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Pythagoras Pro

Pythagoras is a beautiful CAD software program with maximum flexibility. **Figure 1** shows the opening screen. You can work in just about any global or local coordinate system but you can always view the drawing coordinates and the drawing distances.

Drafting

The strongest aspect of this program is drafting. Instructions for how to draw points, lines, curves, spirals and polygons are easy to follow. **Figure 2** shows a sample drafting routine for wedging an arc between two intersecting tangents. By moving the cursor you can set a perfect arc tangent to both straight lines. You will also see the radius of the arc (53.58'). You can set the radius to an exact amount where that is necessary. If the arc must pass through a specific point you can pick an existing point (a list of coordinates appears above the cursor) or you can enter the coordinates yourself. A large selection of symbols is also available.

Plotting

As seen in Figure 1, the plotting sheet is visible in the drafting window. Let's say you have created a 36 x 48-inch plan for a construction project, but you need to reduce it to 8.5 x 11 inches for a file or for a fax. You simply select the smaller printer and the orientation, then scale the text (the ratio of the scale of the original drawing and the scale on the smaller printer).

Figure 3 shows a sample survey from Belgium. Note the outline of the plat for the original printer (single line). The double line is the outline for an 8.5 x 11-inch plot on my little printer. The

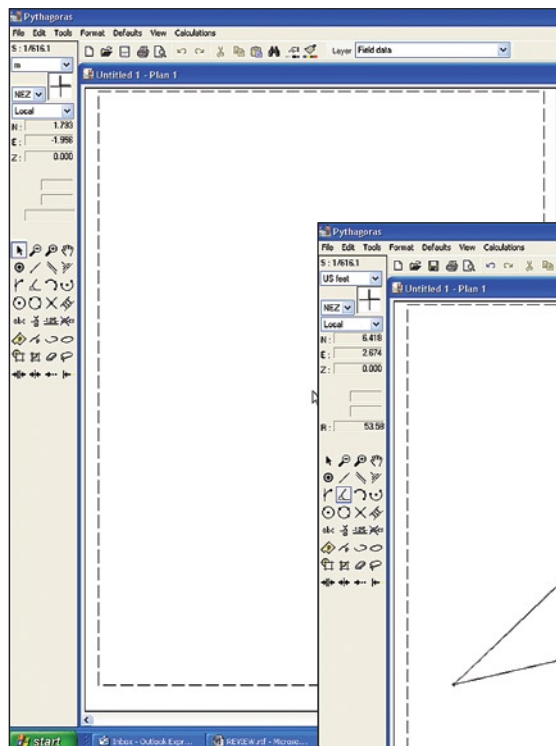


Figure 1

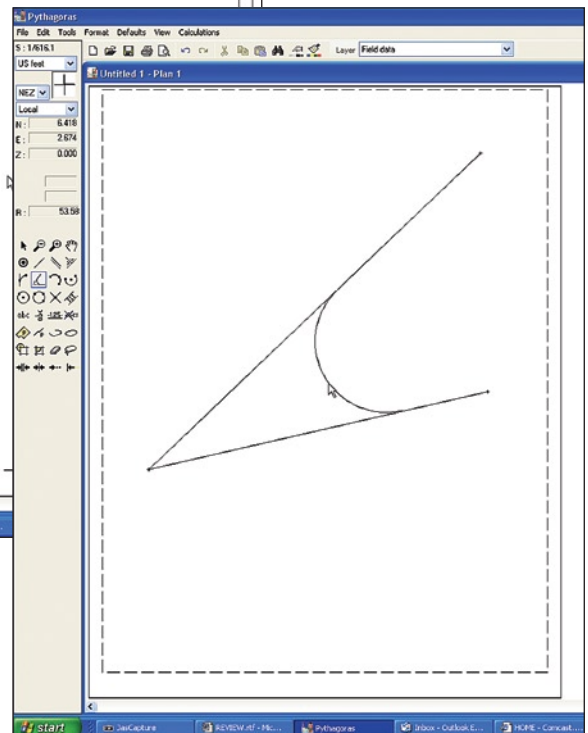


Figure 2

text is hard to read. You can manipulate all the text by clicking Edit and Select All Text. Then choose Format and Scale text. **Figure 4** shows the results. Notice that it is not perfect. "Telephone" is off the page. It is easy to fix because you can scale that bit of text individually. It is

very easy to change from one printer to another and requires very little time and effort. Pythagoras also has a sheet manager for those projects which cover many sheets. You can print free floating sheets to match them up however you wish. You can print all active sheets with

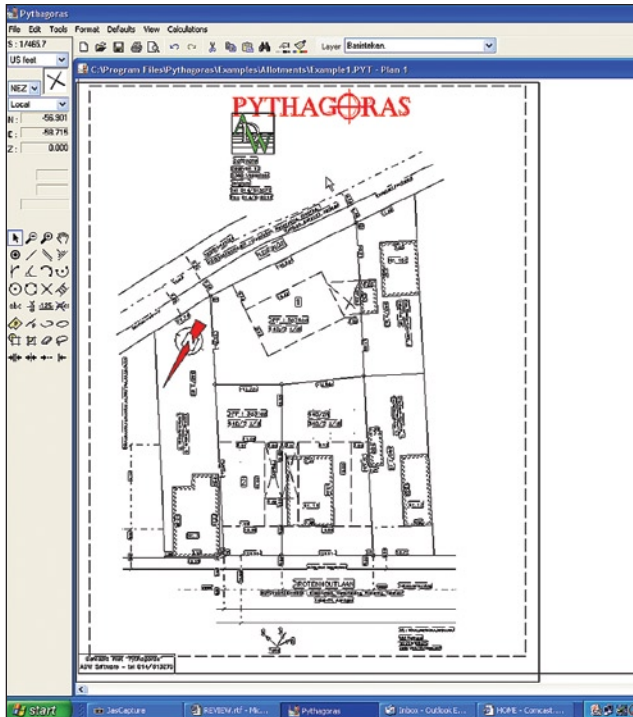


Figure 3

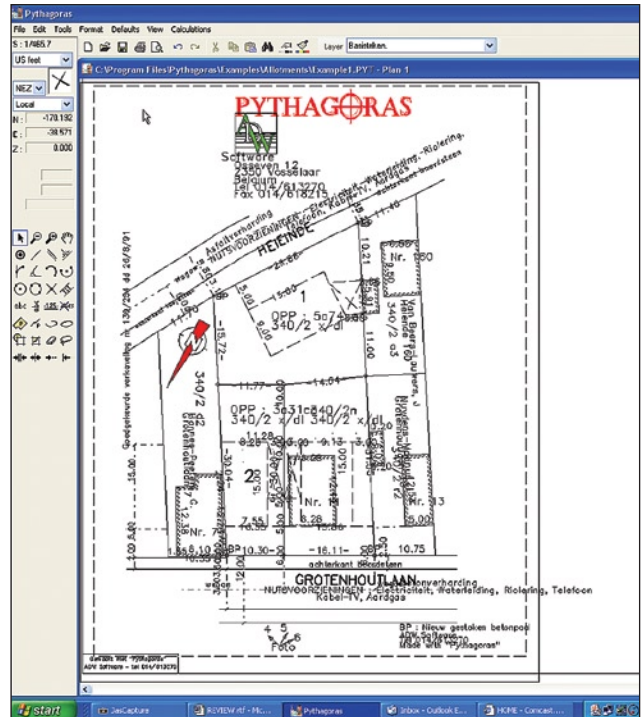


Figure 4

a single command and you can print as many copies as needed.

Note that there are other programs now using “string” technology and arc objects. In these programs relationships between objects are maintained so that when one is altered, all related objects are automatically altered. In some practices

this may or may not be an advantage. To quote from the Pythagoras manual (page 38), “Once you have created an object, its relation to other objects is lost. This means that parallel and perpendicular lines are simply lines and that all title, object, measurement or annotation texts have become simply text.”

Importing

The coordinate import/export function is very powerful and flexible so that virtually any coordinate text file can be imported or exported. But the real power is in the creation of a CDF file. This file is a text file (comes with a sample file and a 142-page manual to

Latest Pentax Instrument

The Pentax R-300X series is the third generation of laser-measuring, auto focusing total stations.

EDM improvements have been made in both efficiency and specification. Measuring time has been decreased while the non-prism range and the measurement accuracy have both been increased. There is dramatically more on-board data storage with 20,000 points (2” models), 16,000 points (5” models), and 12,000 points (6” model). Some models have an internal clock that can time stamp data with date and time. Dust proofing has been increased to IP5X combined with the already very high waterproof rating of IPX6.

Internal software capability has also dramatically increased with the USA availability of the PowerTopoLite (PTL) programs. Functions include Rectangular and Polar Coordinate Measuring, Free Stationing, Stake Out, Point to Line Stake Out, Traversing, Cogo, Area Calculation, 3D

Surface and Volume Calculation, REM, RDM, and Virtual Plane Measurement. The new data transfer program, Pythagoras Power, can graphically display your points with just a few keystrokes.

All R series models use a standard NiMH camcorder battery which give 5+ hours of continuous operation at very low cost and emergency replacements are available in any electronics store. A laser plummet is standard for quicker setups and can be adjusted in ten intensity steps for different conditions.

Pentax exclusive Auto Focusing telescopes (except the R-326X) decrease time to measurement and have multiple operating modes to suit any situation. Auto Focus, Continuous Auto Focus, Power Focus (3 speeds), and Manual Focus are all available for instant selection. Auto focus also decreases eyestrain and focus even in low light conditions when a human eye has difficulties.

Sensors for both temperature and pressure are exclusively built-in to Pentax total stations. You never need to worry about changing conditions affecting the distance accuracy.

Our Absolute Encoders make the R series ready to operate without any telescope or alidade indexing. Reference point angles do not change even when the instrument is turned off or powers down. Vertical Indexing error is also eliminated.

Distance measuring can be done to prisms (all models), reflective surfaces (all models), and standard surfaces (N models) with a function key at any time. There is no need for complicated menus or operation interruption to easily measure multiple target types from the same setup.

The R-300X series combines premium features, exclusive features and high efficiency in a standard priced instrument which is available in 2”, 3”, 5”, and 6” versions to suit most any requirement.

teach you exactly how to customize the system to your work). **Figure 5** shows the first page of the sample CDF file, and addresses abbreviations for common figures. **Figure 6** shows more of the CDF file. In Figure 5 the code was defined as up to a two-letter code. In Figure 6 we see some of the actual codes (descriptors in the data collector file). Each definition starts with a comment preceded by ‘;’. The comment tells you exactly what the code stands for. Immediately, the code is defined as a point or a line or a special feature such as a POINT_WITHIN_POLYLINE. You can spell out the name of the layer it will be placed on, the style (point symbol, line style, etc.), the color and a type of weighting factor such as FIXED POINT (FP=known coordinates), ADJUSTABLE POINT (TP=used in the adjustment of the traverse) and SIDE SHOT (V=adjusted from the appropriate TRAVERSE POINT). You can also add comments. It should also be noted that Pythagoras does not support CVS (comma delimited files). You must convert them to space delimited files or tab delimited files.

Pythagoras imports and exports DWG/DXF, ESRI shapefiles, SICAD_SQD (Windows only), and data collector files from every common electronic total station (again, except CVS files). It also imports digital images and keeps a list of all images in use.

Exporting

In addition to being able to output any form that it can import, Pythagoras can export terrain models (such as 3D surfaces in DXF), object lists, and stake-out lists for field staking in either a manual printout or a text file that can be read directly into an instrument.

Support

My only complaint is that there is no Help button on the toolbar. The software comes with two excellent manuals, however, and multi-language support is also available on their website. I found the FAQ section to be particularly interesting and helpful.

Pythagoras is a powerful program with maximum flexibility and shortcut keys for just about everything. It is used all over the world, and runs on both MAC and Windows. If you’d like to try it for yourself, check out a demo version on their website at www.pythagoras.net.

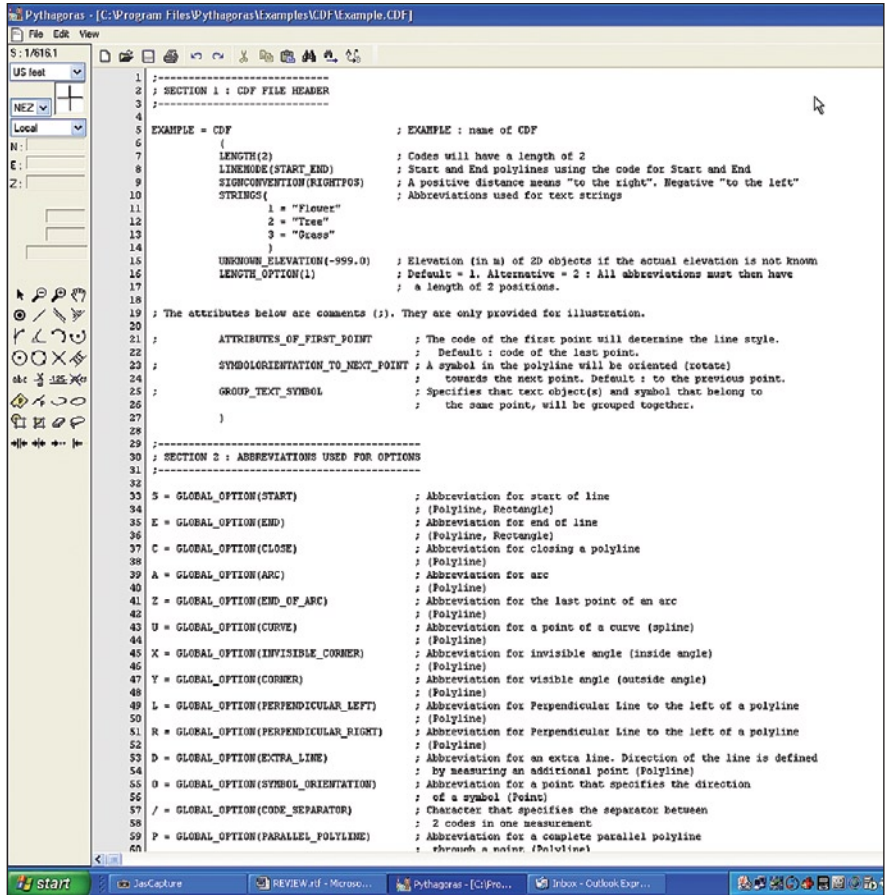


Figure 5

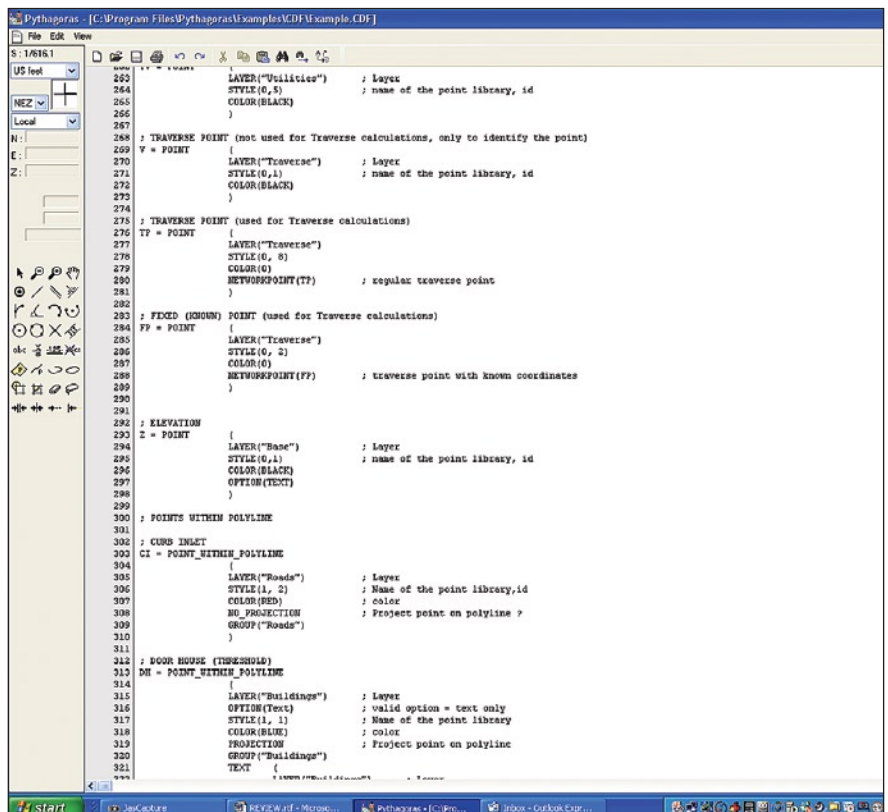


Figure 6