

Roland Berger Focus

September 2017

Turning point for the construction industry

The disruptive impact of Building Information Modeling (BIM)



Management summary

Although construction has been slow in adopting digital technologies compared with other industries, Building Information Modeling (BIM) technology may represent the turning point on the path to digitization.

Across the industry, BIM is now recognized as the go-to platform and process that facilitates collaboration, raises efficiency and cuts costs, and enables users to benefit from a wide range of integrated digital technologies, such as computer-aided design (CAD), project management or machine execution systems (MES).

When BIM really takes off as a platform, it could do to the construction industry what the Amazon platform has done to retail. BIM's disruptive force is in the power shift it brings among the parties that design, engineer, build and operate a building. All stakeholders can use BIM to collaborate better, but the top companies will be those that use BIM to improve current business models and create new ones.

For instance, building materials suppliers who use BIM can get their products in front of the architects and engineers who use BIM for design decisions. If suppliers are not there with the right product data in the appropriate format, they may not be considered for a project at all. This is a clear threat to the existing business model. This also works in the other direction: with the right product placement on BIM platforms, producers and suppliers can lock in product use into early design decisions. They will benefit over the long term because architects and engineers will reuse their preferred BIM-designed objects, such as a design for a facade. Despite BIM's significant capabilities and potential, several hurdles remain, including questions of governance, a lack of standards, and a strong need for BIM user training. This means BIM adoption varies widely across regions.

Roland Berger recommends developing new business models within the BIM ecosystem. Perhaps your existing products will be enhanced with services offered via BIM. Maybe your company will start whole new business lines by analyzing, repackaging or repurposing BIM data, or by filling a new role in the BIM-supported landscape.

In many markets, BIM territory remains unclaimed and opportunities abound. Simply sitting back and waiting for developments in standards and software means the market will leave you behind. The time to act is now.

In this Roland Berger report, we examine BIM technology and its potential effects on the industry. Our analysis and recommendations are based on our own project experience, intensive research, and in-depth interviews with a wide range of stakeholders. The interviews were conducted in early 2017 with 20 selected BIM experts from across Europe.

Contents

1. Ushering in the era of "connected construction"	4
Development, potential and features of Building Information Modeling (BIM).	
2. Assessing your "BIMpact" and learning how to deal with it	10
All stakeholders will be affected, but there is no "one size fits all."	
3. Challenges to BIM adoption	16
The necessities of training people, aligning standards and adapting regulations might slow down BIM adoption but will not prevent it.	
4. Our general recommendations	20
BIM is here to stay. Go ahead and make it yours.	

Chapter 1:

Ushering in the era of "connected construction"

Development, potential and features
of Building Information Modeling (BIM).

Building Information Modeling (BIM) is a digital planning method for construction projects in which all stakeholders have access to the same database. Although BIM has been around for decades under various names, over recent years it has been widely hailed as a technology that can and will shake up construction – an industry known for its relatively low productivity, fragmentation and poor collaboration between suppliers and contractors.

In understanding BIM, it's important to distinguish it from its predecessor, the digital mock-up software known as CAD, or computer-aided design. Engineers and designers have been using CAD since the early 1960s. Unlike in CAD, BIM content can be manipulated in various ways to generate 3D views instantly. With BIM, users create digital representations of physical places and objects and share those designs for collaboration. At the same time, the platform helps users share project information throughout the entire construction lifecycle to more effectively plan and build physical infrastructure. Roland Berger believes BIM could be the most disruptive digital instrument in the industry. → **A**

A BIM model's areas of application can be extended with the addition of information on costs and time and other dimensions. Since live data for costs, quantities and time schedules is readily available, users can add further dimensions such as sustainability. All objects are closely interlinked, so changes in one view/layer lead to automatic adjustments in other views/layers. BIM also includes information on construction-related features such as compressive strength and thermal conductivity. It captures the complete value chain from inception onward, so it can still be used once construction is finished, for example for facility management or maintenance.

BIM OBJECTS ARE SMART OBJECTS

In BIM, design elements are created as connected, multi-dimensional models. Called objects, they come from three types of sources: BIM software (e.g. pre-de-

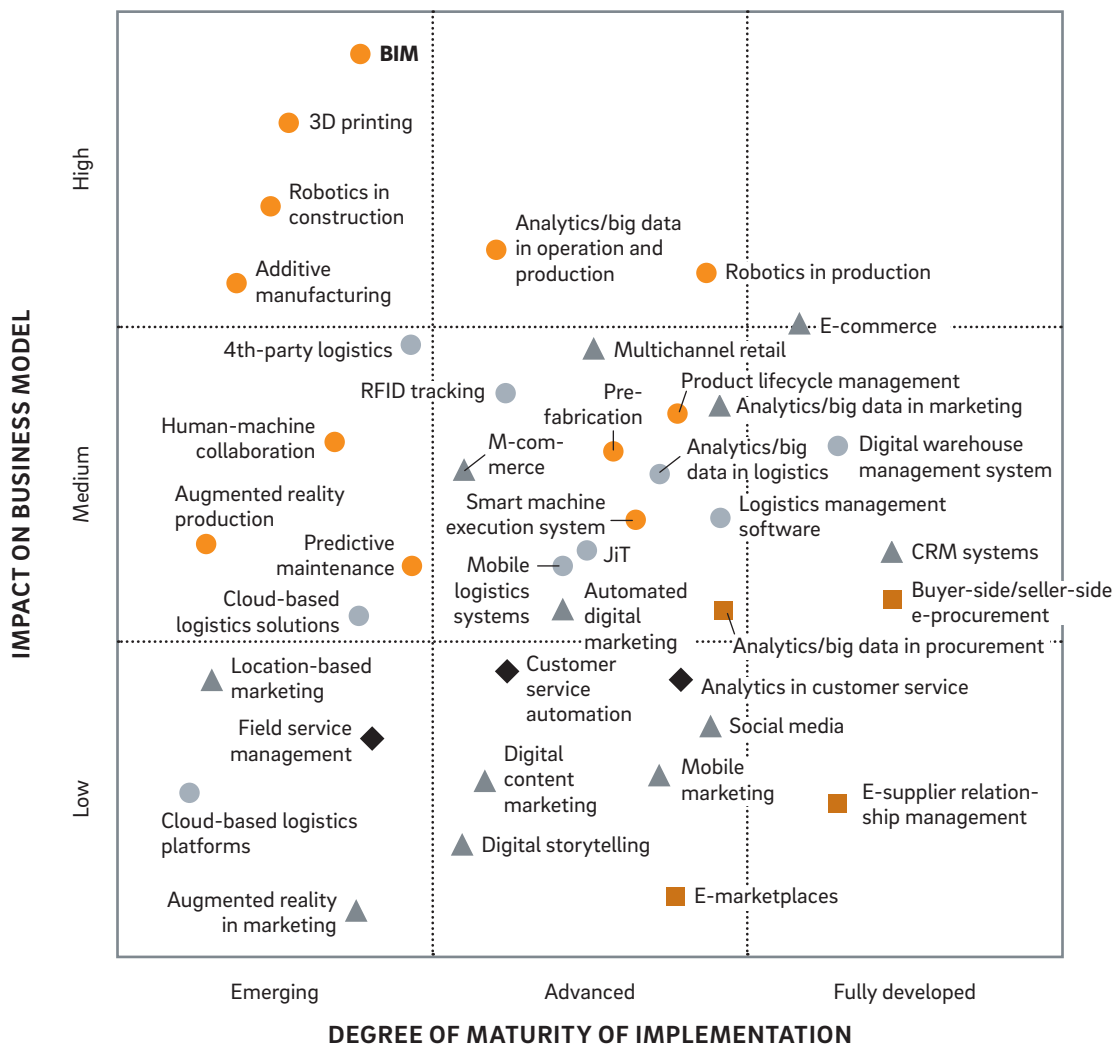
"With BIM, most efforts are put into the planning phase of the project, i.e. front loading. The upfront planning will have a positive impact when it is fully applied in all phases. Essentially reoccurrence of processes and building elements allows for substantial learning effects."

Designer and BIM user

finer BIM objects), online libraries of objects such as "buildingSMART", and BIM users' own object libraries, filled with their own programmed objects or object information offered by construction materials suppliers. No matter the source of these objects, users can quickly visualize design alternatives by adjusting the geometry and other dimensions. BIM is therefore considered "parametric," since it is based on modeling the parameters of object data.

A: Of all the trends in the construction industry, BIM will have the strongest impact on players' business models.

Trend radar for the construction industry.



■ Procurement
 ● Logistics
 ● Production/construction
 ◆ Aftersales/End-customer marketing
 ▲ Marketing and sales

Source: Roland Berger "Digitization in construction" study

BIM models also contain semantic and other data about themselves, making them more than simple representations of building components. They are "smart" data objects because they include project-relevant information such as calculations, schedules, descriptions, and even data on sustainability and energy efficiency. Furthermore, BIM objects can carry tender information, which may disrupt the tender platforms used today. Over time, we expect BIM objects to also contain information on prices and compatibility with other products and systems.

BIM AND FRIENDS: VIRTUAL REALITY, AUGMENTED REALITY AND PRINTED MATERIALS

BIM doesn't stop there: its disruptive impact will be amplified as new technologies get incorporated into BIM platforms. For instance, architects can show their designs to clients using virtual reality, which allows the client to "walk" through the structure as if it were already standing.

Later, when contractors have started working, architects can use the same virtual reality tour to explain details to workers, pointing out things that need to be done or changed while touring the space. Information collected and design decisions made during this step can be used to update the respective BIM objects.

Similarly, using augmented reality glasses, architects or developers could walk their clients through a construction site and show them virtually what certain design elements or changes will look like. These visualizations can be shared on the BIM platform for all to see.

BIM also allows models for 3D-printed materials to be integrated into designs, proofed and then moved faster to rapid prototyping. Autonomous equipment can be modelled, visualized and analyzed for its impact on the whole project.

DRONES, ROBOTS AND 6D

We also expect data feeds to expand constantly with the

incorporation of new technologies. For example drones can be used to monitor the security and safety of large construction sites, and are ideal for precise aerial surveying. Spatial data gathered by drones can be fed into the BIM model. When construction is complete, BIM data is used to organize and optimize facility management. This function becomes even more capable with the use of new data, including data from sensors and robots that comb buildings to provide detailed information on conditions. Cloud-based analytics can be used to better understand all the data, and the results are fed back into the BIM model so that the system optimizes itself.

With such a wealth of information compiled in a shareable and useful format, BIM platforms will help to increase standardization and industrialization across the industry. Users can supplement their 3D planning with a time axis on BIM objects, representing a fourth dimension (4D) for planning and managing the project. Or they can use BIM to create a 5D model, which includes estimates for materials costs or design changes and provides a 3D output. A sixth dimension (6D) could be information for managing and maintaining components throughout the building's lifecycle. → **B**

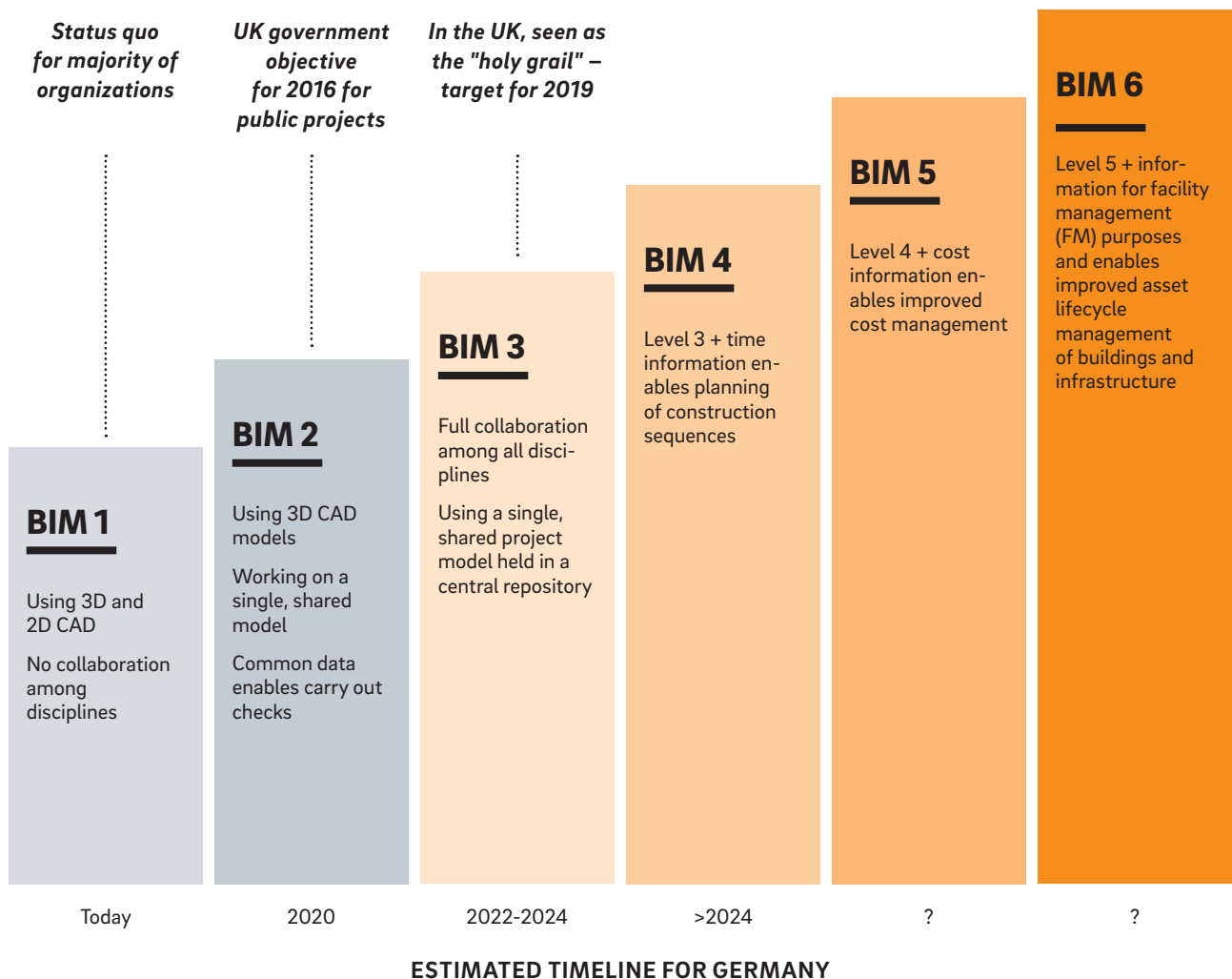
Able to operate at several levels – from 2D to 6D – the BIM digital planning method facilitates collaboration for all companies involved in designing, engineering, constructing and operating a building.

With the prevalence of cloud computing and virtualization – and more countries mandating BIM use in public-sector projects – BIM is ushering in the era of "connected construction" and becoming the go-to design and collaboration platform for the industry.

ASSESSING BIM'S POTENTIAL

Though hurdles exist – including questions of standards, training, and governance – Roland Berger expects BIM to have a major impact on the construction industry by 2025 as more companies tap its potential.

B: There are six levels of BIM development, determined by the amount of information and data processed – Germany, for instance, is still at level one.
BIM development levels and timeline.



According to Oxford Economics, global infrastructure spending is expected to exceed USD 9 trillion a year by 2025. Conservatively speaking, BIM could reduce costs by 10 percent, which is already happening today in certain BIM projects.

For instance, BIM saved Swedish construction company Skanska two months in a complex hospital expansion project in the US; and German rail operator Deutsche Bahn is using BIM for infrastructure projects and expects to cut costs by 10 percent. In a 2016 report by Transparency Market Research, the global market for BIM software, consulting and other solutions was USD 2.7 bn in 2014 and is expected to reach USD 11.5 bn by the end of 2022.

We expect to see a power shift among construction companies as they vie to use BIM's platform capabilities to enhance their current business models and create new ones. If they don't do this, new entrants will do it for them and rewrite the rules of the game in the industry. When BIM really takes off as a platform, it can do to the construction industry what the Amazon platform has done to retail. The winners will be companies that look beyond their own entrenched interests and toward the power of BIM and BIM data.

These companies may currently sell building products to craftsmen and contractors via a construction materials wholesaler, but perhaps soon a technical planner will choose what products to buy from which suppliers. The wholesaler will therefore need to align its marketing and sales efforts correspondingly.

However, bigger contractors might try to integrate the technical planning into their company. As marketing and sales increasingly move online, wholesalers and distributors risk being bypassed and reduced to only logistics activities, and so will try to find a BIM business model to maintain their position. Alternatively, stakeholders may be selling new BIM-related services or data that has been analyzed and repackaged for sale.

"BIM should create more transparency and more opportunities to benchmark. Some segments of the value chain could then become commodities."

BIM user

Chapter 2:

Assessing your "BIMpact" and learning how to deal with it

All stakeholders will be affected, but there is no "one size fits all."

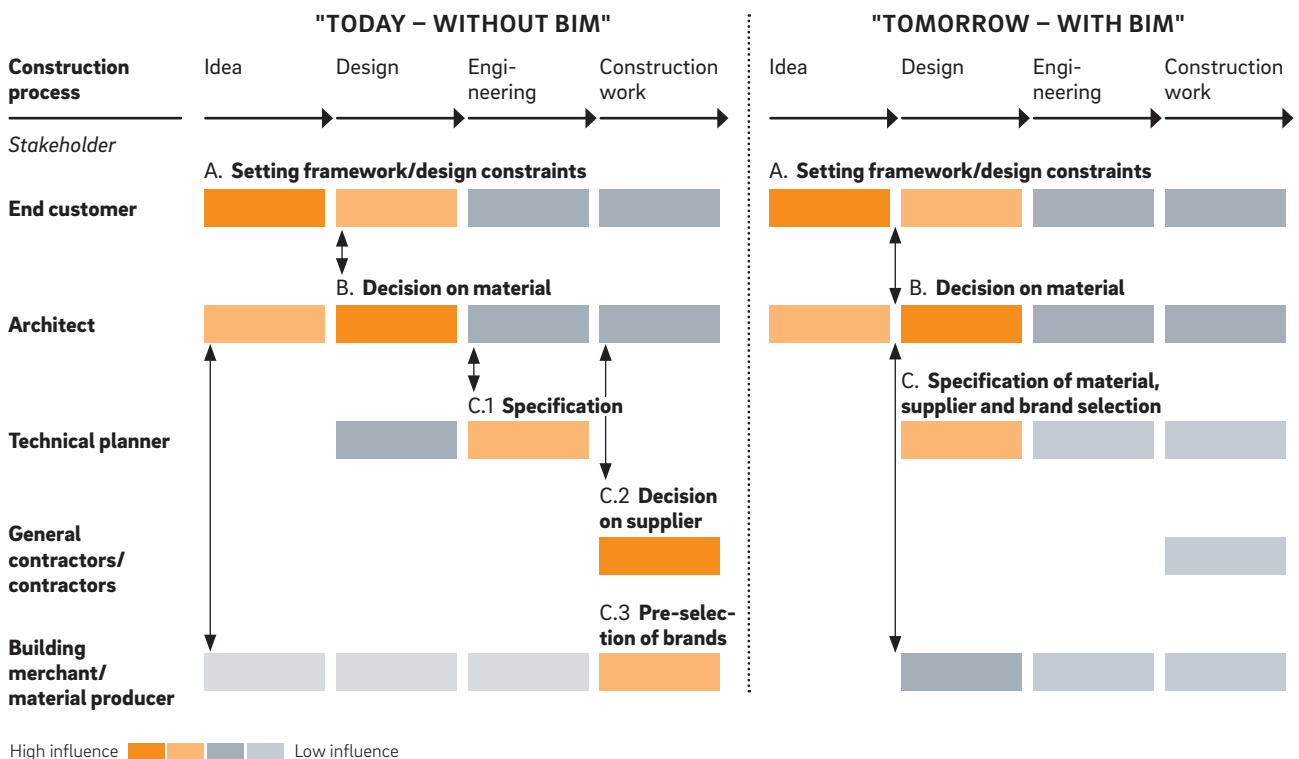
BIM will impact all stakeholders throughout the entire process, from the design and engineering phase, to construction and building operations. Each party will be asked to collaborate on projects in new and different ways, using access controls to ensure that only one party is changing design or project management information at any one time. Cloud-based computing makes this possible with rapid simulation and real-time updates on

design changes and project timelines. As they gain experience with BIM, some stakeholders' roles in the value chain may shift. Those with an eye for opportunity will try to squeeze out others or take over some unclaimed BIM territory resulting from still-unresolved matters of governance. → C

Now let's take a closer look at what benefits and opportunities – and threats – BIM offers companies.

C: Stakeholders' influence on the construction process will shift significantly –

Many decisions will be made earlier on in the process than they are today.
Stakeholders' level of influence along go-to-market with and without BIM.



Source: Interviews, Roland Berger

"BIMPACT" ON: BUILDING MATERIALS MANUFACTURERS AND SELLERS

BIM particularly affects building materials manufacturers and sellers as it allows architects to make design selections without consulting the craftsmen with whom these two stakeholders have strong ties. In the following table, you will see details about the impact of BIM on both these groups. → **D**

Starting with the first group, **building materials manufacturers** should provide BIM details in standardized templates to create value for the planner. Some BIM objects carry more information than needed, and large files can cause the system to slow down or crash, so there are challenges to overcome.

This group should also anticipate what BIM models the architect needs at each stage. In the early planning stages, for instance, architects typically need a 3D object and physical characteristics, such as fire resistance and thermal and acoustic properties.

In addition, building materials manufacturers should consider new business models by understanding the intricacies of each market. In some markets, they are close to craftsmen, and in others they have stronger relationships with merchants who sell the materials. At present, few are close to the architects and designers whose influence on material choices will grow as BIM use expands.

D: Building materials manufacturers and sellers could tap into potential for more automated sales.

On the downside, they risk being crowded out.

AFFECTED AREA	EXPECTED POSITIVE IMPACT	POSSIBLE THREATS TO CURRENT BUSINESS MODEL
Material prices	New product-related services possible, such as continual, real-time analytics on product or energy performance	Lower prices due to more advance planning and the ability to buy in bulk and compare prices Lower prices due to use of pre-fab materials
Brand and product recognition	Improved due to direct contact with design decision maker	Possible new target audience for brand messages
Sales	Potential for more automated sales, for example with an Amazon-like product catalogue within BIM	Risk of being left out, since architects and planners select material upfront, or the system suggests products automatically
Concentration of procurement	New opportunities for pricing models	Less need for materials resellers, since product selection is done by architects during the planning phase
Digital capabilities	Once achieved, can drive sales and improve internal processes	Strong need for investment in training and software Much effort required to digitize a whole product catalogue Uncertainty about which standards to conform to

Building materials suppliers also need to: make products compatible with the standards of leading BIM platform providers in their markets; digitize their catalogue (it does not have to include full detail at the start); develop new pricing models to enable cross-selling of materials and so of whole systems (selling should focus more on modularity including component compatibility); digitize their marketing for integration into BIM platforms.

As designers and planners increasingly interact directly with material producers, **sellers of building materials** need to develop new business models to remain relevant.

They should consider becoming a building materials solution provider via BIM, by pre-packaging various materials for designers and planners, or developing "connected products" that can be modularly inserted into existing Internets of Things. The seller of these connected products could then become a provider of performance data.

Building materials sellers can also: investigate a new business model of supporting or even offering a BIM library by themselves; become an "Alibaba" of BIM objects and physical products; cross-sell over the BIM platform and earn commission from manufacturers for suggesting products or packages of components.

Large sellers of building materials may set new standards for providing BIM details and could build their own platforms. This may put smaller sellers at a disadvantage, since they would need to rely on existing platforms to bring their product catalogues to market.

"BIMPACT" ON: CONTRACTORS AND GENERAL CONTRACTORS

BIM use may increase contractor productivity by further professionalizing their work as "Connected Construction Site 4.0". However, potentially they face reduced control since defining much of the work (e.g. tight planning, use of prefabricated modules, specification of ma-

"We believe BIM carries significant risks for our established sales channel, because our customers (craftsmen) will have less influence over decisions in the future."

Building materials supplier

terial supplier) is now carried out by BIM-enabled architects. With BIM, fewer change requests are typically made due to more time being upfront in planning. Further customer change requests are transparent and can be appropriately priced. A detailed impact of BIM on general contractors and contractors is outlined in the following table. → [E](#)

Construction companies and craftsmen should be able to: read updated BIM files on the go, particularly at the construction site; use BIM to manage workers and collect real-time feedback on progress at the site; define new business models enabled by BIM, such as integrating BIM planning services into their offering; use BIM to improve site logistics, such as material flows and work packages; integrate pre-fab products into BIM models to benefit from economies of scale and reduce waste; assume the data management role if it's not yet taken.

E: Contractors and general contractors might increase their productivity.

However, they also face the possibility of reduced control.

AFFECTED AREA	EXPECTED POSITIVE IMPACT	POSSIBLE THREATS TO CURRENT BUSINESS MODEL
Site labor costs	Lower with more requests for simpler, commoditized labor Lower, due to more off-site fabrication and easier assembly of pre-fab materials Fewer worker-related errors and omissions Less rework	Loss of control over how work is structured because the architect has pre-defined it Contractors give less advice and so do not contribute as much value to the project as before Contractors take on more managerial roles
Labor productivity	Improved transparency through regularly updated work plans	Competence needed to manage BIM-based work plans
Competition	The use of BIM is a differentiator in the market	Stiffer competition because clients have higher visibility in the construction process and can push for greater contractor efficiency Smaller companies might be squeezed out of the BIM market because larger companies can benefit more quickly by widely adopting BIM
Requests for information	Reduced time and effort for RFIs with BIM modules reused and much information on the BIM platform	More time needed to participate in RFIs in the short term due to learning a new system
Requests for changes	Fewer, due to better planning	Less potential for extra business due to customer change requests
BIM training	-	Strong need for investment in training and software Potential staffing problems due to lack of BIM-trained talent

E: Facility managers and building operators should adapt their work processes.

Only then will they be able to make optimal use of the digital plans of the building.

AFFECTED AREA	EXPECTED POSITIVE IMPACT	POSSIBLE THREATS TO CURRENT BUSINESS MODEL
Transparency on products in the building	Better and more detailed overview of building construction Deeper understanding can lead to lower maintenance costs	New software necessitates training More work needed to update BIM
Maintenance capability	Maintenance more informed by building models	-
3D inventory	3D inventory is an extra service for clients	-
Building knowledge base	Electronic, searchable, updatable database streamlines operations	Potential upselling and cross-selling based on available data

"BIMPACT" ON: BUILDING OPERATIONS AND FACILITY MANAGEMENT

During the design and construction phases, BIM greatly improves collaboration between companies and significantly cuts costs.

In the longer term, BIM's greatest potential may be in optimizing building operations and management, and capturing operations data, so that lessons learned can be quickly and easily incorporated into the next round of designs. If a structural problem were to arise 30 years after a building was built, BIM can assist with tracing the problem back to the root cause and help engineers eliminate the problem in future designs.

Considering BIM's impact, **facility managers** should adapt their work processes to make optimal use of the digital plans of the building that they will receive. This will improve the maintenance process but requires that facility managers learn how to use BIM platforms, for instance to update models when conditions change. → **E**

Facility managers can use BIM to better visualize the building and so manage it more effectively, reducing their operating costs, increasing competitive strengths and putting price pressure on those facility managers who do not embrace BIM.

Since BIM provides new tools for optimizing building efficiency throughout its lifecycle, facility managers can use this in their marketing. They can also earn consulting fees for cooperating with architects in the early design phases and sharing their knowledge about buildings optimization.

As the use of BIM evolves and expands, facility managers should be aware that new jobs may emerge in their profession, including "BIM data manager" and "BIM data modeler," and who will be in charge of geometric updates of the model. Another possible job, "BIM project manager," involves integrating BIM into existing property management processes.

"BIM for facility management will give rise to new jobs, and it will cause us to rethink our business, integrate more data into the model, analyze that data, and create more accurate calculations. We will know more about each building at each point throughout its lifecycle."

Real estate service provider and BIM user

Chapter 3:

Challenges to BIM adoption

The necessities of training people, aligning standards and adapting regulations might slow down BIM adoption but will not prevent it.

Even with BIM's significant prospects and potential, there are hurdles to its widespread adoption and use. These include still-unresolved business model issues such as who is going to pay for implementing and using BIM, and who will pay for the extra training and planning that is needed upfront. Technology-related hurdles include the need for file transfer standards, a standard object dictionary and other BIM standards.

Users also need contracts to assign and manage BIM-related responsibilities, but deep collaboration can make such contracts complex. Users must work out in those contracts who can make changes to BIM models and who can't. In some projects, this is hindered by a lack of clarity on who defines roles and coordinates the collaboration.

All of this requires investment and training. And even then, users face the fact that new project partners may not always have the same level of BIM adoption, potentially slowing things down. In general, getting started with BIM requires an upfront investment that may be hard to earn back short term. The long-run benefits are clear though, and having no BIM capabilities will eventually mean losing business.

PEOPLE AND TRAINING NEEDS

Using BIM leads to major internal and external process and organizational changes, and this requires more skilled personnel who can work effectively with the models.

We see two new roles that anyone using BIM will need to fill: company BIM manager, responsible for defining and implementing the model in their organization and using it to optimize internal processes; and project BIM manager, who will be the decision maker for their company during a BIM project. The latter will be the representative who interacts with and coordinates with team members from other companies on the same project.

For each new role, responsibilities will need to be well defined so that companies get the most from BIM. The

"The day is near when there will be a significant cost to product manufacturers if they do not produce BIM information for their clients.

The stark reality is that BIM will continue to change the construction business significantly. Product manufacturers unwilling to adapt to support the BIM process will no longer be competitive."

BIM user

true BIM maestros will not be project managers but those focused on analytics, data management and content management. The person running BIM needs to have an eye for risk and know how to avoid it, for instance by properly managing access controls.

BIM STANDARDS AND STANDARD OBJECT DICTIONARIES

In general, BIM standardization efforts have moved slowly due to fragmentation in the industry and entrenched interests. Two software providers lead the market:

Autodesk (Revit) and Nemetschek (Allplan, ARCHICAD), but in Europe, more than 280 vendors offer BIM software. This abundant offering raises questions about how a file standard will emerge that will allow files from different vendors to be used interchangeably, thus boosting BIM adoption worldwide. Leading software vendors are already working in this direction; one of their initiatives is "buildingSMART". They are also working toward adopting OpenBIM, a standardized approach based on the IFC (industry foundation classes) protocol.

Meanwhile, companies are making a business of helping suppliers digitize objects and creating central libraries of objects from different suppliers. One of these, buildup AG, a spin-off of ETH Zurich of Switzerland, is offering them via an independent platform for Swiss construction companies. BIMobject is another example.

File transfer also remains an unresolved issue. Not only is the size of files a potential problem (e.g. for fast transfer), but so is the transfer interface. The emerging standard here is the IFC protocol, which is a vendor-agnostic (i.e. not manufacturer-specific) file interface.

As a standard emerges, companies should select a software program that meets their needs and is broadly compatible with others. It's better to move forward with BIM with your target market and provide objects of high value to planners than lose time with concerns about standards for file types and transfers.

Another challenge facing BIM adoption is the general and project-specific product data needed from manufacturers in standardized templates, such as product data sheets. This data is necessary for building a standard object dictionary for construction. Suppliers should generally not invest in digitizing every object to the finest detail, but rather should include basic spatial data as a start. To gain speed to market, it is more important to have basic data available for a wider number of products than to provide full details for each product.

CONTRACTUAL MATTERS AND BIM

While standardization is often seen as a technology matter, it also strongly affects contracts, particularly when international partners work together. Many unanswered questions remain about roles, responsibilities and liabilities among stakeholders collaborating via BIM, and these will have to be answered in contracts.

For instance, who will assign tasks within the BIM platform? How will payment be handled? Who will own and manage the data? What happens when one party fails to meet its responsibilities? Who will be liable for mistakes, and how will liability be determined? What are the rights of each user? Will there be national contractual standards? And what about different national regulations that might conflict in international projects?

Companies working on projects together typically have contracts, but such contracts are usually not set up for a world of digital collaboration. In Germany, for example, the architect fee schedule does not even have an entry for a fee for BIM collaboration.

All these matters can slow down BIM adoption and must be addressed, but they can also present opportunities for companies wanting to jump in.

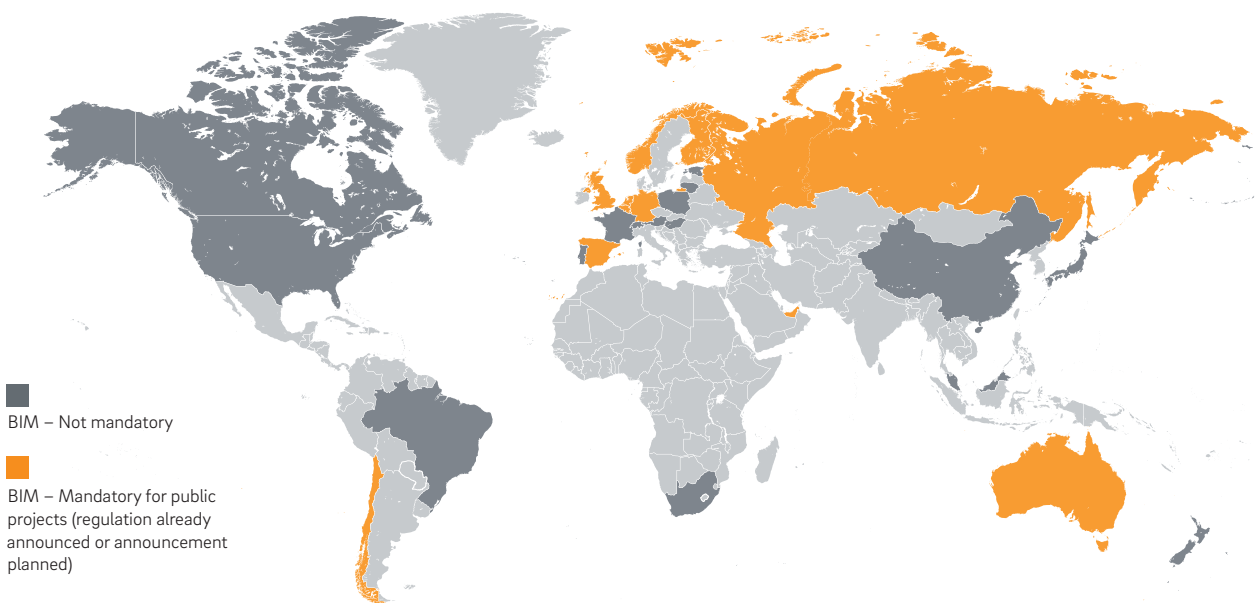
We do not see a natural owner of the project management role at this stage, because architects don't always (like to) assume the project management role. If they do, it would enable them to develop BIM project management as an extra billable service.

DIFFERENT LEVELS OF ADOPTION

Finally, another major factor hampering much wider BIM use is different levels of adoption around the world. In 2016, the research firm Timetric surveyed more than 100 construction organizations globally and found that 41% of respondents do not yet use BIM, 29% do, and 20% are piloting systems. Some 10% were planning to use BIM within the next year. The US is a leader due to widespread standards for building. In general, buildings there are

G: Some countries have already announced or plan to announce government mandates for obligatory use of BIM in the public sector.

Current status of mandates for obligatory use of BIM by country, 2017.



Source: OPIIEC, Roland Berger

more homogeneous and planners tend to rely on a single software package. In Asia, Singapore mandated BIM use in 2015 and has used it for signature projects.

In Europe, the UK is more advanced than Germany and France, since it mandated BIM use for public buildings starting in 2016. Germany's Federal Ministry of Transport and Digital Infrastructure plans to make BIM use mandatory for all transportation infrastructure projects by 2020. The French government decided in 2014 to launch its "Bâtiment Numérique" plan to promote BIM and encourage companies to adopt it, rather than forcing them. Several northern European countries, including Finland and Norway, have government strategies in place, while France and Germany have programs to support adoption.

Given the various initiatives, EU countries run the risk of uncoordinated action. While this may help countries retain certain national preferences around BIM, it can also impede adoption. The EU BIM Task Group is tracking actions in these countries and, although it is a source of BIM information, it is not intended for working on standards. → **G**

Other challenges to BIM's widespread adoption include: the cost of software and hardware; difficulties in selecting appropriate projects for BIM; letting go of old processes, such as reusing non-BIM models; finding BIM-trained employees; and underestimating the work involved in moving to BIM as was pointed out by a study by Arch-Vision in 2016.

Chapter 4:

Our general recommendations

BIM is here to stay. Go ahead and make it yours.

Roland Berger recommends that all stakeholders involved in constructing and managing buildings, as well as infrastructure works, make a plan of action now for embracing BIM.

First and foremost, your company needs to find its way in a BIM world. This includes understanding how BIM works; identifying opportunities, threats and challenges to your current business model; aligning this model and your marketing and sales accordingly; and analyzing obstacles to progress, such as a BIM talent gap.

Second, now is the time for companies to explore and claim BIM territory for themselves. Many BIM roles, such as data manager (e.g. the BIM manager) and project manager, are new roles that are essentially up for grabs.

Third, you may have to convince your clients to accept the potentially higher prices initially needed to move to BIM. Point out to them that they can expect long-term cost savings from BIM, plus the electronic data they will receive at handover that will significantly help with building operations.

Fourth, think ahead and understand how the big picture of BIM will affect your company so you can use BIM to develop new revenue models. These include having designers charge commission from material producers for selecting their products, and generating advertising income on BIM platforms with a Google AdWord type of business, where suppliers pay to be top-of-mind with BIM users.

Our fifth recommendation is to standardize the designs and product templates your company relies on, using them in BIM and making your own processes faster and more efficient.

Sixth, even if your company is in a market where one BIM platform has not become prevalent, it's still critical to get started. During the transition phase, select the best available software (e.g. combination of CAD and collaboration products) for your project instead of waiting for standards to emerge. However, make sure the file stan-

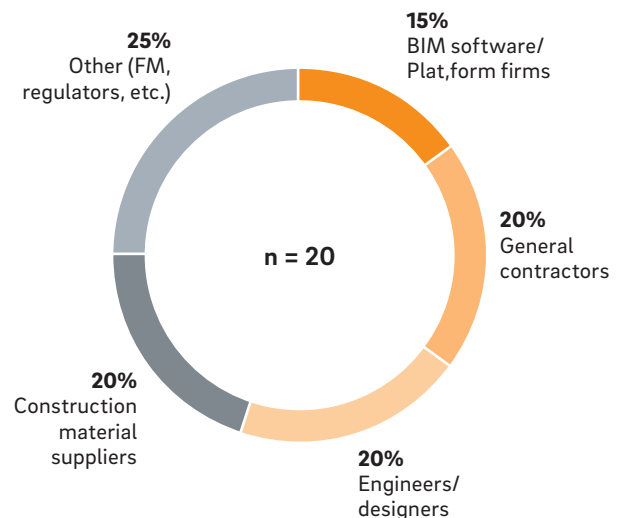
dard you are working with is one that can be converted to other typical standards used by business partners.

Seventh, make sure your management and staff are clear about the reasons for using BIM and the opportunities and threats involved. Instill in them a pro-digital, pro-BIM mindset.

Finally, make your country's policymakers aware of the importance of creating the right framework for BIM adoption, whether this is through directives, mandates, efforts to develop standards or, if need be, regulations. Generally, regulations and guidelines have not hindered BIM adoption, but governments and private organizations must be careful not to create a web of conflicting requirements.

H: We interviewed 20 BIM stakeholders across Europe in 2017.

Distribution of interviewees by background.



Source: Roland Berger

Credits and copyright

WE WELCOME YOUR QUESTIONS, COMMENTS AND SUGGESTIONS

AUTHORS

KAI-STEFAN SCHOBER

Partner

+49 89 9230-8372

kai-stefan.schober@rolandberger.com

PHILIPP HOFF

Principal

+49 69 29924-6193

philipp.hoff@rolandberger.com

AMBROISE LECAT

Principal

+33 1 70928-944

ambroise.lecat@rolandberger.com

GEORGES DE THIEULLOY

Partner

+33 1 53670-900

georges.dethieulloy@rolandberger.com

SVEN SIEPEN

Partner

+41 43 336-8670

sven.siepen@rolandberger.com

This publication has been prepared for general guidance only. The reader should not act according to any information provided in this publication without receiving specific professional advice. Roland Berger GmbH shall not be liable for any damages resulting from any use of the information contained in the publication.

© 2017 ROLAND BERGER GMBH. ALL RIGHTS RESERVED.

About us

Roland Berger, founded in 1967, is the only leading global consultancy of German heritage and European origin. With 2,400 employees working from 34 countries, we have successful operations in all major international markets. Our 50 offices are located in the key global business hubs. The consultancy is an independent partnership owned exclusively by 220 Partners.

Navigating Complexity

Roland Berger has been helping its clients to manage change for half a century. Looking forward to the next 50 years, we are committed to supporting our clients as they face the next frontier. To us, this means navigating the complexities that define our times. We help our clients devise and implement responsive strategies essential to lasting success.

Publisher

ROLAND BERGER GMBH

Sederanger 1

80538 Munich

Germany

+49 89 9230-0