

BES502686

Making The Move: From AutoCAD to Revit

Andrea Gonzalez

MicroCAD training & Consulting

Learning Objectives

- Discover the differences Between Revit and AutoCAD.
- Discover why make the switch learn about the benefits
- Learn basic requirements for starting with Revit.
- Learn how to make the switch and get tips.

Description

The pandemic has faced us with unknown situations that have prompted us to change the ways we do many things, including our jobs. The architecture, engineering, and construction (AEC) industry has found it necessary to adjust its methodologies to meet the global productivity demands and adapt to the new standard of remote work and decentralized digitization of data. AutoCAD software has been known for many years in the industry, but we've seen new methodologies taking center stage in the market. In this session, we'll talk about Revit software and building information modeling (BIM). Revit is a tool for BIM. Revit enables us to use the most efficient construction practices by letting us create a more structured initial planning that's closer to reality. Revit enables collaboration among many people even without being on site, which improves execution time. An intelligent 3D model-based process creates less room for mistakes and less rework, and this translates into higher productivity that relieves financial pressures, helping us to make more profits. What could be better?

Speaker



Andrea Gonzalez is a Mechanical Engineer that is currently working with MicroCAD Training & Consulting as an AEC specialist. Her role consists of training students in Revit as a certified instructor, working on modeling and coordination projects along with Revit new users, as well as providing support to clients with their Autodesk software on the Helpdesk as well as hosting webinars.

Working in the industry for 8 years, she is an experienced system designer focused on plumbing working with Revit and AutoCAD for drafting, modeling, project setups, MEP templates, and document management in BIM 360. She is also well-versed in project coordination with Navis for residential and commercial buildings in the MEP industry, such as offices and educational buildings, multifamily housing, and hotels in the USA and LATAM. Through her knowledge of these two technologies, she has personally experienced many processes of change and all the ins and outs involved with them.

As a person passionate about software, she is not only limited to the MEP industry. She has previous experience with the manufacturing industry, which is trying to take up and she recently acquired her Fusion 360 Autodesk certification as well. She is always excited about new things to study, learn, and teach about her discoveries and share the knowledge she has gained with her experiences.



About MicroCAD Training & Consulting



MicroCAD is committed to assisting individuals in creating things. We offer the greatest equipment to our customers, including large format printers, 3D printers, laser scanners, software, training, and educate them on new and existing features, best practices, and a variety of use cases across industries. MicroCAD understands its users' varied needs and ensures their success within the industry while providing personalized, effective, and insightful support to customer inquiries via multiple channels.

A team of industry specialists from the AEC, manufacturing, and business sectors formed MicroCAD. We have been operating for more than 30 years, expanding, and improving continuously. We collaborate with our partners and are pleased to be an authorized training center and Gold Partner with Autodesk and HP, and a Leica Partner as well.

Find out more at: www.microcad3d.com



Intro

AutoCAD and Revit are the two excellent Autodesk programs that aim to ease the day-to-day tasks of AEC industry professionals. It's well known that AutoCAD has been steadily developing and adapting to market needs and industry evolution for at least 30 years and it is still the preferred reference software for CAD design, but we have seen how the use of Revit has grown little by little and its positioning in the market has become stronger.

Change is always part of evolution and opens up the possibility to explore different ways of doing things. This change can sometimes be associated with a feeling of uncertainty and fear because we don't know the answers to a big number of questions that may come up in the process.

Are AutoCAD and Revit the same? What will be the cost-benefit balance? How should the transition be done without affecting overall productivity? Is Revit and BIM Technology right for your organization? What about concerns of your team and clients that are still CAD users? Why do I want to move? What's the gain? Why am I moving? It is the right time?

The confidence comes from opening our minds first and then trying to ease our concerns and doubts about the new journey we are about to start which is the intent of this session.

Discover the differences Between Revit and AutoCAD.

Even though both are powerful Autodesk design tools and can be used within the same project, if used correctly, are very effective at what they do individually. There is an undeniable fact which is AutoCAD and Revit differ quite a bit.

It is important to define a couple of concepts. There might be some confusion in definitions, and it is important to clarify for understanding. All these concepts will be discussed here.

BIM and CAD are technologies, Revit and AutoCAD are tools for those technologies. Revit is a tool for BIM and AutoCAD is a tool for CAD.

Starting with the differences, it can be said that one of the most important things to know is AutoCAD has been used and was created for general public need while Revit was intended, thought, written, and released based on the needs of the AEC industry.

AutoCAD allows you to get 2D and 3D representations and follows the traditional workflow that all construction documents are created independently (floor plan views, elevations, details, sections, 3D views) which means, if a change needs to be done it would be required to do it linearly and manually one by one on every single related view. Given that, we can define it more as a drafting tool.

Revit also delivers 2D and 3D drawings. So, why one or the other? Here is the "Crown Jewel", elements in Revit are parametric, intelligent and multidirectional. What is the meaning of that? In BIM, all the information comes from a 3D model. Simultaneously, multiple viewpoints are automatically generated, showing the information and changes in real time across all associated views.

As a small Exercise there are two attached videos (Making a pipe change with AutoCAD and Making a pipe change with Revit) where you can notice the same change for a pipe routing with

AutoCAD and Revit and the definitions of Multidirectional, intelligent and Parametric are self-explanatory

In 48 seconds with AutoCAD, it was possible to do a change in the floor plan and then on the isometric, when performing the same operation with Revit, it took 23 seconds, and it also included the instantaneous update for an enlarged view and a section. So, 4 operations vs 2 on the same time and in the 50% of the time.

Having mentioned the parametric and intelligence we can jump to the next remarkable difference. While AutoCAD uses blocks with attributes, Revit includes a library with families that meet the parametric and intelligent features. In a nutshell, this means that elements not only appear as they do in real life, but they behave as they would in real life with all their variables (connectors, sizes, colors, references, manufacturers, capacities). Information that allows users not only to have an exact idea of what is going to be seen at the time of project execution, but also to generate a large amount of data analysis (dimensioning, counting, connection diameters, flow, electrical information etc.) that will be shown on schedules and will be updated automatically if there's any change.

It is important to note that given the accuracy of the families, Revit is much less flexible than AutoCAD. It doesn't offer the same free form drawing and freedom because within AutoCAD we are handling lines. Lines and elements can fit in an AutoCAD drawing but that doesn't ensure that what you are intending to do with the drawing will work in construction.

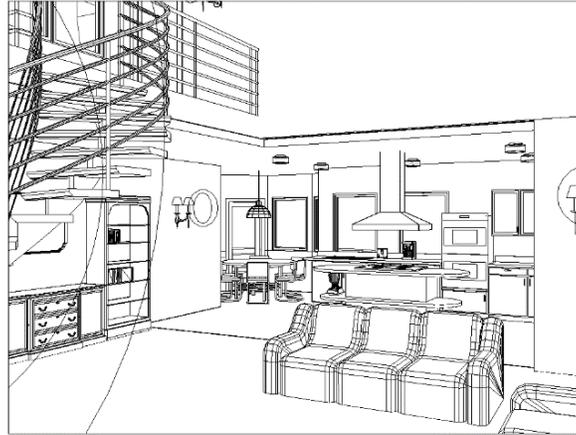
Another feature that makes the difference and gives Revit an additional benefit is the fact that it allows multiple users to work on the same file simultaneously, while periodically synchronizing all edits to a live central file. The project can be on the same server or even in a different country while users work on a single central model. On-site or in-person meetings are no longer required. Teams on opposite sides of the country can make decisions based on the model.

In AutoCAD shared views can be created for visualization and doing markups, but it still doesn't allow two people working on a file at the same time.

Using the same premise of teams that are not in the same physical location or even do not work in the same company, Revit has another additional point in terms of its ability to detect collisions. This can be done by inserting models from other disciplines and the possibility of coordinating in real time and allowing it to be exported to more specialized tools such as Navisworks. Whereas in AutoCAD it must be done manually and involves an ongoing back and forth between all trades.

One of the most tedious and long exercises is the rendering for the aesthetic visualization of the environments and of course it can be done in both AutoCAD and Revit, but if any of you have done it in AutoCAD you know that it can take a long time and must be done one by one on selected views. This is a major reason why renders in AutoCAD are more time consuming and expensive.

With Revit it is easier, and you can get whatever view of whatever location you want to see by creating walkthroughs into the model and even export them to third party application as Enscape to get better and faster results. See below a 3D image with the default Revit setting, then a realistic view, then a Revit render and at the end a marvelous upgrade using Enscape (Images taken from a model by Sandra Wohlgemuth. MicroCAD Training and Consulting ®)



Revit hidden line



Revit Realistic



Revit Render



Revit + Enscape (See video for the walkthrough)

In closing this small chapter, it worth to mention two things: The interface and the learning curve. In my personal and professional experience, Revit has a much more friendly interface added to the fact you have all platforms in one (Architectural, structural, mechanical, electrical and plumbing) and it is overall easier to learn, especially for 3D. With Revit you can provide the basic parameters and let the 3D magic happen! If you already have learned AutoCAD moving to Revit will be a piece of cake!

See a small summary below.

	AUTOCAD	REVIT
PURPOSE	General Public need	AEC Industry need
WORKFLOW	Linear	Multi-directional
DESIGN TOOLS	2D based / 3D option Professional drafting and documentation tools	Intelligent 3D model based Parametric Families
MAKING CHANGES	Manual	Instantaneous
ANALYSIS DATA	Basic calculations	Counting, Energy efficiency, sizing, Flow
FLEXIBILITY	Flexible	Rigid
COLLABORATION	One user per file	Multiple users simultaneously
CLASH DETECTION	Linear coordination between trades	Real-time coordination
3D VISUALIZATION ^{*2}	3D selected views created are separate from the 2D documentation with rendering	All the scenarios you can imagine and walkthroughs with rendering
INTERFACE	Complex	More friendly – All in one
LEARNING CURVE	Average	Steep

It is important to notice that we are doing a comparison between the regular AutoCAD and Revit.

If we talk about AutoCAD specialized tools (AutoCAD MEP and AutoCAD Architecture) they are amazing upgrades that are very close to BIM and Revit behavior the process of change will be even easier because. The only thing still doesn't support is collaborative workflow like any BIM software but can work with it.

Discover why make the switch learn about the benefits.

This question can be answered with another question! Why not? We all have been part of important and shocking changes that have changed our way of seeing and living life.

I am sure that most of you have sent letters instead emails, have rented movies at Blockbuster instead of downloading them on a computer, have used a landline phone instead of a smartphone ... and so on!

In fact, as a result of the pandemic, we have found not only different ways to make our industry work, but also a way of believing in it, using these amazing tools that have allowed us to keep up and running during the hard times we all have endured.

We must go with the flow and meet industry needs. The idea is to stay relevant and competitive and sooner or later most of the clients' requests will start demanding Revit/BIM as a minimum prerequisite for many of the jobs your company wishes to pursue.

Based on the advantages that Revit has over AutoCAD, the most remarkable reasons are:

- Enhancement of efficiency and productivity
- Reliable, trustworthy, and a higher level of quality work
- Improved budgeting process and predictability
- Fewer people on site, more online.
- Safety incidents are less likely to occur
- Better visualization and understanding of deliverables
- Changing is easier and less time-consuming
- Fewer mistakes during construction
- Material waste is reduced

Learn basic requirements for starting with Revit.

Probably the first and biggest barrier to overcome is the fear of change and leaving the comfort zone, so a good attitude and willingness to learn is the main requirement. Other considerations include:

Learning and understanding building information modeling (BIM): This doesn't have to be very deep, but by understanding the basic concept you will understand first what level you are at, what are the capabilities of your tool and with that define how you will use it to its maximum capacities according to your needs.

Basic knowledge and understanding of the application in which Revit will be used: If you know your discipline and how it works in the real life, you have already gained A LOT!!! By learning the basics plus the field knowledge, you can just let your imagination run free. Revit will not allow you to model something that is impossible to do, believe me!

If you have previous expertise using AutoCAD or something similar, get rid of comparisons: There are a bunch of things that you can do similar (background colors, work with keyboard shortcuts, ribbon customizations) if you feel comfortable with it. But a very common practice of beginners is using Revit as AutoCAD (which means using lines instead 3d objects) and this is a no-go. As a new user try to keep your mind open to a new concept and a new way of doing your work.

Don't be afraid to create and make mistakes in the process, be consistent: Practice makes perfect, if you think you can do something, try it! First time can take longer but then your lesson will be learned! Form your own opinion of the software by trying it by yourself.

Learn how to make the switch and get tips

Having said all the above, the next big question to answer is when the decision to evolve and take this big step has been made, is how it will go.

The answer is that it will not be easy, and it will not be an overnight process. But once you're on the road, it's going to be a change that's not only possible but will also help you stay up to date within the industry and improve your processes and productivity. For this change to be as successful as possible, it is recommended to:

Open your mind: Imagine what the world would be like if people as important as Albert Einstein, Martin Luther King, Jr or Amelia Earhart and the scores of others who have changed the world, had thought this way.

What is the obstacle? The knowledge? The fees? The tradition? Owners, architects, engineers, clients, drafters, we all could have many different excuses... Don't just look at the black dot on the white background. Turn the change in a chance and consider that everything will only succeed after a period of upheaval.

Think about your team and be empathetic: People impacted by the change need to understand that benefits will come but will not be immediately and will not be achieved without some effort on their part. It doesn't matter who they are working with.

Help your people to realize what will be most valuable for your company and for the market as their BIM skills improve. Break down the argument "We have always done it in this way" by being patient, giving them confidence, support, and time for the learning curve.

Train your team: While it is true that the best way to be successful at something is by training and practicing every day, it must be done on a regular basis and at a right time, you don't want to people to forget what they have learned

Keep in mind that having guidance from a professional is completely necessary as well selecting the correct course. You must have a training plan, start with a basic class where the users can identify the interface and general function of the software and then spend some time selecting the correct approach for going deeper according to each user's specialty and the purpose with which it is intended to be used.

For example, there is no need to show electrical interface to the plumber right away, that could come later when both have their own expertise areas under control.

It is also super important to identify the strengths, skills and capabilities of your team, not all the people are the same or learn the same, your training plan must consider people that may be displaced with virtual training sessions or feel more comfortable using self-guided resources or people that are more hands-on and prefers to have a challenge to face or a goal to achieve even if it is the training process and consider the remaining team members to encourage and lead the rest of the team.

Hire a BIM CAD Manager: The BIM CAD Manager is the person that ensures project control, the one who makes decisions about the BIM processes, manages the models, informs the updates, and transforms the engineer, company, and client necessities and requests in a reality that makes all team jobs easier. They will also find the proper workflow for achieving the project goal.

The BIM CAD manager brings the team together and is also the one who knows more about the ins and outs of the software. They support the team when it is needed, even if you have been working with Revit for a long time and encourage the team to learn even though they are always there to help.

Having and specialized person to help you in the transition will help a lot. Hiring a BIM CAD manager is not the only possibility you have. It is also suitable to engage a service partner that goes along with you in the journey by giving support on your first project or for answering questions when needed.

BIM Technology has a long way to go. The process must be organized, and all the roles shall be defined and performed by the correct person.

So, as Albert Einstein said, "I DON'T NEED TO KNOW EVERYTHING, I JUST NEED TO KNOW WHERE TO FIND IT, WHEN I NEED IT". Revit and BIM technology is bigger and more powerful than we think and more than knowing how to use the software, there should be someone behind the scenes to support non-engineering tasks such as internal settings and behavior of the platform.

Make your Revit work for you: This mainly means one thing: Templates. Revit comes with some basic templates for each discipline by default. It is a must to customize one according to your company's standards and necessities.

First, identify the things that are always necessary on your project, specifically project deliverables (Views, sheets, schedules, 3D views), and then define how do you want to make them look by talking about your office standards (annotation symbols, tags, title blocks, graphics etc.). These last ones are going to be your seal, the way to make the clients know without even reading that those are your plans!

All the above will be the starting point for all new models and by doing that you not only can ensure that everyone is on the same page throughout the project, and you can reduce confusion, mistakes and you can make everything looks uniform and consequent.

This doesn't mean you have to add millions of things to your template. Make smart choices and select the things you really need and be sure the users are using them in a suitable way.

Make the transition gradually: Start thinking on a realistic and reasonable basis, by choosing the correct project and establishing specific, measurable, assignable, relevant, and time-based tasks, the process will be easier, and it will allow the team to develop its conceptual understanding and scale their knowledge process step by step and upwards.

It is also important to know that at the end of the first process, it will not all be perfection and success, the journey will include positive and negative emotions and situations. Some people will have comments like "the other way was better" and other ones will be more surprised and excited about the new process. It's just a matter of time, patience, and understanding as the transition can take time.

Track all activities constantly to avoid fixing mistakes at the end of the project. Take advantage of the things that didn't go well or took more time than expected, record them and establish a plan for improvement. Same for the things that worked quite well and remember to include them in your permanent workflow.

Organize your team and understand the project. There are many questions to be answered before starting. Do you have all the information to get started? Have you defined each one role and is everyone clear about what they must do? Be sure you are covered with your team and their knowledge and if there is something that you don't know how to do. Think of getting an external resource for help and set an internal timeline for you to tackle an issue and solve it internally before your client does it for you.

A tight schedule places unwanted pressure on the project and the team.

Computer equipment up to date: Be aware of startup costs and requirements before you start. It is a fact that the minimum requirements for Revit are different from the AutoCAD requirements. Given the complexity of the software, it requires greater processing power to run in a correct and fast manner. You can contact your rep or visit the Autodesk website to be sure you are meeting at least the basic requirements.

If you are planning to make the move, a budget for changing or updating your hardware equipment must be included and it is a largely significant part of the transition.

The investment in hardware for the software migration can be done gradually, rather than something that must be bought all at once. Early on, it might be more economical to merely upgrade machines, software, and servers as required.

Try to think about the fact that all the things you are gaining with migrating your software could be lost if your computer is not good enough to handle it.

FACTS

- With CAD technology you draw and with BIM technology your model
- Adopting the change is more than learning a new software
- The investments during the moving will be Time, patience, training and better hardware
- The effects of the change are not immediate
- Instead of seeing the chance as an issue, think of it as a challenge!

The main purpose was open your mind with and small overview of all the things Revit is Capable to do

It should be taken in mind that the use of BIM will end up being mandatory, especially in those public works and infrastructures, where this methodology is successfully applied.

This is just a matter of evolution. Don't be the one who stays behind!

Learning Revit does not imply you will forget AutoCAD, the more you know the most valuable you will be, but I am sure you'll never want to go back!

FREQUENT Q&A

What will be the cost-benefit balance?

Revit suite is more expensive than AutoCAD, but Having BIM, you can do a more organized and clearer initial and plan, turning everything into better productivity, fewer errors and time saved which summarizing, translates into cost savings and therefore relieve financial pressures, improves the cash flows, and generation of more profits which will compensate an overcome this value. After overcoming the learning curve all will be gaining

What about the clients and industry partners that are still CAD users?

So, well. They are interoperable and can be used together! You can have a Revit project and send deliverables by exporting the Revit file in an .dwg file and it will have a good behavior by transferring standards and you also can incorporate designs created in AutoCAD within a Revit Project

Useful links

Learning resources

[AutoCAD Revit Interoperability Guide](#)

[Revit Vs. AutoCAD](#)

[5 Factors to save time and cost with BIM](#)

[What is BIM](#)

[What are the benefits of BIM](#)

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[Switching from AutoCAD to Revit \(Architectural approach\)](#)

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