



DataCAD Boston Users Group

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A Committee of the Boston Society of Architects

A small but energetic core of a ten DBUGers made their way through the snow to this meeting at host Mike Smith's house in Maynard. Mike passed out a survey hoping to put a finger on how we might improve DBUG attendance, which has fallen off quite a bit in recent months. Suggestions were made for 1) earlier notices, 2) getting back to the 3rd Wednesday, and 3) more 3D. Mike suggested that the new continuing education requirement for Massachusetts architects might also help. DBUG meetings do qualify (as AIA sponsored education) and he figured that by attending only 4 DBUG meetings, you can fulfill your entire Mass. state requirement.

DataCAD Basics: Hatch Preview

Mike reviewed the new features for the *Hatch Preview* window with DataCAD 10.02 (see attached handout).

Single vs. Double Precision

Mark Madura was kind enough to pay a visit to our meeting last night and tell us about the implementation and implications of a double-precision database vs. a single-precision database. He demonstrated the "pH test" (see Page 2). I do not know enough about programming data structures to give you any technical data, but with the considerable programming expertise of the DataCAD LLC crew I have to believe that if they say the data is stored at a certain size (in KB) then that's just the way it is.

The current *single-precision* database is "effectively" accurate out to 7 decimal places, including both the left and right side of the decimal, like:

246.0174
11.98245
1,498,234
453,215.5

Because all data points are referenced from the absolute zero point of the drawing file, inaccuracies creep in the farther you go from that point. This can be especially true when dealing with angles, since angles are stored and calculated in radians, then converted to degrees. Depending on the distance from the absolute zero point the radians may first be rounded, then further rounding occurs when converting to degrees.

Double-precision does not mean the database is twice as accurate. It is actually something like 10,000 times as accurate! To illustrate this Mark said to imagine a single-precision

database as a square box drawn on your screen with each side 260 feet long. Now imagine a double-precision database is a square box with each side 493,000 MILES long!! Yes, miles!

The database is "effectively" accurate out to 14 decimal places (hence, I assume, the "double" accuracy), including both the left and right side of the decimal, like:

246.01748376194
11.982457639085
1,498,234.0745213
453,215.57832567
2,591,482,958.8930

DataCAD 11 Features

Precision. Depending on the programming progress the initial release of DataCAD 11 may be issued with the same single-precision database, with a free double-precision update to be issued sometime afterward. If things have advanced enough, we might see double-precision in the initial release. When a pre-version 11 file is opened in DataCAD 11 it will automatically inherit (via an on-the-fly conversion when the file is first opened) double-precision accuracy, effectively "cleaning up" and optimizing the file.

Don't ask me the mathematical specifics (because I don't know), but we were assured that a double-precision database would just about double the file sizes, even with optimizations in text, hatching, etc. However, DataCAD LLC is looking into using a file compression algorithm that would squeeze the file size down to 1/10th the size on disk. That means that a 2MB file might be only 200K on your hard drive. That file, when opened, would expand to its full size of 2MB in memory (RAM) but would still be only 200K on the hard drive.

And no, there is no way to add a "toggle" to turn the double-precision on and off. Double-precision requires hard-coding every aspect of DataCAD to accept the more precise data.

File Format. It appears that with double-precision, plus all the new parametric features being added, DataCAD 11 will indeed have a new database and file format. Rather than a .DC5 file it will have some other, as yet undecided, file extension.

Although it is programmatically possible to create a "conversion" utility in DataCAD to "Save As" a .DC5 file, this is not planned, due to the man-hours of programming that this would

February DBUG Meeting
DBUG Meeting
February 26, 2003
Host: Mike Smith, Wm. Mitropoulos Assoc.
Maynard, MA

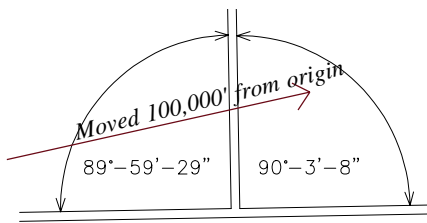
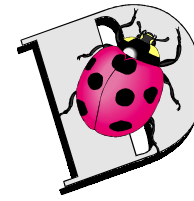


Figure: the pH test (inspired by Phil Hart) calls for rotating a 90 degree intersection (with a gap) 1 degree and then moving it 100,000'. Then clean up the gap in the wall to make clean corners and ask for an angle measurement. In single-precision, you will get a result like at left.



require. As Mark noted, when you are a small software developer you have to pick your priorities. Moving DataCAD forward, rather than backward, is more important to the life of the product at this time. That means that all pre-version 11 files will be able to be opened in DataCAD 11, but DataCAD 11 files will not be able to be opened by versions 10, 9, 8, etc. Mark assured us this is not an AutoDesk-like ploy to force users to upgrade. It's an inevitable matter of economics.

As a workaround, you could Export a drawing as a .DWG or .DXF file and then open it in earlier DataCAD versions, but of course you would lose some of the DataCAD-specific data, including Multi-Scale Plotting layouts and GotoViews.

On my Soap Box: In my OWN opinion the fact that there will be no backward compatibility is not an issue. The fact that the current file format has been maintained for some 12 years or so is proof that DataCAD LLC has done their best to maintain compatibility for all users. It is simply time to move on to bigger and better things, and we owe it to ourselves and to the health of a company that we would all like to see survive, to upgrade to a new file format and a new program without a lot of bitching. And cost just shouldn't be a factor, either. If new versions come out about every 18 months, an upgrade from v.9 costs 71 cents/day, or \$21/month; an upgrade from v.8.5 costs 90 cents/day, or \$27/month; an upgrade from v.8 or earlier costs \$1.27/day, or \$38/month. (How much did we used to spend each month on drawing leads, erasers, rub-on lettering, ink, drafting tape, etc.? Wasn't that the cost of doing business?) *Off my soap box...*

Symbol Browser. The new Symbol Browser in DataCAD 11 continues to look more and more impressive. Unlike the current template windows the new Symbol Browser (still with the familiar row/column format) can be undocked and floated anywhere on your screen, including totally outside of DataCAD. In fact, since it is now NOT drawing-specific, you can have multiple drawing files open while one Symbol Browser remains constantly active on screen (people with dual monitors will REALLY love this one).

There may be an option in the Symbol Browser to display all the symbols that are currently in the active drawing file.

Any option that is available for a symbol (*Enlarge*, *DelSymb*, etc.) can be accessed by right-clicking directly on the symbol in the Symbol Browser. This includes the ability to display a Windows-format table with an infinite number of user-definable fields. Reports using those fields can be generated without the current DOS-like method of laying out complicated report tables.

Symbols. There "might" be layers available within symbols in DataCAD 11.

Snapping. Snapping is up for a "potential" overhaul. Essentially you would be able to snap to anything you can see, including lines of associative hatching, anything in an XREF, anything in a symbol, etc.

Linetypes. Like hatches, linetype definitions will now be stored within the drawing file as they are used. That means that if you send the file to another DCAD user with a different DCADWIN.LIN file, all the linetypes will still display properly! If you open a file that has a "MYLINE" linetype in it, but you don't have that "MYLINE" linetype in your .LIN file, it will still display properly as "MYLINE". If you want to continue using that linetype in the drawing file, you would just use Identify/SetAll and start drawing.

Intelligent/Parametric Objects. We did not see much on this subject (it was not officially part of what Mark was going to talk about), but we did see a little more than what we saw back in November. Mark continues to tell us that the base programming for intelligent objects is solidly in place, and it's just a matter of creating new objects to plug into that programming. We saw some smart revision clouds and even some smart 2-line walls.

DWF Export. AutoDesk has a file format called .DWF (also called Whip!), which is a compressed vector format for the Internet, viewable with a free plug-in. It is like a 2D version of o2c in that the files are tiny and fast. DataCAD 11 is planning to support the export of drawings to this format, which actually supports layers and views. That means that the anyone viewing the drawing can turn layers on and off at will, and DataCAD LLC is looking into the possibility of being able to also export your GotoViews with the .DWF file.

Beta Testing. Mark said that once the free 10.05 upgrade is completed and made available beta testing of DataCAD 11 should start shortly thereafter, perhaps within the next few weeks. Beta testing may initially include two versions: one with single-precision and one with double.

No Time for the Whole Enchilada

With time short, Mike gave a quick overview only of his office use of DataCAD's advanced features of XREFs, XREFClips (XREF Clip Cubes), and SK (Sketch) sheets and Addendum. This handout (*The Whole Enchilada*) is available upon request and on the DBUG website. — *Meeting Notes by Mike Smith (with fill-in addendums by Evan Shu)*