

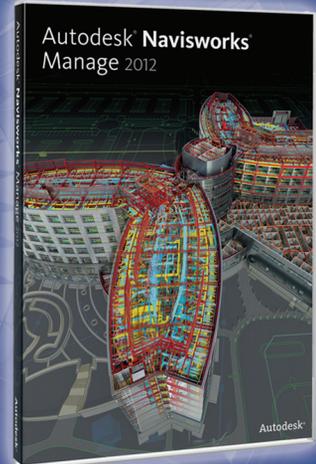
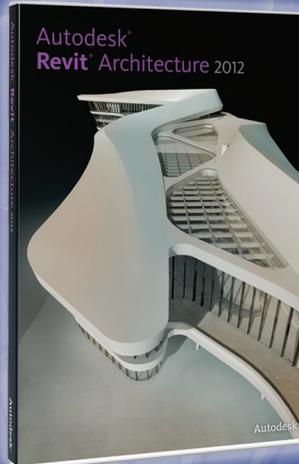


AUGIWorld

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April 2011

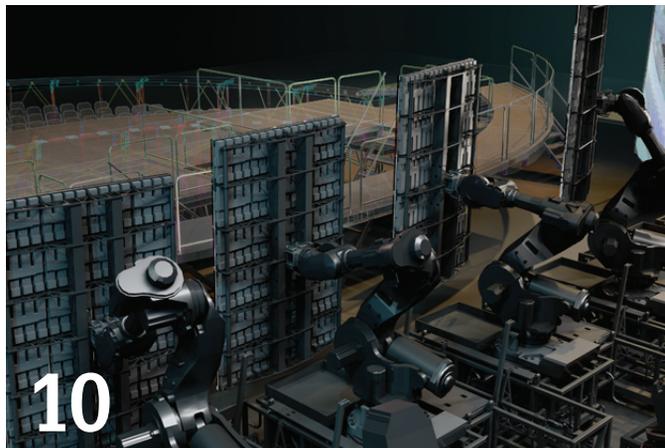
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Civil 3D 2012 – Life's A Beach
Navisworks 2012 – What's New
What's New In Revit Structure 2012

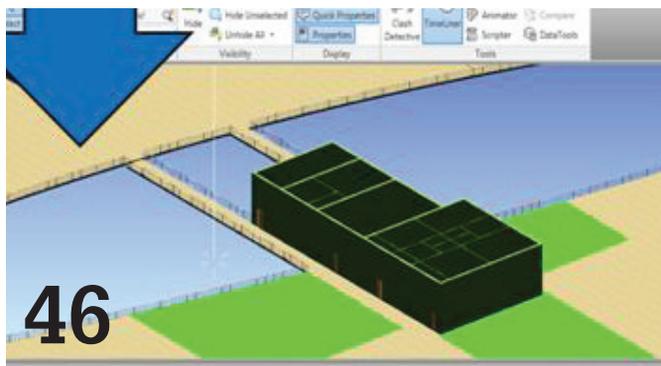
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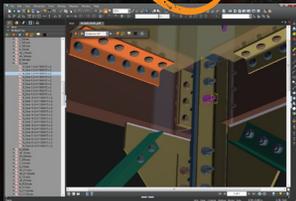
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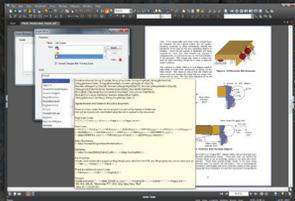


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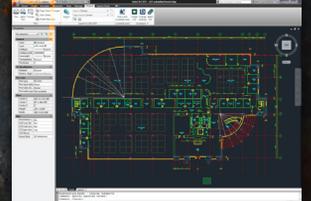
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Welcome to the annual review of the latest Autodesk presents, er, products! As I sit and write this I am on a plane returning home from attending one of the Autodesk industry Media Day events. This was a chance for those in the media, like magazine publishing, to get a sneak peek at what Autodesk is bringing to market this year. Some details have been leaked or released already and this issue hopes to unveil a good deal of the rest for you.

Our authors are daily users of the products they write about. In most cases, they have been playing with the software during the last several months of development. Of course, nothing beats getting your own fingers on the software. Depending on your budget and situation, some of you have already started getting software delivered and the rest will be out shortly. If you can't upgrade at this time, most, if not all, products have trial software you can download and try out. Check out www.autodesk.com for that.

Over at *AUGIWorld* we have been tweaking our Editorial Calendar, which you can find via the hyperlink. In a publication such as this, an Editorial Calendar is somewhat like the flavoring of a given issue. Most articles will follow the issue theme, but there will always be something spicy that falls outside of the preset plan and adds some kick to the issue. I want to encourage you budding writers to contact me or any of the Content Managers to have a go at writing. I should add that you can be published via *AUGI HotNews* just as easily. Contact Marilyn Law for more info on the monthly *AUGI HotNews* newsletter.

This issue also continues the growth of our Content Manager team, which will be bringing you rich and interesting articles in the magazine throughout the year. Newly installed as Content Managers are Andra Marquardt, Darren Young, David Mills, James Salmon, Lonnie Cumpton, Phil Russo and Todd Shackelford. We still have a few vacancies to fill. Perhaps you are interested in helping find articles to publish?

With that I wish you more disk space and happy installs! Thanks for reading!

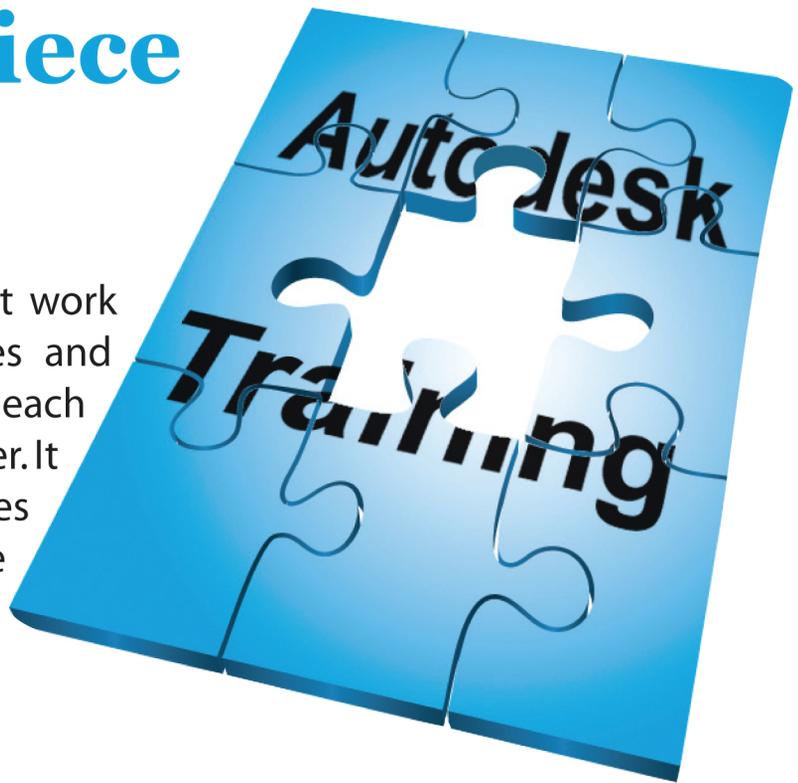
David Harrington



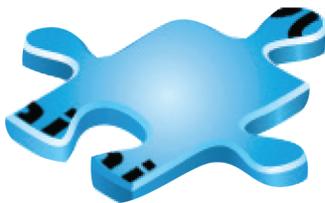
The missing piece of the puzzle.

"Traditional classroom training doesn't work because it doesn't address the issues and problems that today's designers face each day. Update training doesn't work, either. It gives you snippets of many new features and new functions, but it also lacks the understanding of how to apply these things to the daily design process."*

* Source: *Cadallyst*, January 2007



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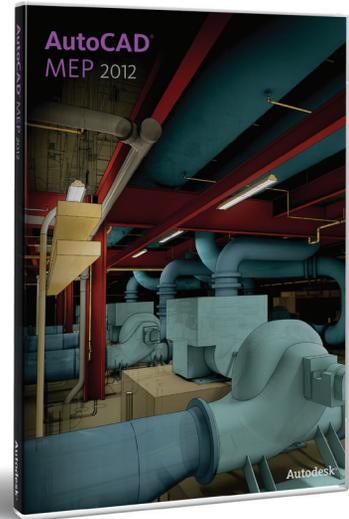


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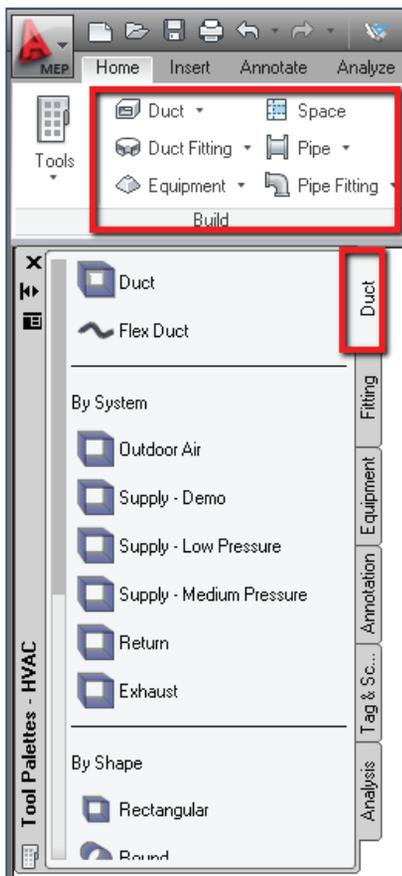
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AutoCAD MEP 2012

Streamlined and Simplified



This year's release of AutoCAD® MEP finalizes changes that we've seen in progress over the past two releases. The welcome addition of the duct properties to the properties palette is a winner for AutoCAD MEP 2012.

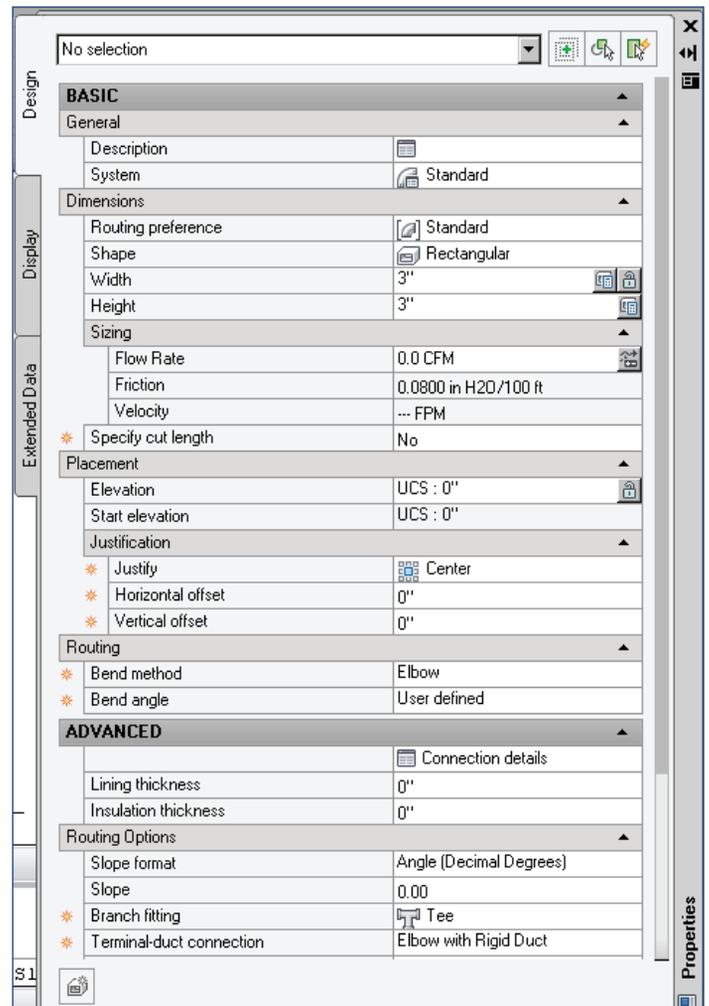


When beginning the DUCTADD command, we have been previously prompted with a dialog box that could be pinned open or minimized, but was a special step nonetheless.

Adding duct requires us to select our routing preference, shape, size, and many other variables that can be set when we create the duct or modify it later. This is the case whether we use the ribbon, tool palette, or command line.

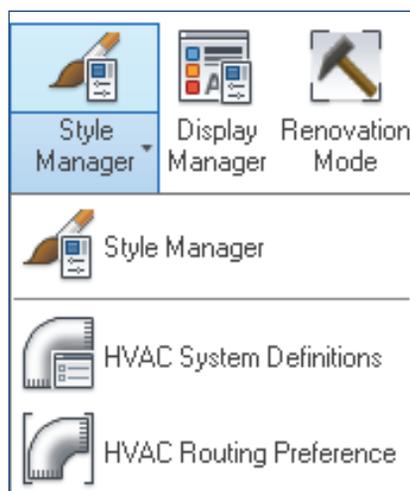
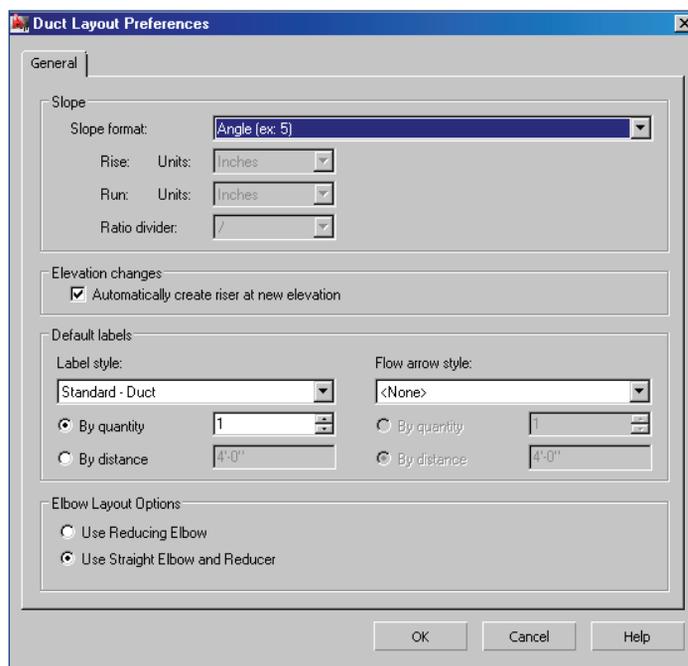
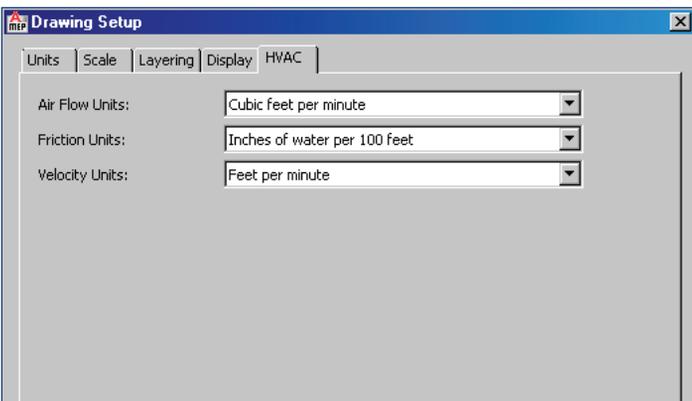
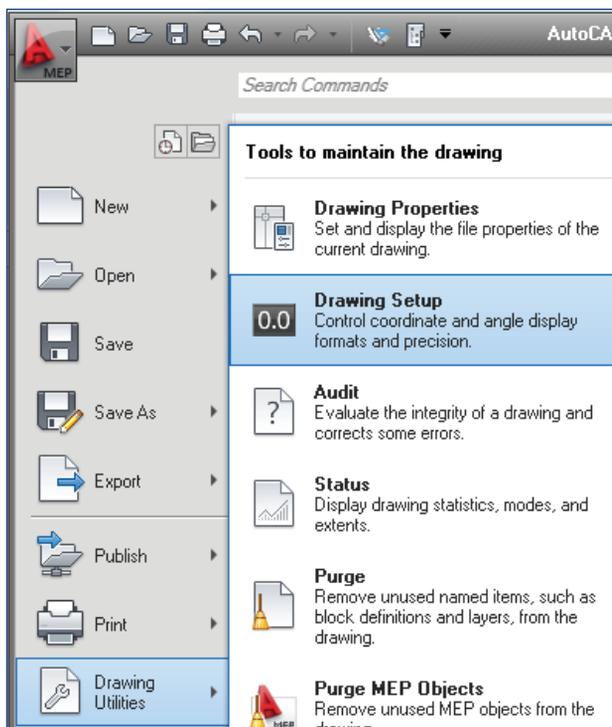
Placing these variables to the command in the properties palette standardizes the way users interact with AutoCAD MEP design and provides us with a consistent workflow.

During MEP design, any portion of the design tab of the properties palette with an asterisk (*) in front of it can only be set at the creation of the element. In other words, during our initial settings for adding our duct in this case.



All the remaining choices such as flow rate can be set or modified at any time by selecting the duct and changing the properties. This is typically done by right-clicking on the duct after selecting it and choosing Properties.

The sizing shown in the properties palette and in any associated parts is now controlled through the drawing setup. We have a new tab for HVAC in drawing setup to specify units.



from preferences. What was once overwhelming and confusing is now simplified.

On that subject, you might also note that the duct layout preferences are closer now to the piping layout preferences. See how everything is simpler and more standardized?

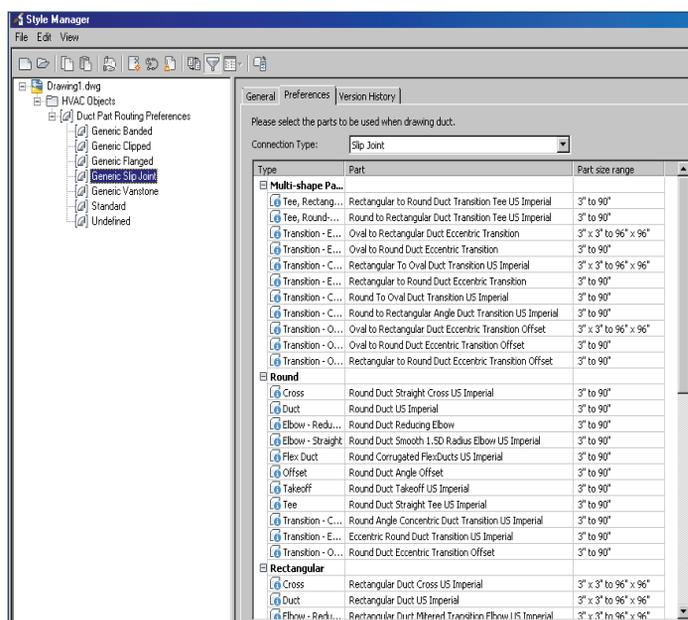
Another similarity now between HVAC and

To access the drawing setup, use your Menu Browser to choose Drawing Utilities and then Drawing Setup. Select the HVAC tab for Air Flow Units, Friction Units, or Velocity Units. The units you select from the units tab (architectural, decimal, engineering) will also impact your selection in the HVAC tab.

This was previously set in the duct preferences area and will show appropriately in all parts related to these HVAC units via the properties palette.

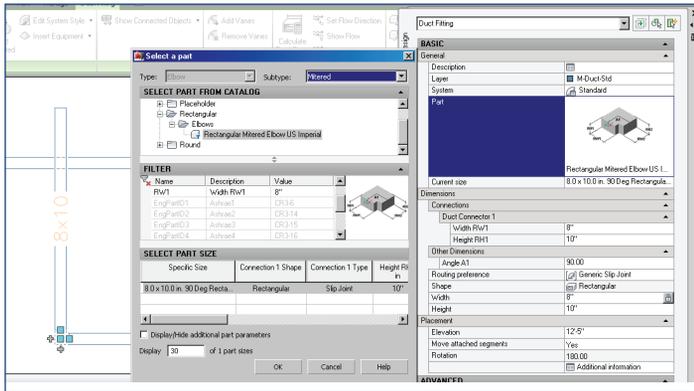
Duct preferences have changed slightly. You still find this under the Manage tab of the ribbon when you are in the HVAC workspace.

Notice the Elbow Layout Options at the bottom with the choice of using a reducing elbow or using a straight elbow and reducer. The other thing you may notice if you've been using AutoCAD MEP for the past few releases is how much has been removed



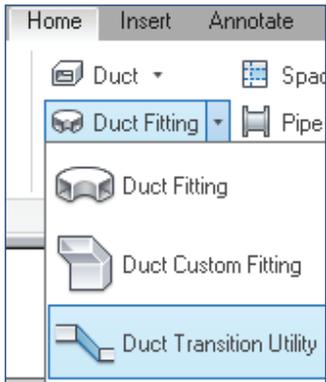
pipng is in routing preferences. We were presented with routing preferences for piping about two releases ago, but now we also have it for HVAC.

The routing preferences are set up the same way as for piping.

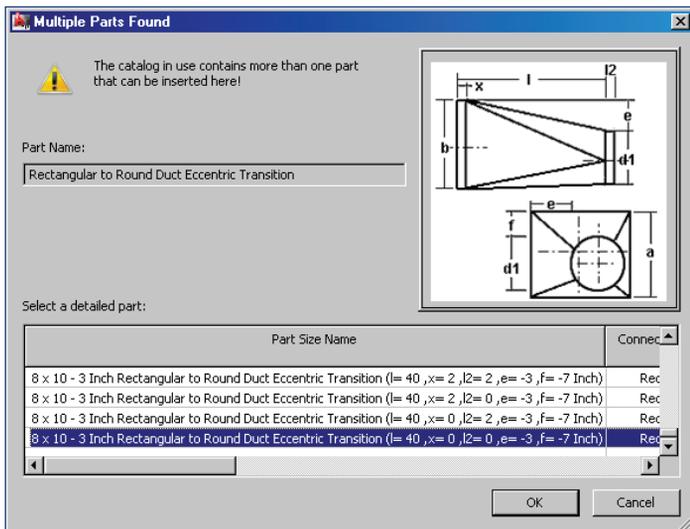


Modifying a part after you've created your design is also much more intuitive.

Select your part (the elbow in this case), and double click on the image of the part in properties. That opens the "Select a part" dialog box that allows you to select another elbow as well as filter and sort by various part parameters.



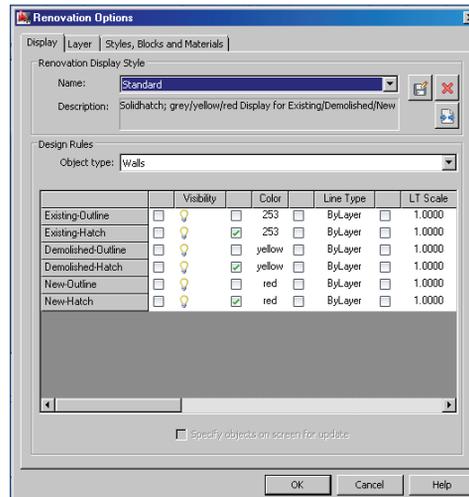
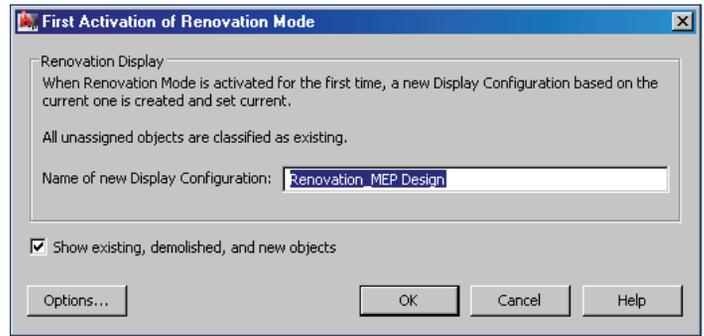
Added duct parts and tools are also available and bring even more value to the program. One new tool you'll see on the Build panel of the Home tab is the duct transition utility. By choosing two separate pieces of duct, duct fitting, or mypart, it will transition to another duct, fitting, or mypart that is at a different elevation.



You will also notice a wider variety of parts available when you need to transition during your change in duct while you are designing. The selection of parts is not only greater, but you'll also see the difference in the preview screen and types of information on each part.

Most of the improvements to AutoCAD MEP 2012 are to HVAC. In addition, there are improvements that carry over from AutoCAD® and from AutoCAD® Architecture that impact AutoCAD MEP. In a future article, I'll expand on the new renovation tool, which allows you to better handle existing vs. demo vs. new layers and objects.

I am very impressed with AutoCAD MEP 2012 overall. While there is not a long list of new features, the features added make



for a better and more consistent flow within the program for the user and standardize much between the disciplines and workspaces. This all makes it easier to use. In my opinion, that's what it is all about.



Beth Powell owns CAD Fuel Design. She produces drawings for the fueling industry and provides training and support for AutoCAD and AutoCAD MEP. Her blog is <http://bethscadblog.blogspot.com/>. She can be reached at beth@cadfuel.com.

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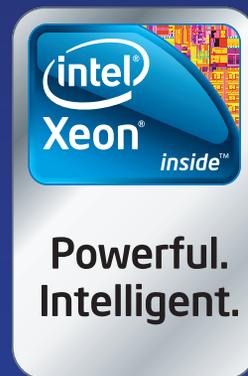


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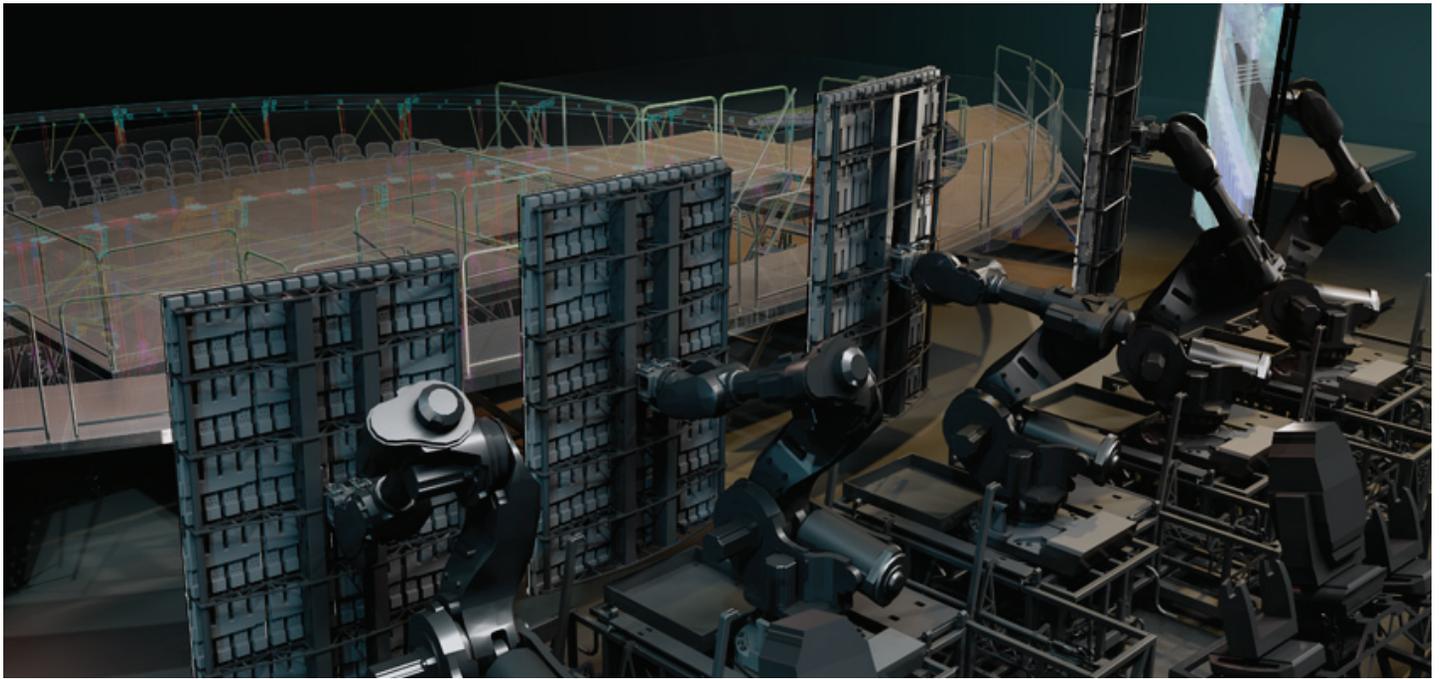
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AutoCAD 2012 Offers Productivity Boost



How many times have you wanted Autodesk to simply make AutoCAD® “better?” Have you ever wondered why certain new features are added while there are existing features that still need fixing? AutoCAD 2012 has new features in it, but they seem to have less “wow factor” to them, except, perhaps, for Fusion. I don’t think CAD history will look back at AutoCAD 2012 as the release that changed the way we do CAD, but it has added several small things to many of our daily operation tools.

There are some “it’s about time” features (such as linear arrays) and there are some really cool things such as AutoCAD WS and Inventor Fusion (both built in to some degree.) But then again, this is my opinion. It’s often difficult to tell how a release will be accepted by users until they get it and do what they can to break it. Before we jump to any conclusions, why don’t we take a look at what AutoCAD 2012 has to offer?

PERFORMANCE IMPROVEMENTS

Looking at the list of new features and enhancements, it seems clear that Autodesk made an effort to make the existing tools better. What carpenter wouldn’t want a better hammer? Right away, it’s easy to see that the response time in the ribbon is greatly improved. The lag time when switching between panels is essentially gone, especially when using Windows 7. This improvement is a must. The ribbon was a sore spot with many users because of

the performance hit they would take when waiting for AutoCAD to switch panels.

CONTENT EXPLORER

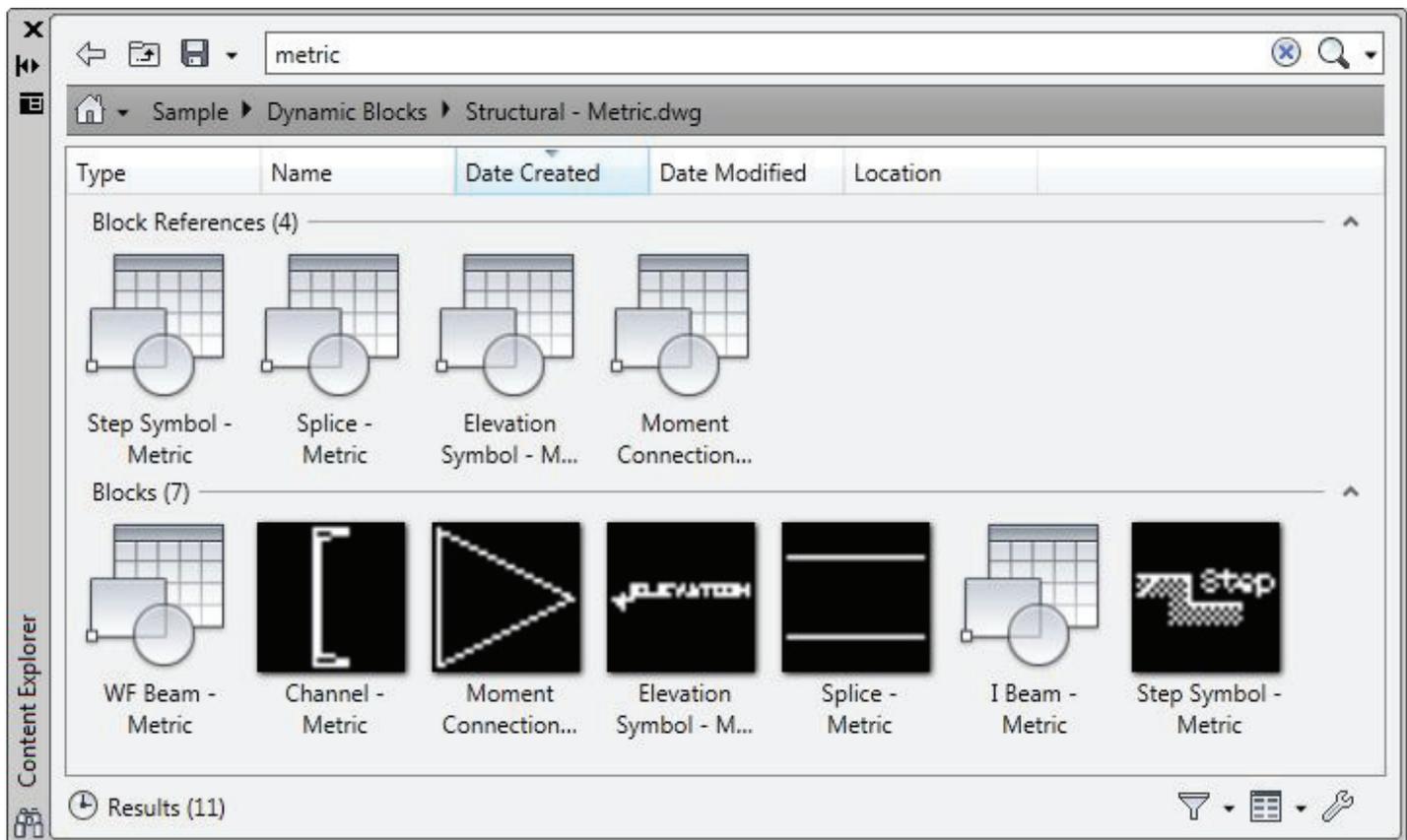
Have you ever wanted to find just the right block in your company’s database or library? AutoCAD 2012 now has a new object-indexing feature called the Content Explorer. It works similarly to Design Center, but it has a search index that has listed all of the applicable files. This enables a quick search for design objects across folders that are holding thousands of files. You can add your own folders or networks to the searchable list and integrate Autodesk Seek as well. CAD managers should be drooling over the potential of this new feature.

AUTOCOMPLETE COMMANDS

AutoCAD 2012 now has auto-complete features for command line entry. As you type (for those of us who still type in our commands) AutoCAD automatically completes the entry for you. When you pause, a list of all of the commands whose prefixes match what you’ve entered so far will be displayed. Pick from the list.

MULTI-FUNCTION GRIPS

Multi-function grips isn’t a new feature, but is now available on more objects (other than polylines and hatches) in AutoCAD. You can find them on lines, arcs, elliptical arcs, dimensions, multi-leaders, 3D faces, edges, and vertices. These



multi-function grips allow you to stretch, lengthen, add/remove vertex, extend, move, flip, continue, and more. Every object with a multi-function grip has its own unique set of options, but all are used in the same way. Again, not new, but a good feature enhancement.

NUDGE

Want to move an object just a few pixels? Use the new NUDGE feature. Press and hold the Ctrl key and move your selected object with the arrow keys in the appropriate direction: up, down, left or right. Not a killer tool, but one that might come in handy from time to time.

SELECTION UPDATES

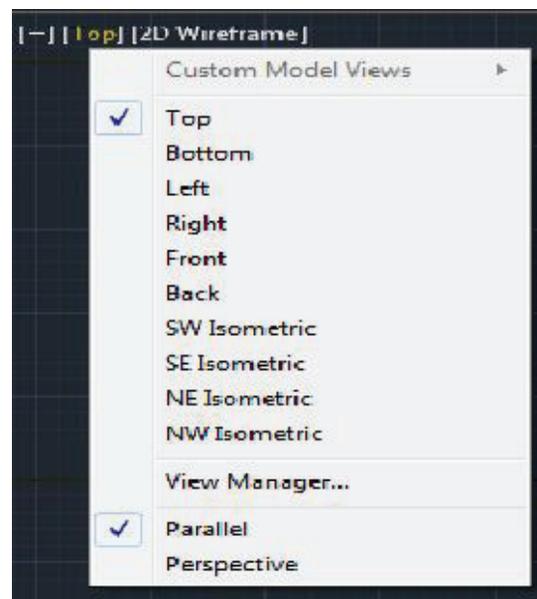
Do you use Groups? They have been missing from the ribbon for a while now, but they are back! Now you can get to your group functions through the Ribbon. The Group process has been streamlined, too. The dialog box has been replaced with simple prompts while many of the commands needed are right in the ribbon.

When selecting objects, the first pick of an implied window now gives you the choice of using Wpolygon, Cpolygon, and Fence as well as the traditional window selection modes.

If you pass your crosshairs over the edge or internal linework of a referenced file (DWG, DWFx, PDF, etc.) then AutoCAD will highlight a selection preview frame around the object. This frame will also be displayed when you select the file in the Reference Manager.

IN-CANVAS VIEWPORT CONTROLS

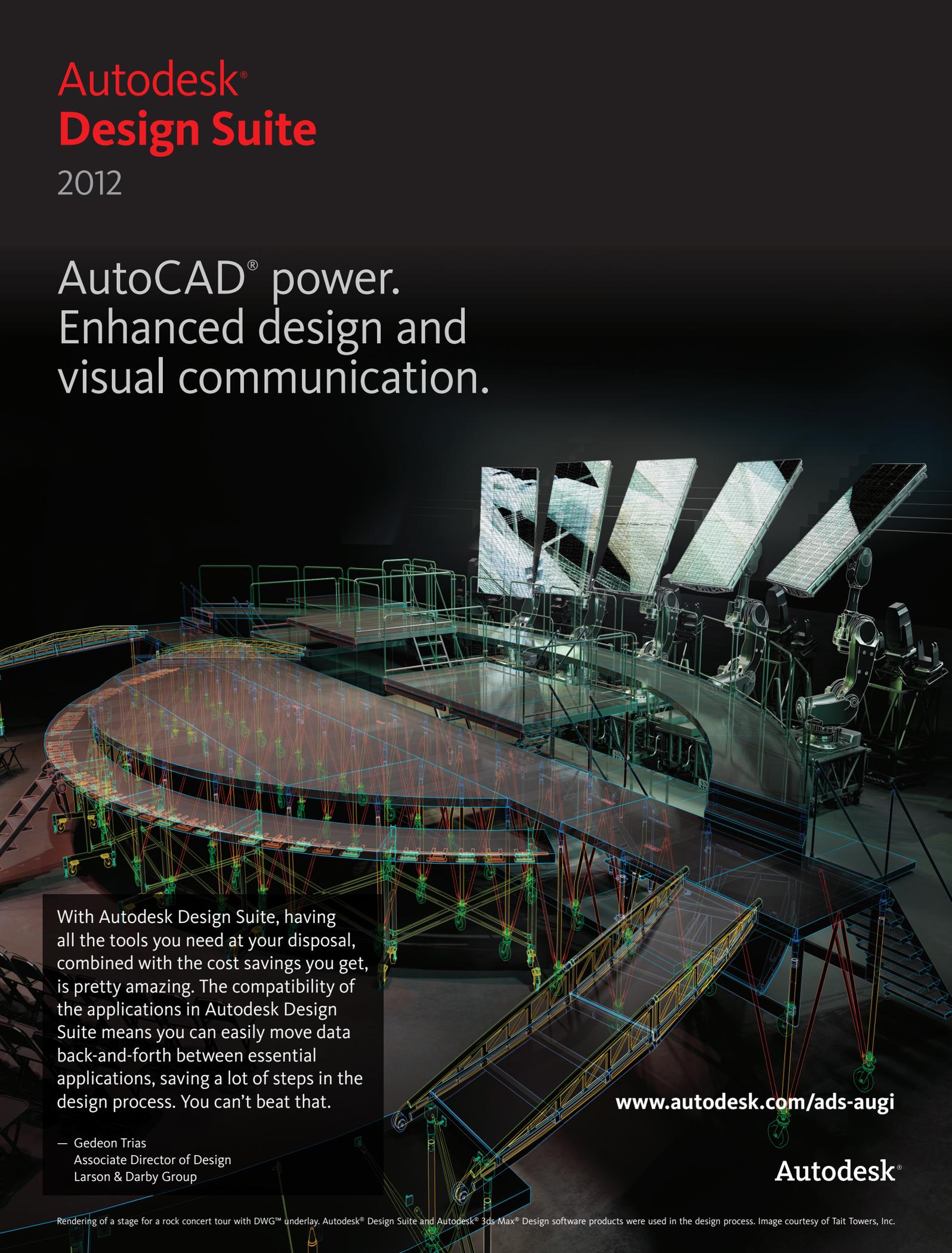
If you work with a lot of 3D models then you know how annoying it can be switching views in an efficient manner. Now with the in-canvas controls you will notice a line of clickable text at the top of each viewport. Here you can turn on/off the View Cube, Steering wheel, or Navigation bar. You can even switch views (top, left, right, SE, NW, etc.) with a quick pull-down that is always there and in the same place. There is also a pull-down that allows you to change the visual style. If you don't want this tool there, go to the 3D settings in options and turn it off.



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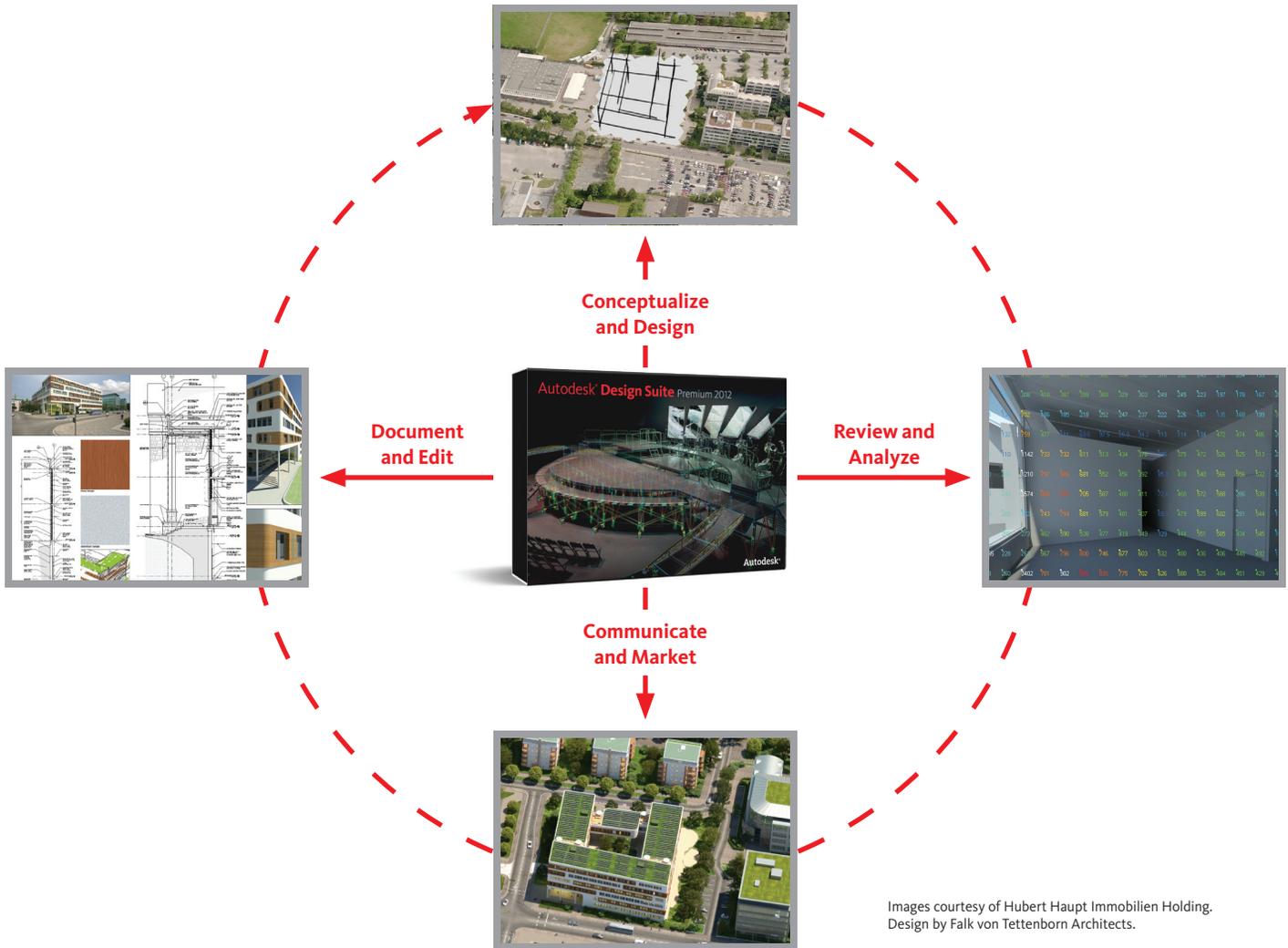
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UCS IMPROVEMENTS

The UCS icon is great, but you could never do anything with it. That has changed. In AutoCAD 2012 it is clickable, meaning that you can do things to the UCS through the icon. You can rotate it to rotate your view and right-click it to bring up a slew of options. When using the UCS command, it will provide you with a dynamic preview of how things will be displayed.

DOCUMENTATION

Annotation tools have been enhanced. Mtext background mask will no longer default to the last color and offset distance used instead of red and 1.5. MLeaders have more control. You can now change the gap around MLeader text in a frame. You can extend the leader line to the text rather than it binding to the outside edge of the bounding box. When you right-click a dimension you can now remove style overrides for that dimension object.

Osnaps are better, too. The perpendicular and tangent osnaps have more flexibility when used. When grip-editing the endpoint of lines or polylines, AutoCAD allows you choose from multiple snap points based on the location of the cursor.

The fillet, chamfer, blend, and join commands now have a preview of what you are about to get if you execute the command. And the fillet tool can fillet splines! The blend tool I mentioned is new. It creates spline objects with tangent or smooth options to create a “blending” of two other objects.

Speaking of splines, they have been updated to support periodic splines. If you specify the Close option when editing a spline, a periodic spline with C2 continuity between the start and finish points is generated. When the spline is selected, this periodic property will be listed in the properties window. Better control when grip-editing splines is provided as well as better influence of splines through the properties manager.

We’ve been able to VP-Freeze layers for a while. Now we can do this but leave the current layer unfrozen. It’s not a huge upgrade, but it will save you a click.

Another Express Tool makes its way into AutoCAD. The Delete Duplicate Objects, or Overkill, is now a native command in AutoCAD. It has been tweaked a bit, making it easier to use and a bit more powerful.

Raster file support has been improved. Do you use MrSid files? Now you can right out of the box with AutoCAD 2012, which also supports DDS, DOQ, ECW, HDR, JPEG2000, NITF, OpenEXR, and PSD files! That’s a list expansion.

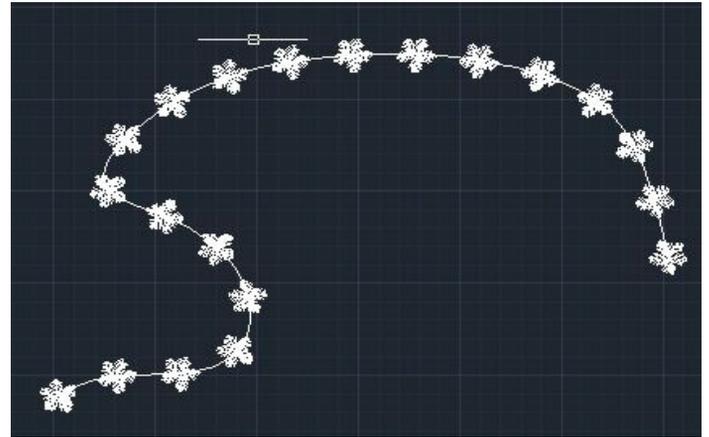
You can now batch convert files to other DWF formats. Click the Save-As button, choose the DWG convert option, then select all of the files you need to convert. No more one-at-a-time operation.

Are you using Sheet Sets? You better be. Do you use Vault? You should. In AutoCAD 2012, Autodesk Vault is integrated with

Sheet Set functionality. You can log in and out of Vault through the Sheet Set Manager.

NEW 2D ARRAY TOOL

This may be my favorite new tool in AutoCAD 2012 and one that I think should have been there a long time ago. We can now create an array along a pathway! The 2D Array tool allows you to add a line of plants along the meandering sidewalk edge. The array command now has a preview feature and uses a contextual ribbon panel similar to the hatch command. This makes real-time editing easier when setting up your array.



NEW 3D TOOLS

3D is huge. In AutoCAD 2012 it’s even more so. Not only is there a new 2D Pathway Array, but there is also a 3D Associative Array. This isn’t a new tool all on its own, but is actually built into the array command as a new option.

Creating and editing surfaces in AutoCAD now have a preview visual display when they are in an intermediate state. If you select a profile to create a lofted solid or surface, a preview will be displayed. This will help you see if what you are doing is really what you want to do. This preview will show up when you use the Surfblend, Surfpatch, Surf fillet, Filletedge, Chamferedge, and loft commands.

The new Offset Edge command lets you create an offset from a planar face (or surface) where all of the edges are in the same plane.

Clicking on a bounded area of a solid will allow you to dynamically extrude it. This enhances the press-pull functionality in AutoCAD. 3D autosnaps have different colors than 2D autosnaps, which will help you distinguish between 2D and 3D objects.

IMPORT AND DETAIL 3D MODELS

AutoCAD is becoming more and more powerful and even useful in the third dimension. AutoCAD 2012 can import 3D models from many different other design packages: Catia, NX, Parasolid, Pro/Engineer, Solidworks, and Rhino. Parts and assemblies are preserved and translated into nested blocks as native AutoCAD objects.

The new Base View tool will take an AutoCAD or Inventor model and automatically create 2D views. The Base View tool allows you to quickly create projection views, orthogonal views, isometric, and more. It also links the model similar to an xref. If that model is updated, so is your AutoCAD file.

AUTODESK FUSION

Autodesk Inventor® Fusion adds to the 3D conceptual design tools in AutoCAD, letting you edit and validate models from many sources in a native DWG setting. When installing AutoCAD 2012 you have the option of installing Inventor Fusion. Once installed, you will have the option of opening 3D content in Inventor Fusion. You will also see an “Edit in Fusion” option when you select and right-click a 3D object in AutoCAD, if Fusion is installed. Fusion gives you the ability to use direct modeling and to change your design quickly. It provides better 3D editing tools for AutoCAD, but in a more familiar environment.

AUTOCAD WS

AutoCAD WS is a new tool from Autodesk that is based in the cloud. AutoCAD 2012 comes with native support for using this new tool. It allows you to upload files to AutoCAD WS from within AutoCAD. You can manage your uploads, edit files, and open them online. When you save a DWG file that you have uploaded, AutoCAD 2012 will update the online version to match your new edits. This new integration gives you access to the Time

Line Tool. It lets you see a detailed history of the different versions of your file. You can learn more about AutoCAD WS in “What’s New in AutoCAD WS” in this issue.

CONCLUSION

AutoCAD 2012 has taken the opportunity to update many commonly used tools. It has added more functionality to existing tools. It has expanded its 3D functionality. Inventor Fusion now comes with AutoCAD, giving users even more 3D conceptual design tools. This update doesn’t have one big “gotta have it” feature, but it does have several “I could use that” additions. Now, what’s going to be in AutoCAD 2013?



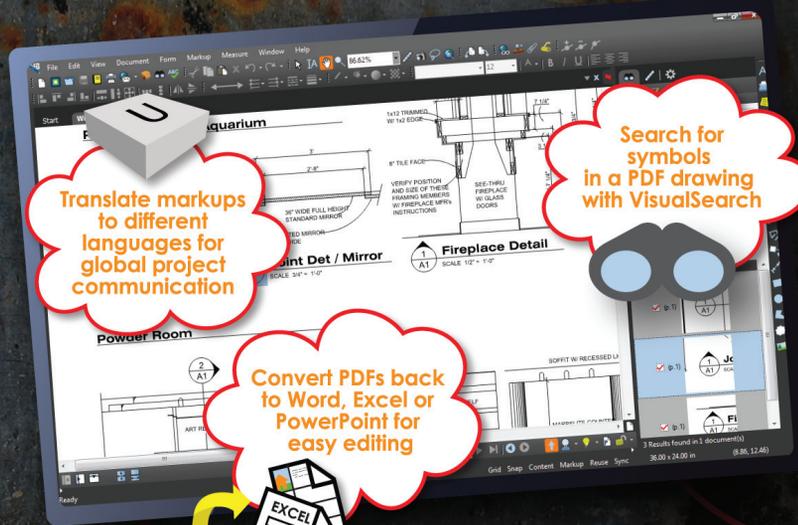
Brian C. Benton is senior engineering CAD technician/designer for Heidt & Associates, Inc, Fort Myers, Florida. Brian has been working with AutoCAD since release 10 in the mechanical, structural, and civil engineering fields. He has been a detailer, drafter, designer, IT assistant, CAD software manager, protector of standards, and proverbial “Help Desk.” He can be reached at benton.brian@gmail.com.

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AutoCAD 2012 – New APIs



The first question we all eagerly ask when a new AutoCAD® release comes along is “What are the new features?” A large number of AutoCAD users then quickly ask two more questions.

What do I have to do to make my old add-ins work in this new release?

What new APIs have you given me to play with?

As a technical support manager and evangelist working for the Autodesk Developer Network, one of my jobs is to answer those two questions for the very large (and growing) community of users and programmers who are customizing and extending AutoCAD.

MIGRATING YOUR OLD ADD-INS

We’ll deal with the bread and butter question first – making your old add-ins work in AutoCAD 2012. The effort required to migrate your old code depends on the programming language you use—LISP, .NET or ObjectARX (C++)—and it can vary from release to release. The good news is that this is one of the easier years.

You’re a busy person, I can tell, so let’s cut to the chase with an Executive Summary: LISP, .NET and ObjectARX add-ins that worked in AutoCAD 2010 or 2011 should work without any problem in AutoCAD 2012. But it’s worth reading the rest of this section to understand ‘the fine print’ before you skip ahead to find out about the new APIs in AutoCAD 2012.

The migration effort for LISP is almost always the same. The LISP interpreter is integrated into AutoCAD and doesn’t depend on any external components. As a result, LISP routines (LSP, FAS or VLX files) very rarely require changes from one release to the next. This year’s release is no exception—your old LISP routines should work in AutoCAD 2012 without needing any changes.

The simple answer for .NET and ObjectARX is the same as for LISP—any add-in you wrote and built for AutoCAD 2010 or 2011 should load and run without problem in AutoCAD 2012. That’s the simple answer. The complete answer takes a little more explaining.

Let’s start with .NET. AutoCAD 2012 installs and uses .NET Framework 4.0. That’s a newer .NET Framework than was used by previous versions of AutoCAD. If you were writing .NET add-ins for an earlier AutoCAD version, then you’re probably using either Visual Studio 2005 or 2008. That’s a problem because these older versions of Visual Studio can’t load .NET Framework 4.0. So, while AutoCAD 2012 can load and run any .NET add-ins you’ve built using those older compilers, you can’t debug your code. This means you need to install Visual Studio 2010 if you want to write and test new features for your .NET add-ins for AutoCAD 2012. As for previous releases, you can use the free Visual Studio Express edition for .NET development.

ObjectARX add-ins are easy this year—even easier than .NET. If you were developing ObjectARX add-ins for AutoCAD 2010 or 2011, then they will load and run in AutoCAD 2012, and you can still use Visual Studio 2008 (Service Pack 1) to debug them. You don’t have to buy Visual Studio 2010. However, Visual Studio 2010 includes a new Platform Toolset feature that allows you

to link Visual Studio 2010 to the old Visual C++ 9 compiler. This compiler shipped with Visual Studio 2008 and is required for building ObjectARX add-ins -as long as you've also installed Visual Studio 2008 (Service Pack 1). This means you can use the same compiler to develop your .NET add-ins and ObjectARX add-ins if you like to do a bit of both. (You'll have to use this configuration if you're one of the small number of people who write mixed-managed C++ code.)

You need to be aware of one more migration issue. If you use an installer to deploy your add-in or if you access AutoCAD registry settings, the minor version number in the AutoCAD registry key has changed. AutoCAD 2011 was version R18.1, AutoCAD 2012 is version R18.2.

Now on to the fun stuff.

THE NEW APIS

The new APIs in AutoCAD 2012 can be classified as two big APIs, a lot of small enhancements, and a really cool new feature that's not really an API, but is going to be of huge benefit when you want to deploy your add-ins to your customers' or colleagues' computers.

Sorry, LISP programmers—the new APIs in this release are focused on .NET and ObjectARX. But the 'cool new feature' I describe in the next section will be very useful to you, too. The two big APIs are the evolution of features and APIs that appeared in previous versions of AutoCAD.

AutoCAD 2010 gave us the Parametric Drawing feature, which allowed us to add 2D geometric and dimensional constraints to drawing elements. That was accompanied by an ObjectARX API. AutoCAD 2011 gave us a .NET version of the Parametric Drawing API, and also ObjectARX and .NET APIs for the Associative Surfaces feature introduced in that release. Both these features make use of an internal framework called the Associative Framework. We've used that Associative Framework again in AutoCAD 2012 to create the Associative Array feature, which comes with (you guessed it) ObjectARX and .NET APIs.

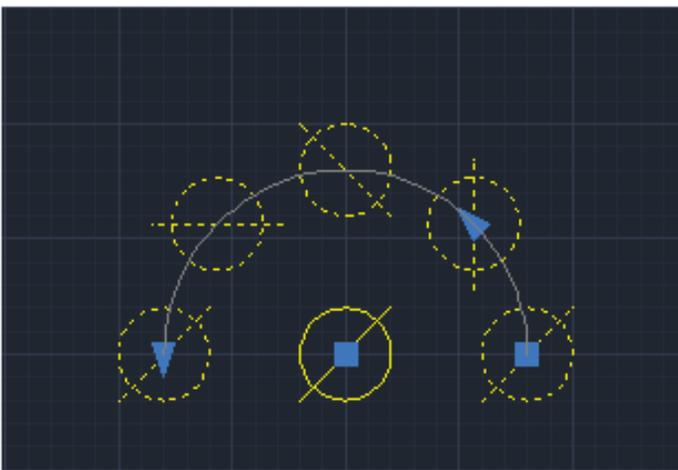


Figure 1: The Associative Array feature comes with a comprehensive API.

The Associative Array API gives you the power to do anything in your add-ins that you can do with the Associative Array feature. You can create new arrays or modify the parameters of existing arrays. A sample demonstrating this API will have been posted to Kean Walmsley's 'Through the Interface' blog by the time this article is published (see the links to further reading later in this article).

The second big API is the Multi-Mode Grip API. In AutoCAD 2011, polylines and splines grew some new grips. And when you hovered over those grips with your cursor, a menu of options suddenly appeared (see Figure 2). In AutoCAD 2012 you can add these grip context menus to the standard AutoCAD entities, or to your own custom objects (if you're an ObjectARX programmer). Combining this with the Overrule API that arrived with AutoCAD 2010, you can even add your own custom grips to an AutoCAD object and then add grip context menus to your custom grips. A sample demonstrating this will also be available on the Through the Interface blog.

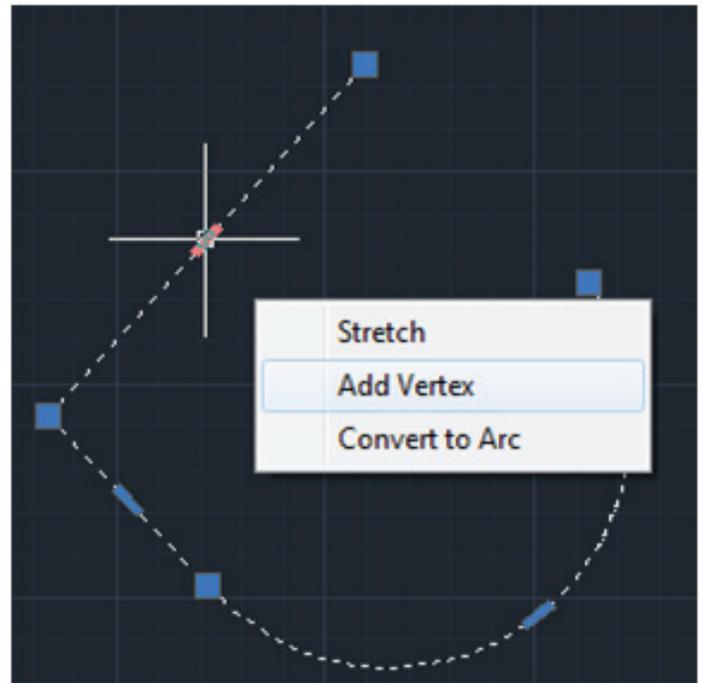


Figure 2: The Multi-Mode Grip API allows you to create your own grip context menus—just like the AutoCAD ones.

The other new APIs in AutoCAD 2012 are smaller additions, and are scattered about enough that I can't describe them all in this article. You'll have to download the ObjectARX SDK documentation and read through the What's New section to find them all. Here are a few of the more notable ones.

Visibility Overrule – a new addition to the Overrule API family to allow you to react to the changing visibility of AutoCAD objects.

ResetTimes API – resets the TDCREATE, TDUPDATE, TDINDWG, and TDUSRTIMER drawing variables to zero. Helpful if you use these to track editing times.

BlockTableRecord.SetIsFromOverlayReference – toggles an Xref between Attachment and Overlay type. This apparently simple API is notable because it's the second most often-requested API addition we receive via the ADN support portal (after the Trace-Boundary API that was added in AutoCAD 2011). AutoCAD actually has to do a lot of work behind the scenes to make that 'simple' change.

A set of ObjectARX functions to convert between AcDb objects and the corresponding AcGe objects (and vice-versa).

All of these are available to .NET and ObjectARX programmers, except the last one, which is ObjectARX only.

This brings us to “the really cool new feature that's not really an API.”

INTRODUCING AUTOLOADER

Writing an add-in for AutoCAD is the easy part. Deploying it to your colleagues' and customers' computers often feels like you're herding cats.

“All I want,” you say, dusting the catnip from your shirt, “is for my add-in to load into any version of AutoCAD installed on the user's machine. Surely that isn't so hard.”

Actually, it is (or was). The AutoCAD development team has been very careful to isolate each AutoCAD installation to prevent “side-by-side” issues, where one language, vertical, or release of AutoCAD stops another from working. Each AutoCAD release, AutoCAD vertical (Civil 3D, Map 3D, etc), and AutoCAD language version uses a unique section of the registry, and in most cases installs its files in a unique location on your hard drive.

You installed the file. Good. Now I want you to open AutoCAD, launch the APPLOAD dialog, and click on the Startup Suite.

That hardly makes your add-in look professional. The new Autoloader feature in AutoCAD 2012 will make all that a thing of the past.

From now on, all you have to do with your add-in is copy it to one of two folders on your hard drive, and AutoCAD will automatically detect and load it. Which of the two folders you use depends if you want your add-in to be installed 'per-machine' or 'per-user'. Assuming a Windows 7 operating system, the 'per-machine' folder is

C:\Program Files\Autodesk\ApplicationPlugins
(or %ProgramFiles%\Autodesk\ApplicationPlugins for short)

and the 'per-user' folder is

C:\Users\\AppData\Roaming\Autodesk\ApplicationPlugins
(or %AppData%\Autodesk\ApplicationPlugins for short)

Just copy your add-in there, along with a little information on which AutoCAD versions you support and how you want your add-in to load, and AutoCAD will take care of the rest for you—no registry entries, no running the APPLOAD or NETLOAD commands, no editing acadoc.lsp.

Let's take an example of a simple LISP add-in. Figure 3 shows the add-in installed in my 'per-user' location. The add-in consists of a folder (with a name ending in .bundle—that's important).

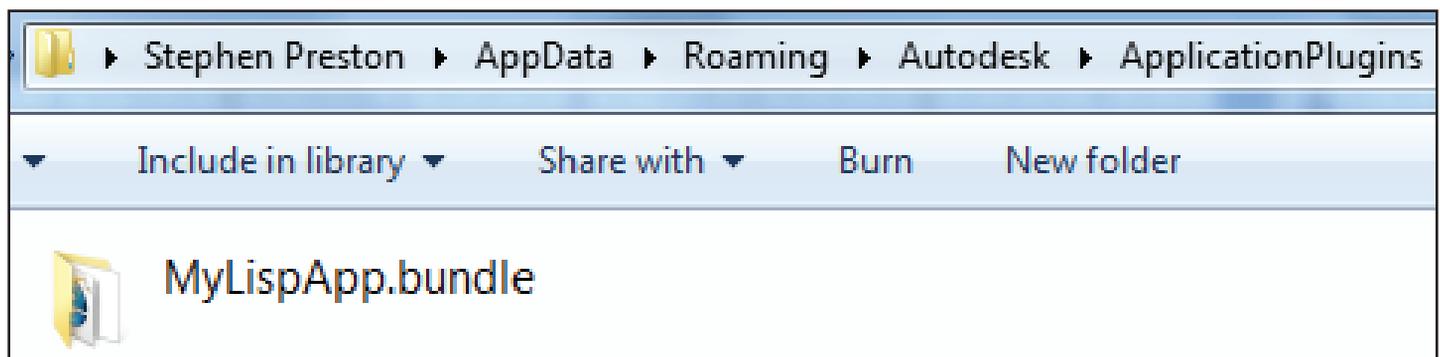


Figure 3: My add-in, installed and ready to run.

That means you have to work out which AutoCAD release/vertical/language is installed, copy your add-in to the right location, and append your information to the correct section of the registry. To do this, you have to either create a really complex MSI installer custom action or tell your users how to manually setup AutoCAD so it will load the add-in.

In this example, the folder contains a simple LSP file that defines my LISP function, an XML file and a simple helpfile (the HTML file). The XML file describes how AutoCAD should load the LSP file. More complex add-ins may consist of multiple files such as LISP (LSP, VLX, FAS), .NET, ObjectARX, and CUI.

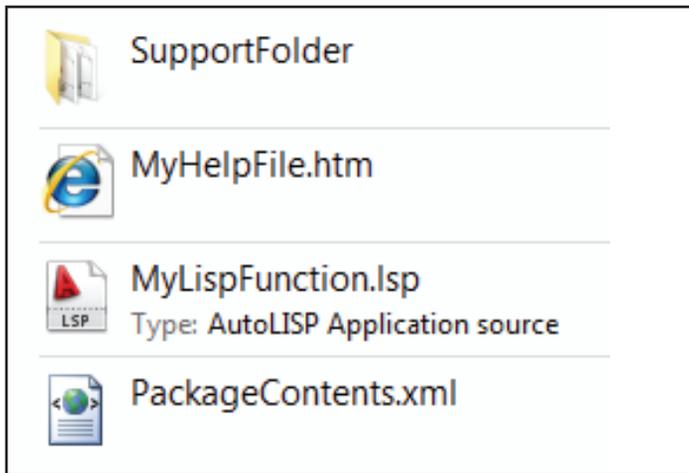


Figure 4: The contents of my add-in—a LISP file, a helpfile, and a little bit of XML.

We can use the XML to tell AutoCAD to load different versions of the files depending on the AutoCAD version, vertical, or language, and the operating system (Windows 32-bit, Windows 64-bit or MacOS). We can even tell AutoCAD when to load them (for example, 'per-document' for LISP or 'on command invocation' for ObjectARX and .NET). You can even define support paths.

Here is some example XML describing this LISP add-in. This is just telling AutoCAD that I have a LISP add-in I want to load 'per-document.' I've also defined a support folder my application needs, and I've not defined any version or operating system conditions, so all versions of AutoCAD with the Autoloader feature will load this add-in:

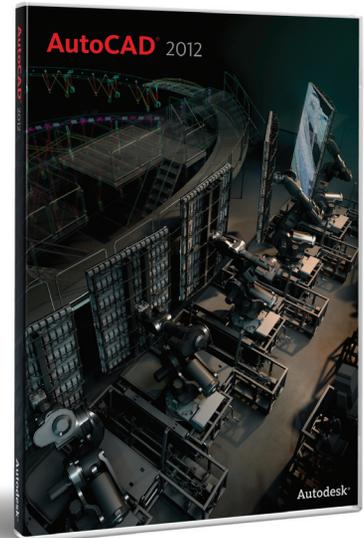
```
<?xml version="1.0" encoding="utf-8" ?>
<ApplicationPackage
  SchemaVersion="1.0"
  ProductCode="9baa5ed6-df3b-4c4d-a210-fb5f95d00d07"
  Name="MyLispApp"
  HelpFile="./MyHelpFile.htm"
  AppVersion="1.0"
>
  <Components>
  <RuntimeRequirements
    SupportPath="./SupportFolder"
  />
  <ComponentEntry
    ModuleName="./MyLispFunction.lsp"
    PerDocument="True"
  />
  </Components>
</ApplicationPackage>
```

This XML is fairly self-explanatory, so I won't walk you through it line by line here. You can read the full documentation for the format in the AutoCAD helpfiles.

FURTHER READING

Those are the highlights of the AutoCAD 2012 new APIs and developer features. All that remains is to leave you with some links to further reading and to wish you the best of luck with your AutoCAD add-in development.

Visit Kean Walmsley's 'Through the Interface' blog (<http://through-the-interface.typepad.com>) to download the Associative array and Multi-Mode Grip samples, and to view a recording of the AutoCAD 2012 New APIs presentation from last winter's Developer Days conferences. Kean's blog is a very good resource for anyone using the AutoCAD .NET API, and will feature more detailed information on the Autoloader.



The AutoCAD Developer Center (www.autodesk.com/developautocad) is a good starting point for learning more about AutoCAD APIs. It includes links to additional resources, such as training material, information about joining the Autodesk Developer Network, and how to access the AutoCAD API discussion forums.

The ObjectARX 2012 SDK is available as a free download from www.objectarx.com.

Documentation for the Autoloader feature and its XML format is available as part of the AutoCAD 2012 online helpfiles. Browse to Help>Customization Guide>Introduction to Programming Interfaces>Install and Uninstall Plug-In Applications.



Stephen Preston has worked for the Autodesk Developer Network team since 2000. Originally from the UK, he is currently based in the Autodesk San Rafael office, where he manages the Developer Technical Services team in the Americas and is the ADN AutoCAD Workgroup Technical Lead, working closely with the AutoCAD engineering team on future improvements to the AutoCAD APIs. You can contact Stephen at stephen.preston@autodesk.com.

What's New in AutoCAD WS?

The screenshot shows the Autodesk AutoCAD WS website. At the top left is the Autodesk logo. Below it, the text "AutoCAD[®] WS" is displayed in red, followed by "First time user?" and a yellow "Create new account" button. A login section titled "Login to your account" includes fields for "E-mail:" and "Password:", a "Forgot your password?" link, a "Remember me on this computer" checkbox, and a green "Login" button. To the right is a video player showing a desktop monitor, a smartphone, and a tablet, all displaying the AutoCAD WS interface. Below the video are six feature icons with descriptions:

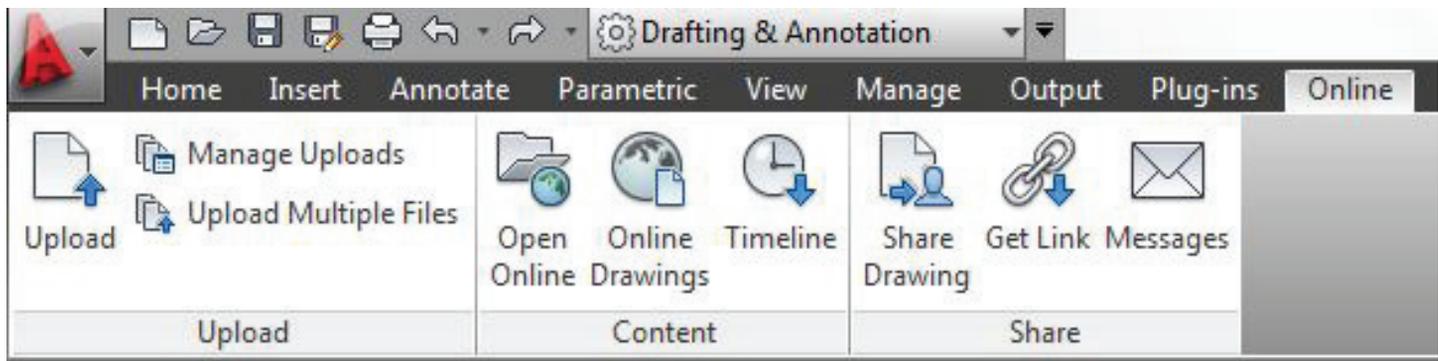
- Edit Online:** View and edit DWG files using any web browser on a PC or Mac.
- Online Storage:** Store thousands of files in your online workspace.
- Mobile app:** Work on the go with an iPhone, iPod or iPad.
- Share and Collaborate:** Share with others to view or edit online. Work together in real-time.
- AutoCAD Plug-in:** Keep online files up-to-date with the AutoCAD WS plug-in.
- Timeline:** See drawing revision history on an interactive timeline.

AutoCAD[®] WS, released just this year, is a remarkable design tool that Autodesk is giving away for free. If you haven't tried, or even heard of AutoCAD WS, let me sum it up for you. AutoCAD WS is a web-based design and collaboration tool. There are currently two versions: one is browser based and the other is iOS based. Your computer (desktop, laptop, notebook, etc.) can go to the website (www.autocadws.com) and start using the program. If you have an iPhone, iPad, or iPod Touch go to the App Catalog, search for Autodesk, and download the app. The iPad app works much like

the browser version, but the iPhone and iPod version are a much simpler design.

AN EXTENSION OF AUTOCAD 2012

AutoCAD WS is not AutoCAD[®], but it is an extension of that product. It adds more usability to AutoCAD and provides collaboration tools that were not previously available. AutoCAD WS's main purpose is mobile use and collaboration. Multiple users can access and share files at the same time, making it fantastic for meetings and discussions. Users can mark-up drawings, add notes, and keep a historical record of what happened. In AutoCAD 2012, users can upload files to their AutoCAD WS



account. In fact, users can fully manage their files that are stored online. Right from the ribbon, in the On Line Panel, click the Upload button to send your file to the cloud. You can also upload files in batches with the Upload Multiple Files option. From the same ribbon panel users will be able to open files online, manage the timeline, share drawings, and get a link to an online file. You can also access your messages.

UPLOADS AND SHARING

The new functionality of AutoCAD WS inside of AutoCAD automatically updates new versions of your edited files. Suppose you shared a file with a client for discussion and later made those changes in “regular” AutoCAD. When you save the file, AutoCAD will update your AutoCAD WS files in the cloud to reflect those changes. You can send a message to your client letting them know and they can open the new file and verify it has been changed appropriately.

How many of you deal only with .DWG files? Not many, I’ll guess. There are also SHP files, plot styles, spreadsheets, and images that you embed or link to your DWG files. Upload them, too. In fact, upload any and all files that are relevant to your drawing. AutoCAD WS can handle it and so can the online storage.

The Get Link button will upload your current file and create a link that you can send via email to a client, vendor, or any other users that need access to the file. If you use the Share Drawing command, AutoCAD will upload the current file and send it to your client or coworker. It also allows you to set file-access limits on a per-user basis. You may need to share the file, but you don’t want others to alter it. No problem—just apply the read-only rights when you send it. Another setting allows users to download only when they receive the link sent via email. The Get Link function allows you to copy the web URL of the file so it can be embedded into an MS Word file, email, text message, or even into a DWG file. Now that’s an interesting concept.

MOBILE AND APP VERSIONS

If you are using Google Chrome, you can load AutoCAD WS as a web app. Doing this keeps a link to AutoCAD WS available in your browser. You can even create a desktop shortcut with Chrome’s help. Of course if you don’t use Chrome, you can always create a bookmark or a shortcut on your desktop.

AutoCAD WS 1.2 (for iOS) added more languages in the support package. It can now handle the following:

Chinese – 中文
 French – Français
 German – Deutsch
 Italian – Italiano
 Japanese – 日本語
 Korean – 한국어
 Portuguese – Português
 Spanish – Español

Previous versions of AutoCAD WS could only handle Paper Space Tabs. This latest version can now open the Model tab on your files. This way you can share your raw linework with clients before you have a final drawing prepared for them. There is a new Brush Tool, which replaces the Free-Line tool. It works better and provides users with more control. One of the biggest additions is the Copy tool. Now you can copy objects in AutoCAD WS instead of being forced to draw everything from scratch.

CONCLUSION

AutoCAD WS makes AutoCAD mobile and simplifies collaboration. Use AutoCAD WS in meetings, over the phone, or face to face. Share your files right from AutoCAD or view them on the web or your iPad. The uses are vast, the program is easy to use, and it is free. Try it out. You have nothing to lose.



Brian C. Benton is senior engineering CAD technician/designer for Heidt & Associates, Inc, Fort Myers, Florida. Brian has been working with AutoCAD since release 10 in the mechanical, structural, and civil engineering fields. He has been a detailer, drafter, designer, IT assistant, CAD software manager, protector of standards, and proverbial “Help Desk.” He can be reached at benton.brian@gmail.com.



15 Questions with Harlan Brumm

What is your role at Autodesk, Harlan?

I am the Product Support Technical Lead for Revit. My role is to help our worldwide support specialists resolve support issues for our customers. I'm responsible for training our support team worldwide on the Revit products. Also, I collaborate with our QA, Development and Product Management teams inside "The Factory" to get answers to questions, organize training, and escalate issues if need be.

How long have you been at Autodesk and in what roles?

I've been with Autodesk for four and a half years now. I started as a Product Support Specialist, mostly supporting AutoCAD Architecture and the MEP products, before moving fully to support Revit and becoming the Technical Lead for the product. I have a real passion and energy for helping architects and engineers use design software and that led me to my current role. I'm also not afraid of any challenge that may come up.

Tell us a little about your background and how you came to be doing what you do now?

I grew up in Wisconsin and started using AutoCAD r12 while I was in high school. As a junior, I started working as a Civil Engineering Draftsman and field hand. I was hooked on Autodesk software as soon as my hand touched my first puck. Even though I am a little bit of a math and engineering

geek, I went to the University of Wisconsin-Milwaukee and studied Architecture. I graduated with my Bachelors of Science in Architectural Studies.

After graduating, I moved around the state a little bit, working mostly on small commercial and residential design work with a few larger projects thrown in. When Autodesk called, I was living at home and working for a small firm near my hometown. Autodesk moved me out to New Hampshire and I have been in Support since. I'm not sure exactly what Autodesk saw in me—just a kid from the midwest with a passion for design and technology, but I'm grateful for the opportunity to do great work.

What does a typical day look like at your desk?

It seems like my day starts as soon as I wake up. I live close, so I am getting coffee in the office about 10 minutes after leaving home.

My first task is catching up on email and helping with cases from our teams in Asia and Europe that have already been working. My role is global, which means I often support our staff in Europe and Asia helping our customers in each place. It's all about when they are awake and when I am asleep and trying to get the most overlap I can. By 10:00 or so, it's off to a meeting or two. I sit on a number of our teams for the product, with my role being to represent our product support team. I also meet with our global support specialists to

provide details about the product, to answer questions, or provide some training. We call these our “Tech Talks.”

By then, it’s about time for lunch, so a few of us might walk downtown Manchester and stop at a restaurant or I’ll run down the road to a deli and pick something up. Even though my role is global, I like to be connected to the local community and participate when I can in Revit user groups or any other technology things that might be happening in the area. I also might spend some time blogging, creating training content or knowledge base articles, or doing research on an issue. I try and spend time on our forums and reading other blog posts to keep me connected as possible to the wider Revit community.

My days are pretty varied and rarely the same. After I get home, I eat dinner and relax with family. I have an 8-month-old daughter who keeps me entertained and busy and a lovely wife. I’m a bit of a sports nut so I will throw on anything that might be on and sit back.

What kind of challenges do you and your co-workers face?

Our primary responsible is to help customers with their technical problems. This comes with its technical challenges

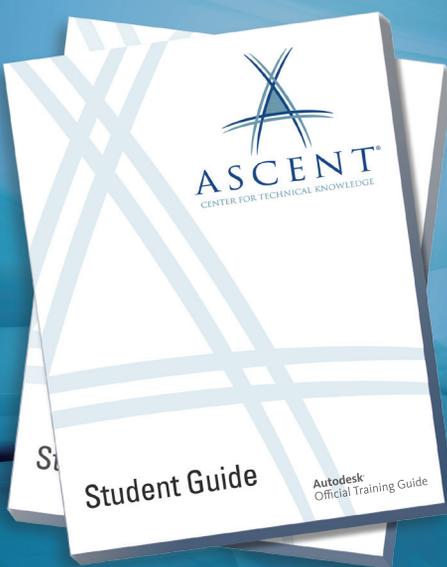
regarding software; however, often the biggest challenge isn’t technical, but is about communication. Communication is key to what we do in Product Support and good communication leads to a better experience for everyone. We work on better ways to share and provide information, explain solutions and workflows, and help communicate to our support teams every day. It’s often a struggle to make sure that all our support specialists have the same information, so I spend a fair amount of energy getting everyone on the same page.

Can you say how many people work with you or perhaps how the work you do is shared?

I work with 15 support specialists worldwide on the Revit team, but interact with many more Autodesk’ers daily. I work with our support managers, content teams, the product teams, and others, every day. It’s great to be part of such a varied and wide-ranging team. We have experts in just about everything and its great interacting and hearing from everyone across the company.

The most obvious way our work gets shared is through our blog (<http://revitclinic.typepad.com>) . We post information and knowledge that we have learned with a mission to better help everyone using Revit and to prevent problems from occurring. We also share our work on the Autodesk Knowledge

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Autodesk Insiders

Base (www.autodesk.com/revitarchitecture-support) with the same goal.

Do you or your team get involved in planning for future releases of the software to offer insight from your support background? After all, you end up helping users with the next release.

One of my main responsibilities is to represent our product support teams to our product development group and give support's perspective. Our product managers do a great job soliciting feedback from everyone inside Autodesk (as well as outside) and Product Support is one of the teams they will ask for feedback from.

I'm involved in many of the conversations about the next release and it's my job to bring that information back to our support teams so we are ready to support the next release as soon as it is available.

Do you get to do any planning for Autodesk University or other events?

Not really. I submit classes like everyone else and hope they get selected, so that I can attend and spend some time face to face with users. I really enjoy events like AU because it's a great opportunity to sit down and chat face to face. There is some great work being done that is great to see. I learn so much from what everyone is doing with the software. There are also so many great speakers to learn from, and I take away a lot from presenting at the event.

You've been actively blogging for The Revit Clinic. How long ago did you start it, how do you decide what to post, and how is readership growing?

The first post was on August 15, 2008. We have a great group of readers. Currently, we have about 1,600 RSS subscribers, 900 fans on our Facebook page, and about 540 followers on Twitter. It's a good day here when we see jumps in those numbers. We've basically doubled the number of visitors each year and right now get about 20,000 visits to the site each month.

Deciding what to post can be a challenge. We want to make sure that we are posting what is relevant and interesting to all the Revit users as well as what fits our mission. We don't post about everything, but try and add a support perspective to the topics that are going on.

I also use Google Analytics to see what posts and topics are the most viewed and we use that data to help us get more information out about popular subjects. Katie Langan, Ryan Duell, and Jeremy Smith do a great job blogging about the three flavors of Revit and I try to blog about items that are more about the whole Revit platform. There is a lot of cross over between us though so we tend to help each other out as well.

Any tricks you use to help check how successful your efforts are? In other words do you guys get enough feedback to know that you are moving in the right direction? What can AUGI members do to help?

In product support, we regularly survey users who submit support requests to us. When you are offered a chance to provide your feedback with a survey at the end of a case, please take the time to respond and give us your feedback. It's very valuable to see where we stand and know what you think of the support you are receiving. We also love feedback on the Revit Clinic, so anytime you can tell us how we did on a post or provide a comment, we appreciate it. We use the feedback we get every day to improve.

Do you check out the activity of other forums like ours at AUGI? How much time do you have to do external research apart from responding to users directly?

I regularly read the Autodesk discussion forums and the AUGI forums. I try to be as up to date as possible with what is going on and what is said about our products. My iPad is stocked with Revit blogs and links to forums and other sites. I dedicate a lot of my free time to reading about Revit. When a particularly difficult issue arises, like anyone else, I check the forums, blogs, and Google to see if anyone else has run into the problem. I learn a ton from our users. I cannot help it, its addicting.

What sort of things do you do for distraction, hobbies, travel?

Well, at the moment, my daughter has me the most distracted. At my heart though, I am a technology geek. I love reading about and experimenting with technology and trying new ways to break my computers. I also am very interested in presentation skills and teaching. In my free time, I teach Revit at the Boston Architectural College and try to share some of my passion for Revit with students. I love being in front of a group and learning new and better ways to interact. I am very envious of great presenters and always want to improve my own skills

What would we be most surprised to know about you?

I never used Revit in production before joining Autodesk. I had experimented with the software for the firms I worked for as the office technology geek, but never in production. I primarily used AutoCAD Architecture and plain AutoCAD. It wasn't until I came to Autodesk that I fully learned Revit... but now it feels like it is part of my DNA!

Civil 3D 2012 Life's a Beach

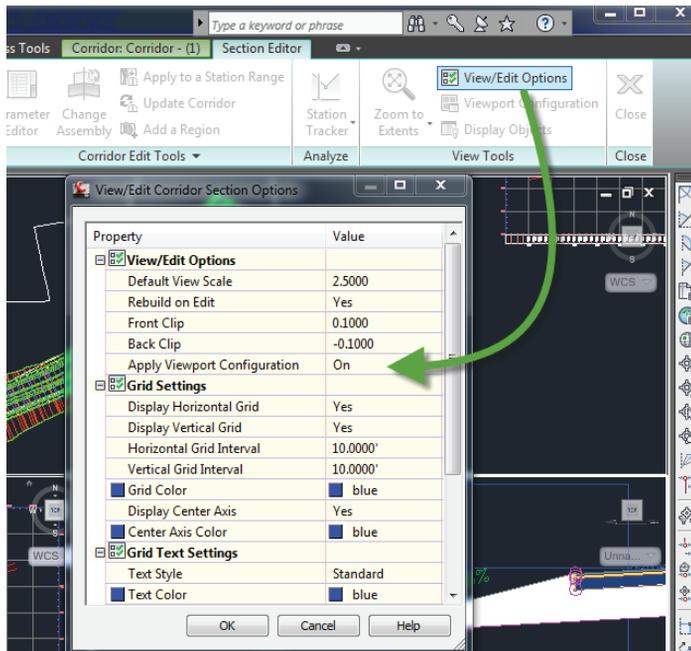


It's time to usher in the New Year. I, for one, am glad to see 2011 go—even after a short, four months. In this “New Year,” the developers of AutoCAD® Civil® 3D have ushered in numerous feature improvements. Following

the trend of last year, the areas of improvement pertain mainly to the transportation features of the product. Corridor Modeling, Sections, and Alignments have seen improvements in how they work to provide an easier way to interact with the objects.

CORRIDOR MODELING IMPROVEMENTS

Corridor modeling improvements provide an automatic way of setting viewports to facilitate editing of the corridor model. While many users may have set their viewports to show plan, profile, and section, there were probably just as many who edited corridor sections utilizing solely the sec-

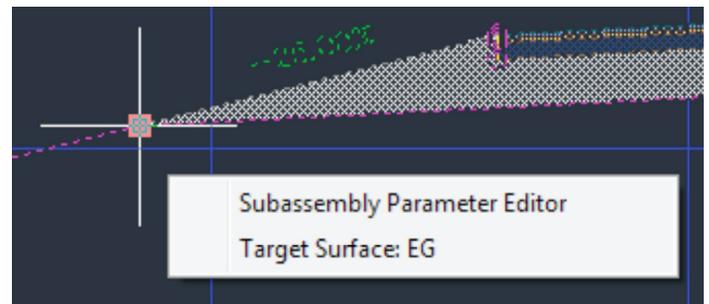


Apply Viewport Configuration

tion view. By setting the new Apply Viewport Configuration to “On,” users are provided with a Plan View, Profile View, and Section View automatically. The resulting views provide an easy way to make changes and then see the model update.

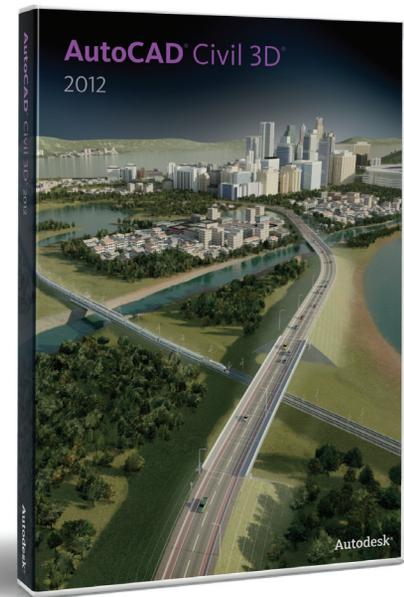
A small inclusion in this improvement is a Corridor Station Slider. The slider provides a visual method to select a corridor section in plan view and move it to the section view you want to see. This is a usability feature I look forward to using in production. Along with the slider is a major improvement in the Station Tracker. In the past, performance of this tool was lacking. It provided intermittent visibility as it moved across the profile, corridor, or section. I'm glad to report the performance of the tool now works seamlessly compared to the 2010 and 2011 versions of Civil 3D.

Another nice touch I'm looking forward to is the ability to change the target of a subassembly directly from the Corridor Section Editor. A grip shows up at the subassembly attachment point with an ability to utilize an available target. The grip provides a way to select a new target or open the Subassembly Parameter = Editor. I envision this feature coming in handy along with the Apply Viewport Configuration.



Corridor Section Editor

A final corridor improvement I'll briefly mention is the ability to show multiple baseline corridors in the corridor section editor and sections. Previously, if you had multiple baselines



in a corridor, you couldn't see all of them in a section view. Now a corridor section is added to the other baseline to facilitate the ability to see the entire corridor in the section view.

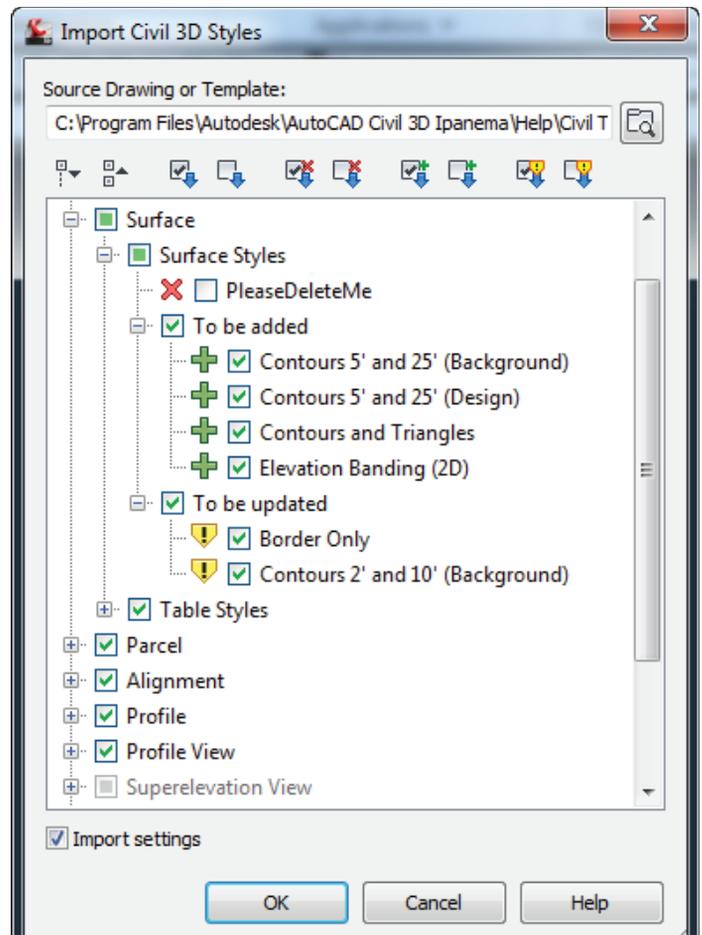
ALIGNMENT LAYOUT IMPROVEMENTS

The improved feature I'm most looking forward to using is alignment layout. This feature allows you to select an alignment subentity and change how it interacts with adjacent subentities. Previously if you wanted to delete a subentity that was dependent on another, you first had to remove the controlling subassemblies. Now you can change the tangency constraint to remove the link. The feature also allows you to use the Ctrl+Click subassembly and delete it. The constraints of the subentity are changed automatically. No longer do you need to delete subentities to modify a subentity within the alignment. This is a feature I've wanted since I first starting using Civil 3D back in the 2007 release.

STYLE AND SETTINGS

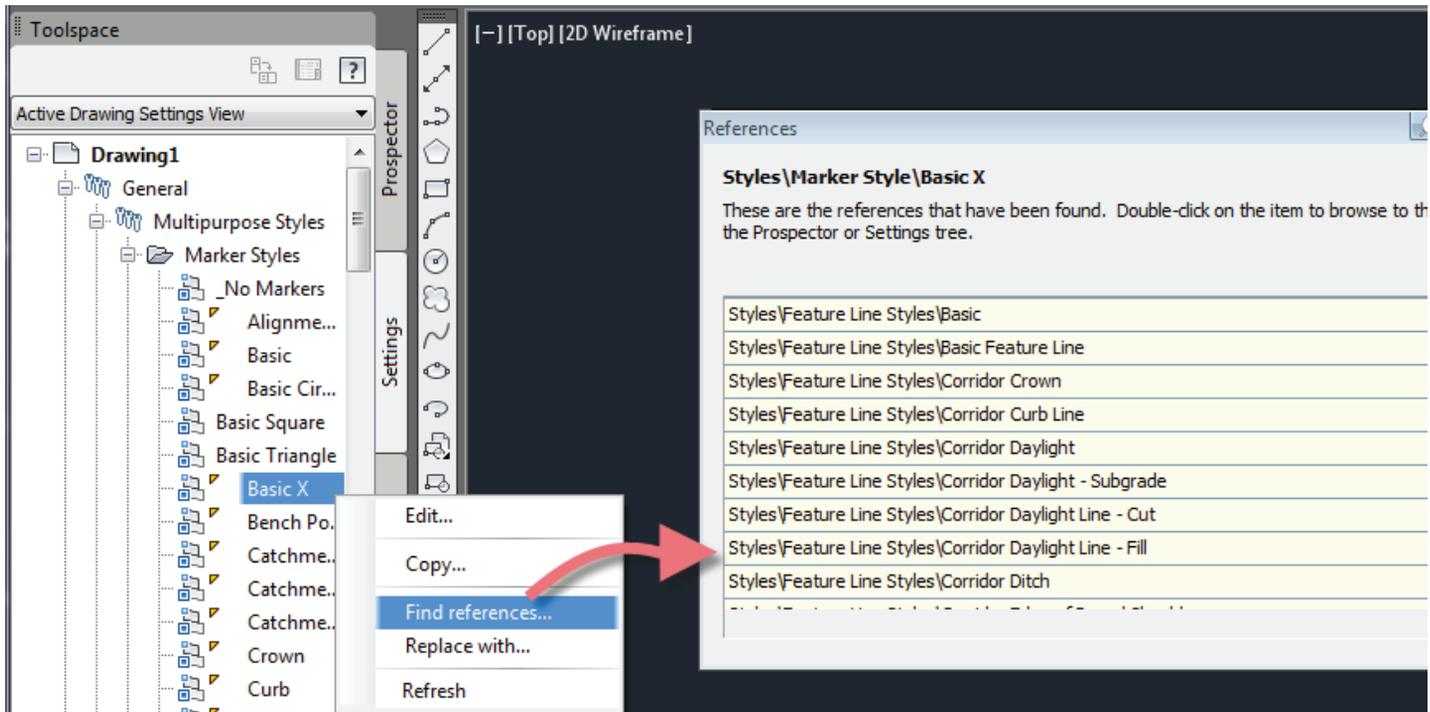
Moving styles from one drawing to another has always been a bit of a chore. While still not perfect in this area, Civil 3D 2012 does provide some tools to help. If a style is used in the drawing it is now possible to find where the style is used. This is helpful in determining if you want to delete the reference or give it a new name. Similarly the new Replace With... option provides a way to replace the style in all of the places it is used. Once replaced, the style can then be deleted. In previous versions one would have to scour a drawing for all of the instances and replace them before being able to delete the style.

From the Manage Tab of the ribbon, Civil 3D 2012 now has commands to Import or Purge styles. In the Import Style



Import Styles

command, you select a drawing and then a dialog box is provided showing all of the styles in both drawings. Each style



Find Reference

type has groups which are to be deleted, added, or updated. Buttons near the top of the dialog box let you place a check mark in each method of importation (delete, add, update). I have to admit to some confusion the first time the tool is used, but after a while its behavior starts to make perfect sense.

The Purge Styles command brings up a list of styles that are not being used in the drawing. It then gives the ability to go through and uncheck the style that you do not want purged. I see this feature as a good way of removing styles that are not being used before sending it out to third parties. While not a perfect way to manage styles, it is getting better.

GIS PIPE NETWORKS

If you work with a municipality that has a stupendous source of GIS pipe data, say, for instance, the City of Tucson in Arizona, then you'll find the Import Pipe Network from legacy GIS formats helpful. The tool lets you take GIS data and convert it into Civil 3D Pipe Networks. Since not all GIS data is the same, the tool provides user-defined data mapping. This lets you map the GIS data to the corresponding Civil 3D Pipe or Structure data. I've wanted this feature in the past and I'm sure every once in a while I'll be able to use it. Hopefully, more municipalities will start storing their assets in GIS for convenient data retrieval.

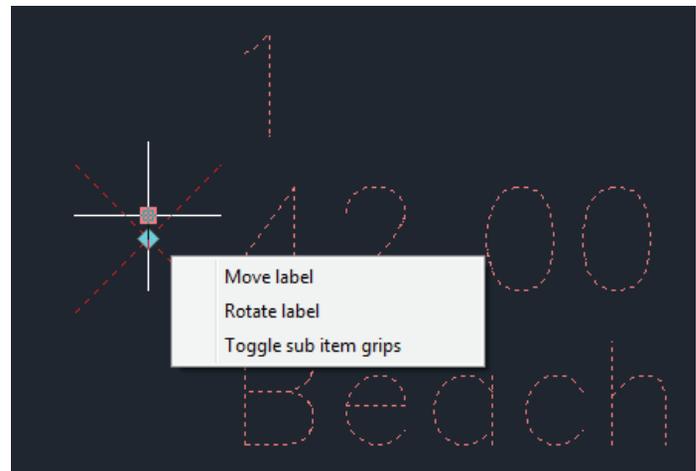
LABEL ROTATION

Point label rotation has added functionality, though it may not be obvious at first. At first you might think point label rotation is missing, but it is still there with an additional feature. The label rotation grip has been replaced by a tooltip. Hovering over the grip provides additional options. In addition to being able to rotate the label about the marker, you can now move the label and then rotate the label about the moved location. The image top right shows the options available in the square grip; additional options are available in the diamond grip. In the diamond grip, the traditional option is available to rotate both the marker and the label. This is great news for surveyors as it provides them more flexibility in displaying point labels in a drawing. The option to toggle sub-items grips is still there as well.

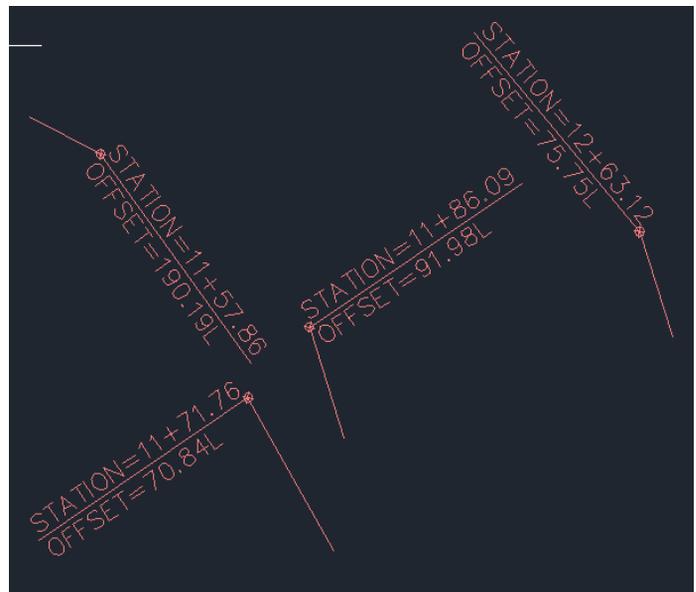
The new point label rotation is available in marker-based labels, which have the option to place a marker with the label. With this feature, I'm able to reduce the number of station offset alignment label styles needed and I'm able to rotate the label to get the appearance I'm after. All of the labels in the image of station offset labels are represented by one style.

ADDITIONAL IMPROVEMENTS

While not covered in this article, there are additional improvements made to sample lines, Autodesk Storm and Sanitary Analysis, surface volume bands, Vault Collaboration, and the Export to 3ds Max CivilView utility. I think there are some good improvements in this release and am



Rotate Point Label



Station Offset Label

looking forward to using AutoCAD Civil 3D 2012 in production.



Christopher Fugitt is a Civil Engineer and has spent the last eight years designing government projects as well as residential subdivisions. Before working as a Civil Engineer, Christopher worked for a General Engineering Contractor on subdivision and mining projects. Christopher earned his B.S. degree in Civil Engineering from California Polytechnic State University, San Luis Obispo. Christopher maintains and authors the Civil 3D Reminders blog at <http://blog.civil-3dreminders.com/>

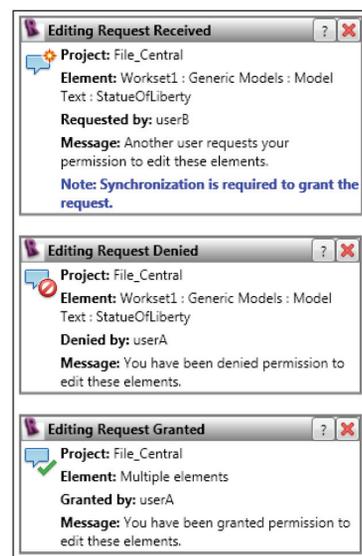
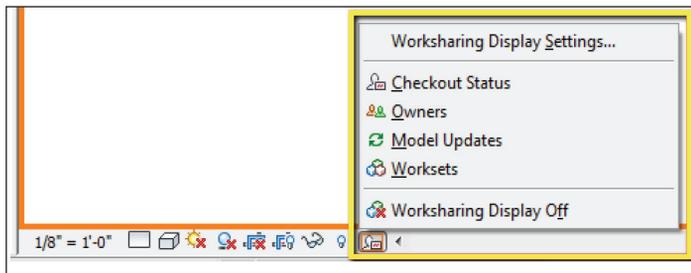
Revit Architecture 2012 & Platform: Score One for the Team

As most *AUGIWorld* readers already know, Autodesk® Revit® comes in three flavors these days: Architectural, MEP, and Structural. In the 2012 releases of Revit, you will find several of the new features are available in all three products. We call these platform features and the new Revit is packed full of them. In fact, there are so many new features we can offer only a quick overview in this article. In future issues of *AUGIWorld*, we will break down the detail of each new feature and cover others not mentioned here.

TEAM WORKFLOW

In the last couple of Revit releases, Autodesk has been developing tools in Revit to support team workflow. This release continues that effort with a great list of highly requested features.

- Tagging Elements in Linked Files
- Worksharing Visualization
- Editing Requests Notification
- Starting View
- Revit Server



TAGGING ELEMENTS IN LINKED VIEWS

(By Lonnie Cumpton – <http://www.youtube.com/watch?v=ADKypvqD7iQ>)

In Revit 2011, Autodesk gave us tools for tagging doors, windows, and a few other objects through a linked model. Everyone quickly noticed that room objects were not on the list of objects that could be tagged in a link in 2011. Well those days are over. Revit 2012 gives us the ability to tag not only room, but also spaces, areas, beam, and even keynote. This opens the

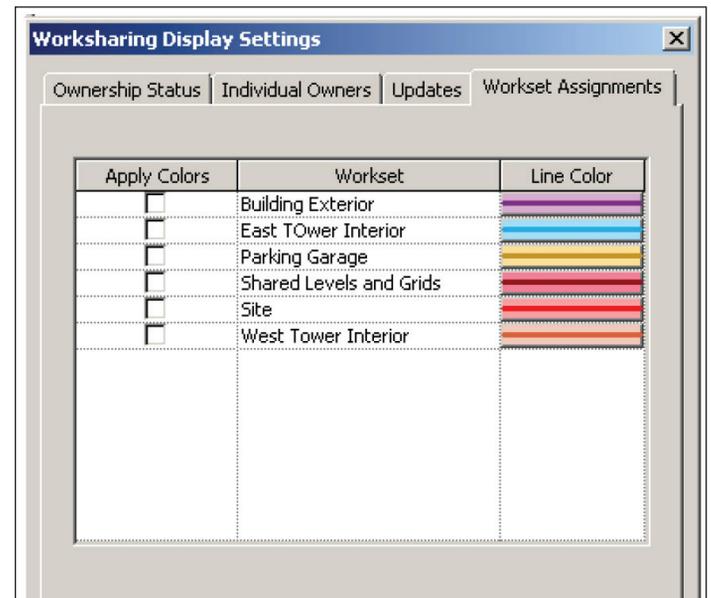
door for teams working with linked files to control tag locations live in their model. Along with making links more tag-eligible Autodesk has also improved the Manage Links dialog box. The Revit links tab is now

first and the columns are sortable by selecting the headers. Even the overall size and shape have been improved for quicker access.

WORKSHARING VISUALIZATION

(By Lonnie Cumpton)

Of all the new features, this one will have a wonderful impact on how we use Revit as a team. If you had been hoping that Autodesk would embed the Workshare Monitor (Subscription Only Tool) into Revit, then prepare to be very happy. Autodesk has not only brought the functionality of the workshare monitor into Revit natively, but at the same time gave it a completely new twist by adding visualization functionality. Have you ever wished that you could just look at your model and see what objects are on what worksets? Or how about looking at the model and seeing what objects are currently being worked on by your co-workers? In Revit 2012 those wishes have been granted. You can now turn on Worksharing Display (functions such as Temporary Hide/Isolate) in any view and have the object color-coded by Worksets, Owners, Model Updates, and Checkout status. This functionality will dramatically change how you use Revit with a team of people. Along with the display tools, Edit Request notifications now pop up inside of Revit and we have an icon on the status bar that shows you how many edit requests you have pending.



STARTING VIEW

(By Lonnie Cumpston)

Those of us who work on large projects have, for several years, asked Autodesk to give us a way to control which view loads when a project is opened. The challenge was that if you had several views open when you saved, then the next time you open the project all of those views would open. Depending on the project and view type open, this could double or even triple project open times. In 2012 Autodesk answered this request with a simple but effective tool that lets you set your Starting View. Simple, but a wonderful tool for project teams.

REVIT SERVER

Revit Server is a big topic and needed its own article, so look for that in a future issue.

DETACH MODEL FROM CENTRAL

Another requested feature is to be able to detach a model from the central file. In 2012 we get that feature and even have the opportunity to preserve or discard worksets.

Beyond the team workflow tools, the Revit team has also add lots of other tools in the platform area.

AUTOCAD DWG EXPORT IMPROVEMENT

(By Bill Debevc – <http://www.youtube.com/watch?v=aZ7RaovUv3I>)

Can you “DWiG” it? Autodesk improved DWG export in Revit 2012. Autodesk has given us greater control, making the sharing of work with the AutoCAD-ites even easier and better than ever.

A welcome addition to the Export CAD Format tool is saved export settings by name. Gone are the days of just saving your last settings; now we can save any number of our settings by name and retrieve them later. The settings are saved with the project or template, and can be transferred between projects using the Transfer Project Standards command within Revit.

Can you believe there are improvements made in exporting linetypes to DWG files? You can now control linetypes by line pattern in Revit using a standard AutoCAD LIN file or you can have Revit automatically generate them for you.

Hatch pattern exporting has also been improved; you can map a Revit fill pattern to an AutoCAD hatch pattern using a standard PAT file.

Your architect’s standard text font is TXT? No problem. Within Revit’s new DWG export dialog box you can map a text font in Revit to a font in AutoCAD. For example you could map Arial to TXT.

Exporting dimensions has also been improved. Revit now uses style-based objects as much as possible. For example, the arrowhead properties in the dimension style is populated from the tick mark setting in Revit.

Exporting layers has also been improved. You can now create layer modifiers based on phase, view type, or workset, to name a few. This means that walls on different phases can be on different layers. You

can even make the modifiers a suffix or a prefix. Can you say A-Wall-Demo, anyone?

Finally Autodesk has reorganized the DWG export dialog box in Revit 2012 making it easier to navigate.

All in all, Autodesk has done a great job improving Revit’s DWG export capabilities.

SCHEDULE AND LEGEND VIEW CREATION FROM PROJECT BROWSER

(By Lonnie Cumpston)

You will now be able to create new schedules and legends by simply right-clicking on the project browser and selecting the new option you want. This is the same process that we use today for creating new sheets.

MORE MULTI-THREADED FUN IN REVIT 2012

(By Bill Debevc)

Autodesk has implemented more multi-threaded love in Revit 2012. Autodesk has made loading elements multi-threaded, which means that load times and opening new view times will decrease. Autodesk has also implemented multi-threading for computing the graphical representation of model elements, now when opening or changing view properties, and thus Revit will generate the model changes faster. These changes may seem like a small thing, but I believe they will make a large impact, especially with large models.

Autodesk has also included another much awaited feature regarding performance. This feature helps clean up our models; you can now purge unsaved imported categories and object styles from your model. So purge, baby, purge.

KEYBOARD SHORTCUT GOODNESS

(By Bill Debevc)

Single key entry will now be first priority

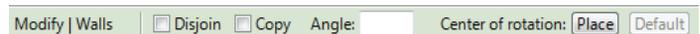
- A warning will now be displayed when a shortcut is duplicated
- Export all commands—not just the ones with assignments

IMPORT AND EXPORT OF FAMILIES

(By Bill Debevc)

Revit now allows you to export and import family types to a TXT file or type catalog. But wait, there’s more. Revit 2012 now has the ability to save all families that are in a project. All the families will be saved with their given names into a subdirectory of your choosing.

The Rotate Enhancement has given Revit’s Rotate command a much more fluid flow. Now when you select the Rotate command, the options bar will display a choice to accept the default location of the center of rotation or you can select ‘Place’ to place the center of rotation. If the default was used, you can now select the origin control and by performing a single left-click of the mouse you can place the center of rotation at a new location. After selecting the rotate command you can hit the space bar to switch from the Default to Place Option.



In addition, a new Keyboard shortcut of 'r3' has been added to place you in the Rotate command with the Place Option active.

The Place Option has also found its way over to the Radial Array command in Revit 2012.



3DCONNEXION DEVICE SUPPORT

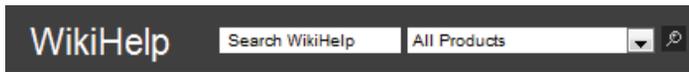
(By William Troeak)

With the release of Revit 2012, Revit now joins the ranks of programs that can use the suite of 3Dconnexion devices. Once a 3Dconnexion device is installed, you will see an additional icon on your Navigation Bar.

WIKIHELP

(By William Troeak)

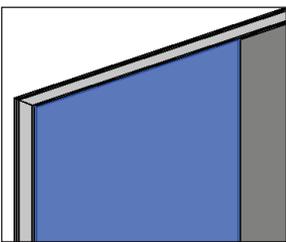
Autodesk product help menus have come a long way from the days of users removing their F1 keys to avoid the painfully slow process of opening the help menu. Now with the release of Revit 2012, Autodesk is introducing WikiHelp, which allows users to upload articles and videos, as well as rate and comment on existing comments and help topics.



WikiHelp will be available when you have an active Internet connection; a locally stored or "old" help menu will be available when you are not connected. Those who like to have more options can specify in the Revit.ini file which help system and or web browser to use.

CONSTRUCTION MODELING

(By William Troeak – <http://www.youtube.com/watch?v=An-4jdTVFpk>)



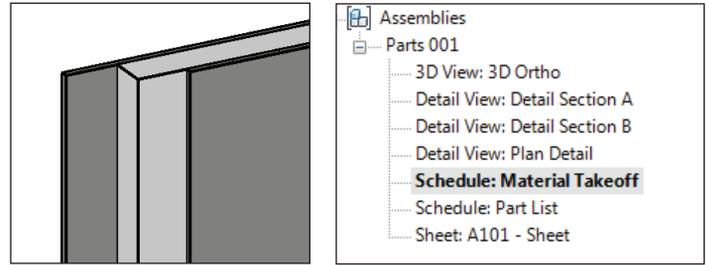
Walls, Floors, and Ceilings can now be divided into parts based on the individual layers of the assemblies.

Once we create Parts, we can select the Instance Parameter of Show Shape Handles, which will allow us to push and pull the individual layers. Then these individual layers of material can be scheduled.



Revit 2012: Construction Modeling

http://www.youtube.com/watch?v=6_QHu1ekJJ0



Material Takeoff	
Material: Name	Material: Volume
Gypsum Wall Board	5.99 CF
Metal - Stud Layer	34.74 CF
Gypsum Wall Board	5.99 CF

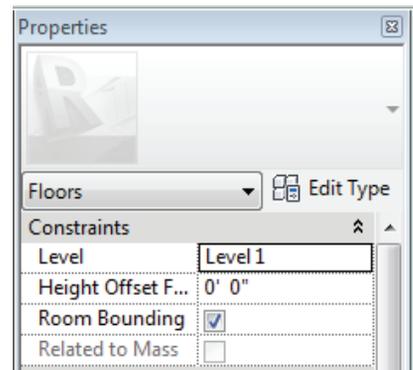
In addition to Creating Parts, we can Create Assemblies. Assemblies allow us to create additional views for documentation and shop drawings.

TYPE SELECTOR, DIMENSIONS, AND LEADERS

(By Joe Eichenseer – <http://www.youtube.com/watch?v=oSTyAC4E3IA>)

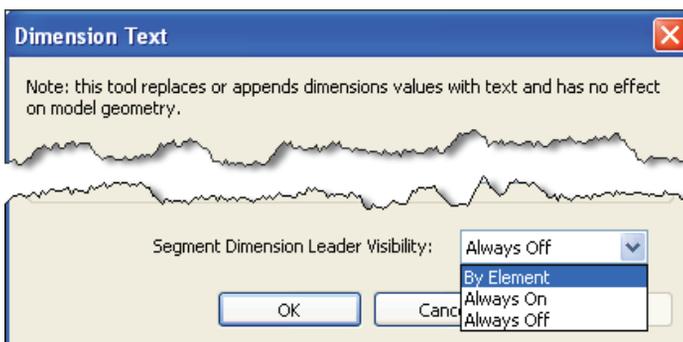
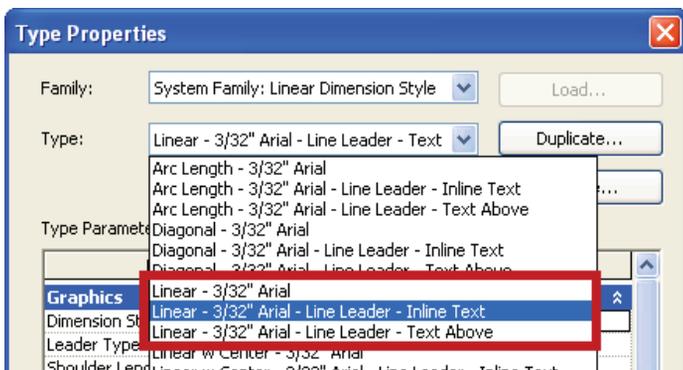
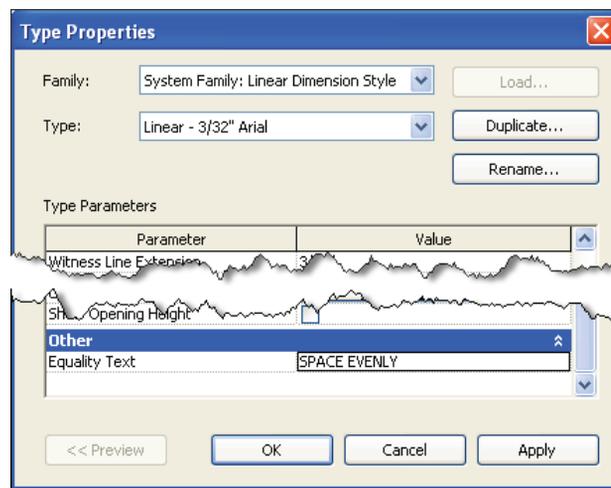
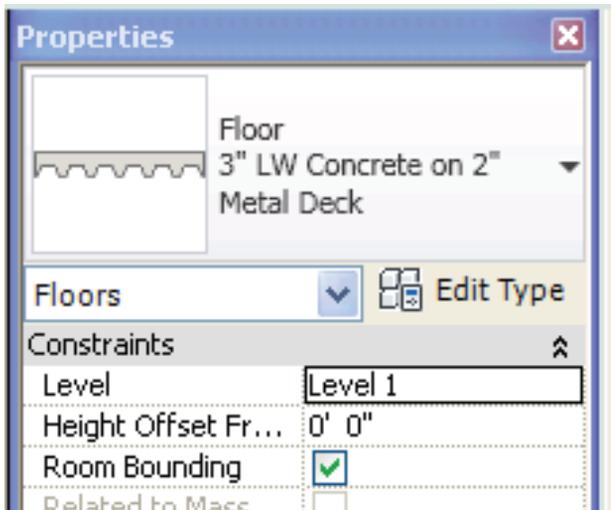
There are enhancements that you might not initially recognize in Revit 2012, including a tweak to the type selector, and updates to the graphics of dimensions and leaders. Even though they may not fall in your "big feature" list, they certainly can help with overall usability and flow within Revit Architecture, Structure, and MEP.

How many times have you started to create an object that requires going into sketch mode and decide that you want to specify the family type while in sketch mode? Learning for the first time that you had to click "Edit Type" in the properties window to make this change might have been a frustrating experience, and it certainly does not fit within expectations that you may have had because of the way Revit works with other families. In Revit 2012, the type selector works while you are in sketch mode, allowing for a more predictable workflow.



We users also have received enhancements to the Equality Display (EQ) of dimensions. Previously, we had two options available – "EQ," or the actual dimension value. As with other dimension text, you could (and still can) override this EQ text one instance at a time, but this could be time consuming if you

needed to edit this in multiple places in multiple views. Now, we have a new "Equality Text" type parameter in our dimension families. This allows you to specify a default alternative to "EQ" in your dimensions across your entire project.



Dimension Leaders (not to be confused with Text Leaders), also received a perk. There is a new instance parameter to include (or not include) a leader to dimension text that has been moved away from its origin and some new stock leader types that allow you to better configure what happens when you reposition this text. Note: these new dimension type parameters exist only when you choose the “Line” setting for your leader type—you won’t find them in the dimension types that use an arc leader. The new parameters are: Leader Type, Shoulder Length, Leader Tick Mark, Show Leader when Text is Moved, and Text Location. New leader options include with or without a shoulder, with text in-line with the shoulder or above a leader shoulder (sometimes called a “tail”). You can also edit the leader visibility of a single element within a string of dimensions through the Dimension Text override dialog box.

POINT CLOUDS

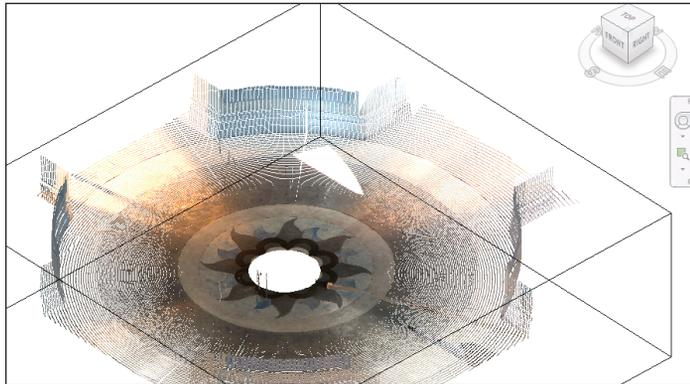
(By Joe Eichenseer)

With activity on the part of the federal government, the private sector, and advancements in technology, the use of laser scanners to capture existing conditions in the form of point clouds has been getting a lot of attention lately. This portion of the article is not going to get into the details of what a point cloud is and why it could be important to you, but will instead focus on the integration of point clouds into Revit 2012.

If you are familiar with how Autodesk has incorporated point clouds into AutoCAD, you’ll find some familiarity in the Revit environment. The Insert ribbon tab has a new button to link in a point cloud and these point clouds can be managed like any other linked file in the Manage Links dialog box.

When you link in a point cloud, Revit’s default is to prompt you to select a spatially indexed .PCG file, which is read in and processed by a proprietary point cloud engine. If you don’t have a .PCG file handy, you can also choose “raw” formats, including .LAS, .XYB, .PTS, .PTG, .FLS, and .FWS. When you choose one of these raw formats, Revit will automatically convert it into an indexed .PCG file and allow you to then link in that new .PCG file.

Once the cloud has been linked into the model, it behaves in part like many other model objects. It can be moved, rotated, copied, and mirrored, and it responds to visibility and phasing controls. In addition, the cloud can be cut by view ranges set in plans, sections, and by 3D view section boxes. These last items are critical for working within point clouds as they provide a mechanism by which you can limit your focus to manageable portions of the cloud.



Considering that the point cloud consists of many thousands to many millions or even billions of points it makes sense that linking in a point cloud can slow down the display system of your computer, but Autodesk has done a good job of optimizing performance while interacting with point clouds—especially if you are using tools such as the previously mentioned section boxes to clip the point cloud into specific, focused areas. However, the large number of points and volume of space that a point cloud takes up makes it easy to pre-highlight and/or select unintentionally. For this reason, once you have the point cloud(s) correctly positioned in your model, you will want to pin it into place to prevent accidentally moving the cloud to another location.

To simplify and improve the process of using a linked scan cloud to generate an as-built model, Autodesk has incorporated the ability to snap to portions of the scan cloud that are perpendicular to the current work plane. Once one of these snapping points has been acquired during a draw or modify command, it remains available for any other use until you change the view by zooming in or out. That being said, sometimes acquiring these snapping points can be challenging when dealing with surfaces that aren't quite perpendicular to the ground, and while you can measure distances within a point cloud, you cannot dimension a point cloud, nor can you use spot dimensions with a point cloud. You will need to use the cloud to generate standard Revit geometry prior to using any of these dimensioning commands.

REVIT ARCHITECTURE 2012: ENHANCED VISUALIZATION

(By Michael Anonuevo – <http://www.youtube.com/watch?v=bHR2Dy42UJk>)

At last, Autodesk Revit Architecture has added more visualization styles in its 2012 release! For design professionals, this is a wel-

come addition that offers more presentation options. These new features are:

- Visual styles
- Realistic with Edges
- Ambient Occlusion added to Hidden Line and Consistent colors mode
- Shadows added to Consistent Colors mode
- Ghost Surfaces display
- Selection Improvements
- Saving a View Template directly from Graphics Display Options
- Lockable 3D views

GRAPHIC DISPLAY OPTIONS

(By Michael Anonuevo)

For starters, the Graphic Display Options has been relocated from the Shadows pop-up menu (see 1, Figure 1) to the Visual Styles pop-up menu where it made more sense to access them from (see 2, Figure 1). The Shadows button is now a toggle switch which turns the shadows on or off (see 3, Figure 1). A new button has been added called Lock 3D View.

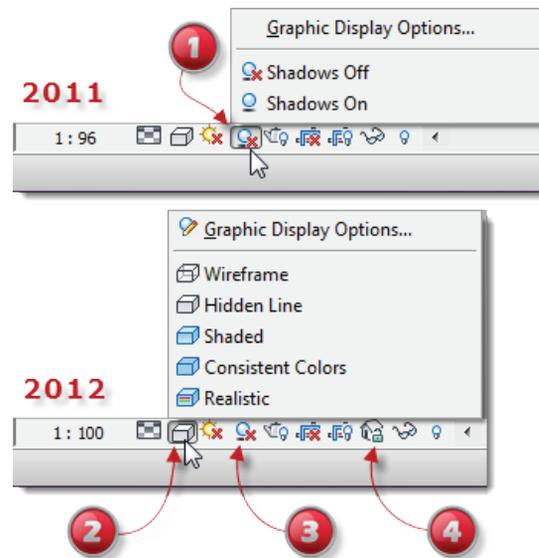


Figure 1

The new Graphic Display Options interface has been updated with settings broken into five separate options (see Figure 2).

1. Model Display
2. Shadows
3. Lighting
4. Sun and Shadow Intensity
5. Background (3D views only)

As you can see from this new dialog box, it is now easier to experiment with different view settings. You don't have to go outside this window to configure different view settings. After you select the surface effect you like, you can click Apply to see the result. When you're satisfied with it, you can then save it as a view template (see 6, Figure 2). Later on, you can apply this view template to different views in your project. When you click the Surfaces drop-down menu (under Model Display) and choose a particular visual style, you'll see which effects you can ap-

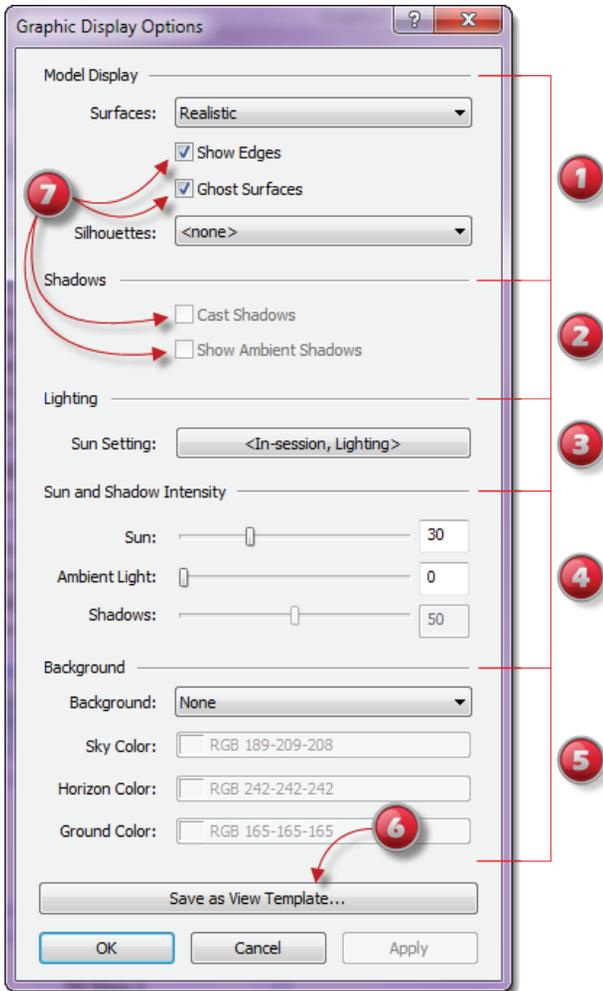


Figure 2

ply. The check boxes in the Model Display and Shadows options will either be active or grayed out (see 7, Figure 2).

LOCKING 3D VIEWS

(By Michael Anonuevo)

Don't you just hate it when you accidentally orbit a saved 3D view and you can't get it back to its exact former orientation? Well now we have the ability to lock a 3D view! Yes, Autodesk added the Lock 3D View feature in the view control bar (see Figure 3).



Figure 3



This new feature includes three options:

1. Save Orientation and Lock View: This option saves your current and disables orbiting.
2. Restore Orientation and Lock View: When a locked view is unlocked and reoriented, this option restores the locked view orientation.
3. Unlock View: This unlocks the current view so you can navigate and orbit the view. To get back to the locked orientation, select the second option, which is Restore Orientation and Lock View.

GHOST SURFACES

(By Michael Anonuevo)

Basically, what this effect does is display the surfaces of your model with a transparency. Take a look at the comparison between a Realistic View (see 1, Figure 4) and Realistic View with Ghost Surfaces (see 2, Figure 4). This surface effect can be applied to the following:

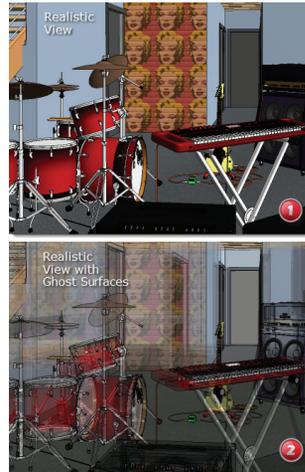


Figure 4

- Entire view
- Per category
- Per element
- As a filter override
- As element override through Visibility/Graphics Overrides

SELECTION IMPROVEMENTS

(By Michael Anonuevo)

When you pre-highlight an object, the color of the outlines now appear in blue (see 1, Figure 5). When an object is selected, it appears in a blue, semi-transparent state (see 2, Figure 5). This transparency effect can be turned off from the Applications]Options]Graphics tab]Color. Your selection then will turn into a blue opaque color (see 3, Figure 5).



Figure 5

TEMPORARY DIMENSIONS AND GRIPS

(By Michael Anonuevo)

The temporary dimensions now appear in blue lines with round grips. When permanent dimensions are selected, they also appear with round grips.

Possible 31 Views Combining Visual Styles with Edges, Ghost Surfaces, Cast Shadows and Ambient Shadows.

HEADS UP!

Updates, Service Packs and Top Known Issues obtained from product pages at Autodesk.com

AUTOCAD/ACA/AMEP

Top Knowledge Base Issues

What's new in AutoCAD 2012

<http://exchange.autodesk.com/autocad/>

Operating System Compatibility for AutoCAD and AutoCAD LT

<http://usa.autodesk.com/adsk/servlet/ps/dl/item?siteID=123112&id=14078105&linkID=9240617>

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<http://usa.autodesk.com/adsk/servlet/cert?siteID=123112&id=16391880>

AutoCAD 2012 Model Documentation Object Enabler (32-bit and 64-bit)

<http://usa.autodesk.com/adsk/servlet/ps/dl/item?siteID=123112&id=16732544&linkID=9240618>

System Requirements for AutoCAD products

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<http://usa.autodesk.com/navisworks/system-requirements/>

Operating System Compatibility for Navisworks

<http://usa.autodesk.com/adsk/servlet/ps/dl/item?siteID=123112&id=15407756&linkID=10382101>

AUTODESK INVENTOR

Top Knowledge Base Issues

System Requirements for Inventor 2012

<http://usa.autodesk.com/adsk/servlet/ps/dl/item?siteID=123112&id=15402497&linkID=9242018>

Microsoft hotfix 971138 required for Inventor to function fully with Vista Operating Systems

<http://usa.autodesk.com/adsk/servlet/ps/dl/item?siteID=123112&id=16323149&linkID=9242018>

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AUTODESK RESEARCH: PROJECT HELIX

Project Helix at Autodesk Research URL: http://labs.autodesk.com/utilities/3dsmax_point-cloud/

From Autodesk // Labs: "Bring your visualizations into context with Project Helix, a powerful technology prototype enabling display and rendering of 3D laser scanning/LiDAR data sets with Autodesk® 3ds Max® and Autodesk® 3ds Max® Design software. With the 3ds Max Point Cloud Tools you can more quickly import as-built site references to help evaluate and visualize your designs in context of their surrounding elements."

Overview video available at <http://www.youtube.com/watch?v=bv5vrnNGBko>

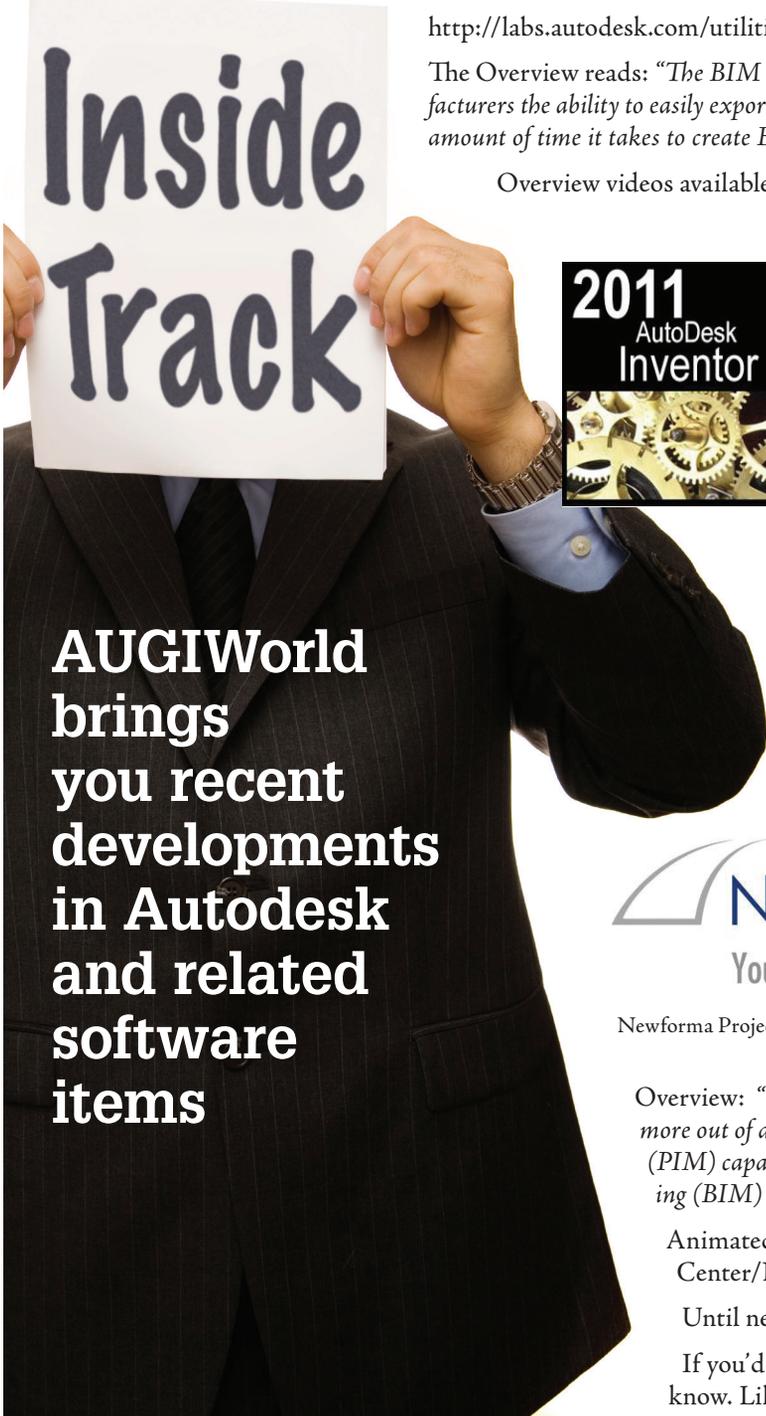
AUTODESK RESEARCH: BIM FAMILY TOOLKIT

BIM Family Toolkit at Autodesk Research URL:

http://labs.autodesk.com/utilities/bim_family_toolkit/

The Overview reads: "The BIM Family Toolkit Technology Preview allows building product manufacturers the ability to easily export Inventor configuration ... directly to Revit families... reducing the amount of time it takes to create BIM Ready Models."

Overview videos available at http://labs.autodesk.com/utilities/bim_family_toolkit/



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Inventor to Revit

NEWFORMA: NEWFORMA PROJECT CENTER 8 ADD-IN FOR AUTODESK REVIT

Newforma Add-In for Autodesk Revit URL: <http://www.newforma.com/Project-Center/Newforma-Revitadd-in.aspx>



Newforma Project Center 8

Overview: "The Newforma® Add-in for Autodesk® Revit® allows you to get more out of an investment in BIM by bringing project information management (PIM) capabilities into the Autodesk Revit suite of building information modeling (BIM) applications."

Animated Demonstrations at: <http://www.newforma.com/Project-Center/Newforma-Revit-add-in.aspx>

Until next issue!

If you'd have some news to share with us for future issues please let us know. Likewise, if you are a user of a featured product or news item and would like to write a review, we want to know.

Introducing Revit MEP 2012



This is the year of piping and systems for Autodesk® Revit® MEP. However, don't fall into the trap of thinking that since piping received some needed attention that other disciplines can ignore the release. Extra attention

was paid to some of the electrical features released last year. Once again, the challenge will be to convince the rest of the design team on your active projects to upgrade the models sooner rather than later to take advantage of the features in Revit MEP 2012.

Disclaimer: This review was written testing features in the beta version of the product and not the final version. Therefore, features reported may not be available, or substantially altered, in the shipped product.

SLOPED PIPE

Ever since Revit introduced sloped modeled piping there have been some issues. If you have dealt with sloped piping in recent versions, you are well aware of the problems, so there is no need to list them here. Revit MEP 2012 makes it easier for designers to work with sloped piping with the following features.

PIPE SLOPE SETTINGS

Pipe slope settings are now stored in Mechanical Settings and can be transferred between projects. This simple change provides some consistency for piping designers. The assigned pipe slopes are selectable in the ribbon. This is a change from the legacy process of changing the slope value directly in the Options Bar while placing the pipe.

SLOPED PIPE LAYOUTS

Settings for sloped pipes while placing them have been moved to the ribbon rather than the Options Bar. This has the benefit of providing more room for distinct images and descriptive text rather than the tiny, cramped buttons on the Options Bar. The

selected slope of a pipe (or no slope) is quickly seen in the ribbon (see Figure 1).

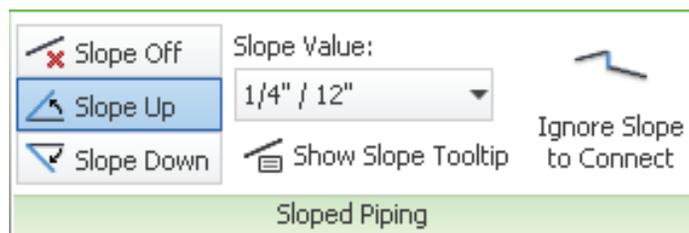


Figure 1: Sloped Piping Ribbon Panel

TIP: Go ahead and assign the most common slope value for the designers and then turn off the slope in the template. This helps the designers when they first turn on a pipe slope because the most common slope value is already selected.

SHOW ACTUAL ELEVATION AND SLOPE

One of the frustrations working with sloped pipe in prior releases was that there was no dynamic feedback about the elevations of the pipe as you were placing it. This has been addressed with the Show Slope Tooltip feature. When this is turned on, a tooltip describing the pipe's starting offset, current offset (at the cursor), and slope of the pipe is displayed. Even when the tooltip is turned off, connecting a pipe to a sloped pipe will show the elevation of the sloped pipe at the connection point.

IGNORE SLOPE TO CONNECT

This feature allows the designer to override the slope value when placing a pipe that will connect to another pipe. When the option is on, the new pipe is directly connected to target pipe without a rise or drop into the target pipe (see Figure 2). It is still up to the designer to ensure the resulting slope falls within the slope permitted by the code.

Revit MEP

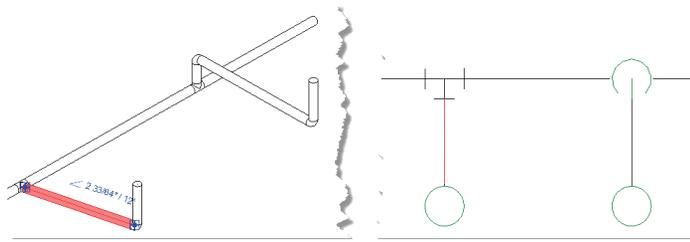


Figure 2: Ignore Slope to Connect Feature

Unfortunately, modifying the location of pipes in a connected sloped pipe system is best done by muttering incantations and prayers to the Revit gods.

SYSTEM BROWSER

The System Browser has received a facelift to help make working with systems better. Some of the improvements follow.

BROWSER FILTERING

The system browser changed the interface for filtering systems to be more visible. There are drop-down boxes and buttons at the top of the system browser to allow you to filter the view, auto-fit the columns, and specify the visible columns.

Filtering the system browser to a specific discipline will display the elements only for that discipline, including the Unassigned category. Therefore, the plumbing designer will not see electrical systems/elements in the system browser (see Figure 3) when they need to concentrate on the electrical model.

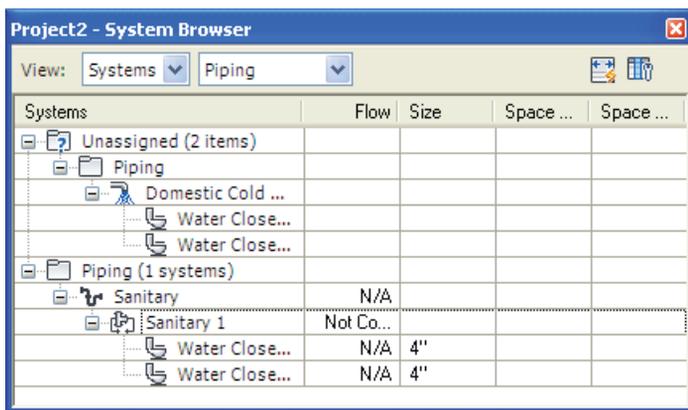


Figure 3: Filtered System Browser

MULTIPLE SELECTION AND SELECTION/HOVER HIGHLIGHTING

Multiple elements in the system browser can now be selected, following the typical multi-select conventions. In a welcome enhancement, elements that are selected in the browser are also selected in the views, and vice versa. This makes it easier to see the elements that are part of the system in a dynamic manner. Hovering over elements in the system browser will highlight the elements in visible views without selecting them.

TREE STRUCTURE

The display of systems is now hierarchal. This makes the display of systems less confusing because not all systems need to be shown at the top level of the system browser.

SYSTEMS

Systems are important in each of the MEP disciplines, but working with multiple systems is an important issue in the piping discipline where there can be many different piping systems in a single building.

GRAPHIC OVERRIDES FOR DUCT/PIPE SYSTEMS

Changing the display of elements in specific systems is perhaps most important in the piping discipline. There are many different pipe systems in even a simple building and although view filters can be used to help distinguish different pipe systems, there is a lot of effort that needs to be put into the templates and each view in order to manage the view filters.

You can now specify the color, lineweight, and linetype of each system at the system level rather than using a view-specific filter. This will make it easier to visualize systems across the entire model. You still have the ability to assign view-specific overrides.

You can create as many different system types as you need by duplicating the "Other" system type and changing the type properties as desired, including the new system-level graphic override.

RENDERING MATERIAL FOR DUCT/PIPE SYSTEMS

A separate material can be applied only for the purpose of rendering. This allows you to assign the correct material for the physical material. But you can now make your renderings much more interesting by using translucent materials for added depth.

OPTION TO SPECIFY SYSTEM WHEN PLACING A DUCT/PIPE

The designer is now able to specify a system for the pipe/duct when placing these elements and not connecting them to equipment.

GRAPHICAL WARNING/DISCONNECT MARKERS MARKERS

In older versions of the software, when you checked systems you would get a list of warnings in a dialog that had to be dealt with in turn until the warnings were resolved. In Revit MEP 2012 the same ribbon buttons now act as a toggle for the display of graphical warning markers in the views. When a marker is selected in the view, the familiar warning dialog appears. The advantage to this approach is that you can concentrate on the warning markers that matter most to you.

Disconnect markers are a new addition to Revit MEP 2012. Selecting the button (see Figure 4) will display a dialog box where you can select the connector types for which you wish to display disconnect markers. Clicking on a disconnect marker will display a warning dialog explaining the disconnect.



Figure 4: Warning/Disconnect Markers

SYSTEM CALCULATION CONTROL

System calculations, per system type, can be controlled separately. Depending on the system type, the options are All, Flow Only, and None. Where an element might show calculated values but the system calculations are not being performed, the value is displayed as “Not Computed.”

SYSTEM CONNECTOR LABELS

System connector labels on equipment and fixtures are far more informative now. There are icons to indicate the connector type, leaders to the connector itself, flow direction is labeled when appropriate, and sizes and flow units are shown.

Clicking on the system icon will start the command to draw the appropriate element at the connector’s elevation and size.

MODIFY SYSTEMS WHILE ADDING DUCT/PIPE

The ability to add an element to a system by drawing duct/pipe already on the system to the unconnected element has been added.

INTERCONNECTED SYSTEMS

Interconnected systems, such as connecting vent to sanitary systems, is finally possible with Revit MEP 2012. As of the writing of this article, the effects of interconnected systems on calculations is still not known.

SYSTEM TYPE AND ABBREVIATION PARAMETERS

A “System Type” parameter has been added to some of the M&P categories and exposed to filters. This makes it possible to assign graphic overrides per system and, even more importantly, allows you to map systems to specific layers for DWG Export. A “System Abbreviation” parameter has also been added to those same M&P categories to display the abbreviation type property for the connected system.

DUCT/PIPE PLACEHOLDERS

Placeholders are used early in the design process to indicate layout when the system itself has not been fully sized. The placeholders can be converted into true duct/pipe elements later in the design process. It is possible to assign size to placeholders and, if desired, slope.

Converting the placeholders is as simple as selecting the placeholder(s) and then selecting the Convert Placeholder button on the ribbon.

Placeholders are a separate category so they can have a display override separately from the actual duct/pipe categories. Placeholders can also be scheduled and tagged. Placeholder can participate in interference checks.

PARALLEL PIPE/CONDUIT RUNS

Drawing parallel runs of pipe and conduit is a tedious task. Revit MEP 2012 adds a feature to draw parallel runs of an existing run of pipe or conduit with a single click (see Figure 5). The parallel runs can be offset both in the horizontal and vertical direction (think of a rectangular array). Conduit bends can be configured to use the same radius as the original bends or to use concentric bends.

When a conduit is connected to equipment surface connectors or cable tray, the parallel runs may also be connected to the same connector or cable tray as long as the copies fall on the surface connector.

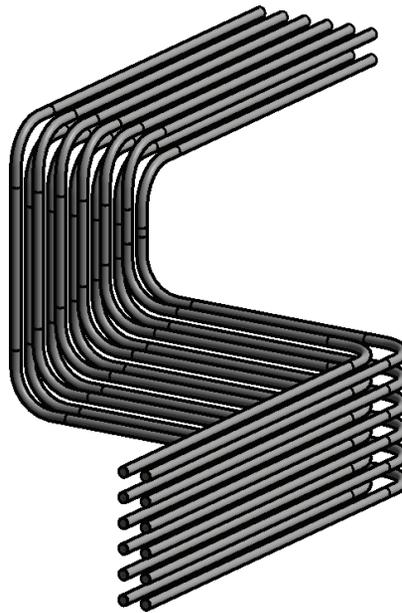


Figure 5: Parallel Conduits in a Single Click

CHANGE TYPE OF RUN

A run of duct, pipe, cable tray, or conduit can have its type changed. Select the elements and fittings and then use the Change Type button on the ribbon to change to another type in the Properties dialog. For example, you can easily change a run of rectangular, mitered elbows ductwork to round duct with short radius elbows.

INHERIT ELEVATION/SIZE VISIBLE ON RIBBON

For many releases, Revit has had the ability to match elevation and size of the snapped element by using the spacebar. But this is a “hidden” feature that is easy to forget. In this release, the option to do this when connecting to an element has been moved to the ribbon and split into two toggles. One toggle is for matching the elevation of the element and the other toggle is for matching the size of the element. The spacebar option still works for those who are accustomed to the original approach.

INSULATION AND LINING

Insulation can now be added to an entire duct or pipe run in a single command. Lining can be added to an entire duct run in a similar way. Fittings and flexible duct/pipe can also be selected during the process to add insulation/lining as appropriate. The

Revit MEP

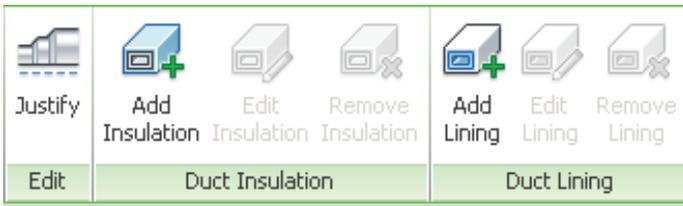


Figure 6: Insulation/Lining Tools

tools for adding insulation and lining are located on the ribbon (see Figure 6). Insulation can participate in Interference Checks.

PANEL SCHEDULES

Panel schedules received some added attention with Revit MEP 2012. For example, panel schedules can now display the totals in Current values in addition to the Load values.

The row and column resizing grips can be disabled to prevent accidental resizing of the cells. The sizes can still be altered via the ribbon interface even when the grips are disabled.

Multi-poled circuits can be merged into a single cell where that is the desired appearance.

The text string for spares and spaces can be set in the Electrical Settings dialog box.

Electrical equipment can drive the number of slots in a panel schedule rather than being explicitly set (forced) in the panel schedule template.

Load names can have an enforced capitalization thanks to a setting in Electrical Settings. Options include:

- From Source Parameters
- Initial
- Sentence
- Upper

The circuit section of the panel schedule can include a column for connected load per load classification.

CONCLUSION

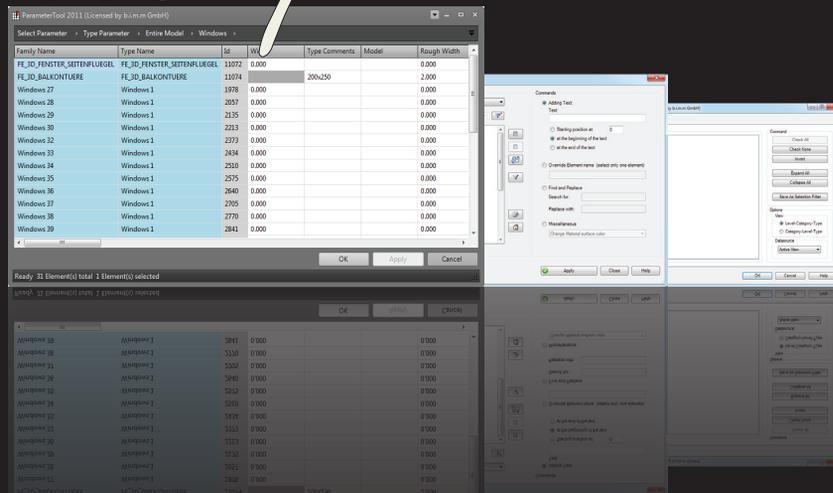
Once again Autodesk has put significant effort into addressing inefficiencies in the MEP BIM design process to improve the productivity of your designers and modelers. This release will improve your productivity, especially when you work with systems or need to make sweeping changes to your model. Along with the enhancements to the core Revit system (described elsewhere in this issue), this is an important release for MEP. Now your task is to deploy this version and convince the architects to upgrade their projects.



R. Robert Bell works for Sparling in Seattle WA US. He is their Design Technology Manager. He has used AutoCAD since v2.18 and Revit MEP since the first beta of Systems. He is currently serving on the AUGI Board of Directors.

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What's new in Revit Structure 2012



REBAR ENHANCEMENTS



In the past, a user had two options when placing rebar: 'Parallel to work plane' and 'perpendicular to work plane.' In the 2012 release of Autodesk® Revit® Structure, the Perpendicular mode has been broken up into two placement options, 'perpendicular to work plane and parallel to cover' and 'perpendicular to work plane and perpendicular to cover.' Combining these three placement methods with the ability to toggle through eight different orientations by pressing the spacebar gives the user 24 unique placement options.

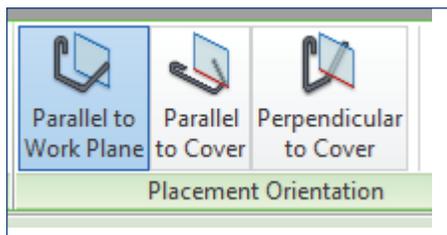


Figure 1: Placement Orientation panel

Revit Structure 2012 no longer limits you to bending rebar in one plane. The rebar family editor now allows bending rebar in more than one plane.

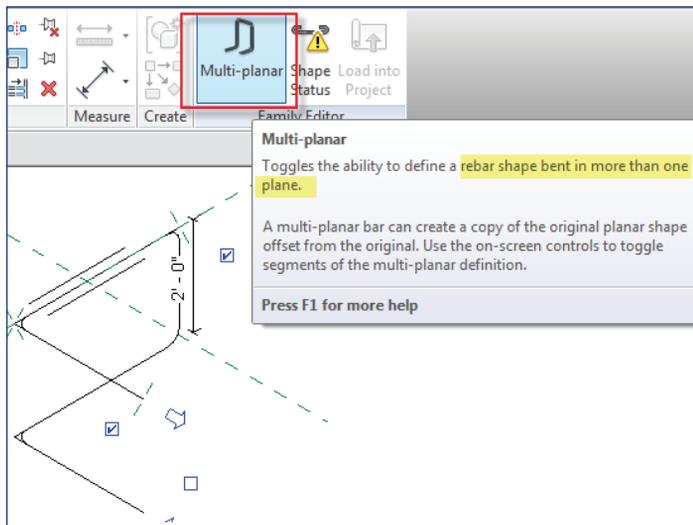


Figure 2: Bending Rebar

GENERIC MODELS AND STRUCTURAL CONNECTIONS

Elements created and categorized as a Structural Connection can now host rebar as long as the material used is set to Concrete or Precast Concrete.

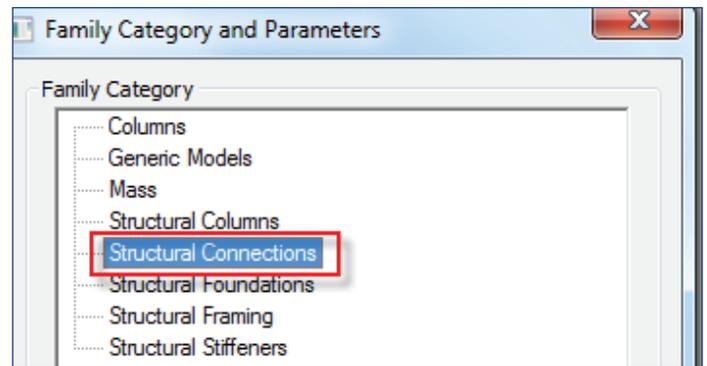


Figure 3: Family category and parameters

Generic Model families have a new parameter called "can host rebar." When this parameter is turned on, it allows the family type to host rebar with the appropriate coverage settings.

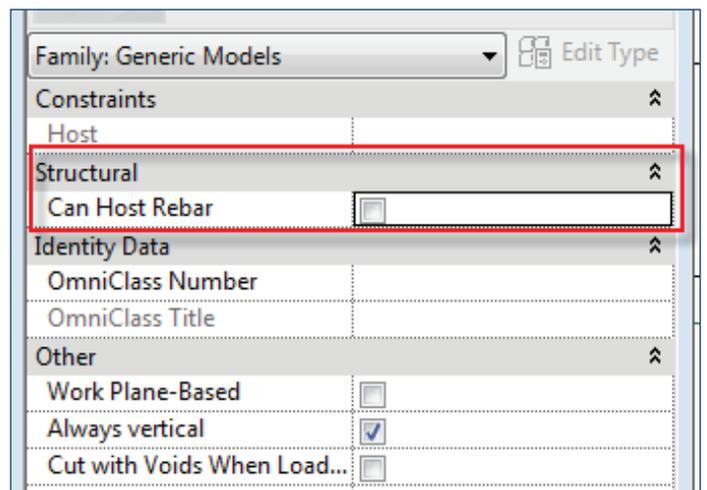


Figure 4: Generic model properties

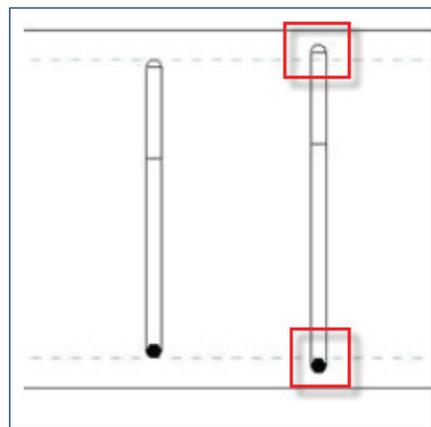
VISIBILITY IMPROVEMENTS

Self intersecting rebar is now displayed correctly in 2D and in 3D views.



Figure 5: Improved Rebar display

MORE REBAR ENHANCEMENTS



When working with Rebar Stirrup style families, the user was limited to snapping to the interior of the cover reference. In Revit Structure 2012 the Stirrup can snap to beyond the cover reference.

Figure 6: Stirrup attachment beyond coverage reference

In the rebar family editor you can create angle parameters to have more control over the bending of rebar. Figure 7 shows a shared parameter called “Rebar Bend Angle” that has been assigned to work planes in the family editor.

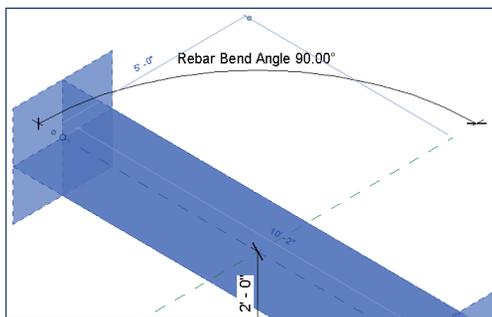


Figure 7: Rebar Family angle parameter

Users can now assign a layout rule before they actually click to place rebar. In the past the rebar needed to be placed then a layout rule could be assigned. Figure 8 shows the rebar set portion of rebar properties before placement.

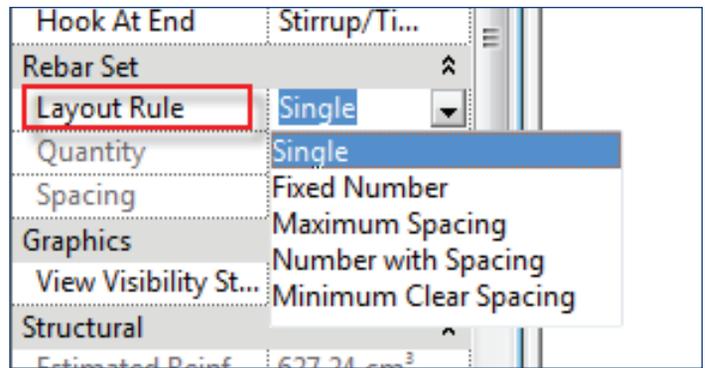


Figure 8: Rebar layout rule

ANALYTICAL MODEL ENHANCEMENTS

A new tab, Analytical Model Categories, has been added to visibility graphics. Some of these controls such as boundary conditions, structural internal loads, structural load case, and structural loads were located in the Model tab in Revit Structure 2010.

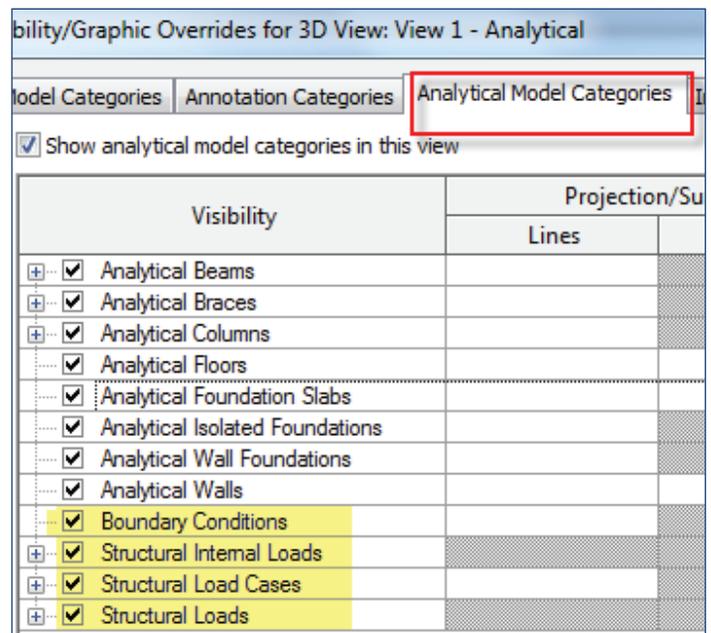


Figure 9: Analytical model visibility control

There is a new tool in the view control toolbar that allows you to temporarily hide or display the analytical model.

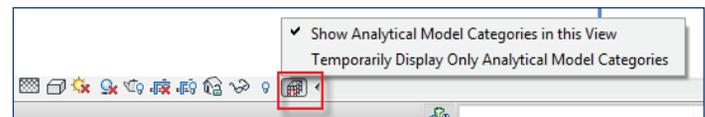


Figure 10: View display toolbar

Analytical Parameters have been broken out separately from the element properties. You can toggle back and forth regardless of whether you have the analytical portion or physical portion of the structural element selected. Figure 11 shows the properties type selector drop-down after a floor has been selected in the model.

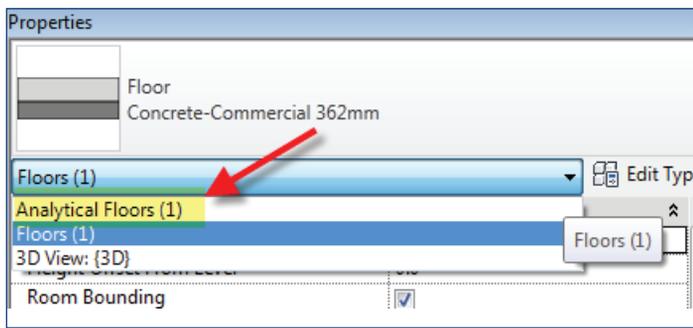


Figure 11: Floor type selector

Structural walls and floors have been given an analytical surface display. These properties can be adjusted using the Object Styles dialog.

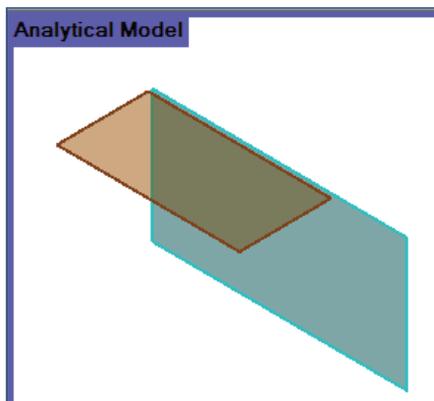


Figure 12: Floor and wall analytical display

A new parameter has been added to all elements that have analytical properties. This parameter is called Enable Analytical Model. When this is turned off, the element is removed from the analytical model. This is a property of the element. If the Analytical model is selected, the property is accessible in the analytical model's contextual tab.

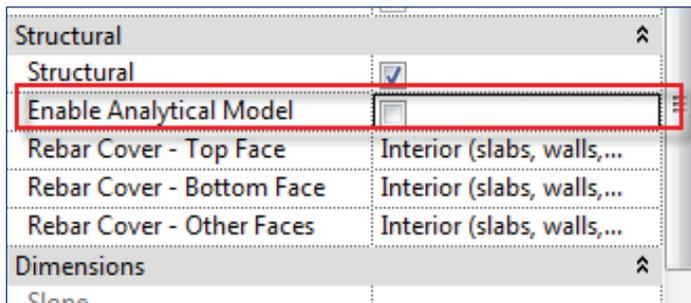


Figure 13: Enable Analytical Model parameter

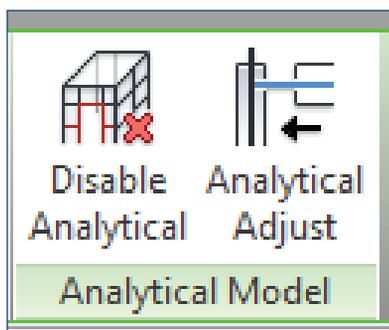


Figure 14: Analytical model's contextual tab

Improvement made to the analytical model display is the ability to differentiate between the start and end of linear segments. This toggle can be found in the structural settings dialog.

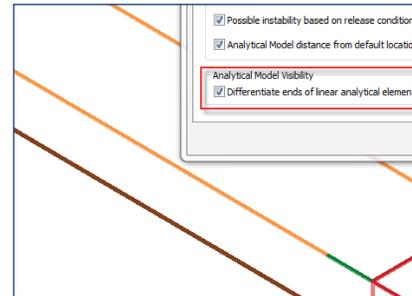


Figure 15: Analytical linear display

Beams, braces, and columns can now be adjusted separately at each end. Nodes will be activated when the Analytical Adjust tool is selected from the Analytical Model Tools panel.

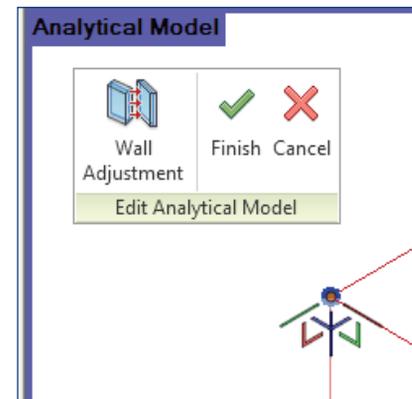


Figure 16: Activated nodes

Walls continue to be adjusted in the same way as they were in Revit Structure 2010. Access to the wall adjustment tool is located in the floating Analytical Edit mode panel. This can be seen in Figure 16.

The Horizontal project parameters of floors have been relocated. They are now a property of the floor instead of a property of the floor sketch line.

SUMMARY

New features in Revit Structure 2012 have filled in the necessary holes for rebar functionality and analytical model control and visibility.



Philip Russo began with AutoCAD version 2.5 in 1986. Through the years he has held positions in the CAD industry as CAD Draftsmen, CAD Manager, Sr. Applications Engineer, and Autodesk Certified Instructor. Lately Phil's focus has been on the implementation of standard practices for the Autodesk Revit product line including Revit Architecture, Revit Structure and Revit MEP. He currently holds the position as BIM Manager at Lindemann Bentzon Bojack, an architectural and engineering firm located in Clermont, Florida. He can be reached at philr@lbbe.com



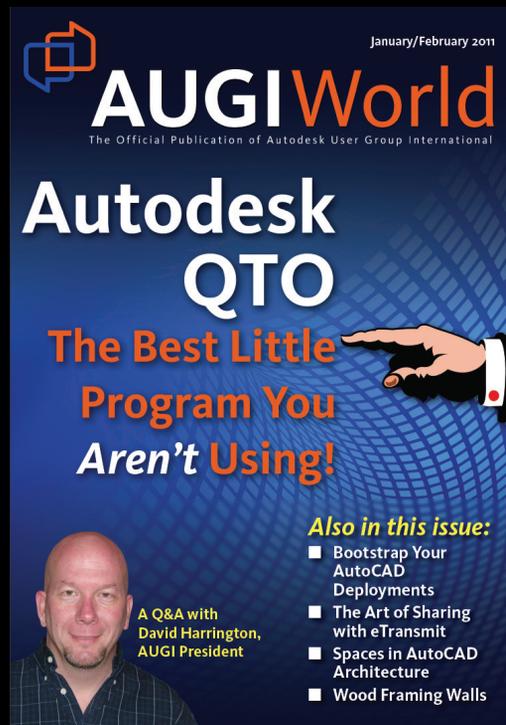
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AUGI HotNews

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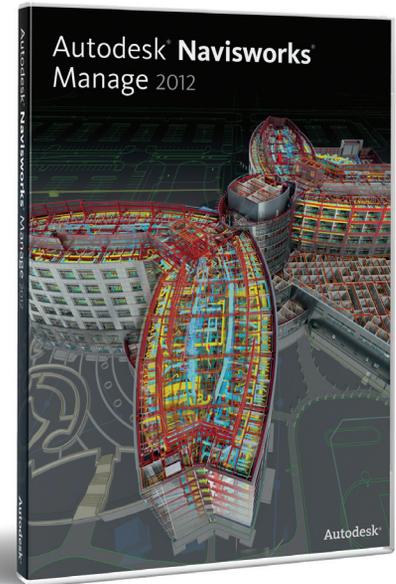


AUGIWorld Magazine

is a monthly magazine designed to help readers improve their use of Autodesk products and learn new techniques. Every issue is packed with product tips & tricks and other technical fare, management issues, and education trends. Distribution is worldwide.

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Navisworks 2012 – What's New



This article describes some of the new features available in Autodesk® Navisworks® 2012. The Navisworks team hopes you find this article interesting, but more importantly we hope you will find the new functionality useful!

For those who aren't familiar with Navisworks, it is project review software used by designers, engineers, construction planners, and contractors as a means of integrating the models, data, and knowledge they contribute to AEC projects. The project team can then explore the various interactions between disciplines, schedules, and logistics.

The new features broadly fall under three categories.

Interoperability: Tools to integrate multiple design applications, allowing your project teams to aggregate the output of multiple disciplines into a single project model.

Analysis: Functionality to help optimize your designs and simulate project processes to gain insight into potential problems before and during construction.

Communication: Tools to allow the project team to collaborate, share ideas, iterate the design, and communicate construction intent.

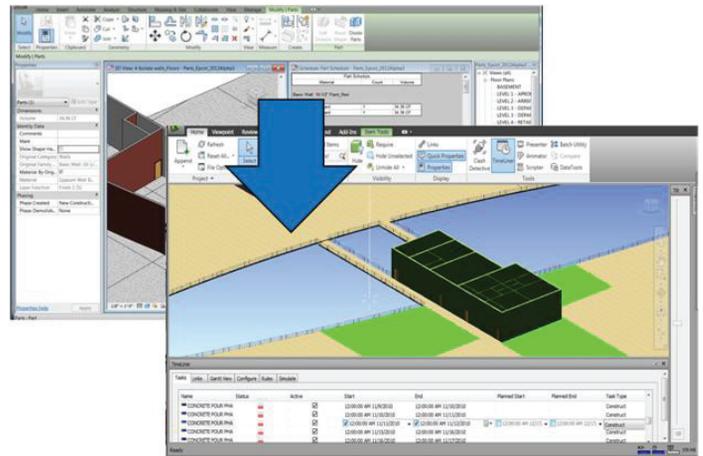
INTEROPERABILITY - REVIT

Navisworks continues to offer support for a broad range of file formats and 3D design applications from Autodesk, non-Autodesk, and neutral vendors. A particular focus for the 2012 release has been in improving interoperability with the Autodesk® Revit® family of products.

Revit Switchback allows you to quickly transition from your Navisworks environment to your Revit model whilst maintaining the visual context. When you are undertaking real-time navigation of your project in Navisworks or reviewing clash results, you can select an object and select Switchback to focus and zoom to

the chosen object in Revit. This offers a quick mechanism to transition from your visualization and analysis activity in Navisworks back to Revit so you can edit your model to quickly resolve issues and improve your design.

Revit 2012 sees the introduction of construction modelling tools. These allow contractors and construction managers to subdivide the models they receive from their design team into the components and assemblies that accurately describe the construction parts. When exporting your model from Revit to Navisworks, you can choose to transfer the construction components or the original model geometry. You can then associate your components with the 4D scheduling tools in TimeLiner to simulate your construction sequencing.



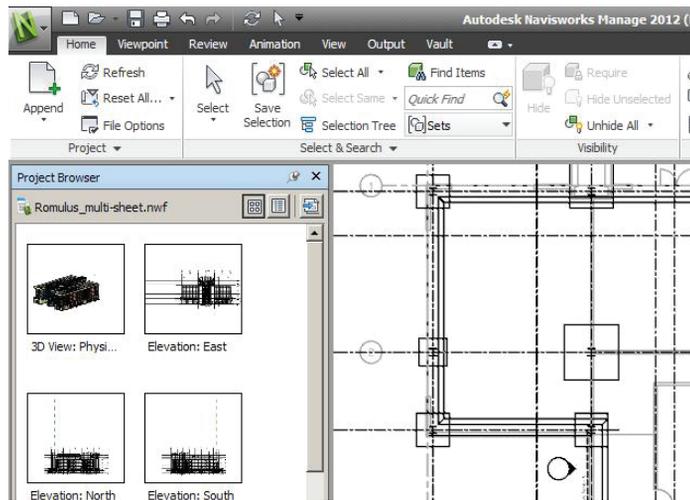
Additional Revit interoperability features include:

- Inclusion of linked files when exporting your Revit model to Navisworks.
- Support for Revit split regions.
- Area, volume, and point property support.

INTEROPERABILITY - 2D

Navisworks 2012 now offers multi-sheet DWF support for 2D sheets and 3D models, enabling you to open, review, and explore your 2D datasets alongside your 3D models. 2D still accounts

for a large percentage of project data, and the introduction of 2D support reflects the Navisworks team's intent to provide a single project review tool that provides you with multiple representations of project data. 2D DWF sheets also maintain the object intelligence; therefore, you can review these in Navisworks as you would a model, accessing object property information, taking measurements, or adding review markup, for example.



A new project browser enables you to access and manage the sheets and models in your multi-sheet file. You can also create your own multi-sheet file by appending sheets and models from various design contributors, which may represent different disciplines. You can view thumbnails of the sheets and models, review their properties, and add or remove sheets and models.

Importantly, objects in your 2D sheets maintain their association with objects in the 3D environment. For instance, this could allow you to select a model component in the 3D world and then find and review the same component in a 2D representation (such as a floor plan or section). This enables you to choose the most appropriate view of the data for the task you are undertaking. If you are working with 2D DWF sheets and 3D NWC models from Revit, the project browser enables you to combine the datasets into a single file and still maintain the association between your 2D and 3D elements.

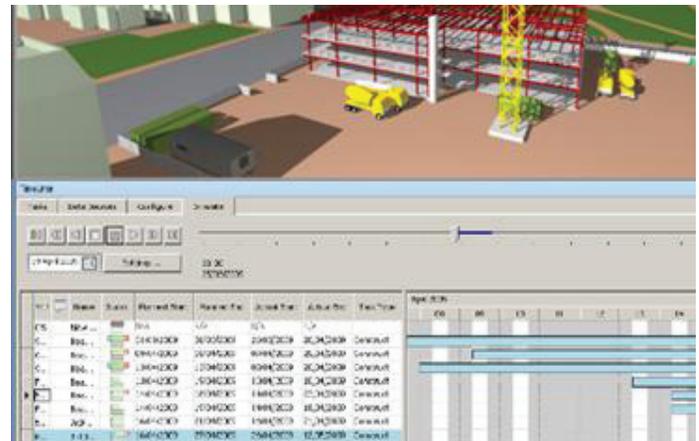
INTEROPERABILITY - VAULT

Navisworks now offers integration with the Autodesk® Vault family of products. Vault is a data management tool for managing the huge volumes of information generated on your projects. Vault 2012 includes a range of features designed specifically to meet the needs of AEC project teams.

A new tab is available on the Navisworks ribbon that enables you to Login, Open/Append, Retrieve/Save, and Check In/Check Out your Navisworks files into the Vault.

ANALYSIS - TIMELINER

The Navisworks team has continued to build scheduling capabilities into TimeLiner for the 2012 release. The Gantt chart is now editable and fully integrated with the Tasks tab, enabling



direct manipulation of project milestones and task durations. The Gantt chart has also been integrated with the Simulate display, so your active tasks are automatically displayed as your run your 4D simulation. A new interface should make the creation, editing, and communication of your construction schedules more effective.

Navisworks 2012 also introduces a comprehensive TimeLiner API, allowing those with sufficient development skills to extend and tailor the out-of-the-box 4D toolset to meet specific project and business requirements or more tightly integrate the 4D schedule with other project management systems.

ANALYSIS - CLASH DETECTIVE

The Clash Detective tool sees a number of new features to better support locating and managing clashes. Some of the enhancements include:

- The option of assigning ownership of clashes to project participants to assist with clash resolution workflows. Enter the name of the owner plus any additional notes to one or multiple clashes. Both the notes and the "assigned to" data are added to the comments associated with the clash result. Reassigning the clash will add an additional comment, providing an audit trail within the Navisworks file.

Autodesk Navisworks Clash Report

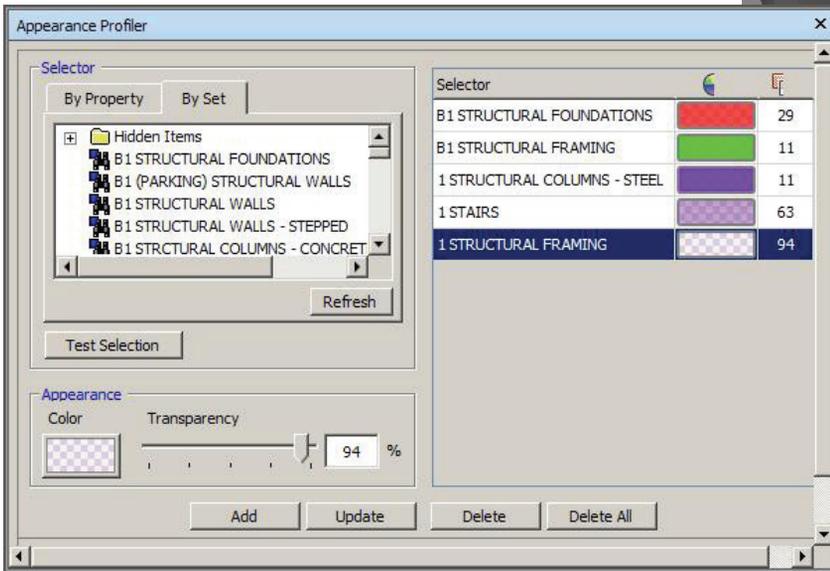
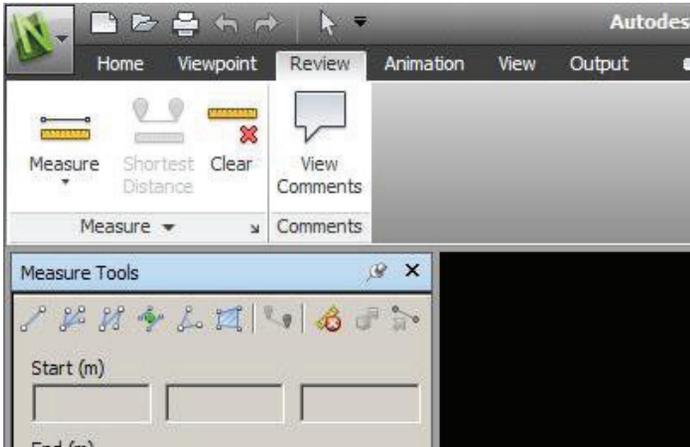
MEP v MEP Tolerance Clashes: New/Active/Reviewed/Approved/Resolved/Type Status
0.05m 304 0 304 0 0 0 Hard OK

Image	Clash Name	Status	Distance	Description	Date Found	Clash Point	Item 1		Item 2					
							Item ID	Layer	Item Name	Item Type	Item ID	Layer	Item Name	Item Type
	Clash1	Active	-0.49	Hard	2011/3/4 12:18.33	x=66.44, y=25.04, z=65.97	Element ID: 1555504	<No level>	Mitered Elbows / Taps	Solid	<No level>	BUILDINGELEMENTPROXY	Solid	
	Clash2	Active	-0.35	Hard	2011/3/4 12:18.33	x=57.97, y=22.55, z=71.42		<No level>	G2144	Solid	Element ID: 897824	<No level>	Mitered Elbows / Taps	Solid
	Clash3	Active	-0.32	Hard	2011/3/4 12:18.33	x=66.00, y=23.85, z=65.73	Element ID: 766690	SECOND FLOOR	Standard	Composite Part	<No level>	BUILDINGELEMENTPROXY (6)	Solid	
	Clash4	Active	-0.32	Hard	2011/3/4 12:18.33	x=65.88, y=24.68, z=65.97	Element ID: 607723	<No level>	Radius Elbows / 90 Taps	Solid	<No level>	BUILDINGELEMENTPROXY (6)	Solid	

- A new formatted HTML report for direct use within Microsoft Excel.
- Wireframe view to help visualize clashes.
- "Clash focus" option to reset the view of a clash.
- Updates to the batch report indicating the status of clashes within your batch tests.

COMMUNICATION – FREEDOM

Freedom is a free viewer that project participants can use to participate in Navisworks workflows using NWD and DWF files. Freedom offers a comprehensive set of project review capabilities such as real-time visualization of massive datasets, access to object properties, viewpoints, redlines, comments, and animations. The Navisworks team continues to transition functionality from the paid-for products (Navisworks Manage and Simulate) into Freedom. There are three key additions for 2012.



- The full set of measurement tools: point-to-point; areas; angles; shortest distance. Providing the measurement tools in the free viewer helps support field access to dimensioning and area calculations.
- Opening of 2D DWF and multi-sheet DWF files.
- TimeLiner in Freedom now includes access to the Gantt control and users have visibility of the Gantt chart while playing TimeLiner simulations. Users also have access to the simulation settings to control the display the 4D playback, including selection of dates to simulate and overlay text.

COMMUNICATION – APPEARANCE PROFILER

The Appearance Profiler allows you to color-code various aspects of your Navisworks model for the purpose of identifying specific objects or differentiating system types on a model-wide basis. Color-coding is done via custom appearance profiles based on Search Sets, Selection Sets, and Property values. Once the model's appearance meets your standards, you can save the profile to be applied to other projects. Using this tool and standardizing on appearance definitions makes it quick and easy to visually identify trades, disciplines, services, and more.



COMMUNICATION – AVATARS

The final area to highlight is the introduction of a family of avatars to meet any of your virtual persona needs! Office workers, hard-hatted foremen, site workers, high-vis workers, firemen... they are all there.

We hope you enjoy upgrading to Navisworks 2012 and benefit from using it. Many thanks to the AUGI team for inviting us to introduce the latest version of Navisworks to you!



Richard Parker works in the Autodesk Construction Business Line as Navisworks Product Manager. He works out of the Sheffield, UK office with his fellow Navisworkers. In a prior life he was an architect, and before joining Autodesk three years ago he worked for a UK-based software house delivering solutions to the AEC industry.

The New Features in Autodesk Inventor 2012



Last year Autodesk poured major feature enhancements into its products in all industries. This year the company has taken a hard look at technology innovations from Autodesk® Inventor® Fusion, as well as feature

requests from users, and have added numerous tools to help designers and engineers be more productive.

The result is a collection of numerous workflow improvements that resolve much of the “Why can’t we just do that here” headaches.

Inventor Suite

- User interface
- Sketches
- Part
- Plastic Part Design
- Sustainability
- Inventor Fusion integration
- iLogic
- Drawing view creation
- Drawing annotations
- Interoperability

Inventor Professional

- Mold tooling
- Dynamic simulation
- Stress analysis
- Frame analysis

Other Enhancements

Autodesk Inventor® 2012 features a “right away” splash screen that appears roughly 3x faster. Additionally, initial testing of Inventor 2012 on the Windows 7 operating system indicates start-up speeds that are as much as 2x faster than Inventor 2011, but depend greatly upon workstation hardware.

USER INTERFACE

Marking Menu

The Marking Menu enhances the right-click context menus in Inventor. This new marking menu functionality was taken from Autodesk Inventor Fusion, and similarly functions in two modes. Right-clicking the view area evokes the Menu Mode, displays an enhanced form of a radial menu that surrounds the cursor, and contains the most common functions associated with the current operation. Cancelling the menu is handled by clicking in the center of the menu, which does not disturb the current operation like the escape key might.

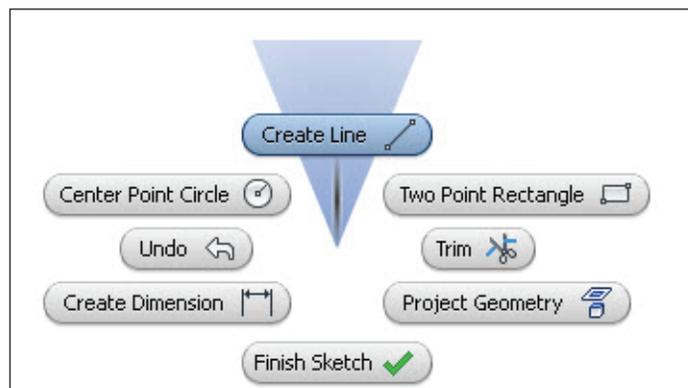


Figure 1: Marking Menu in 'Menu Mode'

Mark Mode (Gesturing) permits right-click and drag functionality to any blank location on the Graphics View Area. As you drag the cursor, a trail appears to visually depict the path that has been dragged.

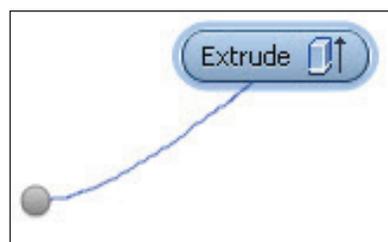


Figure 2: Mark Mode

Inventor detects the start-stop angle of the dragged cursor, and starts the function from the Marking Menu that would have been executed with a simple right-click operation.

Enhanced Mini-Toolbars

The Mini-Toolbars introduced in 2011 have been enhanced to be easier to interpret and include greater functionality. These mini-toolbars are available in the following commands: Extrude, Revolve, Chamfer, Fillet, Hole, and Face Draft commands.

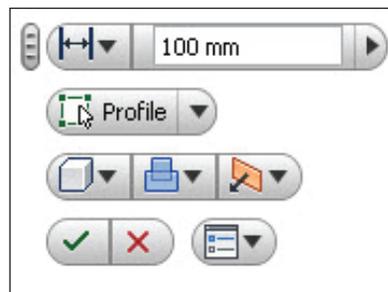


Figure 3: New 'Extrude' Mini-toolbar

Two new toolbar options are available.

- Pin (and move) mini-toolbar position – The grip button at the upper left permits the menu to be dragged and pinned stationary.

- Auto Fade – The mini-toolbar fades to a transparent state as the cursor is moved away.

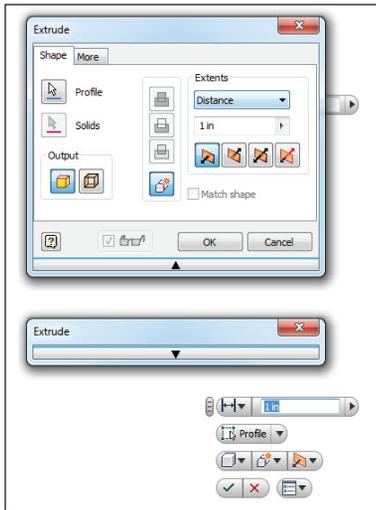


Figure 4: Collapsing dialogs

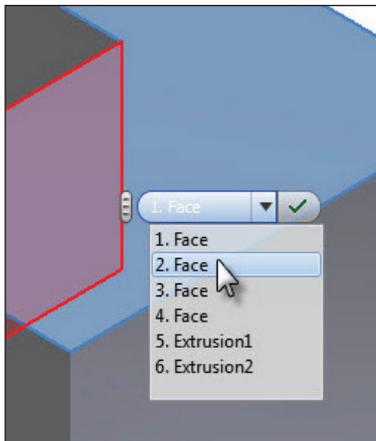


Figure 5: Select-Other mini-toolbar

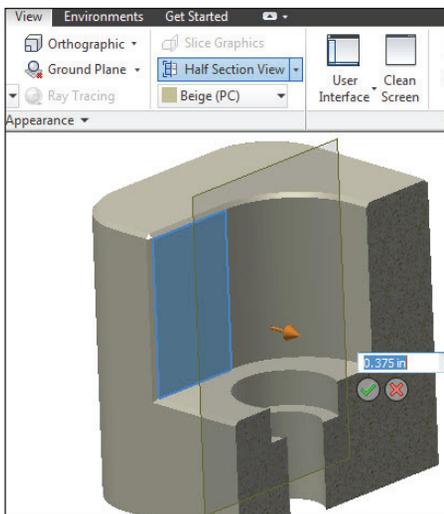


Figure 6: Dynamic section view

Collapsing Dialog Boxes

Dialog boxes collapse (and expand) to increase workspace and to encourage use of the mini-toolbar.

Select Other Mini-toolbar

The select-other selection menu was redesigned with the benefit of Inventor Fusion technology as well. This provides a drop-down list that displays each of the related features that are being hovered over. This permits a more accurate selection of the feature, face, edge, or part you are seeking.

Dynamic Sectioning

Section views can now be viewed in both Assembly and Part files. The section views can be dragged from a reference face or plane dynamically, or by spinning the mouse wheel, as well as direct input.

- Extended Feature Names – This 2011 Subscription Advantage Pack feature is included in Inventor 2012. The functionality allows feature parameter information to be appended to the Feature Name displayed in the model browser.

- Ray Tracing View Display – Ray Tracing is now available in visual styles as an option when the Realistic option is selected.

SKETCHES

- 2D Sketch Default View – When new sketches are created or a sketch is edited, the viewpoint will automatically orientate to be normal with that face by default.

PARTS

- G2 Boundary Patch – Command now available in the Part modeling and Repair environments.
- G2 Variable Radius Fillets – G2 support has been added to Variable Radius Fillets.
- Sweep Along Edge – Geometry edges can now be used for Sweep paths.
- Mirror Fillets – Fillets can now be mirrored.

Model Repair Tools

Imported model data can be inspected in the Model Repair Environment. Once completed, the model will continue to be reliable throughout subsequent modeling operations.

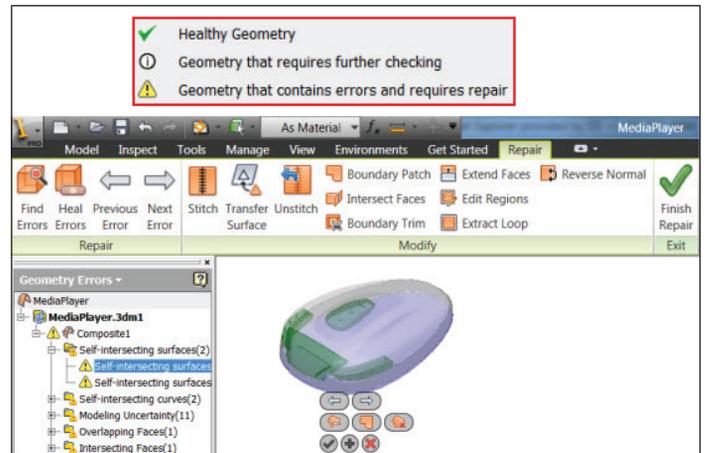


Figure 7: Model repair environment

Face Draft Enhancements

Enhanced controls give you faster draft creation with additional features in a single operation. These include using a line from a sketch as a parting line, separate angles, automatic face chaining, automatic blending, and Direct Manipulation.

Display Failed Feature

Highlights problem feature in the graphics window from the model browser.

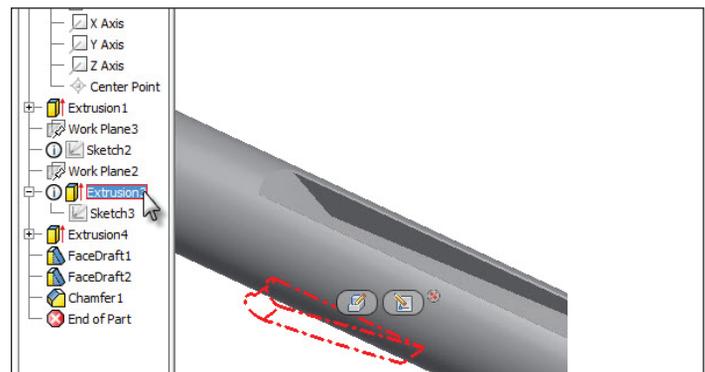


Figure 8: Failed feature display

Project to 3D Sketch

While in a 2D sketch, an awesome new command has been added that projects 2D sketch geometry onto a part's face(s). The faces can be planar or circular, and the projected geometry will be created in a new associative 3D sketch.

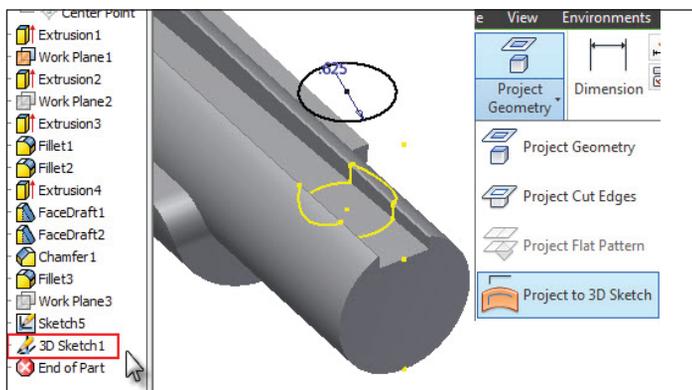


Figure 9: Projected 3D sketch

Rib Enhancements

A better organized and enhanced dialog box adds more capability to a single operation that includes Boss and Draft options, as well as a realistic preview, and better automation.

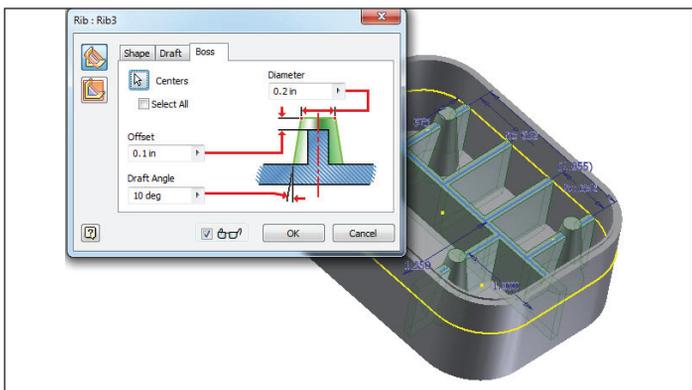


Figure 10: Rib enhancements

Design View Representations

Part files store pertinent Design View Representation information such as:

- Part color
- Work feature visibility
- Camera position
- Section view

PLASTIC PART DESIGN

I really enjoy Inventor's Plastic Part workflow. General enhancements as well as dependable updates and a touch of automation make this corner of Inventor quite enjoyable.

Boss command enhancements

New controls permit Boss geometry to be created in one operation. This would have taken numerous steps in previous releases of Inventor.

- The Angle to Fill field controls the position of ribs on the boss feature, and the Boss is no longer required to equally apply ribs about a full 360°.
- A Boss feature is placed at a point centered on the mating face of the head and the thread. The placement location may be changed by entering a value in the Offset From Sketch field.

SUSTAINABILITY

Material Selector

Within the Add-In command on the Environments tab of the part and assembly environments, a new command has been added that connects you to the GRANTA MI materials informational system, and permits retrieval of materials property data.

INVENTOR FUSION INTEGRATION

Edit Alias Freeform Body via Fusion

A new Edit Form panel and Edit Form commands have been added to Inventor. After starting the Edit Form command, an Alias free-form body is created from the selected model. Inventor Fusion will start and the free-form body is opened in Fusion.

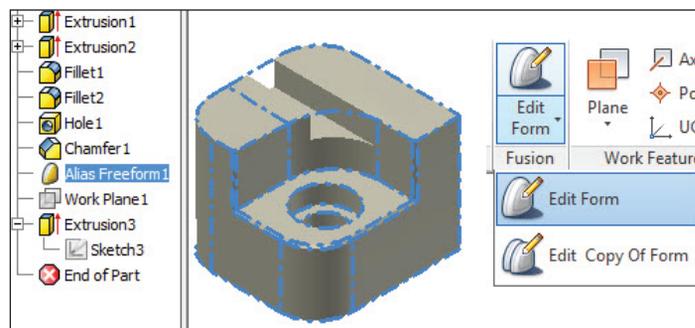


Figure 11: Fusion edit form

Once the edits are completed in Fusion, the model is returned to Inventor and populates the Model Browser as an Alias Freeform object when a parametric part is edited. If a solid body is edited via Fusion, no additional feature is added to the browser.

ILOGIC

The Copy iLogic Design Wizard provides a manner in which to copy an Inventor iLogic template. You can embed design copies as subassemblies in larger designs, as well as a unique and complete product definition. Features include:

- Copy Inventor and non-Inventor files.
- Selects linked documents automatically.
- Copy files to a new or existing project destination.
- Rename file copies by defining a naming prefix, suffix, or both, that can be applied globally to the copy set.
- Set Part Number to be same in original and copied document's iProperties.
- Remove iLogic rules from wizard's copied Inventor documents.
- Use documents even when they do not involve iLogic rules.

Inventor

Custom User Interface Forms

This is one of my favorite inclusions. iLogic desperately needed a simple method for the user to drive its component configurations. Inventor now has a drag-and-drop dialog creation tool to develop custom iLogic Forms without the need for any programming knowledge. Add Parameters, Rules, and iProperties as desired, and configure the organization and appearance with customizable tools, such as tabbed groups and images that drag and drop.

Forms can be defined and stored for use within an Inventor document or for use across multiple documents.

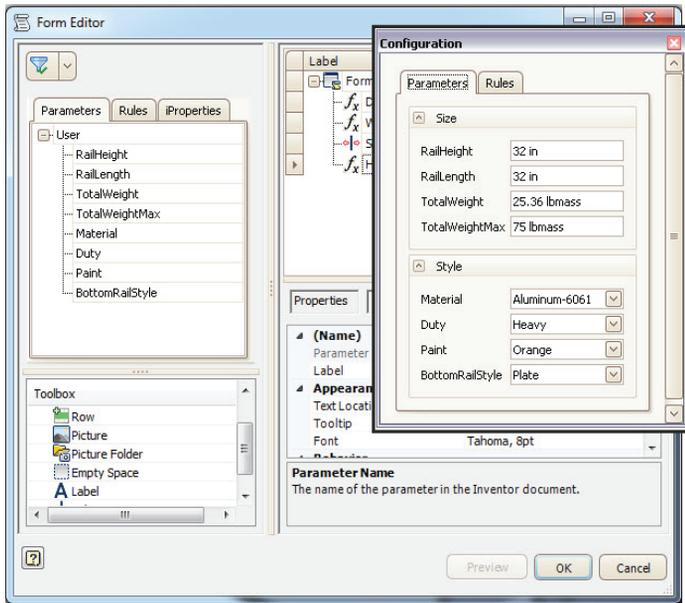


Figure 12: iLogic Form wizard

DRAWING VIEWS

- Change View Orientation – Alter the orientation of existing drawing views using the Change View Orientation tool in the Drawing View dialog. Child views inherit the new orientation.
- Rotate Drawing Views with Sketches – The Rotate View command is available for drawing views that include sketches that are constrained to projected model geometry.

High Speed Drawing Views

Drawing Views can be created and reviewed before the related precise calculations are completed. Inventor's multi-core technology support provides up to around 10x faster drawing view generations on the Windows 7 operating system in certain hardware configurations.

A raster view is displayed while the calculations are completed in the background for each view.



Raster Views are identified by a green glyph in the View area, and a tooltip will display the calculation progress when the cursor is hovered over the view area. The Raster View functionality is optional and controlled through Application Settings.

DRAWING ANNOTATIONS

Origin Mark for Ordinate Dimension Sets

The style of the Origin Mark in ordinate dimension sets can be overridden by double clicking the grip adjacent to the origin mark. All marks set to 'By Style' will take on the configuration of the dimension style settings.

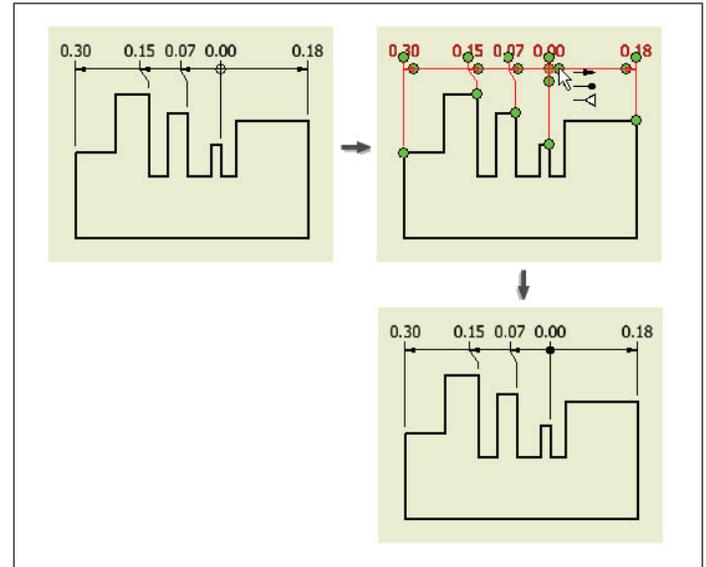


Figure 13: Origin mark override

INTEROPERABILITY

AutoCAD Import

New options improve AutoCAD interoperability.

- Import DWG function bypasses Option Settings.
- Option to import AutoCAD surfaces and wires is available in import wizard.
- AutoCAD Materials import properly along with the components.

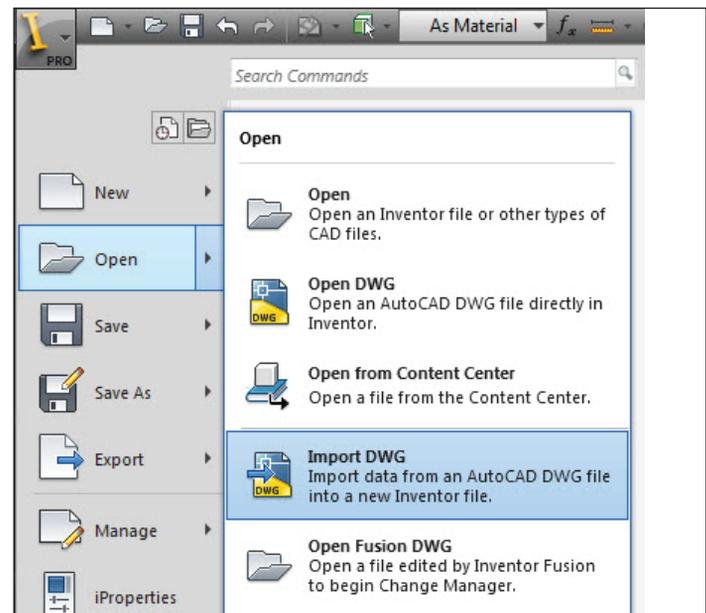


Figure 14: Import DWG

Updated Translators

- Import Catia import R6-R20
- Export Catia export R10-R19
- Import Parasolid import up to V23.0
- Export Parasolid export v9.0 – 23.0
- NX Import v3-v7.5

Rhino File Translation

Rhino *.3dm files can now be imported and modified through Inventor. No associativity is implemented.

BIM Exchange Improvements

The AEC Exchange command has been renamed “BIM Exchange” and offers significant improvements including:

- iPart and iAssembly table access included
- Connector Access and workflow improvements

Export Building Component workflow has been substantially improved as follows:

- Options to include/exclude model properties.
- Model Orientation via View Cube (nice!)
- View Cube Origin can be redefined via the Triad and selected model vertex or work point.
- Orientation options associated to isometric thumbnails, with optional view settings for shadows and other related high-quality features.

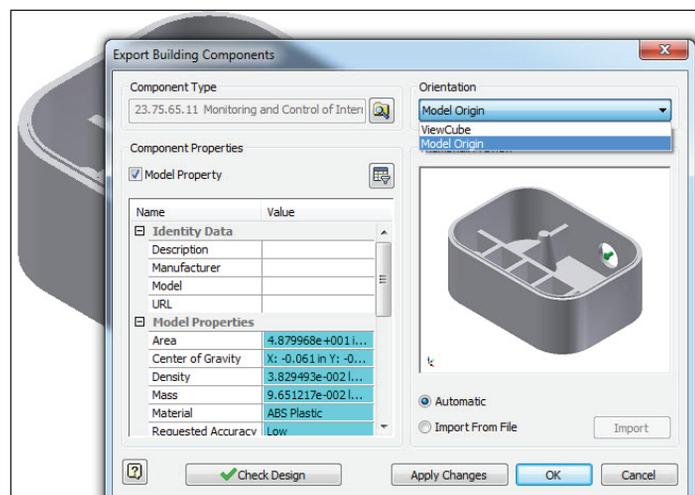


Figure 15: Export building components

BIM Connector improvements

- Parameters use Inventor unit formatting and can be included in the parameters table.
- A fly-out panel is included for numeric parameters, providing access to Measure, Show Dimension, List parameters, and Most Recently Used options.
- Parameters identified for export in the model parameter table are included in the export building component process.
- Inventor size parameters are associated with the Revit Length type.
- Connector parameters are included in the Design Check with invalid icon and red highlighting.

- Design Check is run automatically when using Export Building Components.
- Suppressed connector nodes and text display their suppressed state.
- Exported connector parameters are accessible in the iPart Author and can be used as keys in the iPart or iAssembly.
- Promote Component Connectors enables exposing the sub-component connectors in the parent assembly. Connector links are not promoted, but can be added. Promote Component Connectors is accessible from the connector folder browser node context menu. Individual connectors can be excluded by unselecting “Include in the context menu.” These are included in the Design Check.
- Locate the source component of a promoted connector via the context menu. The source component is selected and highlighted.

OmniClass Table

This table provides an improved method to locate the Revit class for BIM Content.

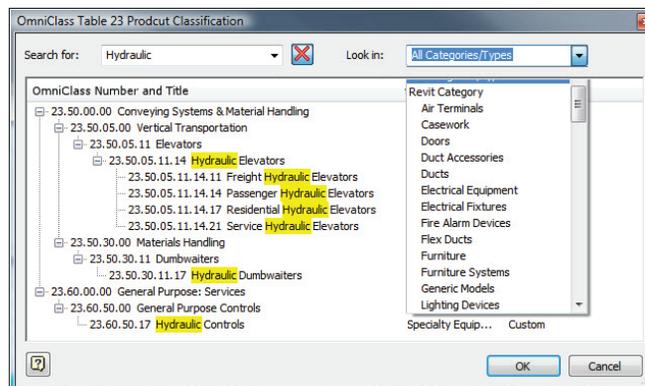


Figure 16: OmniClass table

- Revit / AME MvPart types are synchronized.
- ‘Look in’ option is available to refine category filtering.
- Table context menu options control column display.
- No classification option available.

MOLD TOOLING

General enhancements

- Moldflow GPU support.
- The ability to place the locating ring before you place the sprue bushing.
- Expanded LKM moldbase library content.
- Adjust Orientation command preview graphic.
- Stop automatic surface patch or runoff surface operation at any time during creation.
- Edit coordinate system is added to the Ejector dialog box to redefine the origin and XY orientation.
- Error messages are expanded and enhanced in many areas.
- You can specify the vendor and category for library components such as ejectors and sliders before you query the content.

Inventor

- The Combine Cores and Cavities dialog now contains an enable/disable preview option.
- Inventor Mold Metric desktop content library installation is reduced. Complete content available online.

Feature enhancements

- Cooling Channel Metric Threads – Metric thread can be specified in cooling channels.
- Ordinate dimensions can be specified from the mold or part coordinate system.
- Gate, Cold Well, and Cooling Channel commands now retain last input Value.
- Gate Location can be specified via X,Y,Z coordinates.
- Patching and Runoff Surface Color can now be controlled and persist after the core/cavity is created.
- Multiple Locating Rings placed in single operation via concentric reference.

Select faces to create an insert automatically

Use the 'By Shape' method to select all faces required to automatically create an insert.

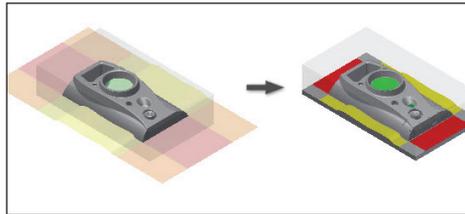


Figure 17: Runoff color

Collaborate through Moldflow Communicator

Export Moldflow analysis results to Moldflow Communicator file. Team members can visualize and compare results through the free Moldflow Communicator viewer.

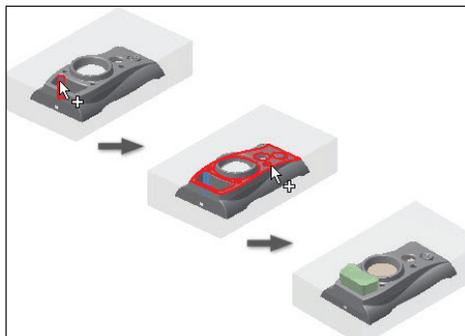


Figure 18: Insert via face selection

Export 3D Model to Moldflow Insight

You can export a 3D mold base to Moldflow Insight for cooling analysis. The mold block is exported by default, and hose definitions, inserts, cooling system, and components can be specified. The process removes unnecessary hole features from the core/cavity solid.

Runner Balancing

Use the Runner Balance command to perform a runner balance analysis on a multi-cavity or family mold design if Moldflow Adviser is installed.

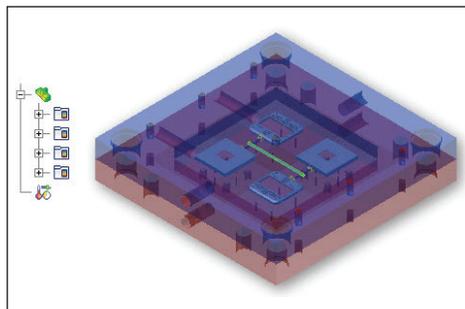


Figure 19: Runner balancing

Once the analysis is completed, the results can be applied to balance the flow into each cavity.

Mold Base Author

The Mold Base Author command identifies assembly members as mold base components, and specifies mold base structure and alignment options. This is available in the Assembly Manage tab and Mold Design Mold Assembly tab.

User Mold Base Command

Allows assemblies to be placed as a mold base.

Edit Moldable Part Command

Activates moldable part file and isolates the component in the view, and permits hole patching and runoff surface creation.

Transition easily from Part to Mold

Create Mold Design added to Tools tab Begin panel provides smooth transition between part modeling and mold design.

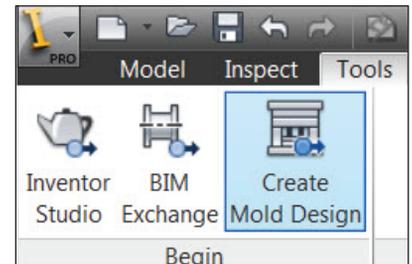


Figure 20: Create Mold Design tool

Place Plastic Part

Three alignment choices are available for the command

- Align with Part Centroid (default)
- Align with Part CSYS (coordinate system)
- Align with Work Reference

Define Workpiece Setting Enhancement

The 'By References' option was added to the Define Workpiece Setting dialog. This allows you to define a workpiece based on selected elements of the plastic part or based on multiple selected elements of the plastic part.

Cooling Channel Check

Analyze channel offset clearances. Errors can be highlighted in Graphics View Area.

Surface Patch and Runoff Surface Enhancement

Any combination of 2D/3D sketch geometry and silhouette curves can be used to create surface patches.

DYNAMIC SIMULATION

Marking Menus

These are now used throughout Inventor including the Simulation environments.

Retain Joints

For those who like to use Automatic Assembly Constraint to Joint conversion, this will

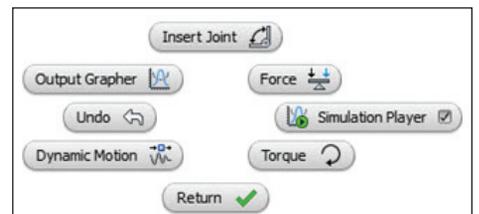


Figure 21: Simulation marking menu

be a welcome addition. When joints are built automatically from assembly constraints, you can retain them in the model when the translator is turned off. Additionally, standard joints and those built from constraints can be customized without repeating the entire process.

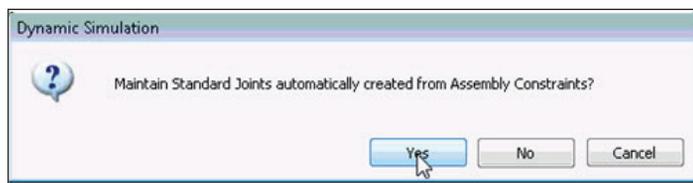


Figure 22: Retained automatic joints

STRESS ANALYSIS

Enhancements in the geometry healing and meshing operations for Stress Analysis continue to be applied for better product design behavior.

More improvements have been added to the Stress Analysis Guide to benefit professionals with low and intermediate skills.

FRAME ANALYSIS

- Stress results were unified in Frame Analysis and Stress Analysis results, which is now consistent with those of Stress Analysis.
- Beam Properties are customizable with more mechanical properties including Reduced Shear Stress and Reduced Shear Area.

Beam Model Improvements

Two options were added to the Beam Model tab of the Frame Analysis Settings dialog box.

- Create Rigid Links – increases the flexibility to adjust the beam model during automatic conversion. When the option is turned off, rigid links are not automatically created during model conversion, but can be added manually.
- Trim Mitered Beam Ends – trims the overlaps during automatic model conversion. This simplifies and improves the accuracy of the conversion results.

Continuous Load Improvements

Enhancements have been applied to help define the start and end magnitudes of the continuous load. Placement options now include relative and absolute offset definitions. Custom size option permits the entry of beam load offset and length.

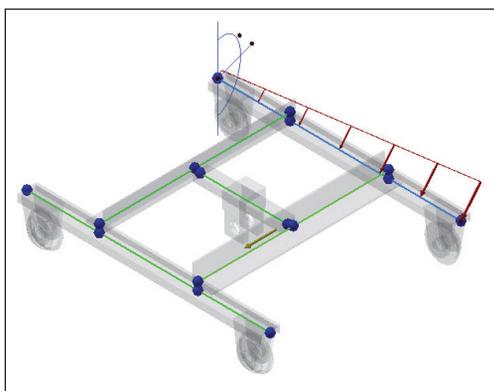


Figure 23: Improved frame loads

Frame Analysis Probes

New Probe and Probe Labels commands expand the toolset for viewing simulation results.

- Create probes for selected simulation results.
- Control the visibility of probe label in the graphics window.

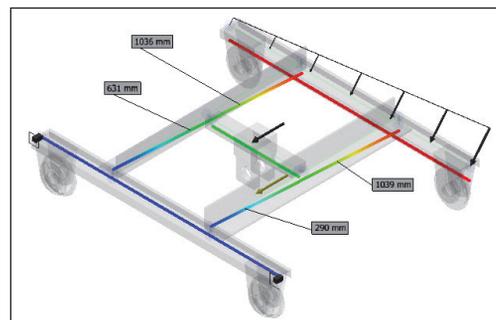


Figure 24: Frame analysis probes

More than one probe can be created while any simulation result is active, and these respond according to whichever result is being viewed

OTHER ENHANCEMENTS

Custom Ribbon Settings stored in a Single XML, which enables sharing and simpler restoration of UI customizations.

Inventor Help

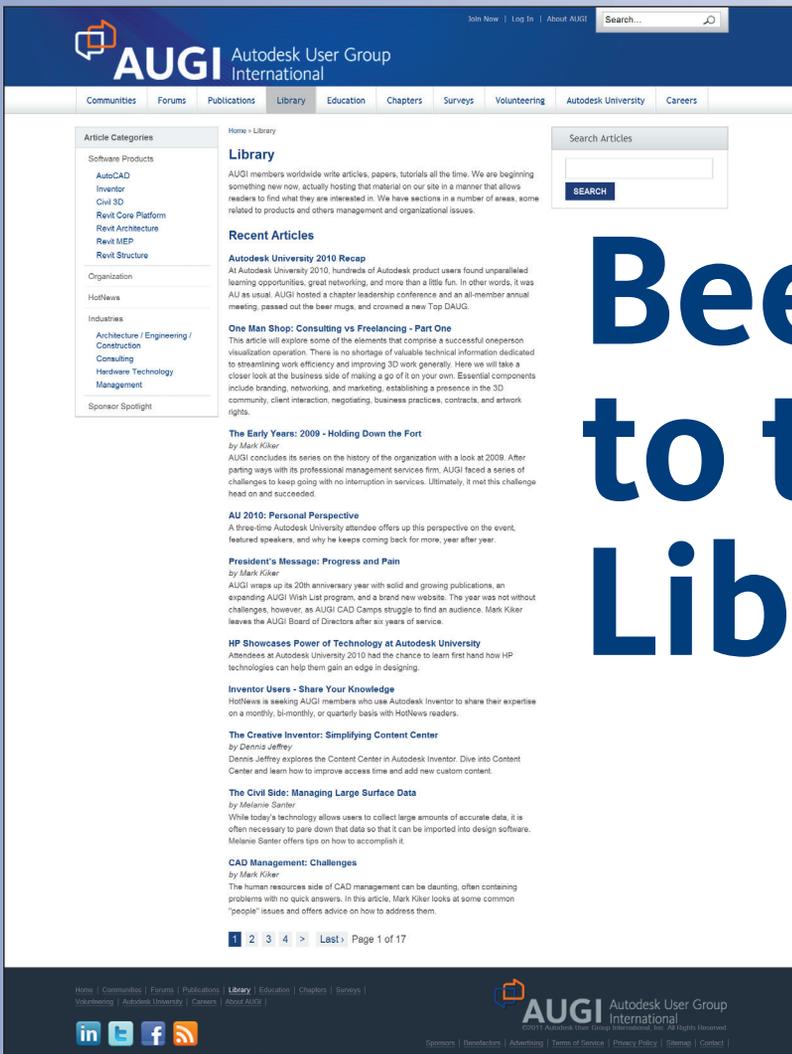
The Autodesk Inventor Wiki help is the default help system for online use. A basic help and tutorial subset is installed along with Inventor for offline situations. The remainder of the help system can be downloaded if desired.

Inventor Essential videos are installed, which include basic demonstrations of the following.

- User Interface
- View Navigation
- Part Creation
- Sketching
- Assembly Creation
- Drawing Creation



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If you've visited www.AUGI.com recently, then you've seen a highly visible improvement in AUGI's member interface. But one of the most exciting features is still flying under the radar and that is the Library. The Library is the home for articles and whitepapers that the membership contribute to the organization. There is a tremendous amount of material generated by members and until now that content 'shelf life' was pretty short. Since magazines come out monthly, an article's time in the spotlight is brief.

Been to the Library?

Well, no longer! As issues of *AUGIWorld*, *AUGI | AEC EDGE* are replaced by new ones, the staff at AUGI will be posting article content on the website in HTML. The magazine PDFs will stay, of course. Consider the AUGI Library a new area to read some great content. Finding articles from past issues is a breeze, because searching and categorization can now be applied to these articles. In addition, the Library is the real home for *AUGI HotNews*, an email-based monthly publication.



your CUI to work better with your PGP today? Tomorrow someone else will begin that exercise as well and you could save them some time with your insight. So, get out there and join the fun – contribute to your magazines and your fellow members. Share your knowledge and expertise with beginners and advanced users alike. People are ready to hear what you have to say. For more details contact david.harrington@augi.com

AUGI, through the contributions of members, produces monthly magazines such as *AUGIWorld*. Well the articles in these magazines don't grow on trees! The content comes from members willing to contribute. If you are an AUGI member, you probably use an Autodesk product. Do you know your product pretty well? Have you ever sat down with someone else to explain how Paper Space works, or how to explode polylines, or customize the CUI? These messages you share casually with others are the same messages that others outside of your area need to hear. Just imagine... even though you have been using AutoCAD since R9, today, somewhere in the world, someone started using AutoCAD for the first time. And that expert level change you made to

Are you ready to write?