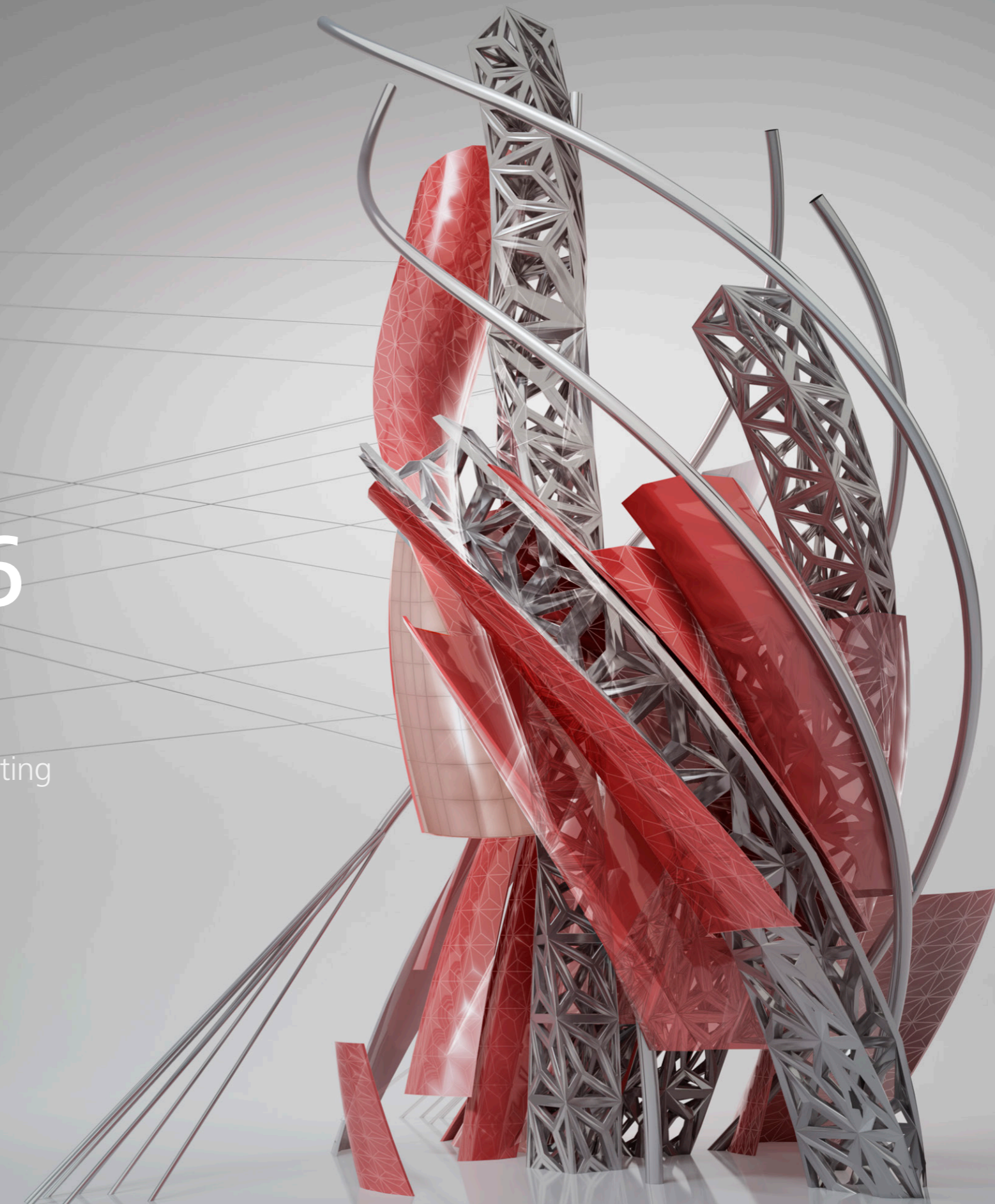


# 5 Key Reasons to Choose AutoCAD® 2016 for Construction

By Robert Green, Owner, Robert Green Consulting



# 5 Key Reasons to Choose AutoCAD 2016 for Construction

- 1 AutoCAD 2016 integrates with Navisworks® & BIM 360™ Glue®.
- 2 AutoCAD 2016 supports high productivity work methods.
- 3 TrustedDWG™ compliance, most current version and stability.
- 4 Broad import/export/underlay options.
- 5 AutoCAD 2016 pays for itself.

As a consultant I work with a lot of construction firms that want to understand what CAD tool will best integrate with BIM methodologies that are becoming more common in their projects yet give them the best return on their software investment.

When speaking with senior staff members at these companies I'm often asked a question like this: "Should we spend the money on AutoCAD 2016 for our CAD users or stick with an older version or one of these free or low cost competitor programs we see touted on the Internet?"

My answer has been and continues to be an emphatic, "Go with AutoCAD!" My reasoning is that AutoCAD makes better sense technically, organizationally, and financially than the competitor alternatives—yes, even the free ones. Since I'm frequently challenged on how AutoCAD can be better than something that's low cost or even "free" I've developed a list of reasons why I recommend AutoCAD—and specifically AutoCAD 2016—to my construction clients (along with some diagnostic questions) I can rattle off quickly.

Here are my top five.

# 1. AutoCAD 2016 integrates with Navisworks & BIM 360 Glue.

So how can CAD and BIM geometry be bridged in construction environments to maximize project productivity? By having the latest Autodesk products that let your team work together across software platforms throughout the duration of the project's life cycle!

AutoCAD 2016's new Coordination Model functionality allows AutoCAD users to attach Navisworks and BIM 360 Glue models and work with them directly—in the familiar AutoCAD environment—to avoid clashes and conflicts that would otherwise be detected later in the design process. And since Navisworks and BIM 360 Glue can work with so many different types of model data AutoCAD can now do so as well. The Coordination Model feature set provides real benefits to construction users:

- BIM data can be readily utilized by AutoCAD 2016 users
- Diverse data sets can be managed by AutoCAD 2016 users
- Conflict avoidance can be leveraged by AutoCAD 2016 users

And with AutoCAD 2016's Autodesk Application Manager, you will now see a notification for Coordination Model Osnap support—much like an XREF notification. This allows you to snap to objects in the BIM 360 Glue or Navisworks model, from the previous day as opposed to weeks or months old. Coordination Model Osnap support gives your team the ability to easily work with the latest geometry to reduce the possibility of conflicts.

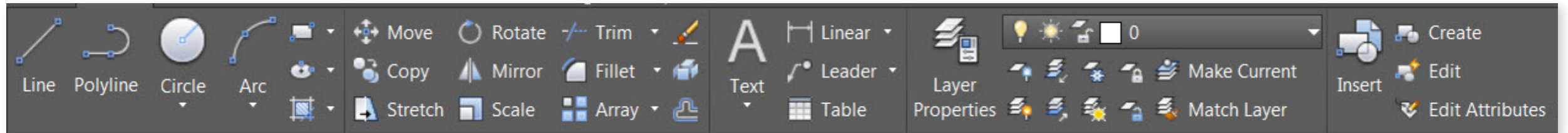
If you use something other than AutoCAD 2016 in your BIM/CAD construction environment you'll be missing out on these key productivity features that extend BIM benefits to CAD users.



## DIAGNOSTIC QUESTIONS:

How much time do you spend dealing with coordination issues such as interferences that are inadvertently introduced due to CAD users not working with BIM data? How much time could you save if all your CAD users could work in a coordinated work environment with BIM and other model data directly in their CAD tool? How much will you have to spend using a non-AutoCAD tool to coordinate CAD data with your models?

## 2. AutoCAD 2016 supports high productivity work methods.



Over the years AutoCAD has devised many highly productive new features. Some of the productivity enhancing work processes supported by AutoCAD 2016 include:

**Advanced Visualization** – Anti-aliasing, graphics processor unit (GPU) optimization and image based lighting environments make viewing experiences crisper, faster and easier from 2D line work to 3D visual styles to rendering capture.

**Coordination Model Support** – Allows AutoCAD users to use BIM/3D information from BIM 360 Glue and Navisworks.

**Enhanced PDF File Generation** – Creating multiple PDF files for construction document sets is faster and the file sizes more compact than ever. All text in the pdf is now searchable. Drawing and web hyperlinks in the DWG™ file stay intact in the PDF.

**Sheet Set Manager (SSM)** – Typically docked to the left of the screen, the SSM allows a selection of drawings/sheets to be organized just like a multi discipline design package is in an engineering office. The SSM isn't widely used but those companies that do use it find their construction users love it because it feels just like working with a set of construction documents (CD's).

**Snappable/Viewable Point Clouds** – Working with field scanned data is made much easier with color visualization and selectable features which make point clouds seem much like native AutoCAD geometry. AutoCAD 2016 now also has the ability to extract 2D drawings from the 3D point clouds.

**Tool palettes** – Floating on the desktop wherever the user likes, these palettes allow multiple pieces of content like blocks, tables, etc., to be visually represented in an easy-to-use drag and drop visual interface.

**Revision Clouds and Smart Dimensioning** – Revision clouds are much easier to work with in AutoCAD 2016 and the ability to see dimensional previews by simply hovering over graphical objects takes the guesswork out of annotating geometry.



### DIAGNOSTIC QUESTIONS:

What would it cost to create equivalent workaround methods in another program? How much would it cost to deploy those solutions? How much productivity would you leave on the table by ignoring these features?

### 3. TrustedDWG compliance, most current version and stability.

If you've ever tried to import a file from another program only to experience a crash, you know how much time and effort it can take to resolve the problem. Since time is money, it becomes obvious how much money could be lost dealing with file interoperability issues from low cost/free programs like these:

- Not being able to read the latest DWG format.
- Not being able to import/export other industry standard formats.
- Not being able to open files with complex entities (like BIM 360 Glue geometry or Navisworks...) authored by other Autodesk software.

Since AutoCAD is produced by Autodesk, it creates files with TrustedDWG technology to ensure compatibility with the newest versions of other Autodesk DWG based tools as well as cloud based utilities and construction solutions.



#### DIAGNOSTIC QUESTIONS:

It is highly unlikely that Autodesk will go out of business and stop supporting AutoCAD's TrustedDWG format next year - can you say that about a low cost/free program?

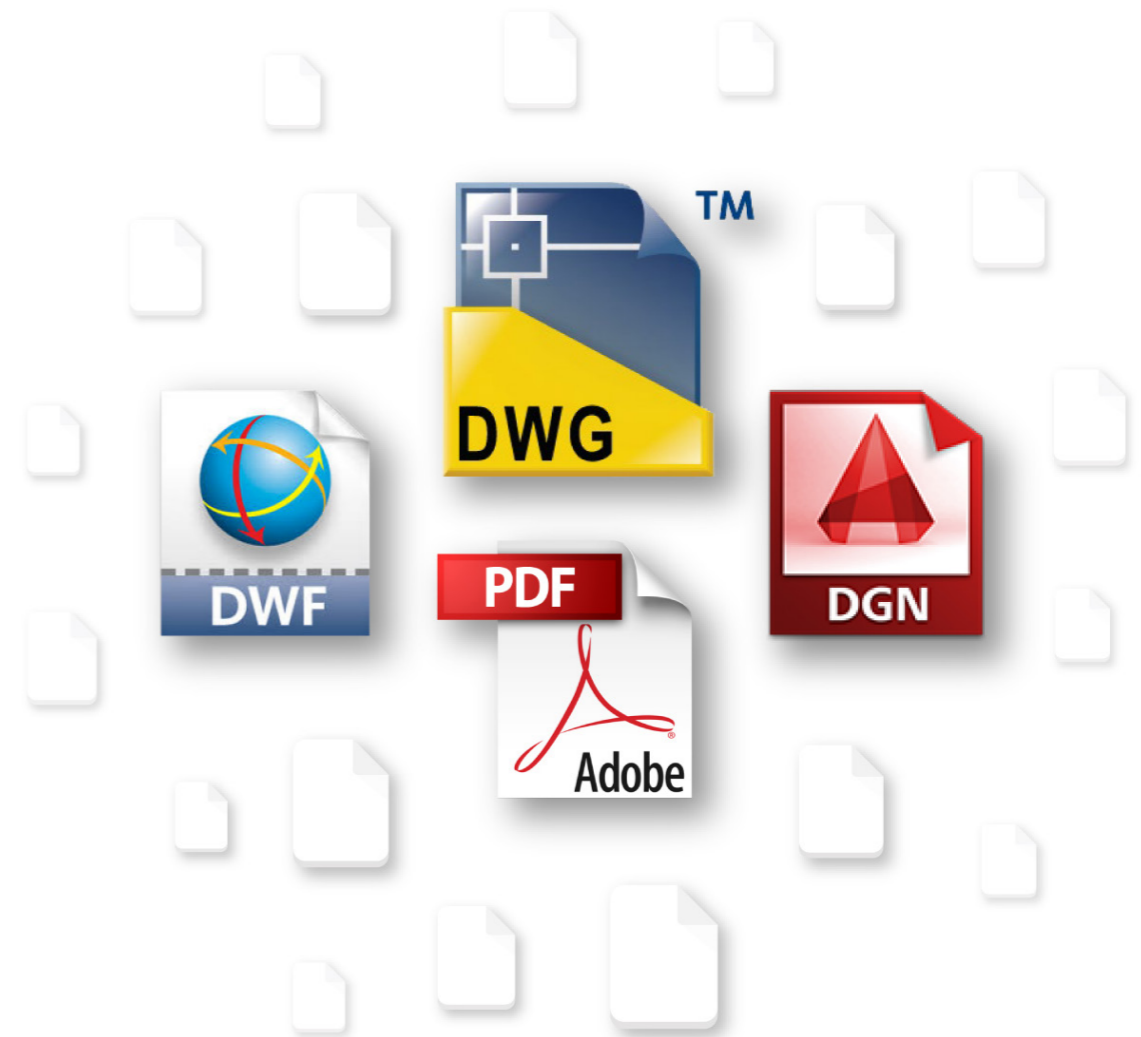


## 4. Broad import/export/underlay options.

More and more CAD users aren't just producing standalone drawing files; they are importing, underlaying or exporting other data formats as part of a diverse digital design environment. For example, you can underlay and snap to 2D geometry stored in DWF, DWFX, DGN, and PDF files. You can think of an underlay like an attached image from another CAD program you can draw over, object snap to or visually clip with a viewport.

With AutoCAD these tasks are no problem since the program has been specifically designed and tested to work with a variety of files from a variety of popular software vendors—including other Autodesk tools. These types of specific file import, export and underlay operations can either be absent or poorly executed in low cost or free products based on my past evaluations.

AutoCAD 2016 has also added support for attaching coordination models to a drawing. You can use these models for virtual coordination of various trades from pre-construction through construction. The ability to attach Navisworks files to your AutoCAD drawings allows you to reference data from a variety of software sources as you create, view, and edit AutoCAD drawings within the context of the model. This workflow enables project teams to manage coordination before the clash occurs, true 'clash avoidance'. This new integration between the Navisworks 2016 update and AutoCAD enables project collaboration that simply isn't otherwise available.



### DIAGNOSTIC QUESTIONS:

What would the absence of these options mean in your typical project workflows? How much time might you spend finding the right drivers and conversion utilities to deal with these types of shortcomings in another program? Are you willing to live with limited abilities just so you can skip upgrading?

## 5. AutoCAD 2016 pays for itself.

Using a little back of the envelope accounting we can do a rough calculation to demonstrate that AutoCAD can actually cost less than the free programs you may have seen. To do the math, we'll use the following hypothetical numbers:

Annual cost of AutoCAD maintenance per user: **\$545**  
(Autodesk's suggested retail price based on perpetual license)

Full labor cost of AutoCAD user: **\$40/hr**

Now consider the following time estimates for dealing with alternative work methods you may have to use with any other program. *Note: For each task a number of hours per user per year is included in parentheses:*

- Manual procedures for PDF and CD set compiling (24 hours)
- Workaround procedures to import/export from/to other software (4 hours)
- Workaround procedures for BIM integration (12 hours)
- Rework due to interferences not found in CAD (12 hours)
- CAD administrator time to resolve above issues (4 hours)

Total cost = 56 hrs/user/year \* \$40/hr = **\$2240 per user per year**

ROI = ( \$2240/\$545 ) \* 100% = **411%**

My own experience has lead me to believe that the 56 hours per year (less than 5 hours per month) per user outlined above is a very conservative estimate of the time a construction firm spends dealing with BIM integration, interference resolution, and CD package preparation. Your average numbers may vary but the methodology remains the same.



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### DIAGNOSTIC QUESTIONS:

How much cost savings are you willing to give up because a \$545 subscription is too expensive?



## Summary

I've seen lots of construction companies try to use programs other than AutoCAD in years past and the outcomes have always been the same: Glitches, disappointments, implementation problems and eventual lack of support. I've talked with management teams who've regretted not upgrading their software to "save money" only to discover the missed opportunities of using the advanced features that AutoCAD has to offer.

There's an old adage that says "you get what you pay for" but in the case of AutoCAD 2016 you may actually get more by streamlining your workflows using powerful new features. Before your company makes a decision on what program to use for your casual 2D CAD users at least go through the diagnostic questions in this piece and tally up how much you'll spend to support a low cost or even free product. You may find that using AutoCAD 2016 helps save you money.

### About Robert Green

Since 1991, Robert Green has provided CAD management consulting, programming, training, and technical writing services for clients throughout the United States, Canada, and Europe. A mechanical engineer by training, Robert has used many popular CAD tools in a variety of engineering environments since 1985. Robert has acquired his expertise in CAD management via real-world experience as the "alpha CAD user" everywhere he has worked. Over time he has come to enjoy the technological and training challenges associated with CAD management, and he now trains CAD managers via public speaking. Robert is well known for his insightful articles in Cadalyst magazine and for his book, Expert CAD Management: The Complete Guide (published by Sybex). When he's not writing, Robert heads his own consulting practice, Robert Green Consulting, based in Atlanta, Georgia.

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