files. To view older project files, open them in the current version of Terramodel and save the file.

Because of the computational requirements of visualization, TV requires more memory and computational resources than Terramodel with the same project file. To maximize the speed of TV, you can hide (In Terramodel) the layers containing data that does not need to be visualized and then activate the "Geometry only from visible layers" options under the miscellaneous tab on the new "preferences" dialog in TV.

Maximum number of objects (p3server.ini) setup
You may need to set the maximum number of objects in a project file for TV. Settings you entered in the **p3server.ini** file for Terramodel are not used by TV.

To change the TV **p3server.ini** file:
1. Start NotePad, WordPad, or a text processor.
2. From the File menu, select **Open**.
3. Locate the TV folder.
4. From the TV folder, select **p3server.ini**.
5. Under **[DBTYPE]**, enter values for:

maxRec= # records - maximum number of objects for the current file
maxPt= point number - highest point number for the current file
Both values **must** be set to the same number.
6. Save the file.

Some TV Terms to Know

Environment
The TV work area displaying projects three-dimensionally. In addition to the project display, an environment contains information such as position and intensity of lights, position and orientation of cameras, and recorded paths.

Camera
The viewpoint you maneuver with the Flying Mode is called a camera. An environment may contain an unlimited number of independently positioned and oriented cameras.

Rotating Mode
In Rotating Mode you move the project around its center on any axis using either mouse or keyboard control.

Flying Mode
In Flying Mode, you move a camera over and around the project simulating forward flight using either mouse or keyboard control.

Path
A recording of camera Flying movements that you can follow later and use in the generation of AVI movies.

Starting Your TV Experience

The following sections describe how to use TV with the example files. This is an excellent way to get started learning TV. Some of the example files include features that are available only in the optional modules.

The first example
Open the mountain road project and follow the recorded path to see how TV renders large road projects.
1. When installation is complete, click the TV shortcut on the Start menu. TV starts with an empty environment.
2. From the File menu, click Open. The Open dialog box appears.
3. In the dialog box, open the **EXAMPLES** folder within the TV folder. EXAMPLES contains four folders: **GOLF**, **LANDFILL**, **METRO**, and **MOUNTAIN**.
4. Click **MOUNTAIN**. The MOUNTAIN folder contains the project and environment files.

5. Click the environment file, **MOUNTAIN.EN**. TV opens the environment containing the mountain road project.
6. Move the camera into position for the fly-through by clicking **Follow Path** from the Navigation menu.
7. Select a flying speed by pressing a number key from **1** (slowest) to **9** (fastest). The camera moves forward along the path, flying above the roadway. Press different number keys to vary the speed, or press **0** (zero) to stop. When the camera reaches the end of the path, forward motion stops.

To record your own flight path, see TV Help for instructions on using the Path toolbar.

The second example

Learn **Rotating Mode**, again using the mountain road project.
1. From the Navigation menu click **Rotating Mode**.
2. In the environment window, click and drag with the mouse. As you move the mouse right, left, up, and down, the project follows, always turning on its center.
    If the project spins out of view, click **Reset Camera** on the Navigation menu. This is the position of the camera when it was created, and where this camera returns when you select Reset Camera. Each camera has its own reset position.
3. To smooth the display while moving, from the Moving Mode menu, click **Move as Points**.
4. Repeat step 2, rotating the project with the mouse. This time, whenever the project is in motion, the display changes to Points Mode, showing only the project points. Points Moving Mode provides the smoothest moving display performance, but select the Moving Mode you find easiest to use.
5. To move in closer to the project, press the **Insert** key. Press the **Delete** key to move out again. The TV Help lists other keyboard and mouse movement controls.

The third example

Learn flying through the MOUNTAIN project with **Flying Mode**.
1. From the Navigation menu click **Flying Mode**.
2. Drag the mouse left to point the camera in that direction. The project apparently shifts to the right. In Flying Mode you are moving the camera, not the project, so the project moves opposite the mouse direction. If you release the mouse button while dragging, the camera will continue to fly on its own.
    Note: Use the **Reset Camera** command to regain flight control.
3. To start forward flight, press the **1**, **2**, or **3** number key. The camera moves forward through the project.
    Begin slowly - you can select a higher speed later. If the speed is still too high with the 1 key, Help has instructions for adjusting the **velocity factor**.

4. Steer the camera by dragging the mouse to point the camera in the direction you want to go. For example, if you are about to dive into the surface, drag the mouse up.
5. The right mouse button also controls flight steering. While continuing flight, click and drag the right mouse button to the left, then to the right. The view slips sideways without changing the forward orientation of the camera.
6. Click and drag the right mouse button up, then down. The right mouse button is another way to move in and out.

The fourth example
To record images of environments, TV includes a high-resolution screen capture utility. To create an example image, open the **GOLF** project.
Note: To use Flying and Rotating in GOLF, set the Moving Mode to **Points** first. GOLF is a complex project in Texture Mode and moves slowly on some machines.
1. To open the golf project environment, from the File menu, click **Open**. A dialog box appears asking to save the MOUNTAIN.EN file. Click **No**. The Open dialog box appears.
2. From the dialog box, open the GOLF folder containing the project and environment files.
3. Click **GOLF.EN** to open the environment file.
The golf project appears with surface textures and images of trees. For more information about textures and other display options, see Help.
4. From the File menu, click **Export Image**. The SnapShot dialog box appears.
5. In the File Name text box, enter a name for the screen capture. The extension is automatically entered.
6. For this example, in the Style Type box select **Windows Bitmap *.BMP**.
7. Use the default Image Properties settings as a start.
8. Click **Save** to create the image.
9. To display or print the Bitmap image, open the file in Microsoft Paint.

Exploring the Other Example Projects

GOLF.EN illustrates use of surface textures and cross-texture images for displaying landscaping projects.

METRO.EN file shows a road project added on to an existing street system. With the optional Orthodrape Module, you can also see how TV drapes orthographic images on the three-dimensional surface.

LANDFILL.EN illustrates displaying a complex three-dimensional construction.

For More Information

For more information or to order the production version of TV, call Trimble at **1-800-235-4972** or **770-396-0700**.