More About IntelliCAD®

IntelliCAD – An Introduction

The development of IntelliCAD is overseen by the IntelliCAD Technology Consortium, “an organization of CAD software developers, who develop applications for IntelliCAD, a Computer-aided design engine. The IntelliCAD engine, which is based on the DWGdirect library from the Open Design Alliance reads and writes the ‘.dwg’ data format – a widely used file format for storing both graphic and textual information of CAD-related software applications.”

The primary goals of the IntelliCAD Technology Consortium are to “research and develop CAD technology, the IntelliCAD platform, and to deliver CAD solutions to customers worldwide.” In other words, to provide the personal and commercial CAD markets with a cost-effective solution that is capable of reading and writing the common drawing (DWG) file.

The ITC is a non-profit, independent organization of commercial software developers (members). The ITC has an elected, volunteer, member based Board of Directors which guide its strategic vision. An independent (non-member) President manages the tactical business operations. Members pay annual dues that fund the ITC. Today the ITC has over 50 members who support 13 languages and ship product in more than 35 countries.

IntelliCAD – A Trip through Time

Except where noted, each of the following items were obtained from An Outside Look in at IntelliCAD (used by permission) which requires the free Adobe Reader.

> *“Where did the name come from? The name of the software ‘IntelliCAD’ comes from a programming company that was formed*

in the early 1990s in San Diego, CA, USA. Their main claim to fame was ADE (AutoCAD Data Extension), which they sold to Autodesk, and which eventually became part of Autodesk Map."

"IntelliCAD the software has a complex and fascinating history that winds its way through Softdesk, Autodesk, Boomerang, Visio, just missing Microsoft, then onto the IntelliCAD Technology Consortium, and now [includes] a variety of brand names, such as CADopia, Bricscad, and DWGEditor."

- *1994, August: "IntelliCAD is purchased by Softdesk of Henniker, NH."*
- *1996, December: "Autodesk acquires Softdesk… Softdesk apparently did not tell Autodesk about its AutoCAD clone."*
- *1997, March: "Autodesk investigated by the FTC (Federal Trade Commission) over the alleged monopoly status of AutoCAD… The FTC allowed Autodesk to purchase Softdesk after Autodesk agreed to: (1) spin off IntelliCAD; (2) not attempt re-acquire the technology; (3) not attempt to acquire any company that owns or controls IntelliCAD; and (4) not interfere with employees who leave Autodesk to work with IntelliCAD… IntelliCAD was spun off as Boomerang Technology in San Jose, CA."*
- *1997, March: "Visio bought Boomerang."*
- *1998, March: "IntelliCAD 98 ships. The price was originally pegged at US$495; upon release, the price dropped to $349 as a 'special introductory price'; the price drops further to $149 at computer superstores, such as CompUSA. Through to the end of June, the first three months of sales for IntelliCAD were nearly 12,000 licenses, producing $3 million in gross revenue – an average of $250 per license."*
- *1998, May: "IntelliCAD is suddenly incompatible with AutoCAD! Autodesk releases a maintenance release for*

AutoCAD R14.01 that makes a change to the .dwg format, and preventing IntelliCAD from reading drawing files… Visio updated IntelliCAD 98 to work with 14.01 files."

- *1999, July 27: "Visio cuts IntelliCAD loose by granting the IntelliCAD Technology Consortium a royalty-free, perpetual license for the source code of the IntelliCAD 2000 technology. The ITC was set up by Visio, but run by an independent board of directors.*
- *1999, September: "IntelliCAD Technical Consortium opens its Web site at http://www.intellicad.org/."*

Subsequent releases of IntelliCAD through the ITC occur every year since its initial release (see the IntelliCAD version history link under the Press section of the IntelliCAD Technology Consortium web site).

IntelliCAD Release History

- *IntelliCAD 6.4 July 27, 2007*
- *IntelliCAD 6.3 February 28, 2007*
- *IntelliCAD 6.2 May 27, 2006*
- *IntelliCAD 6.1 September 5, 2005*
- *IntelliCAD 6.0 May 3, 2005*
- *IntelliCAD 5.1 January 12, 2005*
- *IntelliCAD 5.0 October 24, 2004*
- *IntelliCAD 4.0 March 14, 2003*
- *IntelliCAD 2001 version 3.3 July 19, 2002*
- *IntelliCAD 2001 May 22, 2001*
- *IntelliCAD 2000 March 6, 2000*
- *IntelliCAD 98 May 1, 1998*

Carlson Support for IntelliCAD

The Carlson 2009 installation comes with IntelliCAD 6.4 built-in. When you choose IntelliCAD as the CAD platform during

installation, the IntelliCAD engine is installed along with the Carlson program files. Carlson 2009 only works with this built-in version of IntelliCAD and not on any other version of IntelliCAD or other IntelliCAD based products like Bricscad.

Running Carlson 2009 on IntelliCAD is largely the same as running on AutoCAD. IntelliCAD supports a development environment with a similar interface as AutoCAD which allows Carlson Software to use the same code base on both CAD platforms. Of the over 1700 Carlson commands across the Carlson 2009 products, there are 11 commands that are not supported with IntelliCAD for the Carlson 2009 release. These are:

- Editor Reactors (ie Link Points To Coordinate File)
- Point Object Snap (node snap does work)
- Text Explode To Polylines
- Edit Centerline On-Screen
- Extract Centroid Data
- Label Object Data Areas
- Drape Image On Surface
- Retaining Wall Placement
- Pillar Cut
- Calculate Variogram
- Production By Block Model

IntelliCAD – AutoCAD Comparison

IntelliCAD has a very similar user interface as AutoCAD, supports the core AutoCAD commands and uses the DWG drawing formats 2009 to R14. For some Carlson commands, creating entities in AutoCAD is twice as fast as IntelliCAD which makes a significant difference in routines that create lots of entities.

The upcoming IntelliCAD 7 will be built on DWGdirect from the Open Design Alliance and will add a “DRX development

environment” similar to ObjectARX with AutoCAD. Using DRX should greatly improve the speed of entity creation within IntelliCAD.

While most of the AutoCAD commands Carlson clients use in AutoCAD can also be found in IntelliCAD 6.4, there are many features in AutoCAD that are not in IntelliCAD. Among these features are ones for architectural and mechanical applications that don’t apply to Carlson customers. For this initial release of Carlson 2009 on IntelliCAD 6.4, here are AutoCAD commands that Carlson customers might miss:

- Spell Check
- DGN import/export
- Orbit command
- Find command
- Express Tools
- Tool Palettes
- Annotative Text
- Sheet Set Manager
- Page Setup Manager
- Import .PC3 Files
- Irregular viewports
- Clipboard commands for copybase and paste to original
- VBA not supported for custom applications; VB with COM is supported
- Object Enablers for LDT points and contours
- User-interface for menu customizaiton (no CUI, old MNU method)
- Ctrl-pick cycle for object selection
- Dialog user interface for WBlock
- Dialog user interface for Purge command
- Dialog user interface for Filter command
- Right-Click menus
- Entity Properties as docked-dialog
- Grip snapping to other grips

- Highlighting of entities when dragging cursor over them
- Mudst hatch pattern

If you identify any other AutoCAD feature that you miss when running Carlson with IntelliCAD, please email us at support@carlsonsw.com and we willl add to this list which helps guide future developments.

Bibliography

"IntelliCAD Technology Consortium – Wikipedia, the free encyclopedia"
Available at:http://en.wikipedia.org/wiki/IntelliCAD_Technology_Consortium 09 April 2008

"IntelliCAD® Technology Consortium: The intelligent alternative for CAD developers."
Available at: http://www.intellicad.org/join/index.php 09 April 2008

"Natural monopoly – Wikipedia, the free encyclopedia."
Available at: http://en.wikipedia.org/wiki/Natural_monopoly#Regulation 09 April 2008

"An Outside Look in at IntelliCAD."
Available at: http://www.intellicad.org/WorldMeeting2004/presentations/OutsideLookAtIntelliCAD.pdf 09 April 2008

All links contained herein open in a new web-browser window.

Another Twist for World

I'd like to offer a few other arguments for the use of the DVIEW TWIST routines discussed in North Rotation: Using Twist Screen. The four Carlson DVIEW routines cited:

1. ***Standard*** *– This option allows you to select a rotation angle using the mouse.*
2. ***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.*
3. ***Surveyor*** *– This option prompts for the manual entry of a bearing or azimuth for the rotation angle.*
4. ***Restore Due North*** *– This option returns the screen to the orientation where North is straight up.*

fall right in line with remarks made by ESRI's Brent Jones at the 2009 Carlson User Conference who said:

> *"GIS changes the whole domain for surveyors," Jones added, "And surveyors need to be ready for what's coming next – high*

> *accuracy GIS. The key is geo-referencing," he said. "We can use our data to communicate to our world with greater precision over greater areas."*

In my opinion, a **U**ser **C**oordinate **S**ystem (UCS, by its very definition), takes the data one step further away from being geo-referenced. There are those that would probably argue that having data in a World Coordinate System (WCS) and at assumed coordinates of something like 5000,5000,100 is no better than using a UCS to shift this same data to a proper geo-referenced coordinate system. From a holistic stand-point, I'd tend to agree. However, what sets the WCS *vs.* UCS argument apart is this simple statement:

All drawings must have a WCS yet not all drawings have a UCS.

When one considers the longevity of information represented in drawings created to this point in time and then reflects on how this information might also be used in the future, I feel it is important to model that information (and subsequently allow that information to be easily extracted) in a consistent and reliable fashion. A **U**ser **C**oordinate **S**ystem is typically only understood and used by its creator which in turn, limits its use and subsequently increases the risk of liability when the **U**ser **C**oordinate **S**ystem isn't known or understood by a "downstream" recipient of the drawing (survey stake-out, machine control excavation, *etc*).

Side note observation… Is it me or are there some parallels between UCS and custom ARX objects used in other products? When I look at how long the DVIEW *vs.* UCS arguments have been made, I can only surmise the length of time that will be involved to bring the non-proprietary *vs.* proprietary data argument to a close. I suspect it's going to be a long, tough road.

In any event, it is my opinion that standardizing on a single WCS should provide more consistent deliverables when the drawings/projects span multiple people, offices and/or disciplines. When properly adopted, using a “twisted view” of geo-referenced data in a World Coordinate System should provide more feature-rich information now and into the future when our data is mapped onto the Earth.

Originally posted on **Carlson Connection** by Ladd Nelson

North Rotation: Using Twist Screen

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.

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

Ribbon vs. Menu… Your preference is??

I was reading a recent AP article that was similar to the article entitled Meet Microsoft's antidote to Vista and saw the following:

> *You probably don't know her name, but if you're using Office 2007, the sleeper hit of the Vista era, you're already familiar with Larson-Green's work.*
>
> *She was the one who banished the familiar system of menus on Word, Excel and other programs in favour of a new "ribbon" that shows different options at different times, depending on what a user is working on.*

Hmmm… I'm wondering if she'd be willing to re-think that decision?

I'm not sure what it is about the ribbon interface but I cannot seem to get used to it. I've tried… I mean *I've really tried* to be productive with the Office 2007 ribbon but continually find myself wasting lots of time searching for a particular command whose location I could find instantly in the traditional pull-down menu system used in Windows and Office applications for the past +15 years. The article also said:

> *"We want to reduce the amount of thinking about the software that they have to do, so that they can concentrate all their thinking on the task they're trying to get done," Larson-Green*

> *said in an interview.*

The task I'm trying to get done?? I'm trying to figure out where all my favorite old commands went for getting my work done. I'm finding that I'm spending **more** time thinking and searching for commands and having less time for the task(s) I'm trying to get done. Don't even get me started on the new default file formats for Office files (*.docx, *.xlsx, *.accdb, *etc*) and having to Save As for those who haven't adopted Office 2007 and later.

Side note observation… I wonder how soon it will be until Autodesk decides to release a **.dwgx* file format? Perhaps the Open Design Alliance should beat them to the punch.

According to the frequently changing Wikipedia write-up on ribbons:

> *Microsoft has started the process of acquiring a patent on the ribbon user interface concept[2] and licenses the ribbon design to third-party developers royalty-free, as long as the user interface conforms to the Microsoft's design guidelines and they can get an approval from Microsoft. The ribbon design guidelines are confidential and an evaluation copy is only available when a non-disclosure agreement has been signed.*
>
> *The Ribbon has been licensed by Autodesk for AutoCAD 2009…*

My fear is that when I eventually have to migrate out of AutoCAD 2008 (I'm running the ribbon-less AutoCAD 2008 and IntelliCAD and haven't even looked at AutoCAD 2009/2010), I'll be too far behind the 8-ball. Maybe I'm too grounded and comfortable with pull-down menus. I still prefer Windows XP over Vista and suspect I'd prefer pull-down menus in my CAD product like many of comments left at AutoCAD 2009 – How do you use the

Ribbon? blog. Perhaps it is time to accept the fact that ribbons are likely here to stay. However, if my CAD productivity takes a hit due to the migration to ribbons like my Office productivity took a hit, I suspect I'm "going to have some 'splainin' to do." Personally, I'd love to have a one-to-one chat with Julie Larson-Green (*a.k.a. "Microsoft's antidote to Vista*") to learn why throwing away +15 years of interface familiarity is/was a good idea.

What do you think?

[polldaddy poll=1552888]

Originally posted on **Carlson Connection** by Ladd Nelson

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

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.

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

---

That CAD Girl – April Newsletter

Our April Newsletter can be downloaded HERE

Engineering, Construction, and BIM

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 Software User

Conference

The 2nd annual Carlson User Conference has wrapped up and was a success. And, even more fun, a lot of news was broken at the conference.

- **Dewberry** Case Study, “Choosing and Implementing Carlson Software”
- **ESRI** Announces Partnership with Carlson & Software Grant for Carlson’s IntelliCAD Users

---

Carlson + ESRI = Wow!

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.

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

---

Brent Jones of ESRI discusses ‘Why GIS Needs Surveyors’

Combining all the GIS and land development technologies that exist today is what Brent Jones suggested surveyors do in his keynote address to the attendees at the 2nd annual Carlson User Conference. Jones, PE, PLS, is the Survey, Cadastre, and Engineering Industry Manager for ESRI, which designs and develops the world’s leading geographic information system (GIS) technology.

To help surveyors accomplish this, Jones announced an upcoming grant program to be offered by ESRI for every Carlson IntelliCAD user. “ESRI is very supportive of Carlson’s development on IntelliCAD and we want to support your users,” said Jones of this specialized grant program being developed exclusively for Carlson IntelliCAD users. “We want to help surveyors leverage their existing resources to help in the GIS market.” With this offer Carlson IntelliCAD users will be able to access GIS technology and jump-start a GIS practice. Read More

Originally posted on **Carlson Connection** by Karen Cummings