

**MODULE OF .X FILES GENERATION FOR  
TERRAEXPLORER PRO**

**VERSION 1.0**

## I. GETTING STARTED

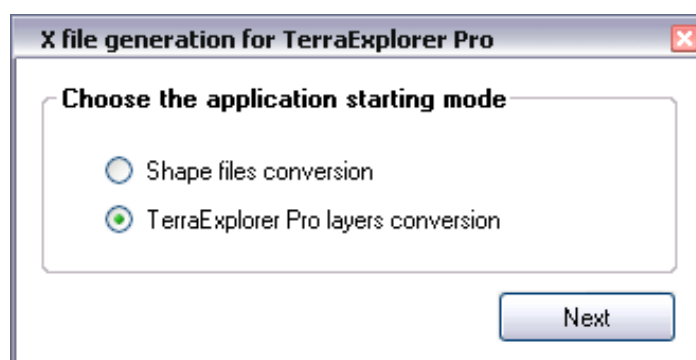
### **System Requirements**

- Windows XP or Vista
- Framework .NET 3.5 SP1
- TerraExplorer Pro 5.1 or higher

### **Starting Mode**

You can choose between two options for the application's starting mode:

- **Shape files conversion** - Direct reading of shapes files in polygon25D format.
- **TerraExplorer Pro layers conversion** - Using an interface integrating the 3D window of TerraExplorer Pro and a part of its functionalities.



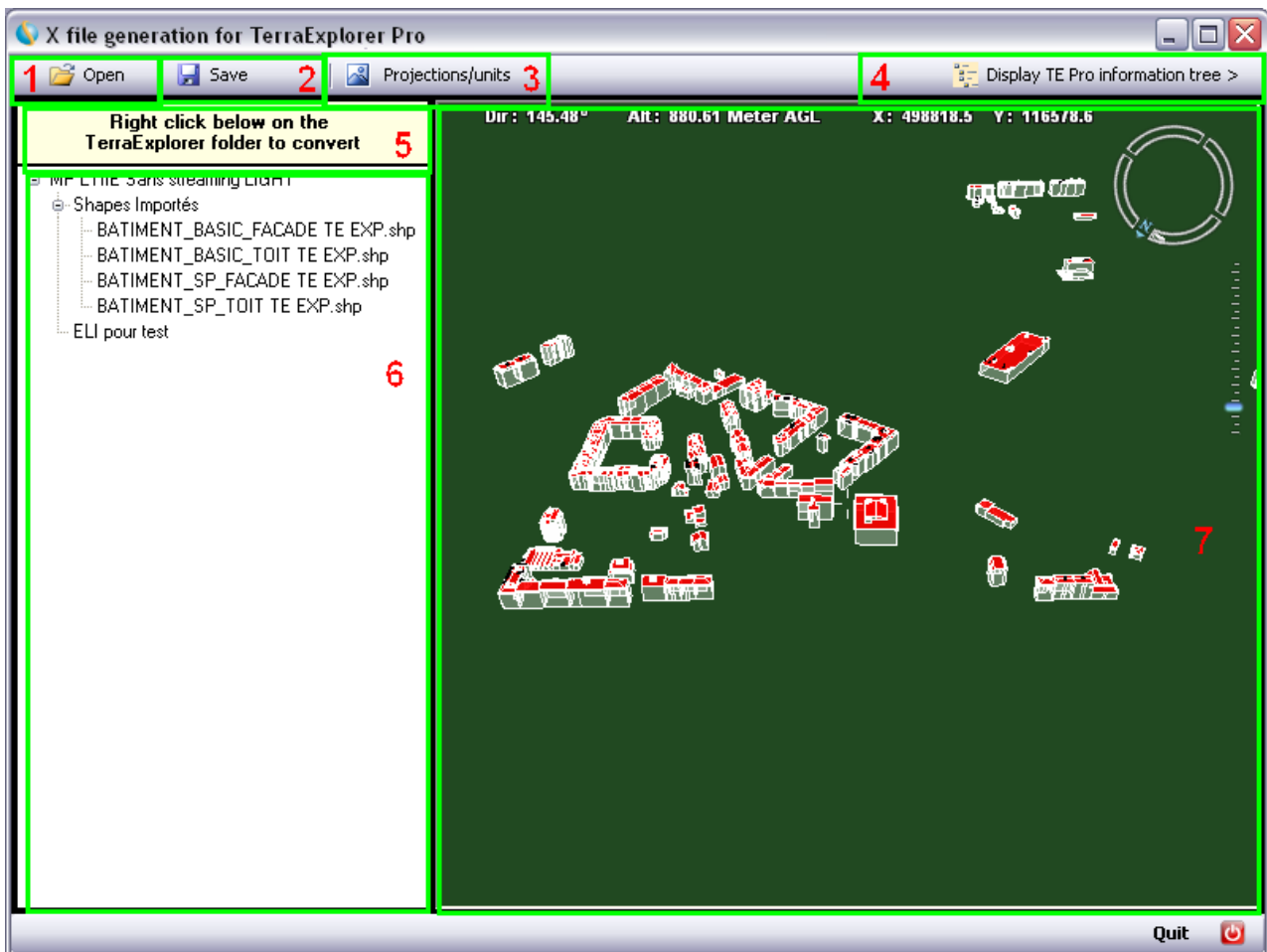
**X file generation for TerraExplorer Pro dialog box**

## II. TERRAEXPLORER PRO LAYERS CONVERSION MODE

### Introduction

If you select TerraExplorer Pro layers conversion, in the X file generation for TerraExplorer Pro dialog box, another dialog box opens in which you select a fly file that should be used as a basis for the conversion. After this file is opened and fully loaded by TerraExplorer, the general interface is displayed.

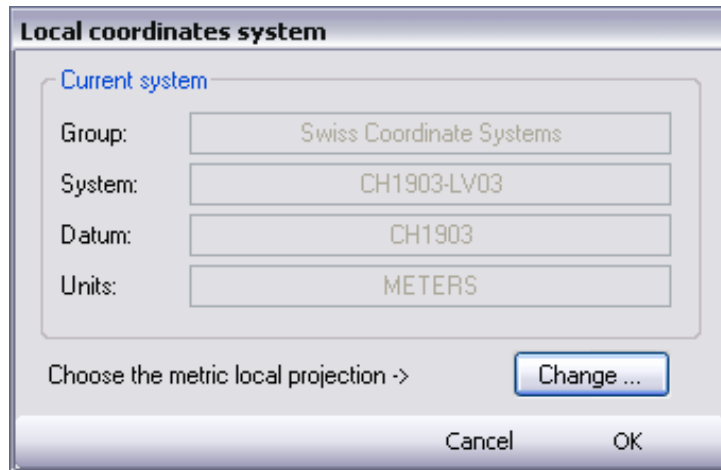
### Interface



General Interface

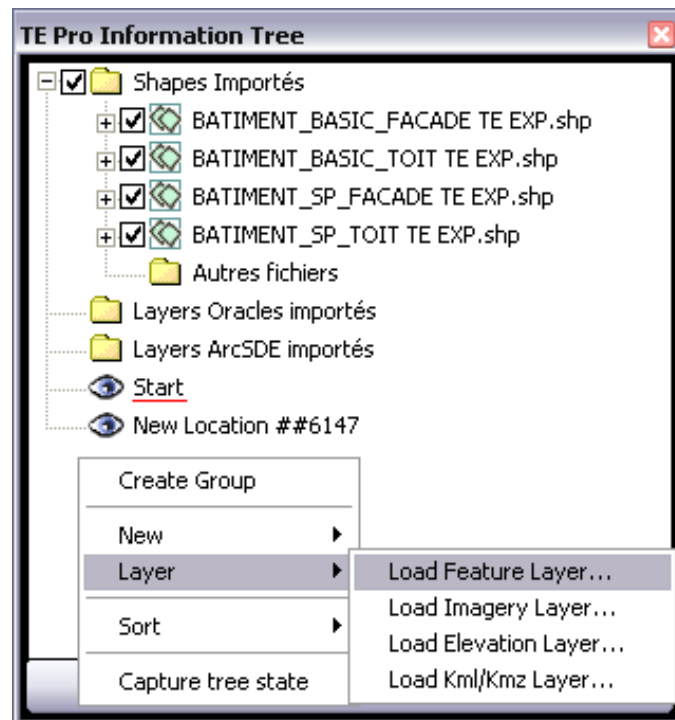
### Description of the General Interface

- 1. Open button** - Opens another fly file.
- 2. Save button** - Saves all modifications to the open fly file.
- 3. Projections/units button** - Opens the Local coordinates system dialog box in which you can choose which coordinate system to use. Most TerraExplorer 3D scenes are Globe projects, which use a latitude and longitude coordinate system (WGS84). To generate X files, you must use a metric coordinate system.



**Local coordinates system dialog box**

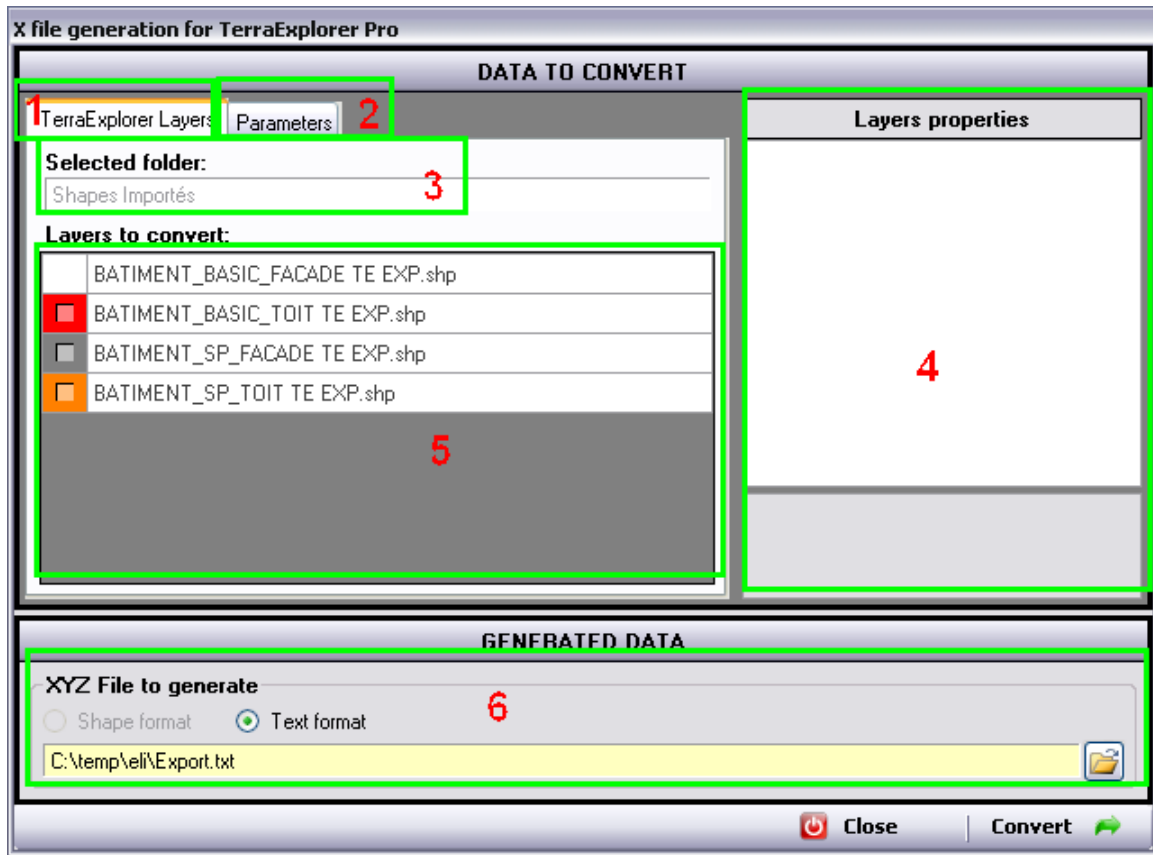
4. **Display TE Pro information tree button** - Opens the TE Pro Information Tree dialog box, which displays all TerraExplorer Pro tree information, and gives access to all the associated functions (importing a layer, data restructuring, modifying an object or layer properties, etc).



**TerraExplorer Pro Information Tree**

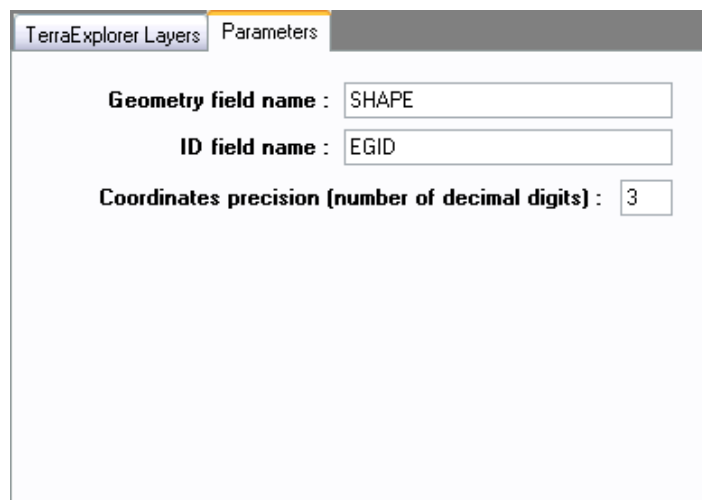
5. Window of visual assistance, associated with the 6 information tree.
6. **TerraExplorer folder tree** - Lists all folders included in the current TerraExplorer fly file. If you click a parent folder, all its subdirectories are displayed below it. In our example, if you click "Shapes importés", four layers are listed below it: BATIMENT\_BASIC\_FACADE TE EXP.shp, BATIMENT\_BASIC\_TOIT TE EXP.shp, BATIMENT\_SP\_FACADE TE EXP.shp, BATIMENT\_SP\_TOIT TE EXP.shp. You can right-click in this tree to:
- **Refresh** - Updates the tree based on modifications to the current fly file.
  - **Convert to X files** (right click one of the folders) - Opens the export interface. For more information about the export interface, see [Description of the Export Interface](#).
7. Regular TerraExplorer Pro 3D window.

## Description of the Export Interface



Exporting layers - X file generation for TerraExplorer Pro dialog box

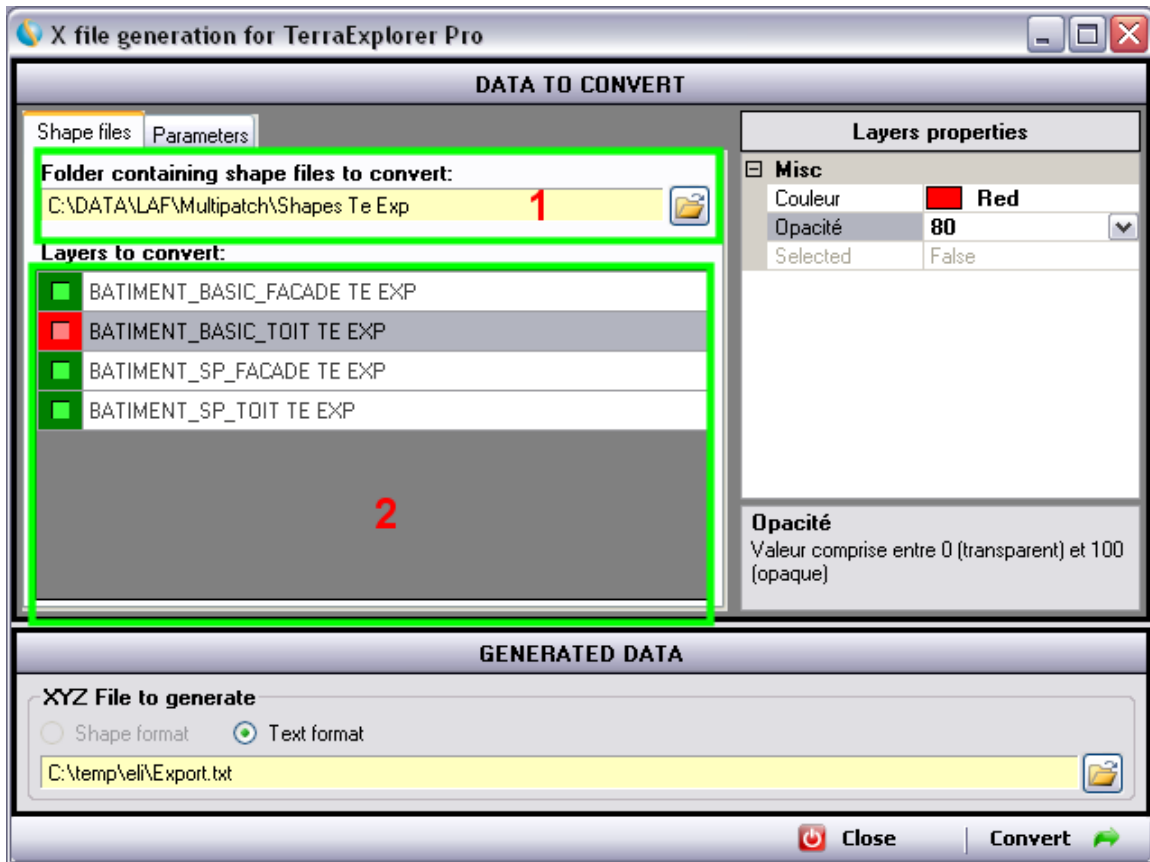
1. **TerraExplorer Layers tab** – Displays list of layers in the selected folder that are to be converted to X files.
2. **Parameters tab** – Lists the following parameters:
  - **Geometry field name** – This parameter is only useful for the Import shape method.
  - **ID field name** - Identifying: field of the database, common to all the objects that are to be grouped together, no matter what their origin layer is. In our example, it is the "EGID" field, present in the four layers, and identifying a building. This value is used to gather all the objects having the same value for this field while creating an X file automatically named <EGIDValue>.
  - **Coordinates precision** - Number of decimal places for the coordinates.



3. **Selected folder** - The TerraExplorer folder (group) that [you selected from the TerraExplorer folder tree](#).
4. **Layers properties** - The properties of the layers listed in the Layers to convert list. By default, the color and opacity properties are the one that were found in TerraExplorer.
5. **Layers to convert** - List of the layers that are included in the folder you selected. Select which layers you want to convert.
6. **Generated Data** - Designation of the file (XYZ Xfile) that will georeference all the generated X files:  
**Note:** In this version, the X,Y,Z, Xfile type file can be created only in text format.
  - Column delimiter: Tabulation
  - The X,Y,Z coordinates describe the position of the created pivot (insertion point) for each X File
  - X, Y in the projection system described above.
  - Z: absolute altitude of the lowest point of the building, this value is used during the XFile importation.
  - The path of this XYZ generated file also defines the path where the Xfiles are created.
  - This georeferencement file can be used for any fly file in TerraExplorer Pro, using the import feature layers function, with the text/csv format.

### III. SHAPE FILES CONVERSION MODE

*Interface:*



**Converting shape files - X file generation for TerraExplorer Pro dialog box**

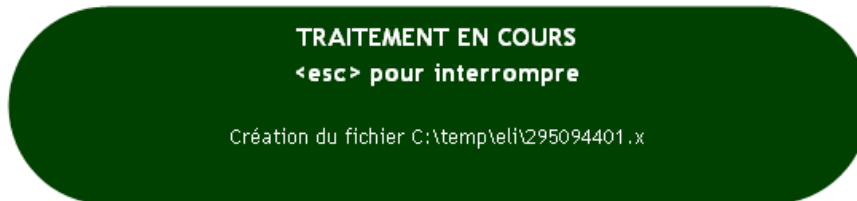
The interface for conversion of shape files is very similar to the [interface for exporting layers](#).

Only two fields differ:

- 1. Folder containing shape files to convert** - Select the directory where the shape files are stored.
- 2. Layers to convert** – Lists the shape files list of polygon 25D type present in the indicated directory.

## IV. GENERAL INFORMATION

- Conversion times may be lengthy, depending on the quantity of data (between 20 and 60 seconds for 2000 buildings, depending on the export mode). A dialog, indicating that the conversion is in process, is displayed throughout the conversion:



- The conversion process can be terminated by pressing <Esc>.
- Every time the application is launched, a new log file of all actions performed in a work session is created, and the old one is deleted. This log file is useful when technical support is required.
- A "ErrorsOrWarnings.txt" file is created in the same directory as the georeferencement result file. This file lists all the errors or inconsistencies that the application found in the data throughout the conversion phase. This file helps you identify which parts of your data eventually need to be corrected.
- The principal parameters of the application are saved from one session to another, such as:
  - Dialogs positions
  - Parameters table value
  - Projection system codes
- Modeling the data with 3 or 4-sided polygons offers the following benefits:
  - Improved conversion time into X files
  - Avoidance of many coherence errors in geometry, which can cause instability of the application or the generation of incorrect X's files. It is impossible to detect all the geometric incoherence of such databases.
  - Examples of errors frequently met in polygons with more than 4 vertices:
    - The first and the last vertices have the same coordinates.  
=> Error automatically treated by the application
    - Several vertices have the same coordinates.  
=> Error automatically treated by the application
    - Crossing polygon (example: eight shape polygon)
    - Non planar Polygon (can generate problems)
- For optimization purposes in real-time displaying the loaded Xfiles in TerraExplorer, it is recommended to create the polygons in the following way
  - The user stands outside of the building, "facing the polygon to digitize"
  - The polygon must be digitized in anti-clockwise way
  - In cases where polygons cannot all be made this way, you have to use the "double-side rendering of 3D models" in TerraExplorer (Project Settings menu, General tab, last option) to display all of them properly.



## V. COMING ATTRACTIONS

Our next release will support the following new features and corrections:

- Working with textures.
- Working with 3D Shape in “multipatch” format.
- X file generation into XPL format directly (optimized for TerraExplorer).
- XYZ file generation into shape format (for use in optimized streaming mode, SFS or directly into TerraExplorer).
- Automatic direct import of the X files into TerraExplorer during the conversion process.
- Use of this tool as a TerraExplorer Pro export plug-in.
- Full English version.(this version is 90% translated from the French one)
- Additional tests and warning messages during calculation.