Carlson Webinars – BIM, GIS and CAD Standards

July 18, 2009
Carlson Software recently asked Felicia and me to present webinars on topics we have particular interest in or specialize in.

Felicia's webinar on BIM, GIS and Carlson Software can be viewed here: BIM, GIS and Carlson Software Webinar

My webinar on CAD Standards can be viewed here: CAD Standards for Carlson Software with AutoCAD or IntelliCAD

Originally posted on **Carlson Connection** by Jennifer Dibona

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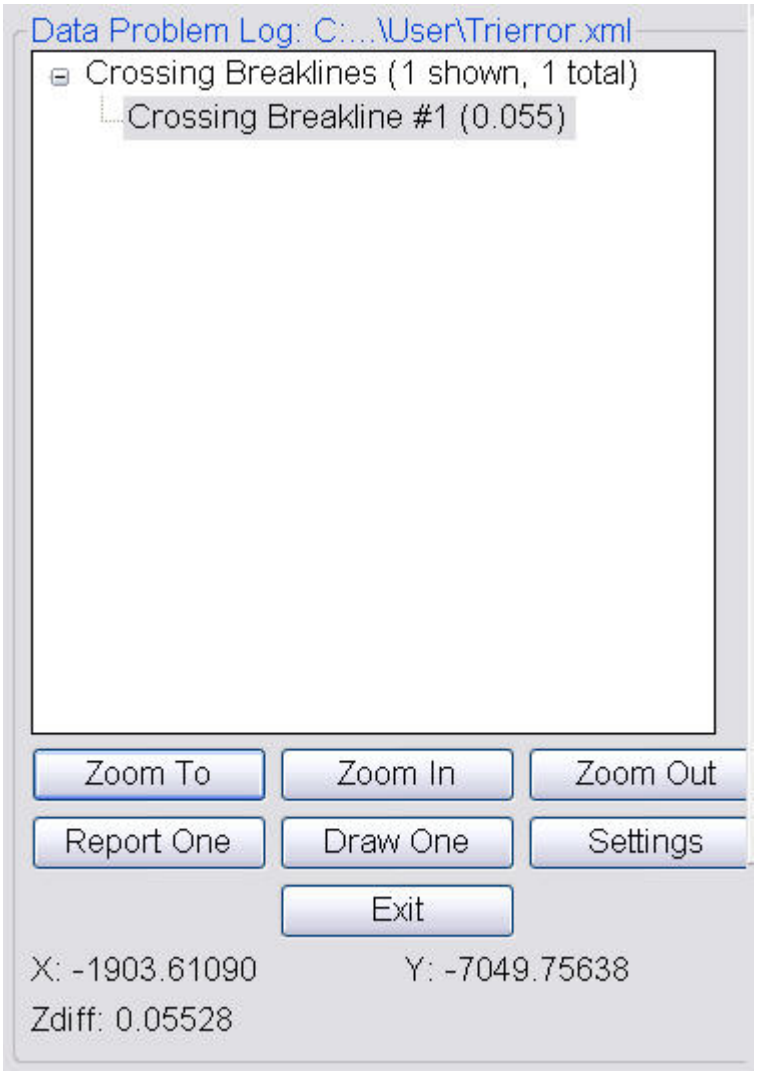
What's In Your Surface?

July 18, 2009
With the adoption of machine control for construction, the

ability of various GIS systems to accept 3D data, and now with the expansion of the term BIM to cover elements outside of a building proper, surface modeling has become a critical aspect of any project. Since so many elements down the line rely on the surface model, it is critical that the model be as accurate as possible and free of errors. This article will be the first in a series that will take a look at various tools and options within the Carlson product line to ensure the accuracy of your surface models, sometimes known as triangulated irregular networks (TIN) or digital terrain models (DTM).

In this first article, we will take a look at quality assurance/quality control (QA/QC) and how it applies to surface modeling. This is an essential step of the model building process, and one that is often overlooked by software manufacturers. For most people, the QA/QC process generally involves examining the contours and looking for issues, or spot-checking points on the surface. All current surface modeling software allows for the generation of contours and spot-checking, but these rely on the user to manually review the entire surface after it has been built.

Carlson Software is one of the few products that include an error checker as part of the surface building process. Most other programs either return a generic error message, or simply fail to complete. If you use the Triangulate & Contour routine, an error log is displayed showing any major issues after the surface data is processed.



The issues listed include the following:

- Crossing breaklines
- T-Intersections between breaklines
- Vertical faces

If there are no issues with a surface model, the error log is not displayed. You can use the various options to change the sensitivity of the error checker, and to highlight any issues found. Simply select a single error on the log, then click Zoom In. You can then either correct the errors using any of the surface editing tools, edit the original data (such as the breaklines) and rebuild, or choose to ignore the errors if they are minor.

Although no errors may be found as part of the surface creation, there may still be errors in the surface model resulting from bad data. Once the surface has been built and any build errors have been corrected, you should do a manual review of the spot elevations and contours. The easiest way to check and verify spot elevations in Carlson is by using the Surface Inspector, which is available from the Surface pull-down menu of various modules. After you select the Surface Inspector command, you can change options as to which surface(s) you want to examine, as well as labeling settings. Once this has been done, move your cursor over the

surface previously specified and a floating dialog box will show you information about that surface. Click anywhere on the surface to label a specific point.



Press Enter to exist the Surface Inspector.

By taking just a little time to verify that your surface model is accurate and free of errors, you can save time, money, and effort in the later stages of your projects. The Surface Error Log is an invaluable tool for locating any errors and flagging them for editing at a later time. The next article in this series will look at checking a surface model using contours.

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Online Training – Friend or Foe?

July 18, 2009

With the economy what it is and everyone trying to get as much bang for their buck as possible, I'm finding that online training for your CAD software programs is an increasingly popular and cost effective option.

Although this post describes my personal approach and may be different considering your trainer, hopefully it will answer some of your questions about online training and will encourage you to give it a try.

How does it work?

There are several online services that trainers may use for online training. WebEx, GoToMeeting and GoToWebinar are all very commonly used and popular. My preference is GoToMeeting and GoToWebinar as they have a very low footprint on your computer and are simple to use. When first entering an online meeting, a small installation of the program occurs allowing you to view and interact with the presenter's computer.

GoToMeeting is smaller scale and better for personalized training. GoToWebinar can handle up to 1,000 “attendees” and is typically used for presentation or demonstration to a large group.

Some of the online meeting services are free, but most require a monthly fee. The fee is paid by the organizer who then has the ability to schedule meetings/webinars in advance or “Meet Now” for meetings on the fly. Your organizer will either email you a link to the meeting site or can tell you the link on the phone. Each meeting has a unique “Meeting ID” that you’ll enter at the main page.

GoToMeeting is typically used for standard training where more than one person may need to show their screen and/or be given control of the mouse and keyboard. This interaction can take place in a variety of ways. When in a meeting, anyone can be given (and must accept) the “Presenter” role which allows others to view their computer. And, even though the Presenter always has priority, control of the mouse movement and keyboard entry may be granted to others in the meeting. This allows someone else to work on my computer remotely.

The audio portion of the training usually takes place by

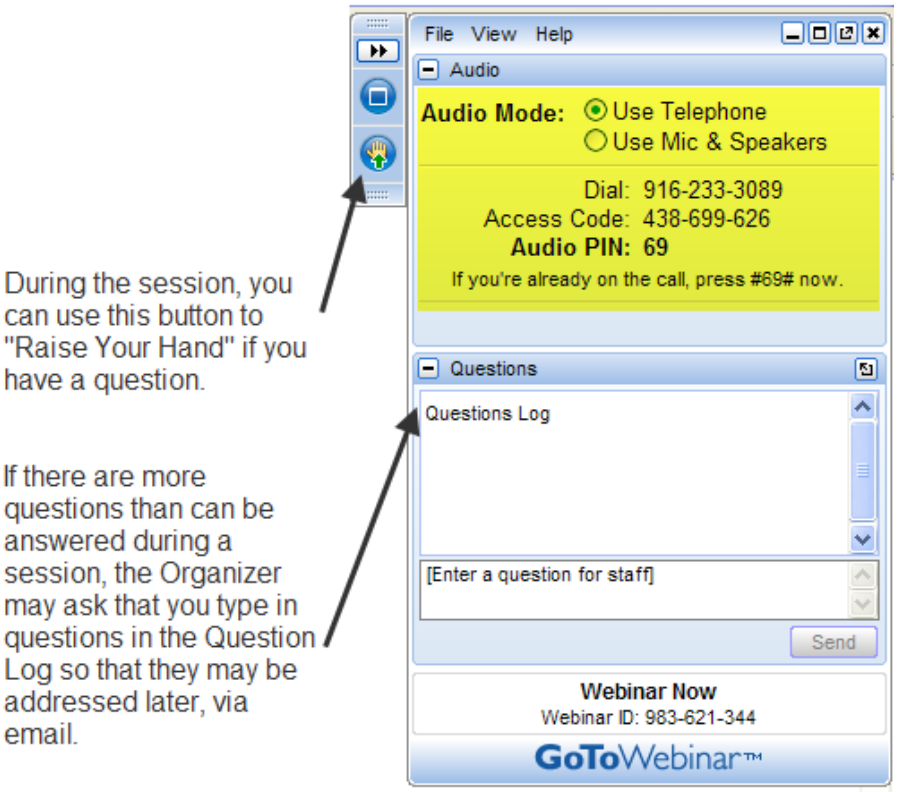
calling in on a conference call line supplied by GoToMeeting. VOIP (Voice Over Internet Protocol) is also available allowing you to use your computer's speakers and microphone but it is not recommended because of quality.

GoToWebinar is used for larger scale demonstration and presentations and can accommodate up to 1,000 Attendees. Online Webinars are generally structured to have one or more Presenters making the presentation.

Like GoToMeeting, the audio portion of GoToWebinar usually takes place by calling in on a conference call line supplied by GoToWebinar. However, in a Webinar setting, the Attendees are muted automatically by the Presenter so that everyone isn't blessed with the sound of crinkling potato chip bags and elevator music when someone puts the phone on hold. The Presenter has the ability to un-mute one or more Attendees as needed. The audio of all Attendees is managed by the Presenter by having each Attendee enter a unique "Audio PIN" upon arrival.

GoToWebinar has 2 ways to ask and respond to questions from Attendees. The Control Panel has a "Raise Your Hand" button that notifies the Presenter there is a question. Depending on

time constraints, the Presenter may decide to un-mute and answer the question during the online session. If there are more questions than can be answered during a session, the Organizer may ask that you type in questions in the "Questions Log" so that they may be addressed at a later time.



Pros and Cons

I've put together what I consider to be the Pros and Cons of online training for CAD Software programs. Please pitch in and offer your comments.

Pros

- Can eliminate travel time and expenses
- Very cost effective option for customized one-on-one training
- Allows for personalized, absolutely customized training because it's normally one on one.
- Can't find a local trainer? No problem. Felicia Provencal can train you from Hawai'i – although you may want to go to her!
- Can be set up within minutes if there is a pressing technical support issue or project that suddenly comes up.
- Can be scheduled in shorter blocks of time – one of the best ways to make sure you retain what you are taught. I like to schedule 2 hours maximum per session.
- Shorter blocks of time allow for easy customization of training topics from one session to the next. If more

time is needed on certain features, it’s easy to squeeze in another 2 hour session.
- It IS interactive!
- All sessions can be recorded and played back at your convenience for a refresher.

Cons

- Some people are more comfortable sitting beside and working directly with the trainer
- It’s less interactive than hands-on, in person training.
- For hands on training and depending on the material being covered, it may not work as well if you have several folks needing training at one time.
- Requires a high-speed connection and a telephone headset allowing two hands on keyboard. A speakerphone can be used as long as feedback doesn’t become an issue.

Real World Example

I recently worked with a client from out of state. He is a grading contractor who thought he needed Carlson TakeOff training but, after some discussion, realized training in

basic CAD (IntelliCAD) needed to come first and then TakeOff training.

The initial proposal was for me to travel there and spend 3-4 days training this client plus a second person (a competitor, in this case) who needed the same training. Both of them decided to give online training a try.

We scheduled online training for every morning one week. I worked with one from 7:30 – 9:30 am and then with the other from 10:30 – 12:30 pm. After the 3rd day, we had covered so much material that one asked to skip the next day so he could work with it himself and apply what he'd learned so far.

We ended up skipping two days. By the time we met again, he'd worked with it enough and become so much more proficient with the basic CAD operation that we were able to fast-forward through the next couple sessions and started working on his current project. Another subsequent session was cancelled because the rain finally stopped!

And then a few days later, he needed to get his project finished and out to bid. So, after our first session one morning, we set up another session at 4:00 that afternoon and

worked until almost 7:00 that evening.

Both customers ended up very happy with the amount of material we covered and where they were with the software when we wrapped up our regular training. They still have the video recordings of the training for their reference to go back to when needed. In the end, the cost was almost the exact same as it would have been had I fulfilled the original proposal but they both learned and retained much more because the training was customized and personalized to their specific jobs.

Originally posted on **Carlson Connection** by Jennifer Dibona

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Carlson-IntelliCAD GIS Starter Kit from ESRI

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Those currently using Carlson with IntelliCAD are eligible for a new “GIS Starter Kit” from ESRI. The Kit includes:

- ArcGIS ArcView desktop software
- A copy of the book *A to Z GIS: An Illustrated Dictionary of Geographic Information Systems*
- A copy of *GIS Tutorial: Workbook for ArcView 9*, Third Edition
- A 10% discount for the ESRI Survey & Engineering GIS Summit ($325 – standard registration price)

To take advantage of the offer, call 1-800-GIS-XPRT (1-800-447-9778) and request the **Carlson-IntelliCAD GIS Starter Kit** and **please have your Carlson Serial Number available**.

You can read more about ESRI's commitment to survey and engineering services by visiting http://www.ESRI.com/engineering.

Originally posted on **Carlson Connection** by Jennifer DiBona

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The Power of LandXML

July 18, 2009

The ability to import and export to LandXML has been around for quite awhile, but I still get a lot of curious looks when I mention it in my training classes. So, what is it? And why should you be using it?

Why Should We Be Using It?

We've all become accustomed to saving archive copies of our drawings for various purposes but saving the corresponding project data is often overlooked. Retrieving the drawing file may allow you to recover proposed contours and profile grid, but the underlying "surface" is lost unless the project was also archived.

Importing and exporting using XML files is the most convenient way to convert, transfer and archive data created in Carlson Software, Land Desktop, Civil 3D, Eagle Point, TerraModel and, I'm sure, other programs.

But, What Is LandXML?

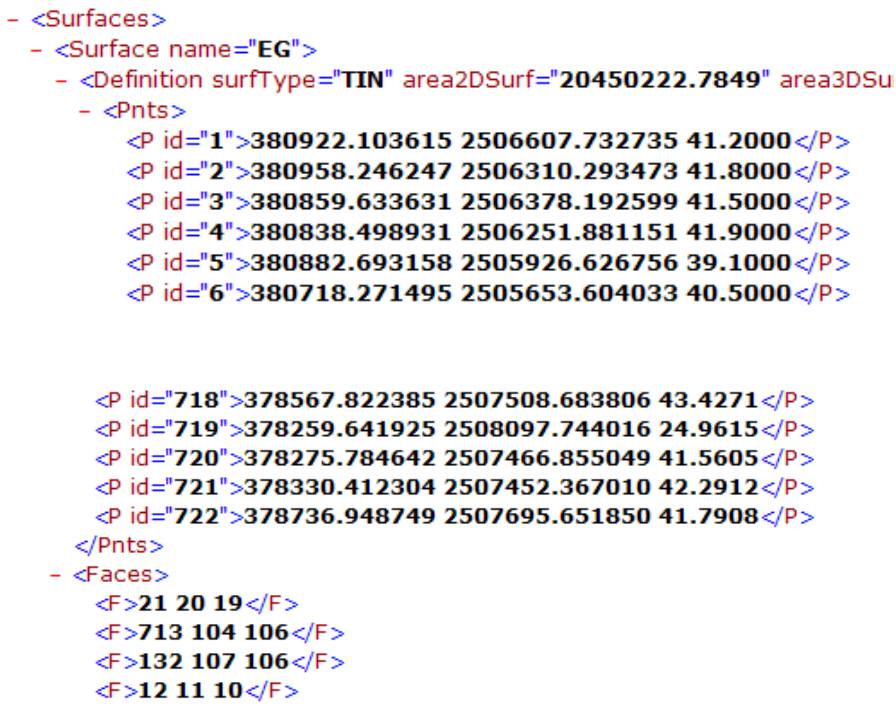
LandXML refers to a file format (.xml) containing data created in a civil/survey program. My recommendation is that ALL civil and survey data should be archived – progress, submittal and final archive – using LandXML.

The way I like to explain it is that we use XML files in the same way we used to rely on DXF files. They're mostly outdated now, but DXF files are a generic file format that, for example, we used to convert MicroStation DGN files to AutoCAD DWG files. At that time, AutoCAD couldn't read DGN files and Microstation couldn't read DWG files; but both could read DXF files. So, we had to convert our drawing files to the generic DXF format that could then be read into the other program.

Similarly, Carlson Software, Land Desktop, Civil 3D and the other programs create their own unique files for civil/survey project data such as points, point groups, surfaces, centerlines, profiles, etc. When we have to pass that data onto someone using a different civil/survey program – it's a nightmare!

That's where LandXML files prove their value.

Exporting your civil/survey data to an XML file breaks it all down into, basically, a text file. Specifically, it's an HTML file that can be viewed through a web browser such as Internet Explorer or Firefox. For instance, when a surface model (TIN) is exported to XML, the X, Y, Z values of each point on the TIN is assigned a number, and then each "face" (triangle) of the TIN is defined by specifying the 3 corners. See the examples below:



Note that one type of data that is currently not supported in XML files is typical cross-sections or template files.

Another benefit of using LandXML to transfer or archive project data is that any combination or all of your project data can be saved in a single XML file. This is valuable because exporting ALL of the data for a project can create a massive XML file.

Even if you archive your project data in its native format, you should consider additional archiving in XML format. No one knows what kind data files we'll be using 10 or 20 years down the road so saving your data in such a generic, text-based format such as XML files allows for easier retrieval down the road.

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A Closer Look at the Drawing Inspector

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Learn more about using the Drawing Inspector to view data about drawing entities.

North Rotation: Using Twist Screen

July 18, 2009
There have been many debates in various blog posts, discussion group posts, and articles regarding what is the best way to handle North rotation on maps. With AutoCAD-based systems, there were essentially two choices: you could set a User Coordinate System (UCS) or rotate the screen using a tool such as 3D Dynamic View. Carlson Civil and Survey

offers these choices with a twist.

One of the main drawbacks to setting up a UCS is that it can throw off calculations being made by your mapping/design software. For example, point databases and external TIN files often refer to the coordinates used in the field, or that existed when the data was generated (such as the TIN being built). If you change the UCS, the coordinates may be wrong, and you may end up with incorrect results for things such as profile generation.

Because of this, many people choose to rotate the screen without rotating the coordinate system. In AutoCAD, the simplest way to do this was by using 3D Dynamic View (DVIEW). The main drawback to the DVIEW command is that while the screen would be rotated, common tasks such as adding text and symbols would be more difficult as they would have to compensate for the rotation of the screen. This was usually managed using a setting called SNAPANG, which could be set to the opposite of the DVIEW rotation, making the use of ORTHO mode viable. In AutoCAD-based systems, this would be fairly tedious, particularly if you wanted to match the rotation to a specific item, such as a portion of a road

centerline.

In any of the Carlson desktop applications, there is a View pull-down menu with several commands that can solve this issue, often with a single click. To see the most commonly used options, go to the View pull-down menu and choose the Twist Screen sub-menu. There are four commands available, each one rotates the screen and automatically sets the SNAPANG to match.

- **Standard** – This option allows you to select a rotation angle using the mouse.
- **Line, Polyline or Text** – This option allow you to select an object to set as a view baseline. It is the most useful when trying to match views to objects such as property lines or road centerlines.
- **Surveyor** – This option prompts for the manual entry of a bearing or azimuth for the rotation angle.
- **Restore Due North** – This option returns the screen to the orientation where North is straight up.

By using these options, you can quickly set up plot sheets and layout tabs, annotate the maps appropriately, and preserve the coordinate system for future design work or

other calculations.

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Working with Land Desktop or Civil 3D Contours in IntelliCAD-based Carlson Programs

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If you are working in an IntelliCAD version of Carlson Survey or Civil and need to bring in surface entities (contours) from a Civil 3D (C3D) or Land Desktop (LDT) drawing, it’s actually very easy to do. However, it’s not necessarily easy to find on your own. And, unfortunately, it’s in a slightly different place depending on whether

you're using the Carlson Survey or Civil menu.

FYI – If you simply try to "Open" a drawing that has AECC Contour Objects with an IntelliCAD-based program, it may look correct, but the entities will only be the dreaded "ACAD PROXY OBJECTS" that have bogus elevations. These are only good to look at… not work with.

Whether you're using Survey or Civil, the only thing you'll need is a drawing file (DWG) containing the C3D or LDT contours for the surface. It doesn't even need to be opened, you just need to have it and be able to find it. (hey, I'm getting old!).

First, start a new drawing in Carlson.

Then, if you're using Carlson Civil:

1. Go to the "Surface" menu,
2. Select "Import/Export Surface"
3. Then, select "Convert LDT/Civil 3D Surface Drawing".

If you're using Carlson Survey:

1. Go to the "Surface" menu,

2. Select “Import/Export Surface Data”
3. Then, select “Convert Civil 3D Surface Drawing”.

Next, you’re prompted to “Select the LDT/Civil 3D Drawing to Read”. After browsing to and selecting the LDT or C3D file, pick “Open”.

Next, you’re prompted to to “Select Converted Drawing to Write”. This will be a new DWG file containing the converted data. After browsing to a new location and specifying a new file name, pick the “Save” button.

You’ll see the conversion process in the text window. Once finished, you can open the converted drawing.

What you will find in the new drawing are all of the entities from the original LDT/C3D drawing except that any AECC Contour Objects have been converted to elevated PLINEs and LINEs.

The first step you’ll probably want to take after opening the new drawing is to join together all of the contour PLINEs and LINEs. You may want to “Isolate” the layers for the contours first.

Then use the “Join Nearest” command under the “Edit” menu. Like most cases, make sure to have the “Join Only Common Elevations” and “Join Only Common Layers” options selected.

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Engineering, Construction, and BIM

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There have been many articles, discussions, and presentations on Building Information Modeling in the recent months. If you haven’t already heard the basics, this post covers it well. For surveyors, civil engineers, and construction firms, there are two things you should know about BIM and how it will impact your business.

First, BIM is very similar in its goals and processes to GIS. Basically, you are attaching data and other information

to objects. This allows you to manage the facilities after they have been built and track their contents over time. This is very similar to how as-builts of infrastructure are managed and tracked through a GIS system. Water and storm sewer sytems, telecomm transmission lines, and landscaping are types of things that are traditionally managed using GIS. The information age has dramatically opened up opportunities for professionals to gather, collate, and attach data to their surveys, designs, and as-builts.

Secondly, since buildings are not constructed in isolation, they must tie into the site grading and infrastructure, further opportunities for designers and contractors have opened up. Complex site plans showing how the grading, structural design, and utilities will all connect are now possible, and represent a new deliverable for firms to offer their clients. Carlson Software offers many solutions for creating these models and because Carlson data migrates well between various CAD and GIS platforms, owners and developers of these projects can be assured that their designs will be ready for management once construction is complete.

Originally posted on **Carlson Connection** by Felicia Provencal

Carlson + ESRI = Wow!

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So, how cool is this?

At the Carlson User Conference this week in Lexington, KY, Brent Jones of ESRI announced a new grant program in coordination with Carlson Software. The program will bring ESRI products to every IntelliCAD-based Carlson program.

Speaking with Brent on Tuesday, he said that a few of the details have yet to be worked out, but Carlson IntelliCAD users should be hearing details in about a month.

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