



A guide for MEP contractors

# How To Get Out Of The Red After Implementing BIM





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This guide aims to help you along your way towards making the necessary step towards achieving ROI and maximizing the benefits of a successful BIM strategy.

**B**IM. Everyone's heard of it and (according to a McGraw Hill 2012 SmartMarket report\*), the majority of North American MEP contractors have leveraged it. However, while some firms might be fully-fledged converts, others remain unconvinced as to whether BIM adoption will ever deliver a measurable return on investment (ROI).

For many businesses who view the cost of BIM adoption with trepidation, implementation is regarded as something of a necessary evil; a hurdle that needs to be cleared in the race to win bigger, better contracts. When a client specifies a project must conform to a particular BIM level, contractors obviously know that securing the work depends on that requirement being met. What many also anticipate is that making that grade will not be without cost. Alongside an investment in technology, there's also the need to ensure that such an investment is properly used and that means manpower. Whether it's training existing staff or bringing in experts from the outside, putting BIM management in the right hands is certainly not cheap.

unless everywhere else was shut. For a lot of firms, the same applies to BIM: If the contract doesn't demand it why spend time and money on implementing it?

The irony is, that while totally understandable, it's just this approach that can prevent a MEP contractor from achieving BIM ROI. In fact, the more engaged businesses are with BIM the sooner they'll reap the rewards it offers both in finance and efficiency. Implementing BIM on a project-by-project basis, just when it's a specified requirement, makes adoption more costly. Making a commitment to embracing and engaging with it across the board is far more cost-effective. Although the latter inevitably incurs a good deal of investment not just upfront but ongoing, highly engaged firms gain the most from BIM. Between 2009 and 2012\*, increased profit was the most reported benefit of BIM. Other positives impacting the bottom line included increased repeat business from existing clients and a greater volume of new work being won. The more highly engaged firms are, the greater the benefits are. There's a direct correlation between ROI and a high level of BIM engagement and companies who continually invest in training and implementation reap the rewards significantly more than their less engaged counterparts.

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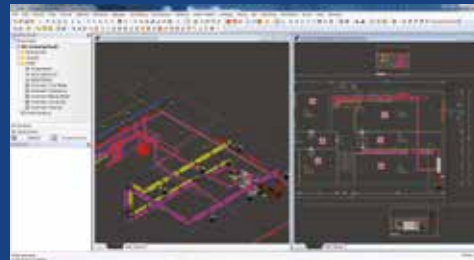
**Let's face it:** Everyone wants to win bigger, more lucrative contracts but, equally, no one wants a hefty bill for landing them. In short, BIM can feel like a taxation on the overall value of a contract, like a hefty service charge pre-applied to a restaurant check when all you were looking for was a light lunch. In the case of the latter, it's likely you'd chose another place to eat next time and avoid dining in the more expensive place



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## What Do MEP Contractors Need To Invest In Upfront?

**O**ne of the ways in which contractors can benefit from BIM is actually to buy it in. By outsourcing 3D modelling, 3D laser scanning and 3D modelling from point cloud services MEP professionals are able to take advantage of all the benefits of BIM without the worry of up-front investment in technology or training. This is also a good way of familiarizing an organization with what BIM is and why it's revolutionizing the way our industry works. Whether you don't have an in-house BIM capability or the size of a project means you need to add more expertise and skills to your existing team, outsourcing can be enormously beneficial.



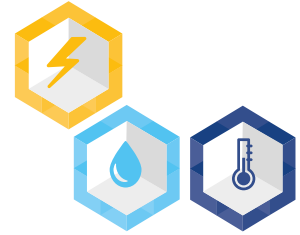
When you outsource your BIM capabilities, you should also benefit from the consultative and partnering expertise of whoever you've selected to integrate BIM into your business. As well as ensuring you're compliant with the specific BIM level of development (LOD) you're required to work to, this will also increase your own degree of BIM knowledge and awareness.

Indeed, many people who outsource BIM services make the decision to manage BIM in-house as a direct result of seeing the benefits it brings first hand. For example, investing in 3D laser scanning services gives businesses unparalleled insight into a new way of working with BIM. Once they can see how much 3D scanning improves accuracy and saves considerable time and money, it's not uncommon for them to make an investment in a scanner of their own.

Whether you're outsourcing your BIM processes or implementing it within your business, what is vital is that you don't skimp on your investment. There is a direct correlation between a high engagement with BIM and ROI. The more committed you are to integrating BIM across every aspect of your business, the quicker you will achieve ROI. From the outset, you will need to invest in technology, invest in training and never lose sight of the goal of revolutionizing the way you work. BIM is about much more than technology. It is predominantly about people and processes. A piece of software, bought off the shelf, will not make your business engaged in BIM. High engagement requires that investment be all-in and ongoing. Make a BIM implementation plan and don't just tinker around on the edges. Immerse yourself fully in BIM and accept that, while implementation is expensive, your dedication to adopting a BIM philosophy throughout your organization WILL achieve ROI and attract bigger contracts, providing you remain committed to being fully engaged with BIM.



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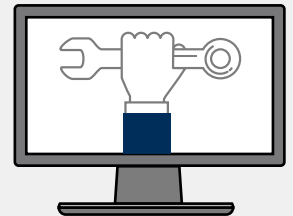


# BIM Implementaion In Four Phases



## Assessing Current Capabilities

Analysing your existing capability is the first step towards integrating BIM. Technology, processes and people should all be reviewed in-depth so you can assess your existing BIM maturity.



## Goals & Ambitions

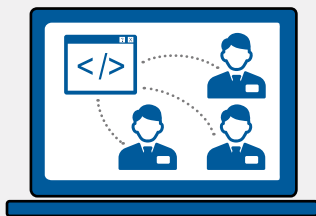
Your organization has a long-term goal when it comes to adopting BIM. Set intermediate BIM targets and put in place measurable progress indicators and a targeted milestones.



## Shaping the Process

After defining your current situation and milestones it is time to identify the steps that need to be taken to reach the goals. Technology is important the software packages and supporting hardware needed to achieve your ambition.

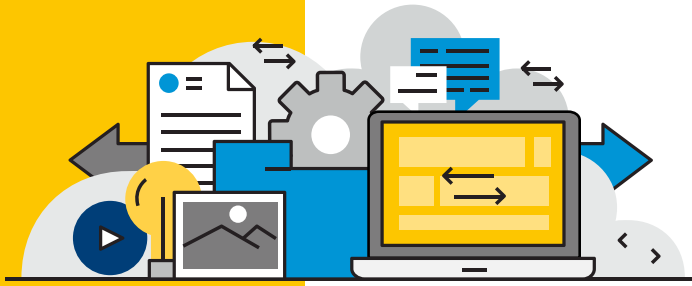
Training your people is also key when implementing BIM and it's not just about equipping them with the skills they need to use software. Communication plays a vital role in BIM implementation and collaboration depends upon it!



## Implementing and Monitoring

One can choose parallel adoption, single project adoption or implementation across the board. Whichever route you take, it's imperative that the process is kept under constant review. Once you're comfortable with an aspect of the process, capabilities can be assessed by returning to Stage 1.





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**H**ow quickly you achieve ROI will also depend on making the best investments for your individual business circumstances. As an MEP contractor, your software requirements may be different from those of other people involved in the project.

Together with properly trained people who believe totally in BIM and its benefits, the technology you invest in is crucial to determining whether investing with BIM will leave you in the red or happily in the black.

It's vital the technology you invest in will work for you. There are a number of choices out there. Be sure to look carefully and explore

how your investment will meet your specific needs. The software you do invest in is a tool that should enable the people within your organization to implement and engage with BIM. What it cannot be is BIM in a box. In order to help secure ROI, software needs to be user-friendly and responsive to your requirements. A tool that's great for architects during the design phase is NOT necessarily going to work for you as an MEP contractor.

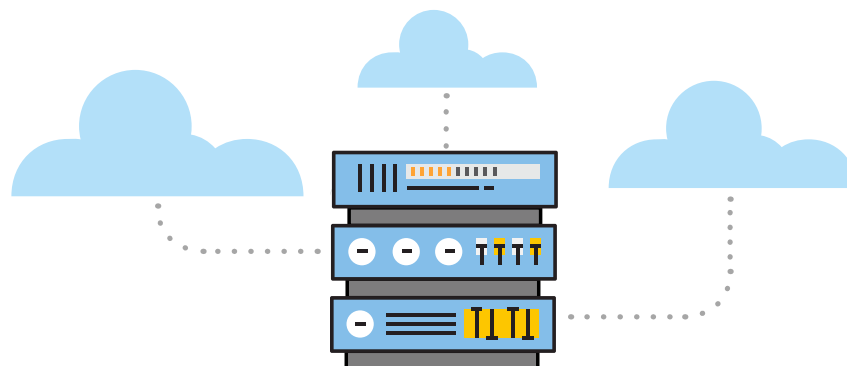
It's also vital to remember that the performance of your software is dependent on the proficiency of your hardware and on where vital data is to be stored. Without a reliable platform underpinning your choice of software, you will struggle. Again, make sure your BIM implementation plan includes looking at all available options below.

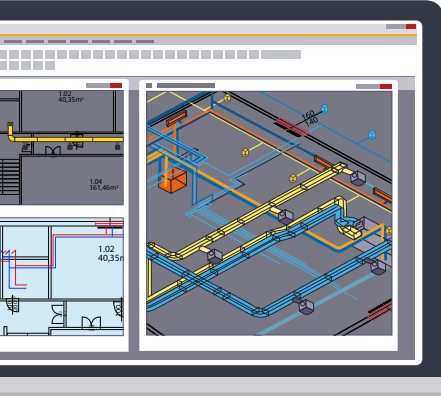
While such an investment may seem a lot, it is essential if high-engagement is to be achieved. Firms that merely dip their toe into BIM adoption, do not benefit and those who are prepared to follow a thorough with a well considered implementation plan will be rewarded.



## START-UP INVESTMENTS

- ⌚ Technology Platform  
(Hardware - Network - Storage - Cloud Capacity)
- ⌚ Software Capabilities  
(Licenses, subscriptions)
- ⌚ Training, re-training and recruiting skilled staff
- ⌚ Communications including data-sharing infrastructure





## Investing In Industry Specific Add-ons

**W**hen businesses first begin their journey towards BIM adoption, they could be forgiven for thinking that with software there's a one-stop software solution that will instantly make them BIM compliant. However, while there are some vital software tools that help make digital construction and BIM a reality, high-engagement needs more advanced solutions.

For example, 2D and 3D computer-aided drafting software, used in architecture, construction, and manufacturing to assist in the preparation of blueprints and other engineering plans, is useful but it is a basic platform with no specific trade or industry focus. As a general purpose offering, it gives users the basic capability to create 'anything' but on its own it's not equipped to meet the requirements of an MEP contractor looking for the right BIM tool.

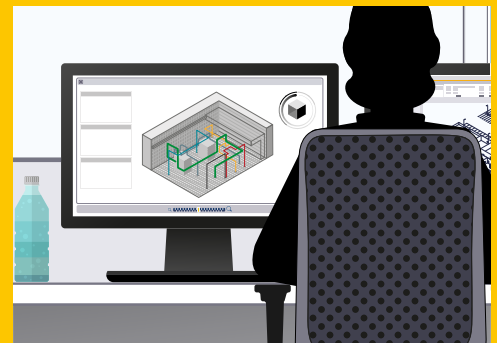
For you to achieve ROI on your investment in software, you need a solution that is particularly focused on the contractor's and installer's deliverables, especially where Level of Development (LOD) impacts directly upon you. Downstream of the design phase the contractor must pick up the bid or estimate then move into virtual construction, order procurement, fabrication (CAM) and installation. This is the workflow that specialist add-on products can best support because it provides functionality that's directly relevant to MEP contractors during the build phase.

No one can deny that investing in software involves a not inconsiderable cost. However, making the right choice up front will directly help you get out of the red sooner and more effectively. The more software is equipped to meet your individual needs, the quicker ROI will be. Our developing relationship with Autodesk positions us, uniquely, to be able to offer software that streamlines and enhances workflows with particular reference to MEP contractors.

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Other software has been created specifically for use by MEP professionals but, often, it is aimed at engineers, designers, and drafters rather than contractors who need to focus on the build stage rather than design. It doesn't offer the BIM functionality that's required in order to facilitate a high level of BIM engagement and, therefore, ROI.

BIM software designed with architects, engineers, contractors and designers in mind enables users to create a unified model that contains real-life information and can be used effectively for modelling, clash detection, and change management. It also provides engineers with tools to design even the most complex building systems. However, in addition to this, when choosing your software, you need to think about the construction workflow and how that makes your requirements unique.







## Investing In Your Team

**A**s already stated, BIM is more about people and processes than it is about technology. In the construction industry, organizations are entirely dependent on skilled people if they are to win contracts and maintain profitability. Highly skilled people also work more efficiently if they are well managed, clear about expectations and share an employer's drive for continuous improvement.

BIM adoption can be polarizing, with some people seeing it as an opportunity to achieve better results more effectively and cheaply, while others regard it as an unnecessary disruption to the way things have always been done. A motivated and engaged team is a major competitive advantage. If there is even one person on your team who doesn't share your commitment to BIM adoption, this will be a major barrier to achieving ROI.

The only way to change sceptical minds is through training and education. It's vital that everyone in your organization sees the value of BIM and understands why it's important to streamline workflows and make projects more collaborative, cohesive and easier to build and manage. BIM implementation is as much about creating cultures and changing philosophies as it is about technology. If high engagement is to be a reality, and ROI achieved, it is essential that you invest in getting everyone on board.

The key to developing a successful training investment plan is following a targeted training approach. Different BIM user profiles, such as model authors or model reviewers, will have different training requirements in terms of application, content, and processes. In order to assess and identify the needs of your workforce, someone will need to take responsibility for managing and implementing investment in training. Buying-in expertise or recruiting a dedicated BIM Manager may seem like a substantial outlay. However, a dedicated BIM Manager or consultant – capable of managing perceptions and expectations as well as physical implementation may prove invaluable.

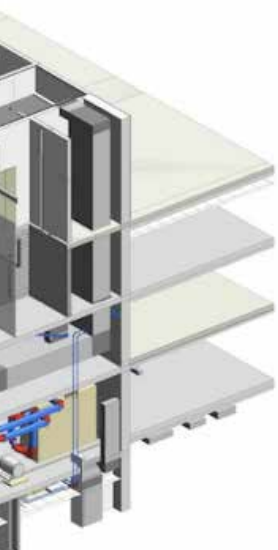
Just as businesses need to invest in leadership and training, individuals need to invest in commitment. In the early days of BIM adoption, your team will need to overcome challenges associated with process change, steep learning curves and shifts in attitude. As BIM integration evolves, individuals will be challenged to operate outside of their comfort zones, develop new skills and take-on different ways of approaching problem solving. Communication with staff and identifying their concerns will help anticipate and alleviate any risks and help achieve ROI on BIM implementation.

If you are going to achieve the ROI associated with high-engagement in BIM, continuous improvement is a must. Clear improvement targets and metrics should be established from the get-go and can act as BIM integration success criteria.

The importance of constantly measuring your success of your implementation plan cannot be overstated. BIM implementation will not facilitate instant ROI.

With the right processes in place, a BIM culture within your company and the right technology in operation, you will achieve ROI. You will also find your business evolves, develops and keeps pace of the rapid evolution of our business when BIM is transforming the way we all work.





# LOD Specification And Why It Matters To MEP Contractors

The AGC BIMForum has published a specification guide which helps to explain the LOD framework which is defined by the American Institute of Architects (AIA). Through this document, examples of each level are provided for most trades and even sub components of that trade. Allowing us to consider the requirements for modeling phase completion as we step through project progression.

In it's simplest form, the LOD's can be interpreted as the following:

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| <p><b>LOD 200</b> ✓</p> <p>Schematic layout with approximate size, shape, and location.</p>                              | <p><b>LOD 300</b> ✓✓</p> <p>Modeled as design-specified size, shape, spacing, and location of equipment.</p>                   |
| <p><b>LOD 350</b> ✓✓✓</p> <p>Modeled as actual size, shape, spacing. Location and connections of equipment supplied.</p> | <p><b>LOD 400</b> ✓✓✓✓</p> <p>Supplementary components added to the model required for fabrication and field installation.</p> |



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Understanding these definitions helps us to classify what we typically see supplied as the “CD” set (Construction Documents) from the engineer as LOD 300. As a contractor or installer, your goal is to use BIM to perform virtual construction (VDC) so that you can resolve potential construction and installation conflicts in the office, saving you labor, materials and time. To do this correctly, you must create your models using LOD 350 or higher which will provide a detailed model based on real manufacturer founded content.

While LOD 350 is a great start, the sweet spot for contractors and installers really happens at LOD 400. If you are practicing prefabrication then this level of modeling allows you to plan and coordinate which of the MEP connections are performed by the shop or field. Furthermore, you are planning exact placement of hangers, sleeves and equipment. This level of virtual construction practice and planning helps to increase your chances at construction and installation success, thus increasing your ROI and minimizing your risk. When a project requires VDC participation, this practice can even help secure your install zones and schedule. If a GC is really behind the requirement then any contractor not participating in BIM collaboration has last right to install.

Based on source: <http://bimforum.org/lod/>, LOD Specification dated October 19, 2016



