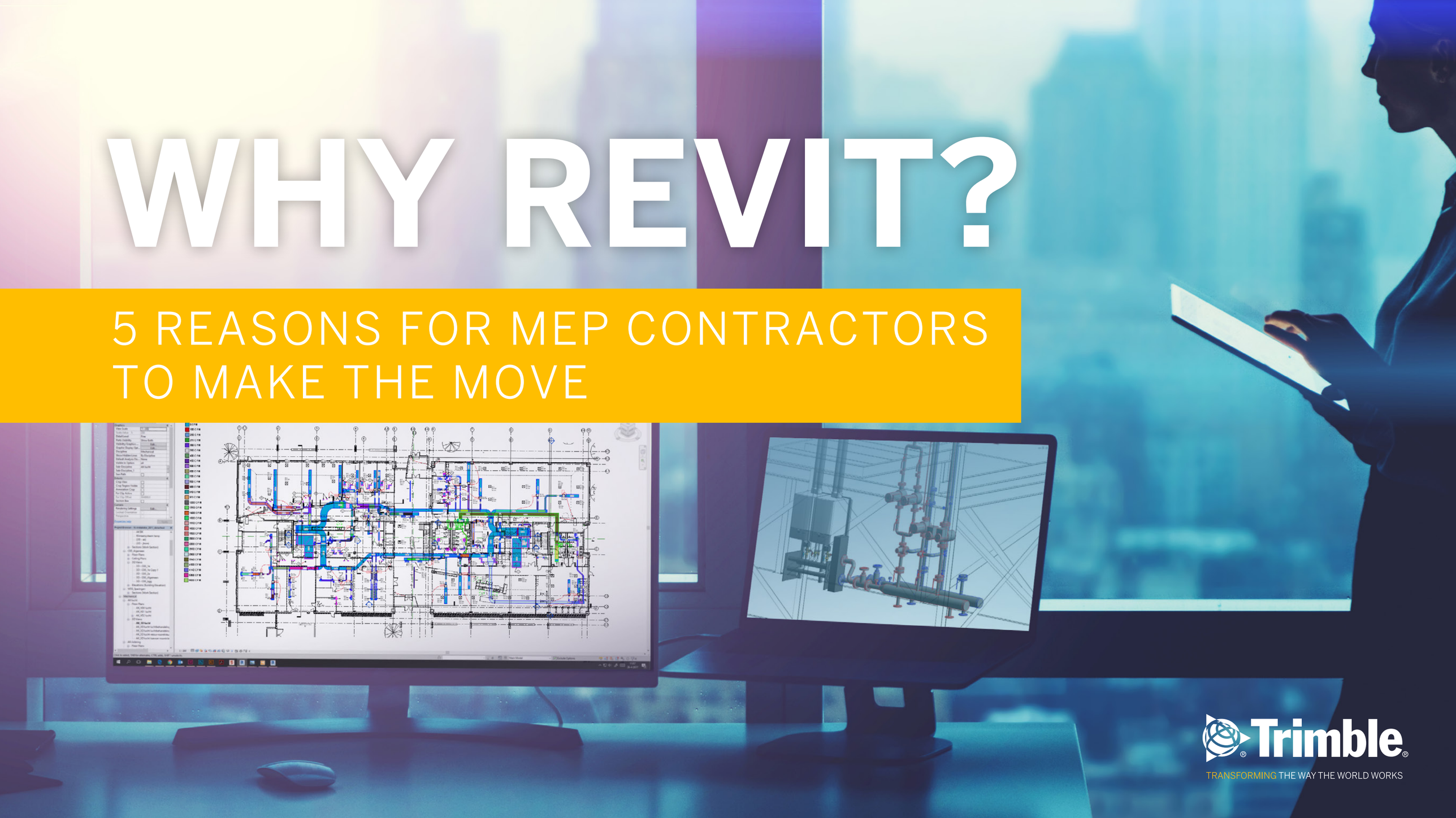
WHY REVIT?

5 REASONS FOR MEP CONTRACTORS TO MAKE THE MOVE



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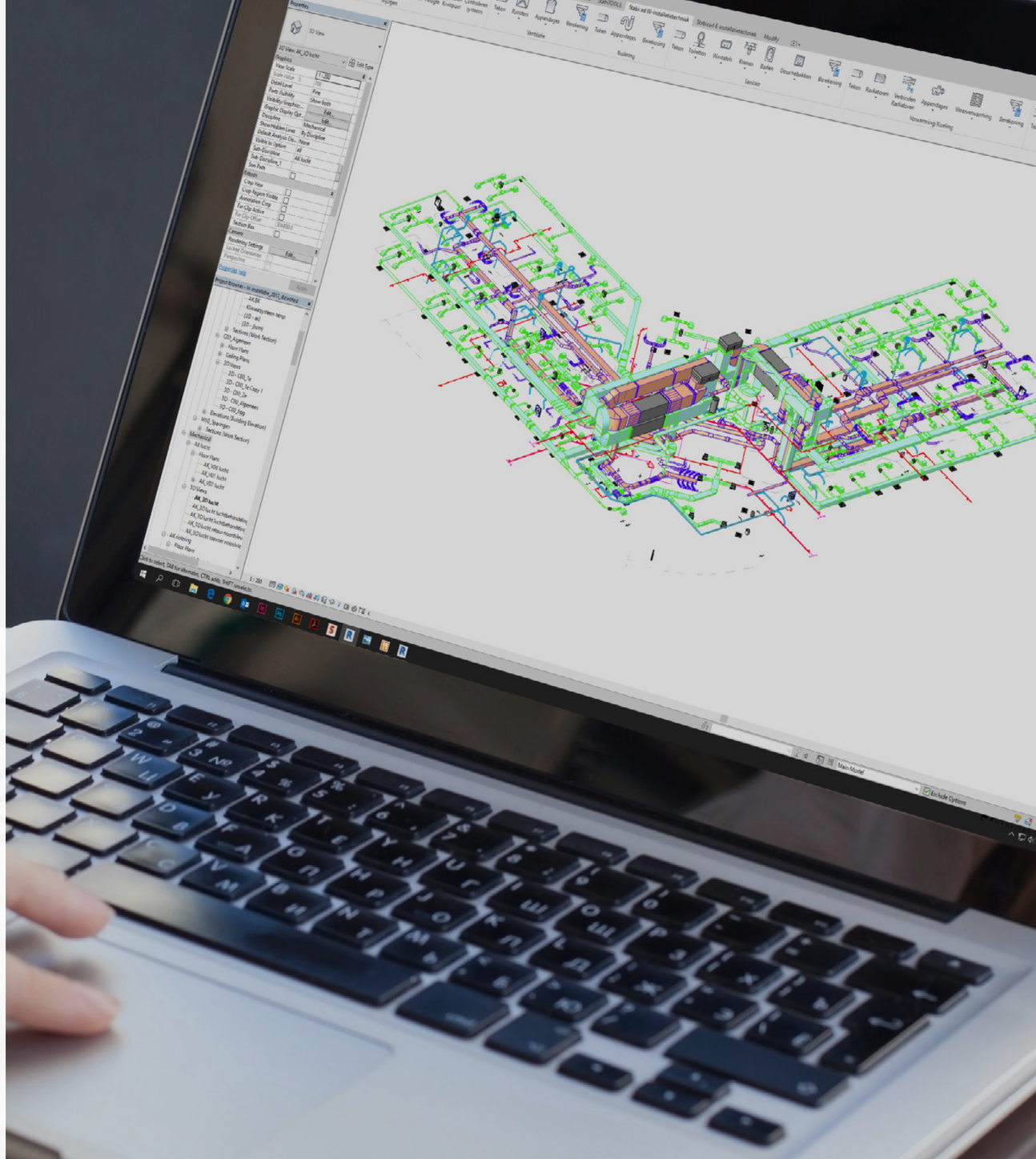
Over the years, architects and engineers have gravitated to Revit as their design platform of choice. But what makes Revit different from AutoCAD? And is it better? Here's what you as a MEP contractor should know about Revit.

After reading this guide you will understand why Revit is gaining popularity, how it supports changing workflows in construction, and finally, what you need to keep in mind when making the move to Revit.

AutoCAD and Revit are both flagship products of Autodesk and popular CAD platforms in the construction industry. Although Revit has a history in architecture, MEP contractors, engineers and detailers have also moved to the platform over the past years. Continue reading to discover 5 reasons why:



REASON #1
THE SINGLE MODEL

Most construction projects start their life as a Revit model in the hands of architects and site planners. Until recently, MEP contractors were only issued with AutoCAD DWG ‘backgrounds’ from the Revit model that architects had been working with. There are a number of major disadvantages to this process:

1

For the DWG to be useful, a large amount of time and effort is required to annotate and document the Revit ‘views’ prior to creating the DWG. Time and effort the engineer is having to waste purely to ‘communicate’ information so that the contractor can redraw what the engineer has already modeled.

A single Revit model will create multiple views, which become DWG files. So, rather than working with (opening, editing and closing) multiple DWG files for a project and organizing, naming and keeping them ‘connected’, Revit allows a single model of the building to be opened. Revit allows, for example, for the mechanical equipment or plumbing fixtures to be connected on each floor, to the risers and other floors. In AutoCAD this would typically require the opening, editing and closing of multiple DWG’s which are unconnected and unaware of changes made in other files.

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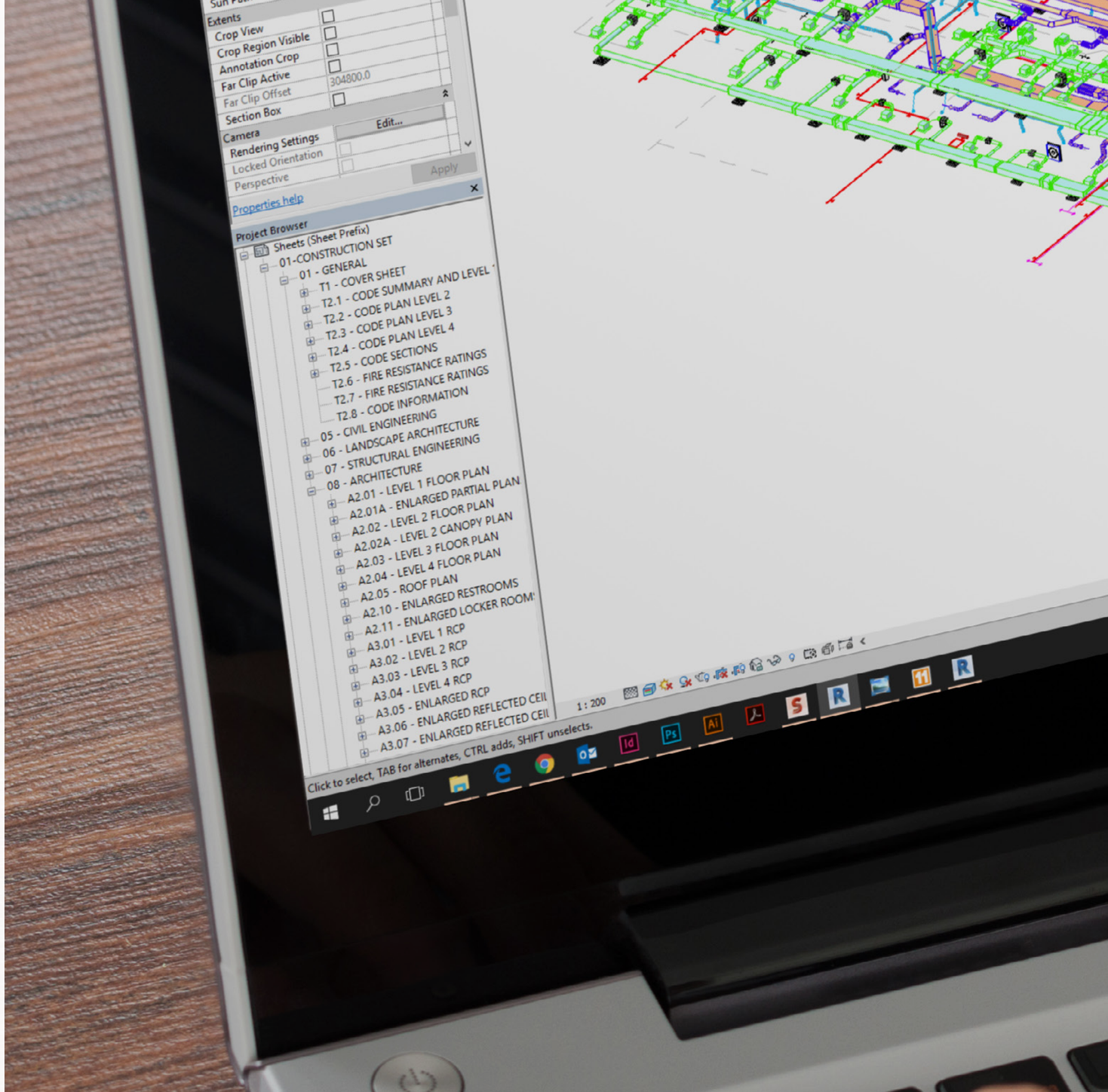

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Typically, the model is not finished when MEP contractors start their work. As the project develops, additional DWG revisions are issued requiring the MEP contractor to compare ‘before’ and ‘after’ DWG files to determine what has changed.

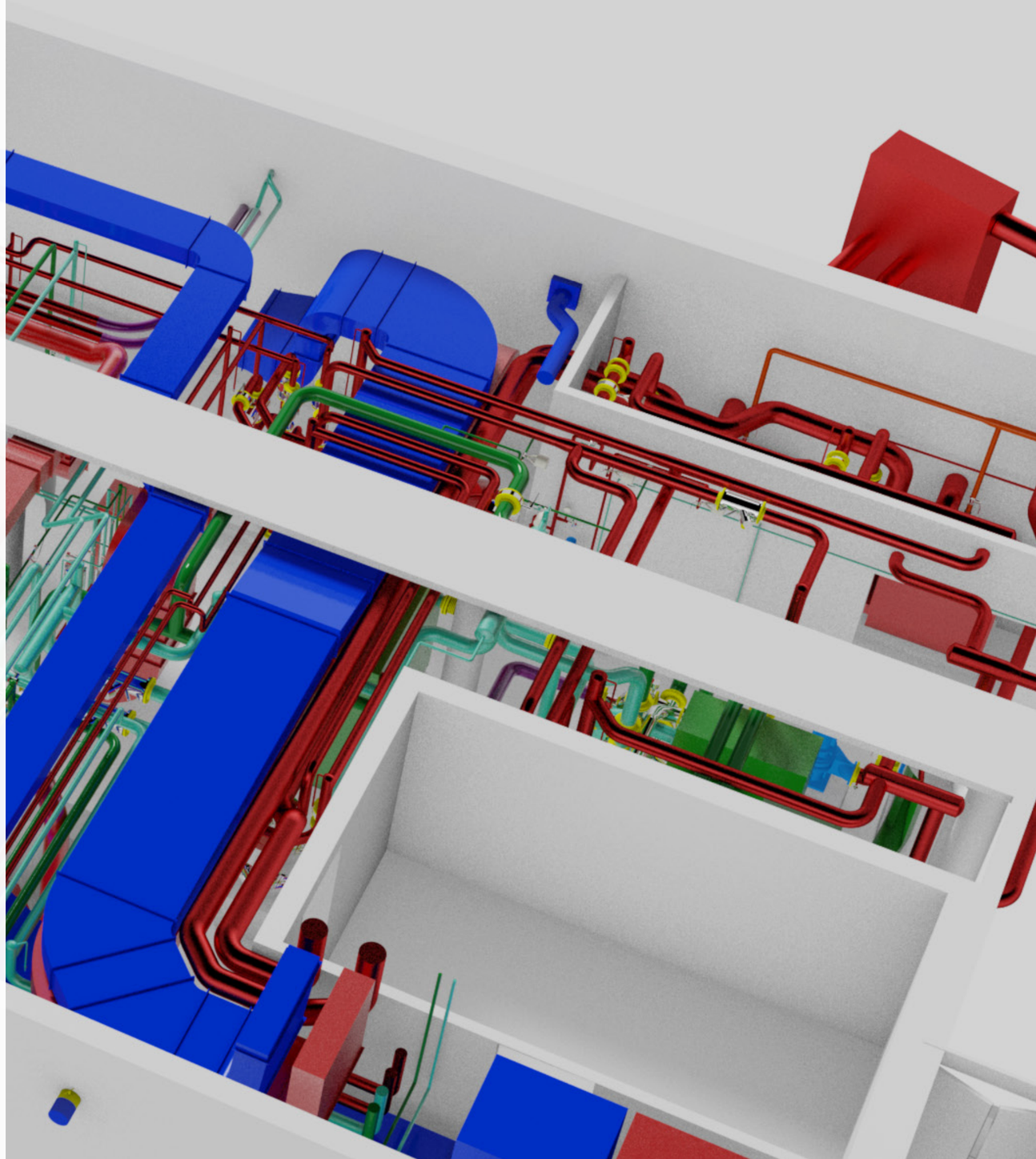
4

DWG files lack the intelligence to be imported as functional Revit objects. Revit models can ‘dumb down’ to DWG files but DWG files can’t ‘smarten up’ to Revit models.

This leads to the first important aspect of Revit: the single model environment.

This means that one single model can contain architecture, structural, engineering and MEP components. Just like different disciplines contribute to the design and construction of a single construction project, Revit provides a single platform to meet all the various requirements for all contributors.

As the model progresses, structural and MEP engineers can add their expertise and knowledge to the same model, while making use of Revit’s inherent design, engineering and analysis capabilities. There’s no need to exchange or convert files to DWG, as all information can be managed in a single Revit model.



REASON **#2** WORKSHARING

As timeframes and budgets for projects are compressed, projects are no longer linear processes starting with an architect completing the design, passing it on for engineering, and the result being passed on to the contractor.

The desired process now is for architects, engineers, and contractors all to be involved at the earliest possible point. Just like on a job site, where the duct contractor is installing ducts while the piping contractor is installing a pipe, the different contractors should be able to work together in the same model as well.

This is where worksharing comes in.

Worksharing is a function of Revit that allows multiple users to open and work in the same model at the same time. Worksharing can be done via a local network or via the cloud. As the architect is completing the overall design of a building, the engineer can already start designing the MEP systems for the first few floors, while the contractor is detailing out the mechanical room.

REASON **#3** STABILITY

As mentioned before, the way of working is changing as timeframes and budgets are getting compressed. The desired process now is for architects, engineers and contractors to work side by side. Revit offers the stability to support this way of working, as it has been designed specifically to handle large, graphically intense, 3D models. AutoCAD on the other hand, was designed as 2D line drawing software:

AutoCAD file

One file may contain details of ductwork on a 2D background in wireframe. Spools and material schedules are typically in separate files. This means that if a change is made in the drawing, spools and schedules have to be remade and AutoCAD won't give any warning that a spool drawing or schedule is out of date.

Revit model

One model can contain all information including the architecture, engineering, MEP detailing, spool and fabrication information and schedules. As the model is developed/changed, existing spools, schedules, etc. are automatically updated by Revit without requiring user 'intervention'.

In short, Revit offers the stability to handle large 3D models, facilitating changing workflows in today's construction projects.

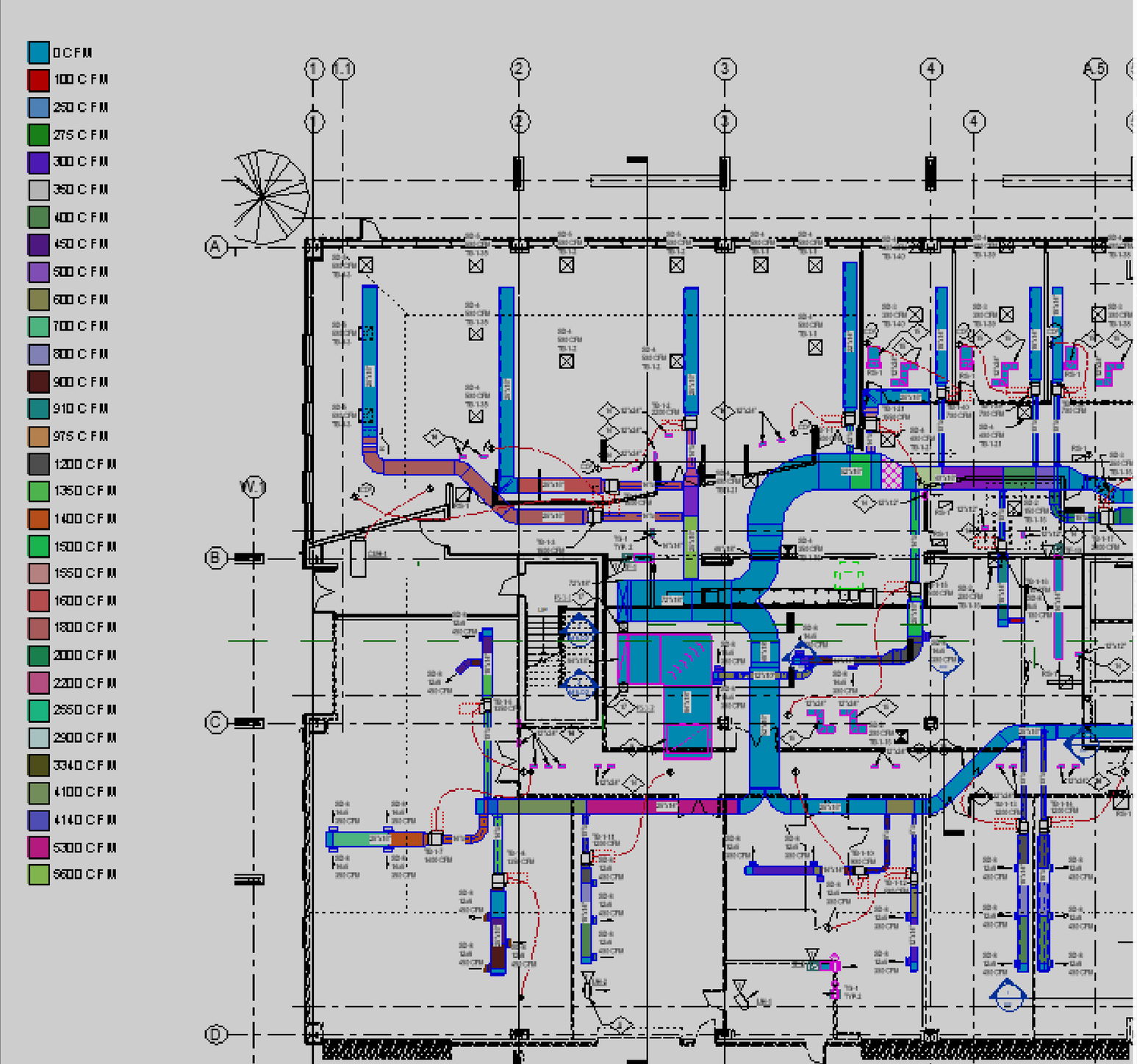
REASON **#4** INHERENT SYSTEM ANALYSIS

A major reason that architects and engineers have gravitated to Revit as the platform of choice over the years is because of its model and system concept. A Revit model is functional and the model can analyze loads and flows on a system. It can, for example, determine if the system is large enough to handle expected load. It can also offer routing and sizing options. Revit works with interconnected systems, adding functionality to the design, which is lacking in AutoCAD. This has a few implications:

1 Revit sees ‘connected systems’ rather than ‘pieces’, which means that MEP systems need to have a start and an end. A ventilation system should for example start with a AHU and end at a VAV.

2 Revit equipment is not just a graphical picture of the object, but includes a vast array of information to create a linked and functional system, such as size, flow and power requirements.

3 Once two objects within Revit are connected, Revit will do its utmost to maintain connectivity between them as they are moved around or re-sized.



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Revit understands the concept of walls, floors, ceilings and so on. A floor based component, such as a pump, needs to sit on a floor. This means that if the floor moves, the pump moves. If a ceiling grid moves, grills and diffusers move with it.

Revit also offers multiple, user-definable, views and schedules of a single entity that are connected. For example, a VAV unit can be displayed in multiple views, spool sheets and as part of an equipment schedule. The properties of the VAV, such as the manufacturer, can be changed either from a graphical view or a schedule view. Regardless of where it is changed, the complete model will be updated accordingly and Revit will do its utmost to maintain system connectivity.

REASON **#5** FROM FIM TO BIM

This leads us to the 5th reason to move to Revit: it lends itself for BIM. In its purest form, a Building Information Model can be defined as a model that contains functional components that can provide data.
Not just about the size, but also about the capabilities of those components when connected as a system.

This is supported by Revit, as the platform is looking at building elements as parts of a complete building. This includes views of the different rooms, floors and systems, permit, prefab and functional sheets and schedules with materials and equipment.

In AutoCAD, however, FIM (Floor Information Modeling) is the best you can expect. Typically, an AutoCAD project will consist of multiple DWG files that, at best, will show a complete floor of MEP overlaying a 2D architectural or structural background. Other than the fact that the MEP systems are typically just a collection of blocks and not connected systems, the MEP components have no interaction with the 2D background or other parts of the building outside of the current DWG. There is no connection in AutoCAD between one DWG and another. For example, if a riser moves, all floor drawings would need to be opened and edited.

SO...
WHY REVIT?

- One single Revit model can contain all components
- It offers the stability to handle large 3D models
- It supports Building Information Modelling
- It has inherent functionality to analyze systems
- It offers work sharing functionality

A FEW THINGS TO KEEP IN MIND

While there are many differences between AutoCAD and Revit, it is not uncommon for organizations to use both AutoCAD and Revit for different purposes. AutoCAD for drafting and creating basic geometry, and Revit for creating geometry enriched with real-life information, supporting the ‘i’ in BIM. When moving to Revit however, there are a few things to take into account:

1. Revit and AutoCAD share a lot of the same features, although the terminology is different. For example the Blocks in AutoCAD are called Families in Revit, and the Layers in AutoCAD are called Systems in Revit.

2. Revit requires big picture thinking.

3. In Revit you work with a single model that you can access through multiple Views and Schedules. Views can be graphical or tabular (Schedules), and Views are linked.

4. Revit means modeling with broad strokes.


ARE YOU READY TO TAKE
THE NEXT STEP WITH REVIT?
Check out our Top 10 Revit Tips for
MEP Designers and Detailers
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